MoinMoin Documentation

Release 2.0.0b6.dev207+g685408b1d.d20260605

The MoinMoin developers

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CONTENTS

Warning

This documentation applies **only** to **MoinMoin version 2** (also known as Moin2, Moin 2.0, MoinMoin2, etc.), except where explicitly noted otherwise. Moin2 is very different from Moin 1.x, so documentation from one version will not apply to the other.

CHAPTER

ONE

GENERAL

1.1 About MoinMoin

MoinMoin is a wiki engine written in Python. It is Free and Open Source Software under GNU GPL v2+. For details please read the *License*.

Project homepage: https://moinmo.in/

Using MoinMoin, wiki users can easily create and maintain web content from their browser.

You can use it:

- as an easily-maintained web site
- as a knowledge base
- for taking notes
- for creating documentation

You can use it for:

- your company / organization, your work group
- your school, college, or university
- your projects and interests
- just yourself

You can run it on:

- a public web server
- an intranet server
- your desktop or laptop
- Linux, macOS, Windows, and other OSes

1.2 What makes MoinMoin special?

Moin tries to be a **great wiki engine**, which encompasses: powerful, extendable and easy-to-use. We don't try to be everything, but we don't try to be minimalistic either.

There are lots of wiki engines out there, making it hard to pick one. However, choosing wisely is important because you may have to live with your choice for a long time because switching wiki engines is not easy.

We won't list all of Moin's features, because comparing feature lists is just not enough. Some features are best left unimplemented, even if they sound great at first. In Moin, you will find most important features like in most major

wiki engines. But still, you and your wiki users might feel quite a different overall experience just because of a bunch of small, superficial differences. Of course the quality of some features' implementations can vary greatly. Thus, you have to try it and play with it, not just look at feature comparisons.

MoinMoin has **been around since about 2000**. It has rapidly grown and evolved through moin 1.9.x. Its developers have increased their experience with Python and wiki technology over the years. With **moin 2.0**, there has been a rather **revolutionary cleanup / rewrite** of how Moin works based on that experience. This promises to make it easier, cleaner, more consistent, more powerful, more flexible and more modular.

Moin is **written in Python**, an easy to read, high-level, object-oriented, dynamic, well-designed and platform-independent programming language.

Moin is **Free Software** (that implies that it is **Open Source**) and, because we use Python, you may even *like* to read and modify Moin's code.

1.3 Who is using MoinMoin?

This shows some of the better-known users of MoinMoin:

1.3.1 Websites

- KernelNewbies, Xen, LinuxWireless, GCC
- Debian, Ubuntu, CentOS
- Apache, GNOME, Wine, OpenOffice, Squid, Exim, Dovecot
- Python, SciPy, TurboGears
- Mercurial, Darcs
- FSFE, FFII, c-base, MusicBrainz
- linuxwiki.de, jurawiki.de, ooowiki.de and ... moinmo.in :D

For links and more sites, please see: https://moinmo.in/MoinMoinWikis

You may also add missing moin-based sites there.

1.3.2 Intranet installations

We know that there are a lot of private intranet installations of MoinMoin in:

- enterprises, companies
- government and administration
- scientific research facilities, universities, schools
- communities

Unfortunately, we do not have permission to name them here.

CHAPTER

TWO

FEATURES

2.1 Operating System Support

Moin is implemented in Python, a platform-independent language. It works on Linux, macOS, Windows, FreeBSD and other OSes that support Python.

That said, Linux is the preferred and most tested deployment platform and will likely have fewer issues than, for example, Windows.

2.2 Servers

- Built-in Python server from Werkzeug, which is easy to use.
- Any server that talks WSGI to Moin:
  - Apache2 with mod_wsgi
  - nginx with uwsgi
  - IIS with isapi-wsgi (not recommended - if you must use Windows, but have a choice concerning the web server, please use Apache2).
  - Other WSGI servers, see https://wsgi.readthedocs.io/en/latest
- With the help of flup middleware about any other server speaking:
  - fastcgi
  - scgi
  - ajp
  - cgi (slow, not recommended)

2.3 Authentication

- Built-in - username/password login form of Moin, MoinAuth
- Built-in HTTP Basic Auth - browser login form, HTTPAuthMoin
- Auth against LDAP / Active Directory (LDAPAuth)
- Any authentication your web server supports via GivenAuth

2.4 Authorization

- Content Access Control Lists (ACLs)
  - global, using a mapping, so you can apply ACLs on parts of the namespace
  - local, per wiki item
  - give rights, such as:
    - create, destroy
    - read, write, rename
    - admin
  - to:
    - specific users
    - specific groups of users
    - all logged-in users
    - all users
- Function ACLs

2.5 Anti-Spam

- Form Ticketing

2.6 Storage

2.6.1 Item Types

- we store data of any type, such as text, images, audio, binary
- we separately store any metadata
- everything is revisioned

2.6.2 Storage Backend Types

- file system
- sqlite3
- everything supported by SQLAlchemy
- you can easily add your own backend with little code

2.6.3 Serialization

- dump backend contents to a single file
- load backend contents from such a file

2.7 Search / Indexing

- important metadata is indexed
- content data is converted (if possible) and indexed
- fast indexed search, fast internal operations
- flexible and powerful search queries
- search current and historical contents
- using a shared index, find content in any farm wiki

2.8 User Interface

2.8.1 OO user interface

- Most functionality is done in the same way no matter what type your wiki item has.

2.8.2 Templating

- Theme support / User interface implemented with templates

2.8.3 Wiki features

- Global History for all items (full list)
- Latest Changes ("Recent Changes"), only lists the latest changes of an item
- Local History for one item ("History")
- Diffs between any revision
  - text item diffs, rendered nicely with HTML
  - image diffs
  - binary "diff" (same or not same)
- Tags / Tag Cloud
- Missing Items
- Orphaned Items
- "What refers here?" functionality
- "What did I contribute to?" functionality
- Sitemap
- Macro support
- Multiple names and Namespaces support

2.8.4 Markup support

- MoinWiki
- Creole
- MediaWiki
- reST

- DocBook XML
- Markdown
- HTML
- plus code / text file highlighting for many formats

2.8.5 Feeds

- Atom
- Google Sitemap

2.8.6 Notification

- by email: SMTP with TLS or SMTP_SSL

2.8.7 Translation / Localization

- Translations into English, German and Swedish are currently available.
- any localization, provided by babel / pytz

2.9 Logging

- Flexible logging provided by the *logging* module of the Python standard library

2.10 Technologies

- HTML5, CSS, JavaScript with jQuery, SVG
- Python
- Flask, Flask-Caching, Flask-Babel, Flask-Theme, Click
- Whoosh, Werkzeug, Pygments, Flatland, Blinker, Babel, EmeraldTree
- SQLAlchemy (supports all popular SQL DBMS), SQLite, Kyoto Tycoon/Cabinet

CHAPTER

THREE

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CHAPTER

FOUR

USING MOINMOIN

4.1 User Accounts

Accounts provide an easy way for wiki users to identify themselves to MoinMoin and other wiki users, store personal preferences and track wiki contributions.

The account creation method is set by the wiki admin as part of the installation process.

- The default method is suitable for wikis exposed to the internet. Only SuperUsers may create a new account. New users will receive instructions for requesting an account when they click the Login button. This method should never use the built-in server in production mode.
- For wikis with physical access limited by a organization's intranet, the wiki admin may allow self registration with an option for email verification. This method may also be useful for single user desktop wikis using the built-in server.
- For desktop wikis with a single user running on a protected PC using the built-in server, the user may configure wikiconfig.py to give full read/write access to anyone without the need to login. In this case the user may set the default theme, edit area text size, etc. in wikiconfig.py. Some minor features like quick links, subscriptions, and bookmarks will not be available.

4.1.1 Account Creation

To create an account, click the *Login* button at the top of the page. If account creation is limited to SuperUsers, you will see instructions to send an email to the SuperUser. If self registration is allowed, proceed to the create account page by clicking the account creation button. The form fields are as follows.

Name
: Your username on the wiki. Names must not contain "/", ":", or "," characters, invisible Unicode characters, or leading or trailing whitespace characters. Embedded single space characters are allowed. This is a required field.

Password
: Your password for logging into your new account. Remember to pick a strong password with a mix of upper and lower case letters, numbers and symbols. This is also a required field.

Password
: Enter your new password again (same as the above field). This is a required field to make sure that your first password entry was correct.

E-Mail
: The email address which will be associated with your new account. This can be used by the wiki administrators to contact you or to verify your account if email verification is enabled on the wiki. This is a required field.

> **Note**
>
> Some wikis require email verification, in which case you will have to click an activation link that will be sent to the email address you provide. You must complete this step before you start using the wiki.

4.1.2 User Settings

User settings provide a way for you to customize your MoinMoin experience and perform account maintenance functions like changing your email address or password. To access your settings page, click the *Settings* button at the top of the page.

The settings page appears as a list of links to various sub-pages for changing elements of your wiki experience; each of these sub-pages is listed below:

Personal Settings

Personal settings include wiki language and locale, name, alias and display-name.

Name
: Your username, as it will appear on the login form, the history pages of wiki items which you edit, and in the footer of items you have edited. All of these places will be rendered as links to your home page in the *users* namespace. If desired, name may be a comma separated list of names. For example, if it is tedious to type your long full name at login, you may create a short alias name: *JohnDoe, jd*. Alias names are only useful at login.

Display-Name
: If your wiki has a custom auth method that creates cryptic user names, then the display-name can be created as an alternative. You will still log in using your username or alias. The display-name will appear as links in history pages and the footer of items you have edited. Use your display-name to create your home page in the users namespace.

Timezone
: Setting this value will display edit times converted to your local time zone. For example, an edit time of 10AM UTC would appear as 8PM AEST if you changed your time zone to GMT +10/Australian Eastern Standard Time.

Locale
: Your preferred language for interacting with MoinMoin. Edit dates and times are formatted based upon the locale unless the ISO 8601 option is selected under Options.

Change Password

Password changes are recommended if you believe that the password you are using has been compromised.

Current Password
: Enter the password which you currently use to log into the wiki. This prevents passers-by from changing the password of a logged in account. This is a required field.

New Password
: The new password which you would like to use. This is a required field.

New Password (repeat)
: Enter your new password again. Used to detect typographical errors. This is a required field.

Notification Settings

Notification settings allow you to configure the way MoinMoin notifies you of changes and important information.

Email
: Change the email address MoinMoin sends email to.

Wiki Appearance Settings

Appearance settings allow you to customize the look and feel of the wiki.

Theme name
: The bundled MoinMoin wiki theme which you would like to use.

CSS file
: If you want to style MoinMoin with custom Cascading Style Sheets (CSS), enter a filename for your custom stylesheet here. Custom CSS provides an advanced level of control over appearance of MoinMoin pages. The file needs to be in the wiki_local subdirectory of the wiki instance. Ask your wiki administrator for assistance.

Number of rows in edit textarea
: The size (in lines) of MoinMoin's plain text editor when you edit an item. The default of 0 resizes the textarea to hold the entire document being edited.

History results per page
: The number of edits you will see when you look at the history of an item.

Quick Links

Quick links enable users to add frequently referenced pages to the Navigation links. In most cases, users will use the "Add Link" or "Remove Link" controls within Item Views to add or remove quick links to local wiki items. Several different types of links may be added:

- To manually add a link to a local wiki item, prefix the item name with the wiki name: MyWiki/myitem
- To add a link to an external wiki page, use the wiki name as a prefix: MeatBall/RecentChanges
- To add a link to an external web page, use the full URL, e.g.: https://moinmo.in
- Other types of links, such as mailto: may be added

Options

The "Options" section allows you to control privacy and advanced features of MoinMoin.

Always use ISO 8601 date-time format
: Display dates and times in ISO 8601 format rather than the usual Babel formats based on the user's locale. If the UTC time zone is selected, dates and times will have a "Z" suffix indicating the date or time is UTC (Zulu time).

Publish my email (not my wiki homepage) in author info
: Control whether or not other wiki users may see your email address.

Open editor on double-click
: This option allows you to simply double-click the text on any MoinMoin item and have it opened in the editor. When using the MoinMoin text editor, the textarea caret will be positioned on the paragraph that was clicked. If the textarea is larger than the display window, pressing the right-arrow key will scroll the page so the caret is visible near the bottom of the window.

Show comment sections
: Show the comment sections for wiki items you view.

Disable this account forever
: Tick this box if you want to disable your account. Your username or alias will still show in the history pages of items you have edited, but you will no longer be able to log in using your account.

4.1.3 Special Features for Users with Accounts

Your User Page

Your user page is a wiki space in which you may share information about yourself with other users of that wiki. It can be accessed by clicking the button with your username on it at the top of the screen, and is edited like a normal wiki item.

"My Changes"

To view your modifications to a wiki, click on `User` in the navigation area, then on `My Changes`. This will show a list of revisions you have made to wiki items sorted by date-time.

The first column will usually show an icon with a link to a diff showing the changes made at that revision. If the item was deleted, the icon will have a link to a revert dialog. If the item has only one revision, the icon will indicate the content type.

The second column will show the item name, aliases, or item ID (if the item was deleted) at that revision with a link to a revision display.

The remaining columns will display timestamps, sizes, revision numbers, and comments.

Bookmarking

Some MoinMoin users spend a lot of time sifting through the global changes list (accessible via the *History* button at the top of every MoinMoin page) looking for unread changes. To help users remember which revisions they have read and which they have yet to read, MoinMoin provides bookmarks. If you have read revisions up until the 13th of January, for example, you would simply click the *Set bookmark* button next to the revisions from the 13th of January to hide all revisions from before that date. If you wish to examine those revisions again, navigate back to the global history page and click *Remove bookmark*.

Quicklinks

At the top of every MoinMoin page, there is a row of buttons for quick access to commonly used MoinMoin features like the global index, global history, and home page. Often, users need quick access to MoinMoin items without having to search for them each time — quicklinks allow you to access your favorite wiki items at the click of a button by placing links to them at the top of every page. To quicklink an item, click the *Add Link* button at the top or bottom of a MoinMoin item. To remove a quicklink, simply navigate back to the item and click the *Remove Link* button.

Quicklinks are associated with your account, so you will be able to access them from anywhere by simply logging into the wiki.

Item Trail

The item trail appears at the top of each page and lists previous items which you have visited. Users with accounts may view this trail wherever they log in, whereas anonymous users have a different trail on each computer that they visit.

Subscribing to Items

Subscribing to items allows you to be notified via email when changes are made. To subscribe, navigate to the item in question and click the *Subscribe* button at the top or bottom of the page. You will now receive an email each time a user modifies this item. To unsubscribe, navigate to the item again and click the *Unsubscribe* button at the top or bottom of the page.

4.1.4 Logging out

Logging out of your account can prevent account hijacking on untrusted or insecure computers, and is considered best practice for security. To log out, click the *Logout* button at the top of the page. You will be redirected to a page confirming that you have logged out successfully.

4.2 Markups Supported by MoinMoin

4.2.1 MoinWiki markup overview

This document describes the features of the moinwiki markup language. Because this document was created using reStructuredText, which does not support some of the features available in moinwiki, the examples below may show both the markup and the result as block or preformatted code.

Features not currently working with Moin's wiki parser are marked with **MOINTODO**.

Table of Contents

Table of contents:

```
<<TableOfContents()>>
```

Table of contents (up to 2nd level headings only):

```
<<TableOfContents(2)>>
```

Headings

Markup:

```
= Level 1 =
== Level 2 ==
=== Level 3 ===
==== Level 4 ====
===== Level 5 =====
====== Level 6 ======
```

Result:

Level 1

Intentionally not rendered as level 1 so as to not interfere with Sphinx's indexing

Level 2

Level 3

Level 4

Level 5

Level 6

Notes:

- Closing equals signs are compulsory.
- Also, whitespace between the first word of the heading and the opening equals sign will not be shown in the output (ie. leading whitespace is stripped).

Text formatting

The following is a table of inline markup that can be used to control text formatting in Moin.

Markup	Result
`'''Bold Text'''`	**Bold text**
`''Italic''`	*Italic*
`'''''Bold Italic'''''`	Bold Italic
`` `Monospace` ``	`Monospace`
`{{{Code}}}`	`Code`
`__Underline__`	Underline
`^Super^Script`	Super Script
`,,Sub,,Script`	Sub Script
`~-Smaller-~`	Smaller
`~+Larger+~`	Larger
`--(Stroke)--`	Stroke

Hyperlinks

Moin2 hyperlinks are enclosed within double brackets. There are three possible fields separated by "|" characters:

```
1. PageName, relative URL, fully qualified URL, or interwiki link
2. Text description or transcluded icon: [[ItemName|{{MyLogo.png}}]]
3. Parameters: target, title, download, class, and accesskey are supported
```

The special CSS class *redirect* may be used to immediately redirect the browser to an internal or external page. Once placed inside an item, that item cannot be viewed as redirection is immediate. To edit the item, type …/+modify/ItemName in the browsers address bar.

Examples with parameters are not shown below because the effect cannot be duplicated with reST markup. To open a link in a new tab or window with a mouseover title, do:

```
* [[ItemName|my favorite item|target=_blank,title="Go There!"]]
```

Internal Links

Internal links for namespaces work the same as an item in the default namespace with subitems. Links without a leading / or ../ refer to an item in the top level of the default namespace, even if the current item is not in the default namespace. Links with a leading / refer to a subitem of the current item. Links with a leading ../ refer to a sibling of the current item.

Markup	Result	Comments
`[[ItemName]]`	ItemName	Link to an item
`[[ItemName|Named Item]]`	Named Item	Named link to an internal item
`[[#AnchorName]]`	*#AnchorName*	Link to an anchor in the current item
`[[#AnchorName|AnchorName]]`	*AnchorName*	Link to a named anchor
`[[ItemName#AnchorName]]`	ItemName#AnchorName	Link to an anchor in an internal item
`[[ItemName#AnchorName|Named Item1]]`	Named Item1	Named link to an anchor in an internal item
`[[../SiblingItem]]`	../SiblingItem	Link to a sibling of the current item
`[[/SubItem]]`	/SubItem	Link to a sub-item of current item
`[[Home/ItemName]]`	Home/ItemName	Link to a subitem of Home item
`[[/filename.txt]]`	/filename.txt	Link to a sub-item called Filename.txt
`[[users/JoeDoe]]`	users/JoeDoe	Link to a user's home item in user namespace
`[[AltItem||class="redirect"]]`	*AltItem is displayed immediately*	Type /+modify/<item> in address bar to edit

External Links

Markup	Result	Comments
`[[https://moinmo.in/]]`	https://moinmo.in/	External link
`[[https://moinmo.in/|MoinMoin Wiki]]`	MoinMoin Wiki	Named External link
`[[MeatBall:InterWiki]]`	MeatBall:InterWiki	Link to an item on an external Wiki
`[[MeatBall:InterWiki|InterWiki page on MeatBall]]`	InterWiki page on MeatBall	Named link to an item on an external Wiki
`[[mailto:user@example.com]]`	mailto:user@example.com	Mailto link

Images and Transclusions

Transclusion syntax is defined as follows:

```
{{<target>|<optional alternate text>|<optional parameters>}}

{{bird.jpg|rare yellow bird|class=center}}
```

- *<target>* is a relative or absolute URL pointing to an image, video, audio, or web page.
- *<optional alternate text>* has several potential uses:
  - Screen readers used by visually impaired users will speak the text.
  - The alternate text may be displayed by the browser if the URL is broken.
  - Search engine crawlers may use the text to index the page or image.
- *optional parameters* may be used to resize or position the target.
  - the browser will automatically resize the image to fit the enclosing container by specifying either class=resize or width=100% height=auto
  - Images or other targets can be resized on the client side by specifying an option of *width=nn* or *height=nn* where nn is the desired size in pixels.

- If Pillow is installed on the server, JPEG (or JPG) images can be resized on the server by specifying an option of *&w=nn* or *&h=nn* where nn is the desired size in pixels.
- Images embedded within text can be positioned relative to a line of text by using *class=bottom*, *class=top* or *class="middle"*.
- Images displayed as block elements my be floated left or right by using *class="left"* or *class=right* respectively, or centered by using *class=center*.

Markup	Comment
`text {{example.png}} text`	Embed example.png inline
`text {{example.png||class=top height=96}} text`	Embed example.png inline
`{{example.png||class=center}}`	example.png as centered image
`{{https://static.moinmo.in/logos/moinmoin.png}}`	example.png aligned left, not float
`{{ItemName}}`	Transclude (embed the contents of) ItemName
`{{/SubItem}}`	Transclude SubItem
`{{ example.jpg || class=resize }}`	browser will automatically resize image to fit the enclosing container
`{{ example.jpg || width=20, height=100 }}`	Resizes example.png by using HTML tag attributes
`{{ example.jpg || &w=20 }}`	Resizes example.png by using server- side compression, requires PIL
`{{ https://moinmo.in/ || width=800 }}`	Resizes the `object` which is embedded using HTML tags. Here markup like `&w=800` will not work.

Extra Info:

Markup like `{{ example.jpg || &w=20 }}`, simply adds `&w` to the `src` URL of the image, the Python Imaging Library (PIL) understands that it has to compress the image on the server side and render as shrinked to size `20`.

For markup like `{{ example.jpg || width=20, height=100 }}` we currently allow only the `width` and `height` (anything else is ignored) to be added as attributes in the HTML, however one can, add anything to the query URL using `&`, like `&w` in the example above.

Transcluded images and videos are resized to fit within layout by default. If you wish to see full-sized file, follow the resource link which can be provided by wiki editor on page or found in Transclusion tab.

Most browsers will display a large blank space when a web page using an https protocol is transcluded into a page using http protocol. Transcluding a png image using an https protocol into an http protocol page displays OK in all browsers.

Blockquotes and Indentations

Markup:

```
indented text
 text indented to the 2nd level
```

Result:

indented text
text indented to the 2nd level

Lists

Warning

- All MoinWiki list syntax (including that for unordered lists, ordered lists and definition lists) requires a leading space before each item in the list.
- Unfortunately, reStructuredText does not allow leading whitespace in code samples, so the example markup here will not work if copied verbatim, and requires that each line of the list be indented by one space in order to be valid MoinWiki markup.
- This is also an **reSTTODO**

Unordered Lists

Markup:

```
* item 1
* item 2 (preceding white space)
 * item 2.1
  * item 2.1.1
* item 3
 . item 3.1 (bulletless)
. item 4 (bulletless)
 * item 4.1
  . item 4.1.1 (bulletless)
```

Result:

- item 1
- item 2 (preceding white space)
  - item 2.1
  - item 2.1.1
- item 3
- item 3.1 (bulletless)
- item 4 (bulletless)
  - item 4.1
  - item 4.1.1 (bulletless)

Note:

- Moin markup allows a square, white and a bulletless item for unordered lists, these cannot be shown in reST documents.

Ordered Lists

With Numbers

Markup:

```
1. item 1
  1. item 1.1
  1. item 1.2
1. item 2
```

Result:

1. item 1
   1. item 1.1
   2. item 1.2
2. item 2

With Roman Numbers

Markup:

```
I. item 1
  i. item 1.1
  i. item 1.2
I. item 2
```

Result:

```
I. item 1

  i. item 1.1

  ii. item 1.2

II. item 2
```

With Letters

Markup:

```
A. item 1
  a. item 1.1
  a. item 1.2
A. item 2
```

Result:

A. item 1
   a. item 1.1
   b. item 1.2
B. item 2

Specify a Starting Point

When there is a need to start an ordered list at a specific number, use the format below. This works for ordered lists using letters and roman numerals.

Markup:

```
1.#11 eleven
1. twelve
   i.#11 roman numeral xi
1. thirteen

A.#11 letter K
A. letter J
```

Result:

```
11. eleven
12. twelve
   xi.roman numeral xi
13. thirteen

K. letter K
J. letter J
```

Definition Lists

Markup:

```
term:: definition
object::
:: description 1
:: description 2
```

Result:

term
: definition

object
: description 1
: description 2

Notes:

- reStructuredText does not support multiple definitions for a single term, so a line break has been forced to illustrate the appearance of several definitions.
- Using the prescribed MoinWiki markup will, in fact, produce two separate definitions in MoinMoin (using separate <dd> tags).

Horizontal Rules

To create a horizontal rule, start a line with 4 or more hyphen (-) characters. Nine (or more) characters creates a line of maximum height.

Markup:

```
Text
----
Text
```

Result:

Text

Text

Tables

Moin wiki markup supports table headers and footers. To indicate the first row(s) of a table is a header, insert a line of 3 or more = characters. To indicate a footer, include a second line of = characters after the body of the table.

Markup:

```
||Head A ||Head B ||Head C ||
============================
||a      ||b      ||c      ||
||x      ||y      ||z      ||
```

Result:

Head A	Head B	Head C
a	b	c
x	y	z

Table Styling

To add styling to a table, enclose one or more parameters within angle brackets at the start of any table cell. Options for tables must be within first cell of first row. Options for rows must be within first cell of the row. Separate multiple options with a blank character.

Markup	Effect
<tableclass=”zebra moin-sortable”>	Adds one or more CSS classes to the table
<rowclass=”orange”>	Adds one or more CSS classes to the row
<class=”green”>	Adds one or more CSS classes to the cell
<tablestyle=”color: red;”>	Add CSS styling to table
<rowstyle=”font-size: 140%; “>	Add CSS styling to row
<style=”text-align: right;”>	Add CSS styling to cell
<bgcolor=”#ff0000”>	Add CSS background color to cell
<rowbgcolor=”#ff0000”>	Add CSS background color to row
<tablebgcolor=”#ff0000”>	Add CSS background color to table
width	Add CSS width to cell
tablewidth	Add CSS width to table
id	Add HTML ID to cell
rowid	Add HTML ID to row
tableid	Add HTML ID to table
rowspan	Add HTML rowspan attribute to cell
colspan	Add HTML colspan attribute to cell
caption	Add HTML caption attribute to table
<80%>	Set cell width, setting one cell effects entire table column
<(>	Align cell contents left
<)>	Align cell contents right
<:>	Center cell contents
<|2>	Cell spans 2 rows (omit a cell in next row)
<-2>	Cell spans 2 columns (omit a cell in this row)
<#0000FF>	Change background color of a table cell
<rowspan=”2”>	Same as <|2> above
<colspan=”2”>	Same as <-2> above
– no content –	An empty cell has same effect as <-2> above
===	A line of 3+ “=” separates table header, body and footer

Table Styling Example

Markup:

```
||Head A||Head B||
===
||normal text||normal text||
||<|2>cell spanning 2 rows||cell in the 2nd column||
||cell in the 2nd column of the 2nd row||
||<rowstyle="font-weight: bold;" class="monospaced">monospaced text||bold text||

||<tableclass="no-borders">A||B||C||
||D||E||F||
```

Result:

Head A	Head B
normal text	normal text
cell spanning 2 rows	cell in the 2nd column
	cell in the 2nd column of the 2nd row
`monospaced text`	**bold text**

A B C
D E F

Verbatim Display

To show plain text preformatted code, just enclose the text in three or more curly braces.

Markup:

```
{{{
no indentation example
}}}

   {{{{
   {{{
   indentation; using 4 curly braces to show example with 3 curly braces
   }}}
   }}}}
```

Result:

```
no indentation example

   {{{
   indentation; using 4 curly braces to show example with 3 curly braces
   }}}
```

Parsers

Syntax Highlighting

Markup:

```
{{{#!highlight python
def hello():
   print "Hello World!"
}}}
```

Result:

```
def hello():
    print "Hello, world!"
```

creole, rst, markdown, docbook, and mediawiki

To add a small section of markup using another parser, follow the example below replacing “creole” with the target parser name. The moinwiki parser does not have the facility to place table headings in the first column, but the creole parser can be used to create the desired table.

Markup:

```
{{{#!creole
|=X|1
|=Y|123
```

(continues on next page)

(continued from previous page)

```
|=Z|12345
}}}
```

Result:

X	1
Y	123
Z	12345

csv

The default separator for CSV cells is a semi-colon (;). The example below specifies a comma (,) is to be used as the separator.

Markup:

```
{{{#!csv ,
Fruit,Color,Quantity
apple,red,5
banana,yellow,23
grape,purple,126
}}}
```

Result:

Fruit	Color	Quantity
apple	red	5
banana	yellow	23
grape	purple	126

wiki

The wiki parser is the moinwiki parser. If there is a need to emphasize a section, pass some predefined classes to the wiki parser.

Markup:

```
{{{#!wiki solid/orange
* plain
* ''italic''
* '''bold'''
* '''''bold italic.'''''
}}}
```

Result:

- plain
- ‘’italic”
- “’bold”’
- “’”’bold italic.”’”’

Admonitions

Admonitions are used to draw the reader's attention to an important paragraph. There are nine admonition types: attention, caution, danger, error, hint, important, note, tip, and warning.

Markup:

```
{{{#!wiki caution
'''Don't overuse admonitions'''

Admonitions should be used with care. A page riddled with admonitions
will look restless and will be harder to follow than a page where
admonitions are used sparingly.
}}}
```

Result:

> **Caution**
>
> '''Don't overuse admonitions'''
>
> Admonitions should be used with care. A page riddled with admonitions will look restless and will be harder to follow than a page where admonitions are used sparingly.

CSS classes for use with the wiki parser, tables, comments, and links

- Background colors: red, green, blue, yellow, or orange
- Borders: solid, dashed, or dotted
- Text-alignment: left, center, right, or justify
- Admonitions: attention, caution, danger, error, hint, important, note, tip, warning
- Tables: moin-sortable, no-borders
- Comments: comment
- Position parsers and tables: float-left, float-right, inline, middle, clear-right, clear-left or clear-both
- Links with browser redirection: redirect

Variables

Variables within the content of a moin wiki item are transformed when the item is saved. An exception is if the item has a tag of '''template''', then no variables are processed. This makes variables particularly useful within template items. Another frequent use is to add signatures (@SIG@) to a comment within a discussion item.

Variable expansion is global and happens everywhere within an item, including code displays, comments, tables, headings, inline parsers, etc.. Variables within transclusions are not expanded because they are not part of the including item's content.

TODO: Allow wiki admins and users to add custom variables. There is no difference between system date format and user date format in Moin 2, fix code or docs.

Predefined Variables

Variable	Description	Resulting Markup	Example Rendering
@PAGE@	Name of the item (useful for templates)	HelpOnPageCreation	HelpOnPageCreation
@ITEM@	Name of the item (useful for templates)	HelpOnPageCreation	HelpOnPageCreation
@TIMESTAMP@	Raw time stamp	2004-08-30T06:38:05Z	2004-08-30T06:38:05Z
@DATE@	Current date in the system format	<<Date(2004-08-30T06:38:05Z)>>	<<Date(2004-08-30T06:38:05Z)>>
@TIME@	Current date and time in the user format	<<DateTime(2004-08-30T06:38:05Z)>>	<<DateTime(2004-08-30T06:38:05Z)>>
@ME@	user's name or "anonymous"	TheAnarcat	TheAnarcat
@USERNAME@	user's name or his domain/IP	TheAnarcat	TheAnarcat
@USER@	Signature "– loginname"	– TheAnarcat	– TheAnarcat
@SIG@	Dated Signature "– login name date time"	– TheAnarcat <<DateTime(…)>>	– TheAnarcat <<DateTime(2004-08-30T06:38:05Z)>>
@EMAIL@	<<MailTo()>> macro, obfuscated email	<<MailTo(user AT example DOT com)>	user@example.com OR user AT example DOT com
@MAILTO@	<<MailTo()>> macro	<<MailTo(testuser@example	testuser@example.com, no obfuscation

Notes:

- @PAGE@ and @ITEM@ results are identical, item being a moin 2 term and page a moin 1.x term.
- If an editor is not logged in, then any @EMAIL@ or @MAILTO@ variables in the content are made harmless by inserting a space character. This prevents a subsequent logged in editor from adding his email address to the item accidentally.

Macros

Macros are extensions to standard markup that allow developers to add extra features. The following is a table of MoinMoin's macros.

Markup	Comment
<<Anchor(anchorname	Inserts an anchor named "anchorname"
< >	Inserts a forced linebreak
<<Date()>>	Inserts current date, or unix timestamp or ISO 8601 date
<<DateTime()>>	Inserts current datetime, or unix timestamp or ISO 8601
<<GetText(Settings)	Loads I18N texts, Einstellungen if browser is set to German
<<GetVal(WikiDict, var1)>>	Loads var1 value from metadata of item named WikiDict
<<FootNote(Note here)>>	Inserts a footnote saying "Note here"
<<FontAwesome(name, color,size)>>	Displays Font Awsome icon, color and size are optional
<<Icon(my-icon.png)>>	Displays icon from /static/img/icons
<<Include(ItemOne/SubItem)>>	Embeds the contents of ItemOne/SubItem inline
<<ItemList()>>	Lists subitems of current item, see notes for options
<<MailTo(user AT example DOT org, write me)>>	If the user is logged in this macro will display user@example.org, otherwise it will display the obfuscated email address supplied (user AT example DOT org) The second parameter containing link text is optional.
<<MonthCalendar()>>	Shows a monthly calendar in a table form, see notes for details
<<RandomItem(3)>>	Inserts names of 3 random items
<<RandomQuote(Itemn	Select a random quote from the given item, or from FortuneCookies if omitted.
<<ShowIcons()>>	Displays all icons in /static/img/icons directory
<<ShowSmileys()>>	Displays available smileys and the corresponding markup
<<ShowUserGroup()>>	Displays metadata defined in usergroup attribute
<<ShowWikiDict()>>	Displays metadata defined in wikidict attribute
<<SlideShow()>>	Displays a link to start a slideshow for the current item
<<TableOfContents(2	Shows a table of contents up to level 2
<<TitleIndex()>>	Lists all itemnames for the namespace of the current item, grouped by initials
<<Verbatim(`same` __text__)>>	Inserts text as entered, no markup rendering

Notes

Date and **DateTime** macros accept integer timestamps and ISO 8601 formatted date-times:

- <<Date(1434563755)>>
- <<Date(2002-01-23T12:34:56)>>

Footnotes are created by placing the macro within text. By default footnotes are placed at the bottom of the page. Explicit placement of footnotes is accomplished by calling the macro without a parameter.

- text<<FootNote(A macro is enclosed in double angle brackets, and"'may"' have markup.)>> more text
- <<FootNote()>>

The **FontAwesome** macro displays FontAwesome fonts. See https://fontawesome.com/search?o=r&m=free for the list of fonts available with FontAwesome version 6.

The **FontAwesome** "name" parameter may include multiple space-separated names. The free fonts are divided into 3 groups: solid, regular (outline), and brands. If the name field consists of a single font name, then the font from the solid group is displayed. To display a font from the regular group, add "regular" to the name field. To display a font from the brands group, add "brands".

The **FontAwesome** color field may be an HTML color name or a hex digit color code with a leading #: #f00 or #F80000. The size field must be an unsigned decimal integer or float that will adjust the size of the character relative to the current font size: 2 or 2.0 will create double the character size, .5 will create a character half the current size.

- <<FontAwesome(thumbs-up,#f00,2)>> is similar to
- <<FontAwesome(regular thumbs-up,red,2)>> but different from these spinners
- <<FontAwesome(spin spinner,plum,2.5)>> <<FontAwesome(fan spin-reverse,orange,2.5)>>

The **Include** macro <<Include(my.png)>> produces results identical to the transclusion {{my.png}}. It is more flexible than a transclusion because it supports multiple parameters and the first parameter may be any regrex starting with a ^. The include macro accepts 3 parameters where the second parameter is a heading and the third parameter a heading level between 1 and 6:

- <<Include(^zi)>> embeds all wiki items starting with *zi*.
- <<Include(moin.png,My Favorite icon, 6)>>

The **ItemList** macro accepts multiple named parameters: item, startswith, regex, ordered and display.

- <<ItemList(item="Foo")>> lists subitems of Foo item
- <<ItemList(ordered='True')>> displays ordered list of subitems, default is unordered
- <<ItemList(startswith="Foo")>> lists subitems starting with Foo
- <<ItemList(regex="Foo$")>> lists subitems ending with Foo
- <<ItemList(tag="template")>> only include items with this tag
- <<ItemList(skiptag="template")>> ignore items with this tag
- <<ItemList(display="FullPath")>> default, displays full path to subitems
- <<ItemList(display="ChildPath")>> displays last component of the FullPath, including the '/'
- <<ItemList(display="ChildName")>> displays subitem name
- <<ItemList(display="UnCameled")>> displays "fooBar" as "foo Bar"

The **MonthCalendar** macro accepts multiple named parameters: item, year, month, month_offset, fixed_height and anniversary.

- <<MonthCalendar>> Calendar of current month for current page
- <<MonthCalendar(month_offset=-1)>> Calendar of last month
- <<MonthCalendar(month_offset=+1)>> Calendar of next month
- <<MonthCalendar(item="SampleUser",month=12)>> Calendar of Page SampleUser, this year's december
- <<MonthCalendar(month=12)>> Calendar of current Page, this year's december
- <<MonthCalendar(year=2022,month=12)>> Calendar of December, 2022

The **SlideShow** macro creates a link to start a presentation for the current item. The slides are separated by level 1 and 2 headings. The text before the first heading is ignored. Navigation within the slideshow can be controlled via corresponding buttons at the edge or bottom of the browser screen or using the left and right arrow keys.

Smileys and Icons

This table shows moin smiley markup, the rendering of smiley icons cannot be shown in Rest markup.

X-(	:D	<:(	:o
:(	:)	B)	:))
;)	/!\	<!>	(!)
:-?	:\	>:>	|)
:-(	:-)	B-)	:-))
;-)	|-)	(./)	{OK}
{X}	{i}	{1}	{2}
{3}	{*}	{o}	

Comments

There are three ways to add comments to a page. Lines starting with ## can be seen only by page editors. Phrases enclosed in /* and */ and wiki parser section blocks of text with a class of "comment" may be hidden or visible depending upon user settings or actions.

Markup:

```
## Lines starting with "##" may be used to give instructions
## to future page editors.

Click on the "Comments" button within Item Views to toggle the /* comments */ visibility.

{{{#!wiki comment/dashed
This is a wiki parser section with class "comment dashed".

Its visibility gets toggled by clicking on the comments button.
}}}
```

Result:

Click on the "Comments" button within Item Views to toggle the visibility.

Notes:

- The toggle display feature does not work on reST documents, so there is no way to see the hidden comments.

4.2.2 WikiCreole markup overview

Features currently not working with Moin's WikiCreole parser are marked with **CREOLETODO**.

Features currently not working with Moin's reST parser are marked with **reSTTODO**.

Headings

Markup:

```
= Level 1
== Level 2
=== Level 3
==== Level 4
===== Level 5
====== Level 6
```

Result:

Level 1

Intentionally not rendered as level 1 so it does not interfere with Sphinx's indexing

Level 2

Level 3

Level 4

Level 5

Level 6

Notes:

Closing equals signs are optional and do not affect the output. Also, whitespace between the first word of the heading and the opening equals sign will not be shown in the output (i.e., leading whitespace is stripped).

Text formatting

The following is a table of inline markup that can be used to format text in Creole.

Markup	Result
`**Bold Text**`	**Bold text**
`//Italic Text//`	*Italic text*
`//**Bold and Italic**//`	Bold and Italic
`__Underline__`	Underline
`{{{Monospace}}}`	`Monospace`
`First line\\Second line`	First line Second line

reSTTODO: reStructuredText line blocks are not working in Moin2

Hyperlinks

Internal links

Markup	Result	Comment
`[[ItemName]]`	*Item name*	Link to an item
`[[ItemName|Name`	*Named Item*	Named link to an internal item
`[[#AnchorName]]`	*#AnchorName*	Link to an anchor in the current item
`[[#AnchorName|N`	*Named anchor*	Link to a named anchor.
`[[ItemName#Anch`	*ItemName#Ancho*	Link to an anchor in an internal item
`[[ItemName/SubItem]]`	*ItemName/Subiter*	Link to a sub-item of an internal item
`[[../SiblingItem]]`	*../SiblingItem*	Link to a sibling of the current item
`[[/SubItem]]`	*/SubItem*	Link to a sub-item
`[[attachment:Fi txt]]`	*Filename.txt*	Link to a sub-item called Filename.txt. Note that this is for MoinMoin 1.x compatability and is deprecated in favour of the more convenient `[[/SubItem]]` syntax

External links

Markup	Result	Comment
`http://www.example.com`	http://www.example.com	External link
`[[http://www.example.com]]`	http://www.example.com	External link
`[[MeatBall:InterWiki|InterWiki item on MeatBall]]`	InterWiki item on MeatBall	Link to an item on an external Wiki
`[[mailto:user@example.org]]`	mailto:user@example.org	Mailto link

Images and Transclusions

Markup	Comment
`{{example.png}}`	Embed example.png inline
`{{example.png|Alt text}}`	Embed example.png inline or display “Alt text” if not available
`{{ItemName}}`	Transclude (embed the contents of) ItemName inline.
`{{/SubItem}}`	Transclude SubItem inline.

Paragraphs

Markup:

```
You can leave an empty line to start a new paragraph.

Single breaks are ignored.
To force a line break, use <<BR>> or \\.
```

Result:

You can leave an empty line to start a new paragraph.

Single breaks are ignored. To force a line break, use
or
.

reSTTODO: reStructuredText line blocks are not working in Moin2

Horizontal rules

Markup:

```
A horizontal rule can be added by typing four dashes.

----

This text will be displayed below the rule.
```

Result:

A horizontal rule can be added by typing four dashes.

This text will be displayed below the rule.

Preformatted text

Markup:

```
{{{
This text will [[escape]] **special** WikiCreole //markup//
    It will also preserve indents

And whitespace.
}}}
~[[This text will not be a link, because it uses the tilde (~) escape character]]
```

Result:

```
This text will [[escape]] **special** WikiCreole //markup//
    It will also preserve indents

And whitespace.
```

[[This text will not be a link, because it uses the tilde (~) escape character]]

Notes:

This tilde character (~) makes the parser ignore the character following it, which can be used to prevent links from appearing as links or prevent bold text from appearing as bold. For example "~**Not bold~**" would output "**Not bold**").

Syntax Highlighting

Markup:

```
{{{
#!python
#Python syntax highlighting
import this

def spam():
    print('Spam, glorious spam!')

spam()
}}}
```

Result:

```
#Python syntax highlighting
import this

def spam():
    print('Spam, glorious spam!')

spam()
```

CREOLETODO:The use of syntax highlighting currently crashes moin.

Lists

Ordered lists

Ordered lists are formed of lines that start with number signs (#). The number of '#' signs at the beginning of a line determines the current level.

Markup:

```
# First item
# Second item
## First item (second level)
## Second item (second level)
### First item (third level)
# Third item
```

Result:

1. First item
2. Second item
    1. First item (second level)
    2. Second item (second level)
    1. First item (third level)
3. Third item

Unordered lists

Markup:

```
* List item
* List item
** List item (second level)
*** List item (third level)
* List item
```

Result:

- List item
- List item
  - List item (second level)
  - List item (third level)
- List item

Mixed lists

Markup:

```
# First item
# Second item
** Bullet point one
** Bullet point two
# Third item
# Fourth item
```

Result:

1. First item
2. Second item
   - Bullet point one
   - Bullet point two
3. Third item
4. Fourth item

Tables

Markup:

```
|= Header one |= Header two |
| Cell one    | Cell two
| Cell three  | Cell four   |
```

Result:

Header one	Header two
Cell one	Cell two
Cell three	Cell four

Notes:

Table cells start with a pipe symbol (|), and header cells start with a pipe symbol and equals sign (|=). The closing pipe symbol at the end of a row is optional.

Macros

Macros are extensions to standard Creole markup that allow developers to add extra features. The following is a table of MoinMoin's Creole macros.

Markup	Comment
`<<Anchor(anchorname`	Inserts an anchor named "anchorname"
`< >`	Inserts a forced linebreak
`<<Date()>>`	Inserts current date, or unix timestamp or ISO 8601 date
`<<DateTime()>>`	Inserts current datetime, or unix timestamp or ISO 8601
`<<GetText(Settings)`	Loads I18N texts, Einstellungen if browser is set to German
`<<GetVal(WikiDict, var1)>>`	Loads var1 value from metadata of item named WikiDict
`<<FootNote(Note here)>>`	Inserts a footnote saying "Note here"
`<<FontAwesome(name, color,size)>>`	displays Font Awsome icon, color and size are optional
`<<Icon(my-icon. png)>>`	displays icon from /static/img/icons
`<<Include(ItemOne/ SubItem)>>`	Embeds the contents of `ItemOne/SubItem` inline
`<<ItemList()>>`	Lists subitems of current item, see notes for options
`<<MailTo(user AT example DOT org, write me)>>`	If the user is logged in this macro will display `user@example.org`, otherwise it will display the obfuscated email address supplied (`user AT example DOT org`) The second parameter containing link text is optional.
`<<MonthCalendar()>>`	Shows a monthly calendar in a table form, see notes for details
`<<RandomItem(3)>>`	Inserts names of 3 random items
`<<ShowIcons()>>`	displays all icons in /static/img/icons directory
`<<TableOfContents(2`	Shows a table of contents up to level 2
`<<Verbatim(`same` __text__)>>`	Inserts text as entered, no markup rendering

Notes

Date and **DateTime** macros accept integer timestamps and ISO 8601 formatted date-times:

- <<Date(1434563755)>>
- <<Date(2002-01-23T12:34:56)>>

Footnotes are created by placing the macro within text. By default footnotes are placed at the bottom of the page. Explicit placement of footnotes is accomplished by calling the macro without a parameter.

- text<<FootNote(A macro is enclosed in double angle brackets, and"'may"' have markup.)>> more text
- <<FootNote()>>

FontAwesome color must be a hex digit color code of either 3 or 6 digits with a leading #: #f00 or #F80000. FontAwesome size must be an unsigned decimal integer or float that will adjust the size of the character relative to the current font size: 2 or 2.0 will create double the character size, .5 will create a character half the current size. Font awesome

experts will know about the special “fa” class and the “fa-” name prefixes. It is acceptable, but not necessary to provide these. See https://fontawesome.com/v4/cheatsheet/

- <<FontAwesome(thumbs-up,#f00,2)>> is identical to
- <<FontAwesome(fa fa-thumbs-up fa-2x,#FF0000)>>

The **Include** macro <<Include(my.png)>> produces results identical to the transclusion {{my.png}}. It is more flexible than a transclusion because it supports multiple parameters and the first parameter may be any regrex starting with a ^. The include macro accepts 3 parameters where the second parameter is a heading and the third parameter a heading level between 1 and 6:

- <<Include(^zi)>> embeds all wiki items starting with *zi*.
- <<Include(moin.png,My Favorite icon, 6)>>

The **ItemList** macro accepts multiple named parameters: item, startswith, regex, ordered and display.

- <<ItemList(item=”Foo”)>> lists subitems of Foo item
- <<ItemList(ordered=’True’)>> displays ordered list of subitems, default is unordered
- <<ItemList(startswith=”Foo”)>> lists subitems starting with Foo
- <<ItemList(regex=”Foo$”)>> lists subitems ending with Foo
- <<ItemList(tag=”template”)>> only include items with this tag
- <<ItemList(skiptag=”template”)>> ignore items with this tag
- <<ItemList(display=”FullPath”)>> default, displays full path to subitems
- <<ItemList(display=”ChildPath”)>> displays last component of the FullPath, including the ‘/’
- <<ItemList(display=”ChildName”)>> displays subitem name
- <<ItemList(display=”UnCameled”)>> displays “fooBar” as “foo Bar”

The **MonthCalendar** macro accepts multiple named parameters: item, year, month, month_offset, fixed_height and anniversary.

- <<MonthCalendar>> Calendar of current month for current page
- <<MonthCalendar(month_offset=-1)>> Calendar of last month
- <<MonthCalendar(month_offset=+1)>> Calendar of next month
- <<MonthCalendar(item=”SampleUser”,month=12)>> Calendar of Page SampleUser, this year’s december
- <<MonthCalendar(month=12)>> Calendar of current Page, this year’s december
- <<MonthCalendar(year=2022,month=12)>> Calendar of December, 2022

4.2.3 reStructuredText Markup

Contents

This document is an introduction to the reStructuredText (rST) markup language. It demonstrates the features of the Moin2 rST support. For details, follow the links to the reStructuredText Markup Specification.

There are two HTML version of this document: one is part of the Wiki Help generated by Moin, the other belongs to the external documentation generated by Sphinx. Some features and links only work in the Wiki Help page.

Section Headings

Section headings are underlined (or over- and underlined) with a printing nonalphanumeric 7-bit ASCII character (details).

- The underline/overline must be at least as long as the title text.
- A blank line after a heading is optional.
- Instead of a fixed order of heading adornment styles, the level is determined by their order in the document:

  The first adornment style encountered is registered as page title style (<h1> in HTML), the second style is assigned to level 2, the third style to level 3, and so on.[1]
- Once established, adornment styles must be consistent. Skipping a heading level results in a parsing error.

Markup	Result
`=======` `Level 1` `=======`	The first encountered style becomes the *page title* (if it is unique)[1].
`Level 2` `=======`	See the heading of *this section*.
`Level 3` `-------` `Level 4` `*******` `Level 5` `:::::::` `Level 6` `+++++++`	See *below*. (Section headings may not be nested in body elements like *lists*, *tables*, or *admonitions*. You may use *rubrics* for informal headings outside the main document structure.)

Level 3

Level 4

Level 5

Level 6

Thematic Breaks

A *thematic break* represents a change in subject or emphasis. It is typically rendered as additional space between paragraphs, often with a horizontal line, a row of asterisks, or some other ornament. See below for an example.

HTML represents a *thematic break* with the `<hr />` element. In reStructuredText, this element is called *transition* and represented by a horizontal line of 4 or more repeated punctuation characters (details).

[1] If any visible content appears before the first heading on a page or if the adornment style is used more than once, the first heading is set to level 2 and all subsequent headings are demoted by one level (details).

Markup	Result
`See below for an example.` `----------` `HTML represents [...]`	See *above*. (Transitions may not be nested in body elements like *lists*, *tables*, *admonitions*, ...).

Text Formatting

Inline markup can be applied to words or phrases within a text block to format text (details).

- Less common styles are obtained via interpreted text roles.
- reStructuredText does not support `***Nested** inline markup*`.[2]

Markup	Result	Notes
`*emphasis*`	*emphasis*	
`**strong emphasis**`	**strong emphasis**	
`` ``inline \literal\`` ```	`inline \literal\`	In literal context, *backslashes* have no special meaning.
`` `Hamlet` ``	*Hamlet*	Interpreted text. The default text role is configurable, it defaults to the "title" role (see below).
`:ab:`abbr.``	ABBR.	Abbreviations, can be styled with custom CSS.
`:code:`answer = 42``	`answer = 42`	For syntax highlight, see *custom text roles*.
`:sub:`sub`\ script`	subscript	Character-level markup ...
`:sup:`super`\ script`	superscript	... requires *escaped spaces*.
`:title:`Moin``	*Moin*	The title of a creative work (book, opera, coding project, etc.) Analog to HTML <cite>. This is the initial default text role.

Additional Text Roles

Including the "html-roles.txt" standard definition file adds roles that correspond to HTML elements representing edits to the document and text-level semantics.

[2] This is a longstanding Docutils TODO issue.

Markup	Result	Notes
`:del:`removed``	~~removed~~	removed content
`:ins:`inserted``	inserted	editional additions
`:b:`keyword``	**keyword**	highlight **key words** without marking them up as important
`:dfn:`dfn``	*dfn*	the defining instance of a term
`:i:`rôle``	*rôle*	alternate voice
`:kbd:`Ctrl X``	`Ctrl X`	user input
`:mark:`up``	up	highlight a run of text
`:q:`Tagline!``	“Tagline!”	content quoted from another source
`:s:`strike``	~~strike~~	text that is inaccurate or no longer relevant
`:samp:`Ready!``	`Ready!`	computer output
`:small:`print``	print	side comments
`:u:`anotation``	anotation	unarticulated annotations of, e.g, mispellings
`:var:`n``	*n*	variables

Custom Text Roles

Custom interpreted text roles can be used to attach CSS class values to inline text and set the code language for syntax highlight (details).

Markup	Result	Notes
`.. role:: green` `A :green:`dragon`.`	A dragon.	Moin pre-defines some CSS classes for background color. Text with other classes can be styled with custom CSS.
`.. role:: blue(emphasis)` `The `Norwegian`:blue:.`	The *Norwegian*.	Custom roles may be based on standard roles.
`.. role:: em-tt(emphasis)` `  :class: monospaced` `*emphasis* and` `:em-tt:`emphasis monospace``	*emphasis* and *emphasis monospace*	Custom roles may be used as surrogate for nested inline markup.
`.. role:: tex(code)` `  :language: latex` `:tex:`\frac{\pi}{4}``	`frac{pi}{4}`	There is highlight support for many languages. See also *code blocks*.

- The examples rely on Moin CSS classes missing in the *external documentation*.

Hyperlinks

Hyperlinks connect a *hyperlink reference* to a matching *hyperlink target* (details).

- Matching of *named* references and targets is done after normalizing whitespace and case.
- *Anonymous* references and targets are matched according to their order.
- The target can also be *embedded* in the reference.

Internal Links

Page-internal links point to an anchor (named element or anonymous target) in the same document.

Markup	Result	Notes
`Simple_ reference and _`simple` inline target.`	*Simple* reference and simple inline target.	See simple reference names and inline targets.
`Links to a `named paragraph`_, the `MoinMoin logo`_, and a table named `fruit salad`_.`	Links to a *named paragraph*, the *MoinMoin logo*, and a table named *fruit salad*.	Put phrase references in backticks.
`It's `easy <simple_>`__.`	It's *easy*.	Custom link text with embedded alias.
`Easy__ as pie.` `__ simple_`	*Easy* as pie.	Custom link text with anonymous reference and anonymous indirect target.
`Section headings_ are implicit targets.`	*Section headings* are implicit targets.	For details, see implicit targets.
`.. _named paragraph:` `This paragraph` `is a target.`	This paragraph is a target.	Empty hyperlink targets mark the following element.

The Moin rST converter interprets named hyperlink references without matching target as **Wiki-internal links** (whitespace is normalized).

- Caution! Explicit targets, inline targets and *section headings* with the same name take precedence!
- Docutils and Sphinx report unknown target names as errors.

Markup	Result	Notes
`Home_`	**Home_**	item in default namespace
`` `users/Home`_ ``	**`users/Home`_**	item in specified namespace
`` `../moin`_ ``	**`../moin`_**	sibling item in current namespace
`` `../moin#Linking`_ ``	**`../moin#Linking`_**	fragment of a sibling item
`` `/Subitem Example`_ ``	**`/Subitem Example`_**	subitem of the current item

Wiki-internal link targets may also be specified as URI References.

- The syntax for Wiki-internal links differs from POSIX *path* syntax!

Markup	Result	Notes
`` `<Home>`__ ``	Home	item in default namespace (as embedded URI reference)
`` `My Castle <Home>`__ ``	My Castle	… with custom text
`` `<users/Home>`__ ``	users/Home	item in specified namespace
`` `Moin markup`__ `` `__ ../moin`	Moin markup	sibling item (in an anonymous target)
`|MoinMoin|_ markup` `.. _MoinMoin: ../moin`	markup	… as *image* link via substitution reference The substitution text becomes the reference name, an explicit target maps it to a URI reference.
`` `sub-item </Subitem%20Example>`__ ``	sub-item	subitem (with custom text) In URI context, whitespace is removed by default. Use an *escaped space* or percent encoding.

External Links

External links point to an external resource (specified as URI).

Markup	Result	Notes
`Moin (https://moinmo.in/) supports rST.`	Moin (https://moinmo.in/) supports rST.	URIs and email addresses are turned into standalone hyperlinks.
`Moin_ supports rST.` `.. _moin: https://moinmo.in/`	Moin supports rST	A named hyperlink reference and matching external target keep the details out of the text flow.
`` `Moin <https://moinmo.in/>`__ supports rST. ``	Moin supports rST.	Reference with custom link text and embedded URI.
`` `Moin supports rST`__. `` `__ https://moin-20.readthedocs.io/en/latest/user/rest.html`	Moin supports rST.	Anonymous references and targets are handy for verbose or repeated link texts.
`:RFC:`6921``	**RFC 6921**	"rfc-reference" role
`:PEP:`01``	**PEP 01**	"pep-reference" role

Blockquotes

An indented text block is interpreted as a *blockquote*, a text part quoted from another source (details).

- Blockquotes may contain arbitrary body elements.
- To add an attribution, append a paragraph preceded by "--" or an em-dash.

Markup	Result
preceding paragraph It is my business to know things. That is my trade. -- Sherlock Holmes succeeding paragraph	preceding paragraph It is my business to know things. That is my trade. —Sherlock Holmes succeeding paragraph

Lists

reStructuredText provides syntax for *unordered lists*, *ordered lists*, *definition lists*, *field lists*, and option lists. See *line blocks* for the rST alternative to a "bulletless" list.

- Lists must be separated from other body elements by blank lines. Blank lines between list items are optional.
- The list marker must **not** be indented.
- List items may contain arbitrary body elements.

Unordered Lists

A text block which begins with a *, +, -, •, →, or , followed by whitespace, is a *bullet list* item (details).

- Item content must be left-aligned and indented relative to the marker.
- Content may start on the same line as the marker or on the next line.
- The first content line sets the indentation level for this item.

Sub-items 2.1 to 2.2.2 show some valid input variants.

Markup	Result
- item 1 - item 2 - item 2.1 - item 2.2 - item 2.2.1 - item 2.2.2 - item 3	• item 1 • item 2 – item 2.1 – item 2.2 ∗ item 2.2.1 ∗ item 2.2.2 • item 3
Attention! * Indented lists * are nested in a block quote.	Attention! • Indented lists • are nested in a block quote.

Ordered Lists

Ordered lists are similar to *unordered lists*, but use *enumerators* instead of bullets (details).

- Ordered lists can be automatically enumerated using the # character.
- The first enumerator determines the *enumeration sequence*, *formatting type*[3], and *start value*.

Sub-items 2.1 to 2.2.2 show some valid indentation variants.

Markup	Result
`#. item 1` `#. item 2` `(a) item 2.1` `(#) item 2.2` `i) item` `2.2.1` `#)` `item 2.2.2` `#. item 3`	1. item 1 2. item 2 (a) item 2.1 (b) item 2.2 i) item 2.2.1 ii) item 2.2.2 3. item 3
`4) item 4 with` `C. uppercase` `#. letters and` `IV) custom` `#) start values`	4) item 4 with C. uppercase D. letters and IV) custom V) start values

Definition Lists

Definition lists are formed by a *term* on one line followed by an indented *definition* or *description* on the next line (details).

Markup	Result
`term` `Description` `term 2 : classifier` `Optional *classifiers*` `may be appended to the term.`	**term** Description **term 2** [classifier] Optional *classifiers* may be appended to the term.

[3] HTML output ignores the formatting style and always uses a trailing period.

Field Lists

Field lists are mappings from field names to field bodies (details).

- Field bodies may start on the same line as the field name or on the next line.
- Field list syntax is also used for options in *directives* and for bibliographic fields.

Markup	Result

```
:Version:      2.0b2
:Release Date: 2001-08-16
:Authors: - Joe Doe
   - Erika Mustermann
   - Jan Kowalski
```

Version
2.0b2
Release Date
2001-08-16
Authors
- Joe Doe
- Erika Mustermann
- Jan Kowalski

Option lists

Option lists document the options of a command-line program (details).

- There must be at least **two** spaces between the option(s) and the description (which may also start on the next line).

Markup	Result

```
-a      Output all.
-c arg  Output just arg.
--long  Output all day long.
-f FILE, --file=FILE  These
   two options are synonyms.
```

-a	Output all.
-c arg	Output just arg.
--long	Output all day long.
-f FILE, --file=FILE	These two options are synonyms.

Line Blocks

A *line block* is the reStructuredText syntax for forced line breaks (details). It resembles a plain (bulletless) list and is commonly used for verse and addresses

- Line blocks may contain inline markup and nested line blocks. Block-level markup is not recognized.

Markup	Result

```
| Start lines with a vertical bar.
|    Indented lines
|    indicate a *nested* line block.
| Long lines may be
  continued on the next line
  (without vertical bar).
| In the output, all lines may wrap.
```

Start lines with a vertical bar.

Indented lines

indicate a *nested* line block.

Long lines may be continued on the next line (without vertical bar).

In the output, all lines may wrap.

Tables

There are four ways to specify tables in reStructuredText:

- *Simple tables* are easy to create but limited.
- *Grid tables* are complete but cumbersome to create.
- *CSV tables* format CSV data as table.
- *List tables* are easy to type and edit but don't look like tables in the rST source.

Markup within the table cells is supported (you can even nest a table in a table cell). *Table directives* allow customization and adding a title/caption.

Simple Tables

Simple tables use a compact and easy to type table representation (details):

- Equals signs (=) are used for top and bottom table borders, and to separate *header rows* from the table body.
- Each line of text starts a new row, except when there is a blank cell in the first column.

Markup

```
==== ==== ====
 ..   A    B
==== ==== ====
  1   A1   B1
  2   A2   B2
==== ==== ====
```

Result

	A	B
1	A1	B1
2	A2	B2

Notes

To start a row without content in the first column, use empty *comments* (`..`) or *escaped whitespace* (`\ `).

Markup

```
=== === ===
In      Out
------- ---
 a   b  a+b
=== === ===
 1   2   3
=== === ===
```

Result

In		Out
a	b	a+b
1	2	3

Notes

Lines of hyphens or equal signs crossing column boundaries indicate *column spans*.

Markup

```
=====  ================
row 1  a cell with
       two *lines*

row 2  a cell with

       two *paragraphs*
-----  ----------------
row 3  a) list
       #) item 2
=====  ================
```

Result

row 1	a cell with two *lines*
row 2	a cell with two *paragraphs*
row 3	a) list b) item 2

Notes

Cells of the first column must fit on one input line. Other cells may use continuation lines.
Blank lines or lines of hyphens may be used to visually separate rows.

See the "*table*" directive for styling options.

Grid Tables

Grid tables are a table representation via grid-like "ASCII art" (details).

Markup	Result	Notes
`+---+----+----+` `|  | A  | B  |` `+===+====+====+` `| 1 | A1 | B1 |` `+---+----+----+` `| 2 | A2 | B2 |` `+---+----+----+`	<table><tr><th></th><th>A</th><th>B</th></tr><tr><td>1</td><td>A1</td><td>B1</td></tr><tr><td>2</td><td>A2</td><td>B2</td></tr></table>	
`+--------------+` `| column span  |` `+===+==========+` `|* A| row span |` `|* B|          |` `+---+          |` `|foo|          |` `+---+----------+`	<table><tr><th colspan="2">column span</th></tr><tr><td colspan="2">• A • B</td><td>row span</td></tr><tr><td colspan="2">foo</td></tr></table>	Grid tables allow arbitrary body elements in *all* cells and both *row* and *column spans*.

See the "*table*" directive for styling options.

Table Directives

Table directives use the "directive" syntax to pair the table content with a caption and/or options guiding the presentation.

csv-table

The *csv-table* directive supports CSV data (details).

Markup	Result	Notes
`.. csv-table::` `  :header-rows: 1` `  :stub-columns: 1` `  , A, B` `  1, A1, B1` `  2, A2, B2`	<table><tr><th></th><th>A</th><th>B</th></tr><tr><td>1</td><td>A1</td><td>B1</td></tr><tr><td>2</td><td>A2</td><td>B2</td></tr></table>	*Delimiter*, *quote* character, *escape* character, and more can be customized with directive options. Cell content is parsed as rST.

TODO: The :url: option to load data from an external source does not work with the syntax for wiki-internal items.

list-table

The *list-table* directive creates a table from data in a two-level bullet list (details).

Markup	Result	Notes
`.. list-table::` `  :header-rows: 1` `  :stub-columns: 1` `  * -` `    - A` `    - B` `  * - 1` `    - A1` `    - B1` `  * - 2` `    - A2` `    - B2`		List-tables are suited for complex cell content. They are, for example, extensively used in the source of this document.

	A	B
1	A1	B1
2	A2	B2

table

Use a *table* directive to attach a table caption, a reference name, or customization options to *Simple Tables* and *Grid Tables* (details).

Markup	Result	Notes
`.. table:: Fruits` `  :name:` `    fruit salad` `  :class: yellow` `    moin-sortable` `    no-borders` `  ===== ====== ===` `  Fruit Colour  #` `  ===== ====== ===` `  apple red     5` `  plum  purple  3` `  kiwi  brown   17` `  ===== ====== ===`		The "class" option allows styling with Moin CSS classes or custom CSS. (This also works with *CSV tables* and *list tables*.) The "name" option provides a target for *internal links*.

Table 1: Fruits

Fruit	Colour	#
apple	red	5
plum	purple	3
kiwi	green	17

Limitations

In comparison to other markup formats, you may miss some features that are not supported in reStructuredText:

- There is no syntax for text alignment in cells or columns.
- There is no syntax for table footer rows.
- Attaching colour to individual rows or cells is not supported.
- Attaching CSS class values to individual rows or cells is not universally supported.

Some features of reStructuredText tables are currently not supported by Moin (TODO):

- The table caption/title is ignored.
- The *align*, *width*, *widths*, and *stub-columns* options are ignored.

Preformatted Text

In a *preformatted text block*, line breaks and whitespace (except the minimal common indentation) are preserved. The font defaults to "monospace".

Literal Blocks

A double-colon (`::`) at the end of a line or on a line of its own starts a *literal block* (details).

Markup	Result
`In a literal block::` `  Whitespace   and line` `  breaks are preserved.` `  *Markup* is `ignored\ `_.`	In a literal block: `Whitespace   and line` `  breaks are preserved.` `*Markup* is `ignored\ `_.`

Code Blocks

The "code" directive starts a *code block*. Specify the content language to enable syntax highlight.

Markup	Result
`.. code:: rst` `  .. |registered| replace::` `  :sup:`®`` ` ` :ltrim:`	`.. |registered| replace::` `  :sup:`®`` ` ` :ltrim:`

Parsed Literal Blocks

The "parsed-literal" directive starts a *parsed* literal block. The content is parsed for inline markup.

Markup	Result
`.. parsed-literal::` `  A *pre*\ formatted   block` `  with `text formatting_`.`	`A *pre*formatted   block` `with *text formatting*.`

Directives

The *directive* markup syntax provides an extension mechanism for reStructuredText (details).

A set of *standard directives* is described in the reStructuredText Directives document. This section introduces a selection. See also *Table Directives* and *Preformatted Text*.

Applications may add domain-specific directives. Moin adapts the "*contents*" and "*include*" directives and adds the "macro" and "parser" directives.

Admonitions

Admonitions are used to draw the reader's attention to an important information (details).

There are nine specific admonition types ("*attention*", "*caution*", "*danger*", "*error*"[4], "*hint*", "*important*", "*note*", "*tip*", and "*warning*") and one "*generic*" admonition.

[4] "Error" admonitions are also used to highlight rST syntax errors.

Markup	Result
`.. attention:: Mind the gap!`	**Attention** Mind the gap!
`.. caution:: Use admonitions sparingly.`	**Caution** Use admonitions sparingly.
`.. danger:: Slippery when wet!`	**Danger** Slippery when wet!
`.. error:: Something went wrong`	**Error** Something went wrong
`.. hint:: Think before you speak.`	**Hint** Think before you speak.
`.. important:: Back up your data!`	**Important** Back up your data!
`.. note:: :name: note The "name" option provides a target for `internal links`_.`	**Note** The “name” option provides a target for *internal links*.
`.. tip:: Be consistent.`	**Tip** Be consistent.
`.. warning:: Strong prose may provoke extreme mental exertion.`	**Warning** Strong prose may provoke extreme mental exertion.
`.. admonition:: Custom The generic `"admonition" directive`_ expects a title as argument.`	**Custom** The generic “admonition” directive expects a title as argument.

Images

Images are inserted with the "image" directive. For *inline images*, use a substitution definition.

- Moin does not support length units in the "width" and "height" options. Unitless numbers work fine.

Markup	Result	Notes
`.. image:: help-common/logo.svg` `  :width: 100` `  :height: 150` `  :alt: [MoinMoin logo]` `  :name: MoinMoin logo` `  :target: help-en/Home`		A block-level image. The "name" option provides a target for *internal links*. The "target" option makes the image "clickable".
`The |MoinMoin| logo as inline image.` `.. |MoinMoin| image:: help-common/logo.svg` `  :height: 18`	The logo as inline image.	The substitution definition may be referenced more than once (cf. *Wiki-Internal Links*).
`An external inline image |Python|.` `.. |Python| image:: https://docs.python.org/3/_static/py.svg` `  :height: 18`	An external inline image .	Images from external sources may be blocked by the browser for security or privacy reasons.

- Videos are recognized by the file extension.

  TODO: currently, "width" and "alt" options are ignored by Moin.

- `user/help-common/cat.jpg`

  A right or left aligned image (using the "align" option) lets the following elements float up.

- In Moin, images are not enclosed within a block level element so several images declared successively without any positioning will be displayed in a horizontal row:

- In the *external documentation*, most image-URIs do not work and the alternate text is shown.

Figures

A *figure* consists of an image, a caption, and an optional legend. Figures are declared with the "figure" directive.

Markup	Result
`.. figure:: help-common/logo.svg` `  :height: 50` `  :alt: [white M in blue circle]` `  Moin Logo` `  The image URI does not work in` `  the `external documentation`_.`	Fig. 1: Moin Logo The image URI does not work in the *external documentation*.

Inclusions

The "include" directive is adapted by Moin to include Wiki items.

- No directive options are supported in Moin.
- The special syntax for standard definition files works.

Markup	Result
`.. include:: help-common/audio.mp3`	Not shown, because it prevents compilation of the *external documentation*.
`.. include:: <html-roles.txt>`	The roles defined in the included file can be used in the document. Cf. *additional text roles*.

Rubrics, Sidebars, and Topics

The "rubric" directive creates an informal heading. Sidebars and topics are used for content that is only tangentially related to the main subject.

Markup	Result
`.. rubric:: Why "Rubric"?` `A *rubric* was traditionally` `a text part written in red.`	**Why "Rubric"?** A *rubric* was traditionally a text part written in red.
`.. sidebar:: Floating Sidebars` `  :class: float-right` `  Use `Moin CSS classes`_ to let the` `  sidebar float to the right or left.` `.. topic:: Topics and Blockquotes` `  A *topic* is like a blockquote` `  with a title, or a self-contained` `  section with no subsections.`	See *below*. (*Topics* and *sidebars* may not be nested in body elements like lists, tables, admonitions, ...)

Floating Sidebars

Use Moin CSS classes to let the sidebar float to the right or left.

Topics and Blockquotes

A *topic* is like a blockquote with a title, or a self-contained section with no subsections.

Table of Contents

The "contents" directive generates a table of contents.

Markup	Result
`.. contents::` `  :depth: 3`	See the ToC at the *top*.

Comments

A *comment* is a text block that starts with ".. " and ends with the first non-indented line (details).

- An "empty comment" followed by a blank line does not consume any indented text. It serves to terminate a preceding construct.
- In Moin, comments may be made visible/invisible by clicking the "Comments" link in the "Item Views" menu/toolbar.
- Tip: to prevent mix-up with other "explicit markup blocks", start the text on the line below the ".. ".

Markup	Result
`.. This is a comment.` `.. [This] is a citation_.` `..` `  [This] is a comment.` `..` `  [This] is a blockquote.`	[This] is a blockquote.

Backslash Escapes

A backslash escapes the following character (details).

Markup	Result	Notes
`*hot* \*dogs* C:\\WINDOWS`	*hot* *dogs* C:\WINDOWS	The escaped character represents itself.
`H\ :sub:`2`\ O`	H_2O	Escaped *whitespace* is removed, …
`</Subitem\ Example>`__	/SubitemExample	… except in URI context (where whitespace is removed by default).

Error Handling

Problems with a severity level above the report level generate system messages.

Markup	Result
`Unbalanced *inline markup triggers a warning.`	Unbalanced *inline markup triggers a warning.

Contents

4.2.4 DocBook XML Markup

This page shows the different features of our native DocBook support. A table of contents is automatically generated from section titles.

This content, describing the DocBook syntax, is written in reST. Instances where reST cannot duplicate the same rendering produced by DocBook are flagged with **reST NOTE**. The reST parser used by Moin and the parser used by Sphinx are different.

Lists

Itemized List

Markup::

```
<itemizedlist>
  <listitem>
    <para>Item 1
    </para>
  </listitem>
  <listitem>
    <para>Item 2
    </para>
  </listitem>
```

(continues on next page)

(continued from previous page)

```
  <listitem>
    <para> Item 3
    </para>
  </listitem>
</itemizedlist>
```

Results:

- Item 1
- Item 2
- Item 3

Ordered List

Markup::

```
<orderedlist numeration="lowerroman">
  <listitem>
    <para>One</para>
  </listitem>
  <listitem>
    <para>Two</para>
  </listitem>
  <listitem>
    <para>Three</para>
  </listitem>
  <listitem>
    <para>Four</para>
  </listitem>
</orderedlist>
```

Results:

i. One

ii. Two

iii. Three

iv. Four

reST NOTE: Should show small Roman numerals here.

Simple text formatting

Markup::

```
<para>
<emphasis role="bold">This</emphasis> paragraph contains
<emphasis>some <emphasis>emphasized</emphasis> text</emphasis>
and a <superscript>super</superscript>script
and a <subscript>sub</subscript>script.
</para>
```

Results: **This** paragraph contains *some *emphasized* text* and a ^{super}script and a $_{sub}$script.

Quotes

Markup::

```
<para>This software is provided <quote>as is</quote>, without express
or implied warranty.
</para>
```

Results: This software is provided “as is”, without express or implied warranty.

Trademarks and Copyrights

Markup::

```
<para><trademark class='registered'>Nutshell Handbook</trademark> is a
registered trademark of O'Reilly Media, Inc.
</para><para>
<trademark class="copyright">2014 Joe Doe</trademark>
</para><para>
<trademark class="trade">Foo Bar</trademark> is an unregistered trademark.
</para><para>
<trademark class="service">Foo Bar</trademark> is an unregistered servicemark.
</para>
```

Results: Nutshell Handbook® is a registered trademark of O’Reilly Media, Inc.

© 2014 Joe Doe

Foo Bar™ is an unregistered trademark.

Foo Bar℠ is an unregistered servicemark.

Preformatted Data

Markup::

```
<screen><![CDATA[
<para>
My  preformatted      data.

Remove blanks from "] ] >" below:
</para>
] ] ></screen>
```

Results::

```
<para>
My  preformatted      data.

Remove blanks from "] ] >" below:
</para>
```

Links

Markup::

```
<link xlink:href="https://moinmo.in/">MoinMoin rocks</link>
```

Results:

MoinMoin rocks

Tables

Markup::

```
<table frame='all'><title>Sample Table</title>
<tgroup cols='5' align='left' colsep='1' rowsep='1'>
<colspec colname='c1'/>
<colspec colname='c2'/>
<colspec colname='c3'/>
<colspec colnum='5' colname='c5'/>
<thead>
<row>
  <entry namest="c1" nameend="c2" morecols='1' align="center">Horizontal Span</entry>
  <entry>a3</entry>
  <entry>a4</entry>
  <entry>a5</entry>
</row>
</thead>
<tfoot>
<row>
  <entry>f1</entry>
  <entry>f2</entry>
  <entry>f3</entry>
  <entry>f4</entry>
  <entry>f5</entry>
</row>
</tfoot>
<tbody>
<row>
  <entry>b1</entry>
  <entry>b2</entry>
  <entry>b3</entry>
  <entry>b4</entry>
  <entry morerows='1' valign='middle'><para>  <!-- Pernicious Mixed Content -->
  Vertical Span</para></entry>
</row>
<row>
  <entry>c1</entry>
  <entry namest="c2" nameend="c3" morecols='1' align='center' morerows='1' valign='bottom
↪'>Span Both</entry>
  <entry>c4</entry>
</row>
<row>
  <entry>d1</entry>
  <entry>d4</entry>
  <entry>d5</entry>
</row>
</tbody>
```

(continues on next page)

(continued from previous page)

```
</tgroup>
</table>
```

Results:

Horizontal Span		a3	a4	a5
b1	b2	b3	b4	Vertical Span
c1	Span Both		c4	
d1			d4	d5
f1	f2	f3	f4	f5

reST NOTE: the table does not show the correct result.

Images

An “inlinemediaobject” may be positioned within a paragraph and aligned to the text top, middle, or bottom through use of the align attribute.

Markup::

```
<para>
Here is an image
<inlinemediaobject>
  <imageobject>
    <imagedata format="png" align="middle" fileref="png"/>
  </imageobject><caption>My Logo</caption>
</inlinemediaobject>
embedded in a sentence.
</para>
```

Results:

Here is an image

embedded in a sentence.

Notes:

- The Sphinx parser does not have an image named “png” so the alternate text will be displayed.
- **reST NOTE**: There is no facility to embed an image within a paragraph.

Footnotes

All footnotes are placed at the bottom of the document in the order defined.

Markup::

```
<para>An annual percentage rate (<abbrev>APR</abbrev>) of 13.9%<footnote>
<para>The prime rate, as published in the Wall Street
Journal on the first business day of the month,
plus 7.0%.
</para>
</footnote>
```

(continues on next page)

(continued from previous page)

```
will be charged on all balances carried forward.
</para>
```

Results:

An annual percentage rate (APR) of 13.9%[1] will be charged on all balances carried forward.

4.2.5 MediaWiki markup overview

Features currently not working with Moin's MediaWiki parser are marked with **MWTODO**.

Features currently not working with Moin's reST parser are marked with **reSTTODO**.

Headings

Markup:

```
= Level 1 =
== Level 2 ==
=== Level 3 ===
==== Level 4 ====
===== Level 5 =====
====== Level 6 ======
```

Result:

Level 1

Intentionally not rendered as level 1 so it does not interfere with Sphinx's indexing

Level 2

Level 3

Level 4

Level 5

Level 6

Text formatting

These markups can be used within text to apply character style.

[1] The prime rate, as published in the Wall Street Journal on the first business day of the month, plus 7.0%.

Markup	Result
`'''Bold text'''`	**Bold text**
`''Italic text''`	*Italic text*
`'''''Bold and italic text'''''`	Bold and italic text
`<nowiki>no ''markup''</nowiki>`	`no ''markup''`
`<u>underline</u>`	underline
`<del>strikethrough</del>` or `<s>strikethrough</s>`	strikethrough
`<code>Fixed width</code>` or `<tt>Fixed width</tt>`	`Fixed width`
`<pre>Preformated text without '''markups'''</pre>`	`Preformated text without '''markups'''`

reSTTODO table headers are not formatted as headers (see "Tables" section for corresponding MWTODO)

Hyperlinks

Internal links

reSTTODO These link targets are not interpreted. (The examples shown here result in empty links)

reSTTODO Comments (lines starting with `..`) are printed

Markup	Result	Comment
`[[Item name]]`	*Item name*	Link to an item
`[[Item name|alternative text]]`	*alternative text*	Link with alternative text
`[[#anchor]]`	*#anchor*	Link to an anchor on this item
`[[#anchor|alternative text]]`	*alternative text*	Link to an anchor with alternative text
`[[Item name#anchor]]`	*Item name#anchor*	Link to an anchor on another item
`<div id="anchor">text</div>`	text	Definition of an anchor **MWTODO** (div tag is not interpreted)
`[[/subitem]]`	*/subitem*	Link to a subitem
`[[media:image.jpg]]`	*media:image.jpg*	Link to a file **MWTODO** (irrelevant for moin?)

External links

Markup	Result	Comment
`http://www.example.com`	http://www.example.com	External link **MWTODO** (not converted into a hyperlink)
`[http://www.example.com text]`	text	External link with alternative text
`[http://www.example.com]`	[1]	External link with number **MWTODO** (no numbering, normal link)
`[mailto:test@example.com mail]`	mail	Mailto link

Images

MWTODO Use of `[[File:...]]` causes this error: `AttributeError: 'unicode' object has no attribute 'keyword'`

Syntax

The syntax for inserting an image is as follows:

```
[[File:<filename>|<options>|<caption>]]
```

The *options* field can be empty or can contain one or more of the following options separated by pipes (`|`).

Format option:
Controls how the image is formatted in the item.

one of `border` and/or `frameless`, `frame` or `thumb`

Resizing option:
Controls the display size of the picture. The aspect ratio cannot be changed.

one of `<width>px`, `x<height>px`, `<width>x<height>px` or `upright`

Horizontal alignment option:
Controls the horizontal alignment of an image.

one of `left`, `right`, `center` or `none`

Vertical alignment option:
Controls the vertical alignment of a non-floating inline image.

one of `baseline`, `sub`, `super`, `top`, `text-top`, `middle` (default), `bottom` or `text-bottom`

Link option:
The option `link=<target>` allows to change the target of the link represented by the picture. The image will not be clickable if `<target>` is left empty.

Please note that the link option cannot be used with one of the options `thumb` or `frame`.

Other options:
The `alt=<alternative text>` option sets the alternative text (HTML attribute `alt=`) of the image.

The option `page=<number>` sets the number of the page of a .pdf or .djvu file to be rendered.

Examples

Markup	Description
`[[File:example.png]]`	Displays an image without further options.
`[[File:example.png|border]]`	Displays the image with a thin border.
`[[File:example.png|frame|text]]`	Displays the image in a frame (not inline) and shows *text* as caption.
`[[File:example.png|thumb|text]]`	Displays a thumbnail of the image (not inline) and shows *text* as caption.
`[[File:example.png|frameless]]`	Like `thumb` but inline and without border and frame

Paragraphs

Markup:

```
You can leave an empty line to start a new paragraph.

Single breaks are ignored.
To force a line break, use the <br /> HTML tag.
```

Result:

You can leave an empty line to start a new paragraph.

Single breaks are ignored. To force a line break, use the
HTML tag.

Horizontal rules

Markup:

```
A horizontal rule can be added by typing four dashes.

----

This text will be displayed below the rule.
```

Result:

A horizontal rule can be added by typing four dashes.

This text will be displayed below the rule.

reSTTODO Horizontal rule is not interpreted.

Preformatted text

Markup:

```
␣Each line that starts
␣with a space
␣is preformatted. It is ''possible''
␣to use inline '''markups'''.
```

Result:

Each line that starts
with a space
is preformatted. It is *possible*
to use inline **markups**.

MWTODO Preformatted text is not interpreted.

reSTTODO Line blocks (lines starting with `|`) are not interpreted.

Comments

Markup:

```
<!-- This is a comment -->
Comments are only visible in the modify window.
```

Result:

Comments are only visible in the modify window.

MWTODO This is not interpreted (i.e. comments are printed).

MWTODO A line starting with `##` is treated as comment, although it should be treated as part of an ordered list (see section "Ordered lists").

MWTODO It seems that `/*...*/` is treated as comment, whereas this is not intended in mediawiki syntax.

Symbol entities

A special character can be placed by using a symbol entity. The following table shows some examples for symbol entities:

Entity	Character
`—`	—
`←`	←
`→`	→
`⇐`	
`⇒`	
`©`	©

It is also possible to use numeric entities like `&#xnnnn;` where "nnnn" stands for a hexadecimal number.

Lists

Ordered lists

Ordered lists are formed of lines that start with number signs (#). The count of number signs at the beginning of a line determines the level.

Markup:

```
# First item
# Second item
## First item (second level)
## Second item (second level)
### First item (third level)
# Third item
```

Result:

1. First item
2. Second item
    1. First item (second level)
    2. Second item (second level)
        1. First item (third level)
3. Third item

Unordered lists

Markup:

```
* List item
* List item
** List item (second level)
*** List item (third level)
* List item
```

Result:

- List item
- List item
    - List item (second level)
    - List item (third level)
- List item

Definition lists

Markup:

```
;term
: definition
;object
: description 1
: description 2
```

Result:

term
: definition

object
: description 1

  description 2

Mixed lists

It is possible to combine different types of lists.

Markup:

```
# first item
# second item
#* point one
#* point two
# third item
#; term
#: definition
#: continuation of the definition
# fourth item
```

Result:

1. first item
2. second item
   - point one
   - point two
3. third item

   term
   : definition

     continuation of the definition
4. fourth item

Indentations

Definition lists can also be used to indent text.

Markup:

```
: single indent
:: double indent
:::: multiple indent
```

Result:

: **single indent**

  : **double indent**
    : multiple indent

Footnotes

Footnotes can be used for annotations and citations rolled out of the continuous text.

Markup:

```
This is a footnote <ref>This description will be placed at the item's bottom.</ref>
```

Result:

This is a footnote [1].

[1] This description will be placed at the item's bottom.

Tables

Syntax

Markup	Description
`{|`	**table start** (required)
`|+`	**table caption** (optional) **MWTODO** (not interpreted) only between table start and first row
`|-`	**table row** (optional) This is not necessary for the first row.
`|`	**table data** (required) Start each line that contains table data with `|` or separate data on the same line with `||`
`!`	**table header** (optional) **MWTODO** (not formatted as header) Start each line that represents a table header with `!` or separate different headers on the same line with `!!`.
`|}`	**table end** (required)

Basic tables

Note that the following tables do not have visible borders as this has to be done with XHTML attributes.

MWTODO Tables should be borderless by default, the `border` attribute is not interpreted.

Markup:

```
{|
|row 1, column 1
|row 1, column 2
|-
|row 2, column 1
|row 2, column 2
|}
```

Result:

row 1, column 1	row 1, column 2
row 2, column 1	row 2, column 2

Markup:

```
{|
!header 1
!header 2
|-
|A
|B
|-
|C
|D
|}
```

Alternative syntax:

```
{|
!header 1!!header 2
|-
|A||B
|-
|C||D
|}
```

Result:

header 1	header 2
A	B
C	D

It is possible to use other elements inside tables:

Markup:

```
{|
!header 1
!header 2
|-
|A line break<br />can be done with the XHTML tag.
|A pipe symbol has to be inserted like this: <nowiki>|</nowiki>
|-
|
* This
* is a bullet list
* in a table cell.
|[http://www.example.com Hyperlink]
|}
```

Result:

header 1	header 2
A line break can be done with the XHTML tag.	A pipe symbol has to be inserted like this: |
• This • is a bullet list • in a table cell	Hyperlink

MWTODO Lists cannot be used inside cells.

XHTML attributes

It is allowed to use XHTML attributes (border, align, style, colspan, rowspan, ...) inside tables.

Markup:

```
{|border="1"
|This table has a border width of 1.
|align="left" | This cell is left aligned.
|-
|colspan="2" | This cell has a colspan of 2.
|}
```

Result:

This table has a border width of 1.	This cell is left aligned.
This cell has a colspan of 2.	

MWTODO attributes `border` and `align` are not interpreted

reSTTODO colspan is not interpreted

4.2.6 Markdown Markup

This page introduces you to the most important elements of the Markdown syntax. For details on the Python implementation of Markdown see https://python-markdown.github.io/

In addition to being supported by Moin2, the Markdown markup language is used by issue trackers such as those found in Bitbucket and GitHub. What you learn here can be used there as well.

Features currently not working with Moin's Markdown parser are marked with **MDTODO**.

This page, describing the Markdown syntax, is written in reST. Instances where reST cannot duplicate the same rendering produced by Markdown are flagged with **reST NOTE**. The reST parser used by Moin and the parser used by Sphinx are different. As noted below there are several instances where one works and the other fails.

Table of Contents

The table of contents is a supported extension that is distributed with Python Markdown.

Markup:

```
[TOC]
```

Result:

Contents

Headings

Level 1 and 2 headings may be created by underlining with = and - characters, respectively.

Having equal numbers of characters in the heading and the underline looks best in raw text, but having fewer or more = or - characters also works.

Heading levels 3 through 6 must be defined by prefixing the heading with a variable number of # characters indicating the heading level. Heading levels 1 and 2 may be defined in the same manner. It is customary, but not required, to follow the # characters with a single space character. Another option is to append the appropriate number of # characters after the heading text.

Markup:

```
Level 1
=======

# Level 1

Level 2
-------

## Level 2

### Level 3

#### Level 4

##### Level 5

###### Level 6 ######
```

Result:

Level 3

Level 4

Level 5

Level 6

NOTE: Levels 1 and 2 are not shown above to avoid adding unwanted entries to the table of contents. See the top of this page for an approximate view of a level 1 heading and next section heading below for level 2.

Preformatted Code

To show a preformatted block of code, indent all the lines by 4 or more spaces.

Markup:

```
Begin preformatted code

   First line
   Second line
       Third line

End of preformatted code
```

Result:

Begin preformatted code

```
First line
Second line
    Third line
```

End of preformatted code

Simple text editing

Markup:

```
Paragraphs are separated
by a blank line.

To create a line break, end a line
with 2 spaces.

Use asterisk characters to create text attributes: *italic*, **bold**, ***bold␣
↪italics***.
Or, do the same with underscores: _Italics_, __bold__, ___bold italics___.
Use backticks to create `monospace`.
```

Result:

Paragraphs are separated by a blank line.

To create a line break, end a line
with 2 spaces.

Use asterisk characters to create text attributes: *italic*, **bold**, bold italics. Or, do the same with underscores: *Italics*, **bold**, bold italics. Use backticks to create `monospace`.

reST Note: The moin reST parser will indent the second paragraph above.

Linking

Markdown supports two style of links: inline and reference.

Inline Links

Inline links use the form:

```
[link text](url "optional title")
```

Markup	Result
[home page](Home)	home page
[home item](Home “my home page”)	home item
[a sub item](Home/subitem)	a sub item
[toc1](markdown#table-of-contents)	toc1
[toc2](#table-of-contents)	toc2
[moinmoin](https://moinmo.in “Go there”)	moinmoin
[![Image name](png)](Home “click me”)	png image

reST NOTE: Links with title attributes and images as links are not supported in reST. The internal links above are broken.

Wikilinks

Wikilinks use the form:

```
[[PageName]]
```

Markup	Result
[[Page]]	Page
[[Page/Subpage]]	Subpage

This features uses the mdx_wikilink_plus extension.

Reference Links

Reference links have two parts. Somewhere in the document the link label is defined using a unique id; this has no visible output. Then the reference link uses a form with square brackets rather than parens:

```
[id]: url "optional title"

[link text] [id]
```

Markup	Result
[apple]: https://www.apple.com/	
[MoinMoin]: https://moinmo.in/ "go!"	
[see apples][apple]	see apples
[go to MoinMoin][MoinMoin]	go to MoinMoin

reST NOTE: Links with title attributes are not supported in reST.

Lists

Unordered lists may use *, +, or - characters as bullets. The character used as a bullet does not effect the display. The display would be the same if * characters were used everywhere.

Markup:

```
* apples
* oranges
* pears
    - carrot
    - beet
        + man
        + woman
    - turnip
* cherries
```

Result:

- apples

- oranges
- pears
  - carrot
  - beet
    - man
    - woman
  - turnip
- cherries

reST NOTE: As shown above and below, the Sphinx rendering of ordered and unordered lists shows excessive spacing between levels.

Ordered lists use numbers and are incremented in regular order. Neither alpha characters nor roman numerals are supported. Although you may use numbers other than 1 with no adverse effect (as shown below), it is a best practice to always start a list with 1.

Markup:

```
1. apples
1. oranges
7. pears
    1. carrot
    1. beet
        1. man
        1. woman
    1. turnip
1. cherries
```

Result:

1. apples
2. oranges
3. pears
    1. carrot
    2. beet
        1. man
        2. woman
    3. turnip
4. cherries

Lists composed of long paragraphs are easier to read in raw text if the lines are manually wrapped with **optional** hanging indents. If multiple paragraphs are required, separate the paragraphs with blank lines and indent.

Markup:

```
*   Lorem ipsum dolor sit amet, consectetuer adipiscing elit.
    Aliquam hendrerit mi posuere lectus. Vestibulum enim wisi,
    viverra nec, fringilla in, laoreet vitae, risus.
*   Donec sit amet nisl. Aliquam semper ipsum sit amet velit.
```

(continues on next page)

(continued from previous page)

```
    Suspendisse id sem consectetuer libero luctus adipiscing.
*   Lorem ipsum dolor sit amet, consectetuer adipiscing elit.
Aliquam hendrerit mi posuere lectus. Vestibulum enim wisi,
viverra nec, fringilla in, laoreet vitae, risus.
*   Lorem ipsum dolor sit amet, consectetuer adipiscing elit.
Aliquam hendrerit mi posuere lectus. Vestibulum enim wisi,
viverra nec, fringilla in, laoreet vitae, risus.
*   Donec sit amet nisl. Aliquam semper ipsum sit amet velit.
Suspendisse id sem consectetuer libero luctus adipiscing.
```

Result:

- Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Aliquam hendrerit mi posuere lectus. Vestibulum enim wisi, viverra nec, fringilla in, laoreet vitae, risus.
- Donec sit amet nisl. Aliquam semper ipsum sit amet velit. Suspendisse id sem consectetuer libero luctus adipiscing.
- Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Aliquam hendrerit mi posuere lectus. Vestibulum enim wisi, viverra nec, fringilla in, laoreet vitae, risus.
- Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Aliquam hendrerit mi posuere lectus. Vestibulum enim wisi, viverra nec, fringilla in, laoreet vitae, risus.
- Donec sit amet nisl. Aliquam semper ipsum sit amet velit. Suspendisse id sem consectetuer libero luctus adipiscing.

Horizontal Rules

To create horizontal rules, use 3 or more -, *, or _ on a line. Neither changing the character nor increasing the number of characters will change the width of the rule. Putting spaces between the characters also works.

Markup:

```
---

text

- - - - - -

more text

******

more text

_____
```

Result:

---

text

---

more text

---

more text

Backslash Escapes

Sometimes there is a need to use special characters as literal characters, but Markdown's syntax gets in the way. Use the backslash character as an escape.

Markup:

```
*hot*

333. is a float, 333 is an integer.

\*hot\*

333\. is a float, 333 is an integer.
```

Result:

hot

333. is a float, 333 is an integer.

hot

333. is a float, 333 is an integer.

reST NOTE: The Moin reST parser flags the use of 333 as a bullet number.

Nested Blockquotes

Advanced blockquotes with nesting are created by starting a line with a > character.

Markup:

```
> A standard blockquote is indented
> > A nested blockquote is indented more
> > > You can nest to any depth.
```

Result:

> **A standard blockquote is indented**
>
> > **A nested blockquote is indented more**
> > You can nest to any depth.

Images

Images are similar to links with both an inline and a reference style, but they start with an exclamation point. Within Markdown, there is no syntax to change the default sizes or positions of transclusions:

Markup:

```
To transclude image from local wiki:
![Alt text 1](png "Optional title")

Reference-style, where "logo" is a name defined anywhere within this item:
![Alt text 2][logo]
```

(continues on next page)

(continued from previous page)

```
Image references are defined using syntax identical to link references and
do not appear in the rendered HTML:
[logo]: png  "Optional title attribute"

To transclude image from remote site:
![remote image](http://static.moinmo.in/logos/moinmoin.png)
```

Result:

To transclude image from local wiki:

Reference-style, where "logo" is a name defined anywhere within this item:

Image references are defined using syntax identical to link references and do not appear in the rendered HTML:

To transclude image from remote site:

reST NOTE: The Moin reST parser renders all three images above. The Sphinx parser renders only the external png image from http://static.moinmo.in/logos/moinmoin.png. reST syntax does not allow the rendering of inline images, nor the use of a title attribute. The logos above are floated right, in Markdown the logos would appear as inline images.

Inline HTML

Note: Use of the style attribute within HTML tags is dependent upon configuration settings. See configuration docs for information on *allow_style_attributes*.

You may embed a small subset of HTML tags directly into your markdown documents.

```
<a>              - hyperlink.
<b>              - bold, use as last resort <h1>-<h3>, <em>, and <strong> are preferred.
<blockquote>     - specifies a section that is quoted from another source.
<code>           - defines a piece of computer code.
<del>            - delete, used to indicate modifications.
<dd>             - describes the item in a <dl> description list.
<dl>             - description list.
<dt>             - title of an item in a <dl> description list.
<em>             - emphasized.
<h1>, <h2>, <h3> - headings.
<i>              - italic.
<img>            - specifies an image tag.
<kbd>            - shows keyboard input.
<li>             - list item in an ordered list <ol> or an unordered list <ul>.
<ol>             - ordered list.
<p>              - paragraph.
<pre>            - pre-element displayed in a fixed width font and unchanged line breaks.
```

(continues on next page)

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```
<s>             - strikethrough.
<sup>           - superscript text appears 1/2 character above the baseline used for␣
↪footnotes and other formatting.
<sub>           - subscript appears 1/2 character below the baseline.
<strong>        - defines important text.
<strike>        - strikethrough is deprecated, use <del> instead.
<ul>            - unordered list.
<br>            - line break.
<hr>            - defines a thematic change in the content, usually via a horizontal␣
↪line.
```

Markup:

```
E = MC<sup>2</sup>

This word is <b>bold</b>.

This word is <em>italic</em>.

This word is <strong>bold</strong>.

This word is <strong style="color:red;background-color:yellow">bold</strong>;
colors depend upon configuration settings.
```

Result:

reST NOTE: The moin reST parser will flag the above as an error because it does not support the *raw* directive.

Extensions

In addition to the TOC extension shown near the top of this page, the following features are installed as part of the "extras" extension.

Tables

All tables must have one heading row. By default table headings are centered and table body cells are aligned left. Use a ":" character on the left, right or both sides of the heading-body separator to change the alignment. Changing the alignment changes both the heading and table body cells.

As shown in the second table below, use of outside borders and neat alignment of the cells do not effect the display. Markup within the table cells is supported.

Markup:

```
| Tables            |Are            |Very  |Cool    |
|-------------------|:-------------:|-----:|:-------|
| col 2 is          |centered       |$12   |Gloves  |
| col 3 is          |right-aligned  |$1600 |Necklace|
| col 4 is          |left-aligned   |$100  |Hat     |

`Tables`            |*Are*            |Very  |Cool
------------|:-------------:|-----:|:-------
`col 2 is`|*centered*|$12|Gloves
```

(continues on next page)

(continued from previous page)

```
`col 3 is`|*right-aligned*|$1600|Necklace
`col 4 is`|*left-aligned*|$100|Hat
```

Result:

Tables	Are	Very	Cool
col 2 is	centered	$12	Gloves
col 3 is	right-aligned	$1600	Necklace
col 4 is	left-aligned	$100	Hat

Tables	*Are*	Very	Cool
col 2 is	*centered*	$12	Gloves
col 3 is	*right-aligned*	$1600	Necklace
col 4 is	*left-aligned*	$100	Hat

reST NOTE: reST does not support cell alignment, therefore the last example shown above does not reflect the resulting alignment.

Syntax Highlighting of Preformatted Code

A second way to create a block of preformatted code without indenting every line is to wrap the block in triple backticks.

To highlight code syntax, wrap the code in triple backtick characters and specify the language on the first line. Many languages are supported.

Markup:

```
``` javascript
var s = "JavaScript syntax highlighting";
alert(s);
```

~~~ {python}
def hello():
   print "Hello World!"
~~~
```

Result:

```
var s = "JavaScript syntax highlighting";
alert(s);

def hello():
   print "Hello World!"
```

reST NOTE: reST supports some generic highlighting of indented blocks. The Moin Markdown highlighting is more colorful and varies per language.

Fenced Code

Another way to display a block of preformatted code is to "fence" the code with lines starting with three ~ characters.

Markup:

```
~~~
ddd
eee
fff
~~~
```

Result:

```
ddd
eee
fff
```

Smart Strong

The smart strong extension prevents words with embedded double underscores from being converted. e.g. *double__underscore__words* is wanted, not *double `**underscore**` words*.

Markup:

```
Text with double__underscore__words.

__Strong__ still works.

__this__works__too__.
```

Result:

Text with double__underscore__words.

Strong still works.

this__works__too.

Attribute Lists

Markup:

```
A class of LawnGreen  (that will create a greenish background per a CSS rule) is
added to this paragraph.
{: class="LawnGreen "}

A `{: #para3 }` id was added to the 3rd paragraph on this page,
so [click to see 3rd paragraph](#para3).
```

Result:

A *{: #para3 }* id was added to the 3rd paragraph on this page, so click to see 3rd paragraph.

reST NOTE: The moin reST parser will flag the first example above as an error because it does not support the *raw* directive.

Definition Lists

Markup:

```
Apple
:   Pomaceous fruit of plants of the genus Malus in
    the family Rosaceae.
:   An american computer company.

Orange
:   The fruit of an evergreen tree of the genus Citrus.
```

Result:

Apple
: Pomaceous fruit of plants of the genus Malus in the family Rosaceae.

  An american computer company.

Orange
: The fruit of an evergreen tree of the genus Citrus.

Footnotes

The syntax for footnotes in Markdown is rather unique.[^unique] Place any unique label after the characters "[^" and close the label with a "]". The footnote text may be placed after the reference on a new line using the label, followed by a ":", followed by the footnote text. All footnotes are placed at the bottom of the document under a horizontal rule in the order defined.

[^unique]: Markdown footnotes are unique.

Markup:

```
Footnotes[^1] have a label[^label] and a definition[^!DEF].

[^1]: This is a footnote
[^label]: A footnote on "label"
[^!DEF]: The footnote for definition
```

Result:

Footnotes[1] have a label[2] and a definition[3].

Admonition

The Admonition extension adds rST-style admonitions to Markdown.

Syntax:

```
!!! type "optional explicit title within double quotes"
    Any number of other indented markdown elements.

    This is the second paragraph.
```

[1] This is a footnote
[2] A footnote on "label"
[3] The footnote for definition

If you don't want a title, use a blank string "".

The following types are supported:

- attention
- caution
- danger
- error
- hint
- important
- note
- tip
- warning

Markup:

```
!!! note
You should note that the title will be automatically capitalized.
```

Result:

> **Note**
>
> You should note that the title will be automatically capitalized.

Instance-specific extensions

You can specify a list of additional extensions to the markdown parser per instance. A list of potentially interesting extensions can be access in Python-markdown's wiki.

For example, to automatically link URLs:

```
class Config(DefaultConfig):
    ...
    markdown_extensions = ['pymdownx.magiclink']
```

In Moin2, you specify the item's markup language when you create a new item. Currently Moin2 supports MoinWiki, WikiCreole, reStructuredText, DocBook, MediaWiki and Markdown markups.

Moin2 currently provides output converters for MoinWiki, Markdown, reST, HTML, and DocBook. When viewing any markup item, the item may be converted to a different markup language by clicking the Convert link.

4.3 Templates and Metadata

Two features that are related to the creation, editing, and saving of an item are templates and metadata.

4.3.1 Templates

Templates make it easier for users to create new items that are similar to many other items. Instead of starting from scratch or using a copy, paste, and modify technique, templates that contain the common text and structure can be created. A template item must have a tag of "template".

When creating a new item, if there are available templates for the selected content type and namespace, then an extra step is added to the create item dialog that allows the editor to choose a template. If a template is selected, the content of the template item will be loaded and copied to the modify screen's textarea.

To create a new template, just create an item and add a tag of "template" before saving the item. Once created, each user creating a new item in the target namespace and content type will be given the option of using any of the available templates.

Templates may define data for the ACL, Summary, and Tags fields. These values will be copied to the modify form within the item creation dialog; note the *template* tag will not be copied. Users wanting to create a new template using an old template will need to re-enter the *template* tag.

For templates with MoinWiki markup, Predefined Variables can be used to insert date, time, username, item name, and others. See Predefined Variables in the MoinWiki markup overview.

The example below is a very simple template for the **users** namespace. Each user is encouraged to create a home page using the 4-line MoinWiki markup template. **@ITEM@** and **@EMAIL@** are predefined variables and will be replaced with the item name (the new item name is expected to be the user's name) and the user's email address (copied from the current user's settings) when the item is saved. To create a home page, each user begins the creation of a new item in the **users** namespace, selects the template, enters a nickname and hobbies, and saves the item.:

```
= @ITEM@ =
Nickname:
Hobbies:
Email: @EMAIL@
```

4.3.2 Metadata

When an item is edited (including non-text items like images, etc.), most themes provide a means of updating certain metadata associated with the item. The metadata fields that may be updated by all editors include Summary, Tags, and Names.

Users with admin authority on the item may update the item's ACLs. The format of ACL rules is discussed within the configuration section under authorization.

Most themes will display the Summary field above the item's content. The use of this field is optional. When used, it may contain a one-line summary of the page's content, a TODO list of additional content that should be added or verified, or other special instructions to future readers and editors.

For fields that may have multiple entries like the Tags and Names fields, use commas to separate the entries. Leading and trailing spaces are stripped, embedded spaces will become part of the tag or name.

Tags provide an alternate means of indexing articles. While tags are frequently used to group items based on the item's subject matter, they can also be used to group items in ways unrelated to the subject matter such as marking items that need additional content, editing, review, etc. Most themes provide a link to a Tags view within the navigation panel.

While most items will have a single name, item editors may add or delete multiple names. Editors may find multiple names useful when renaming or merging items. Item names cannot span multiple namespaces. Most themes will show all item names within the Page Trail panel. Some reports, such as History, will show all item names in a single row. Other reports that are sorted by name, such as Index and Tags, will show each name in a separate row.

4.4 Searching and Finding

4.4.1 Entering search queries

To start a search, enter a query into the short query input field and press Enter or click the search icon. By default, the names, summary, tags, content, namengram, summaryngram, and contentngram fields of each item's last revision are searched. Deleted items (trash) are excluded.

The search results view provides a form for refining the search through AJAX updates. Click the More Search Options link to see the form. A transaction is started each time a character is added or removed in the search field. If typing is rapid, it is possible that results will be processed out of order. The Whoosh query shows the last term processed.

Clicking the Search Options link displays alternatives for modifying the search. AJAX updates will be made whenever a radio button or checkbox is changed.

Below the search form is the query processed by Whoosh, and Whoosh-generated suggestions for additional searches by input, item name, and item content.

Finally, the search hits are presented. These are ordered by the Whoosh scoring number. Each hit will contain the item name and some metadata. If available, the item summary and partial item content with the search term highlighted will be shown.

4.4.2 Simple search queries

Just enter one or more words into the query input field and press Enter.

If your query consists of multiple words, it will only find documents containing ALL those words. You can use AND, OR, NOT to refine your search. "AND" is the default.

Examples

Search for "wiki":

```
wiki
```

Search for documents containing "wiki" AND "moin":

```
wiki moin
```

Explicit alternative (does the same as above):

```
wiki AND moin
```

Search for documents containing "wiki" OR "moin":

```
wiki OR moin
```

Search for documents containing "wiki" and NOT "bad":

```
wiki NOT bad
```

Explicit alternative (does the same as above):

```
wiki AND NOT bad
```

Group terms using ():

```
wiki AND NOT (bad OR worse)
```

4.4.3 Redirect to best match

If you know the target item name, start the search term with a backslash character. Only the names and namengram fields will be searched. If there is a hit, the browser will be redirected to the highest-scoring hit.

Examples

Search for a specific item name and immediately redirect browser to best match:

```
\Home
\Home/subitem
\users/JoeDoe
```

4.4.4 Using wildcards

If you want to enter word fragments or if you are not sure about spelling or word form, you can use wildcards for the parts you do not know:

Wildcard	Matches
?	one arbitrary character
*	any count of arbitrary characters

Examples

Search for something like wiki, wika, wikb, . . . :

```
wik?
```

Search for something like wiki, willi, wi, . . . :

```
w*i
```

You can also use it for a poor man's language-independent word stemming.

Matches on clean, cleaner, cleanest, cleaning, etc.:

```
clean*
```

4.4.5 Using regular expressions

Regular expressions enable even more flexibility for specifying search terms.

See https://en.wikipedia.org/wiki/Regular_expression for basics about regexes.

See https://docs.python.org/3/library/re.html about Python's regex implementation, which we use for MoinMoin.

You need to use this syntax when entering regexes: r"yourregex"

Examples

Search for hello or hallo:

```
r"h[ae]llo"
```

Search for words starting with foo:

```
r"^foo"
r"\Afoo"
```

Search for something like wiki, wika, wikb, ...:

```
r"wik."
```

Search for something like wiki, willi, wi, ...:

```
r"w.*i"
```

4.4.6 Searching an item's subitems

To limit the search to an item's subitems, use a leading >, followed by the item's name, followed by the search arguments.

Examples

Wildcards, regular expressions, etc. may be used in the search arguments:

```
>colors blue
>users/JohnDoe red*
>home red OR blue OR green
```

4.4.7 Searching in specific fields

If not specified otherwise, Moin will search in `names`, `tags`, `summary`, `comment`, and `content` fields. Three fields with n-gram support are also searched by default: `namengram`, `summaryngram`, and `contentngram`.

N-gram indexing is a powerful method for getting fast, "search as you type" functionality. A tokenizer splits words within n-gram content fields into strings of 3 to 6 characters. These small strings may be matched against search terms that are tokenized into strings of 3 to 6 characters.

To specify the field to search in, use the *fieldname:searchterm* syntax. If embedded spaces are desired, use *fieldname:"search term"*. Separate multiple terms with a space: *content:foo tags:Foo* is the same as *content:foo AND tags:Foo*.

The following table includes fields that may be useful for searching.

Field name	Field value
`acl` **	access control list (see below)
`address`	submitter IP address, e.g. 127.0.0.1
`comment`	editor comment on save, rename, etc.
`content`	document contents, e.g. This is some example content.
`contentngram` **	document contents, tokenized by 3 to 6 characters.
`contenttype`	document type: text, image, audio, MoinWiki, JPG, ...
`itemlinks` **	link targets of the document, e.g. OtherItem
`itemtransclusions` **	transclusion targets of the document, e.g. OtherItem
`language`	(main) language of the document contents, e.g. en
`mtime`	document modification (submission) date, e.g. 2025-12-31
`namengram` **	document names, tokenized by 3 to 6 characters.
`names`	document names, e.g. Home, MyWikiPage
`namespace`	namespace:"" for default or namespace:users
`name_exact`	same as `names`, but is not tokenized
`name_old`	name_old:* for all renamed items
`summary`	summary text, if provided by author
`summaryngram` **	summary text, tokenized by 3 to 6 characters.
`tags`	tags of the document, e.g. important, hard, TODO
`username`	submitter username, e.g. JoeDoe

** These fields exist only in the current revisions index, see Notes below.

Examples

Search in metadata fields:

```
contenttype:text
contenttype:image/jpeg
tags:todo
mtime:2022-01-08  # use ISO 8601 dates; `mtime:2022-01` works
address:127.0.0.1
username:JoeDoe
```

Search items with an item ACL that explicitly gives Joe read rights:

```
acl:Joe:+read
```

4.4.8 Notes

There are two indexes. The smaller index is used by default. It indexes only the current revision of each item. The larger index is used when the All radio button under the Search Options link is selected. The larger index includes all revisions of all items, including revisions of deleted items. As noted in the table above, the larger index omits several fields to save space.

By default, all namespaces are searched, including the userprofiles index. Because the userprofiles index is normally read-restricted, hits will be blocked and included as "n items are not shown because read permission was denied" at the bottom of the page.

Items with transcluded content do not contain the transcluded content within the item's index. An item containing "foo" within its content and transcluding an item with "bar" within its content cannot be matched by searching for "foo AND bar". Both items will be matched by searching for "foo OR bar".

Moin only uses an indexed search. Keep in mind that this has some special properties:

- By using an index, the search is fast.
- Because it uses only an index, it can find only what was put there.
- If you use wildcards or regexes, it will still use the index, but in a different, slower way.

For example:

- create an item with "FooBar" in the name, content, summary, tag, and comment fields
- search for "ooba" — the namengram, summaryngram, and contentngram will match
- search for "FooBar": names, namengram, tags, summary, summaryngram, content, contentngram, and comment will match
- search for "foobar": names, namengram, summary, summaryngram, content, contentngram, and comment will match

4.4.9 More information

See the Whoosh query language docs.

4.5 File Upload

File upload functionality is accessed through the +modify item view or the Index view.

To upload a file on the +modify item view, click the browser's Browse/Choose button. Use the browser's file dialog to select an item, then click the OK button. The file will be uploaded and saved with the previously chosen content type; file name suffixes are ignored.

To upload a file or files on the global index navigation view, start by clicking the *New Item* link to bring the *Create new item* dialog into view.

From the Index view, there are two methods of uploading files: single file or multiple files. Uploaded files will be logically placed within the current index, sub-index, or namespace. Multiple file uploads have several restrictions:

- the files will be uploaded and saved using the current name
- existing items with the same name will be overwritten
- the file names should have a valid suffix that defines the file type
- files without a known suffix will be stored as-is and available for download

4.5.1 Single File Upload

Enter the new item name into the input area and click the *Create* button. Select the content type to proceed to the +modify view. Use the browser's file dialog to select an item, then click the OK button. The file will be uploaded and saved with the chosen content type; file name suffixes are ignored.

4.5.2 Multiple File Upload

Click the browser's Browse/Choose button and select one or more files from the browser's file dialog, or use the drag-and-drop method to copy files.

The file uploads will start immediately. Upload status will be displayed by overall and individual progress bars. The names of the files successfully uploaded will be prepended to the list of files in the index.

4.6 Namespaces

MoinMoin supports the use of multiple namespaces where each namespace may have a unique backend or media type. For example, the default namespace could use the OS filesystem for item storage and another namespace could use an SQL database.

- an item in one namespace can readily include or transclude content from an item residing in another namespace.
- it is not possible for an item to have an alias name referencing a different namespace.
- it is not possible to rename an item into a different namespace.
- it is not possible to use a namespace name as an item name in a different namespace.

See the namespace section within MoinMoin configuration for information on how to configure namespaces.

4.6.1 URL layout

`http://server/[NAMESPACE/][[@FIELD/]VALUE][/+VIEW]`

The above defines the URL layout, where uppercase terms are variables defined below and [] denotes optional segments. It means: search for items where field `FIELD` has value `VALUE` in namespace `NAMESPACE` and apply the view `VIEW` to it.

NAMESPACE
: Defines the namespace for looking up the item. NAMESPACE value `all` is the "namespace doesn't matter" identifier. It is used to access global views like global history, global tags etc.

FIELD
: Whoosh schema field to look up the VALUE (default: `name_exact`, lookup by name). FIELD can be a unique identifier (`itemid`, `revid`, `name_exact`) or non-unique (e.g., `tags`).

VALUE
: Value to search in the FIELD (default: the default root within that namespace). If the FIELD is non-unique, we show a list of items that have `FIELD:VALUE`.

VIEW
: Used to select the intended view method (default: `show`).

Examples:
: The following examples show how a URL can look, `ns1` and `ns1/ns2` are namespaces.

  - `http://localhost:8080/Home`
  - `http://localhost:8080/ns1/@tags/sometag`
  - `http://localhost:8080/ns1/ns2`
  - `http://localhost:8080/ns1/SomePage`
  - `http://localhost:8080/+modify/ns1/ns2/SomePage`
  - `http://localhost:8080/+delete/ns1/@itemid/37b73d2a6c154bb4ab993d0fb463219c`
  - `http://localhost:8080/ns1/@itemid/37b73d2a6c154bb4ab993d0fb463219c`

4.7 User Subscriptions

Users can subscribe to Moin items to receive notifications about item changes. Item changes include:

- creation of a new item
- modification of an existing item

- renaming of an item
- reverting an item's revision
- copying of an item
- deletion of an item
- destruction of a revision
- destruction of all item's revisions

Make sure that Moin is able to send emails; see *Mail configuration*.

4.7.1 Types of subscriptions

There are 5 types of subscriptions:

- by itemid (*itemid:<itemid value>*)

  This is the most common subscription to a single item. The user will be notified even after the item is renamed, because itemid doesn't change. If you click on *Subscribe* on item's page, then you will be subscribed using this type.

- by item name (*name:<namespace>:<name value>*),

  The user will be notified if the name matches any of the item names and also its namespace. Keep in mind that an item can be renamed, and notifications for this item would stop working if the new name doesn't match anymore.

- by tag name (*tags:<namespace>:<tag value>*)

  The user will be notified if the tag name matches any of the item tags and its namespace.

- by a prefix name (*nameprefix:<namespace>:<name prefix>*)

  Used for subscription to a set of items. The user will be notified if at least one of the item names starts with the given prefix and matches the item's namespace. For example, if you want to receive notifications about all the items from the default namespace whose name starts with *foo*, you can use *nameprefix::foo*.

- by a regular expression (*namere:<namespace>:<name regexp>*)

  Used for subscription to a set of items. The user will be notified if the regular expression matches any of the item names and also its namespace. For example, if you want to receive notifications about all the items on the wiki from the default namespace, then you can use *namere::.**

4.7.2 Editing subscriptions

The itemid subscription is the most common one and will be used if you click on *Subscribe* on the item's page. Conversely, *Unsubscribe* will remove the itemid subscription.

If you were subscribed to an item by some method other than an itemid subscription, then on *Unsubscribe* you will be told that it is not possible to remove the subscription and you need to edit it manually in the User Settings.

All the subscriptions can be added/edited/removed in the User Settings, Subscriptions tab. Each subscription is listed on a single line and is case-sensitive. Empty lines are ignored.

For itemid subscriptions, we additionally show the current first item name in parentheses (this is purely for your information, the name is not stored or used in any way).

CHAPTER

FIVE

ADMINISTERING MOINMOIN

5.1 Requirements

MoinMoin requires Python 3.10+. A CPython distribution is recommended because it will likely be the fastest and most stable. Most developers use a CPython distribution for testing. Typical Linux distributions will either have Python 3.10+ installed by default or will have a package manager that will install Python 3.10+ as a secondary Python. Windows users may download CPython distributions from https://www.python.org/ or https://www.activestate.com/.

An alternative implementation of Python, PyPy, is available from https://www.pypy.org/.

5.1.1 Servers

For Moin2, you can use any server compatible with WSGI:

- the built-in server (used by the "moin run" command) is recommended for desktop wikis, testing, debugging, development, ad hoc wikis, etc.
- Apache with mod_wsgi is recommended for bigger/busier wikis.
- Other WSGI-compatible servers or middleware are usable.
- For CGI, FastCGI, SCGI, AJP, etc., you can use the "flup" middleware: https://www.saddi.com/software/flup/
- IIS with ISAPI-WSGI gateway is also compatible: https://code.google.com/archive/p/isapi-wsgi

Caution

When using the built-in server for public wikis (not recommended), use "moin run –no-debugger –no-reload" to turn off the Werkzeug debugger and auto reloader. See the Werkzeug docs for more information.

5.1.2 Dependencies

Dependent packages will be automatically downloaded and installed during the Moin2 installation process. For a list of dependencies, see pyproject.toml.

5.1.3 Clients

On the client side, you need a web browser that supports W3C standards HTML 5, CSS 2.1, and JavaScript:

- any current version of Firefox, Chrome, Opera, Safari, Maxthon, Internet Explorer (IE9 or newer).
- use of older Internet Explorer versions is not recommended and not supported.

5.2 Installation

5.2.1 Installing the code

There are a lot of ways to do this and as this is not moin specific, we won't go into details:

- As long as moin2 is in pre-release stages, this is likely your only and best choice. If you use LDAP, you will have to install OS-dependent packages yourself. You will have to install Moin updates and security fixes yourself. Create a virtual environment first for better separation, then install Moin:

```
<python3> -m venv </path/to/new/virtual/environment>
cd </path/to/new/virtual/environment>
source bin/activate  # or "scripts\activate" on Windows
pip install --pre moin
```

- Or, use your operating system's / distribution's package manager to install the moin2 package. This is the recommended method as it will install moin2 and all other software it requires. Also your OS / dist might have a mechanism for updating the installed software with security fixes and future releases.

  For example, on Debian/Ubuntu Linux:

```
apt install moin
```

- Or, install into a virtual environment from PyPI. You will have to install Moin updates and security fixes yourself:

```
<python3> -m venv </path/to/new/virtual/environment>
cd </path/to/new/virtual/environment>
source bin/activate  # or "scripts\activate" on Windows
pip install moin
```

After installation, you should have a `moin` command available, try it:

```
moin --help
```

5.2.2 Creating a wiki instance

You'll need one instance directory per wiki site you want to run using Moin; this is where wiki data, indexes, and configuration for that site are stored.

Let's create a new instance:

```
moin create-instance --path INSTANCE-DIRECTORY
```

Change into the new instance directory:

```
cd INSTANCE-DIRECTORY
```

You'll find a `wikiconfig.py` there to edit. Adapt it as you like, you'll find some comments in there. Review and change the settings for:

```
* sitename
* interwikiname
* ACLs - SuperUser and SuperEditor
* registration only by superuser
* edit locking policy
* email configuration
```

(continues on next page)

(continued from previous page)

```
* namespaces and backends
* SECRET_KEY
* etc.
```

After configuring, you can create an empty wiki by initializing the storage and the index:

```
moin index-create
```

If you don't want to start with an empty wiki, you can load the welcome page 'Home' and the English help for editors:

```
moin welcome
moin load-help -n help-en
moin load-help -n help-common
```

Or, if you have a moin 1.9.x wiki, convert it to moin 2:

```
moin import19 -d <path to 1.9 wiki/data>
```

5.2.3 Run your wiki instance

Now try your new wiki using the built-in Python-based web server:

```
moin run  # visit the URL it shows in the log output
```

For production, please use a real web server like Apache or nginx.

For more information on various wiki admin activities, see *Moin Command Line Interface*.

5.2.4 Verifying signed releases

Releases are signed with an GPG key and a .asc file is provided for each release.

To verify a signature, the public key needs to be known to GPG. There are two moin project co-owners, their public keys may be imported into the local keystore from a keyserver with the fingerprints:

```
gpg --recv-keys "6D5B EF9A DD20 7580 5747 B70F 9F88 FB52 FAF7 B393"
gpg --recv-keys "7AFC F58F A118 9DED 2E86 3C41 3D96 89A8 79BD D615"
```

If GPG successfully imported the key, the output should include (among other things):

```
gpg: Total number processed: 1
```

To verify the signature of the moin release, download these files from https://github.com/moinwiki/moin/releases:

```
moin-2.*.*.tar.gz
moin-2.*.*.tar.gz.asc
```

Then run:

```
gpg --verify moin-2.*.*.tar.gz.asc
```

With a success, the output should look similar to this:

```
gpg: assuming signed data in 'dist/moin-2.0.0a1.tar.gz'
gpg: Signature made Wed Mar 27 13:54:41 2024 USMST
gpg:                using RSA key 7AFCF58FA1189DED2E863C413D9689A879BDD615
gpg: Good signature from "RogerHaase (2024-03-11) <haaserd@gmail.com>" [ultimate]
```

5.2.5 Useful Resources

If you have any questions about MoinWiki you can use the following resources:

Documentation (installation, configuration, user docs, API reference):

- https://moin-20.readthedocs.io/en/latest/

Repository, Issue tracker (bugs, proposals, todo), Code Review, Discussions, etc.:

- https://github.com/moinwiki/moin

Wiki:

- https://moinmo.in/MoinMoin2.0 (production wiki, using moin 1.9)

IRC channel on libera.chat (quick communication and discussion):

- #moin (Web Chat: https://web.libera.chat/?#moin)

5.3 Server Options

5.3.1 Built-in Web Server (easy)

Moin comes with a simple built-in web server powered by Werkzeug, which is suitable for development, debugging, and personal, small-group wikis.

It is *not* made for serving bigger loads, but it is easy to use.

Please note that by default the built-in server uses port 5000. As this is above port 1024, root (Administrator) privileges are not required and we strongly recommend that you use a normal, unprivileged user account instead. If you are running a desktop wiki or doing Moin development, then use your normal login user.

Running the built-in server

Run the Moin built-in server as follows:

```
# easiest for debugging (single-process, single-threaded server):
moin run

# or, if you need another configuration file, IP address, or port:
MOINCFG='/path/to/wikiconfig.py'
moin run --host 1.2.3.4 --port 7777
```

While the Moin server is starting up, you will see some log output, for example:

```
INFO werkzeug WARNING: This is a development server. Do not use it in a production␣
↪deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
INFO werkzeug Press Ctrl+C to quit
```

Now point your browser at that URL — your Moin wiki is running!

Stopping the built-in server

To stop the wiki server, either press Ctrl+C or close the window.

Using the built-in server for production

Caution

Using the built-in server for public wikis is not recommended. Should you wish to do so, turn off the Werkzeug debugger and auto reloader by passing the –no-debugger and –no-reload flags. The wikiconfig.py settings of *DEBUG = False* and *TESTING = False* are ignored by the built-in server. See Werkzeug docs for more information:

```
moin run --host 0.0.0.0 --port 80 --no-debugger --no-reload
```

5.3.2 External Web Server (advanced)

We won't go into details about using Moin under an external web server, because every web server software is different and has its own documentation, so please read the documentation that comes with it. Also, in general, server administration requires advanced experience with the operating system, permissions management, dealing with security, the server software, etc.

In order to use MoinMoin with another web server, ensure that your web server can talk to the Moin WSGI application, which you can get using this code:

```
from moin.app import create_app
application = create_app('/path/to/config/wikiconfig.py')
```

MoinMoin is a Flask application, which is a microframework for WSGI applications, so we recommend you read Flask's deployment documentation.

Make sure you use *create_app()* as shown above to create the application, because you can't import the application from MoinMoin.

Continue reading here: https://flask.palletsprojects.com/deploying/

In case you run into trouble with deployment of the moin WSGI application, you can try a simpler WSGI app first. An example file is included at *contrib/deployment/test.wsgi*.

As long as you can't make *test.wsgi* work, the problem is not with Moin, but rather with your web server and WSGI app deployment method.

When the test app starts doing something other than Server Error 500, please proceed with the MoinMoin app and its configuration. Otherwise, read your web server error log files to troubleshoot the issue from there.

Tip

Check the contents of /contrib/wsgi/ for sample WSGI files for your server.

5.3.3 Create and Serve a Static Wiki Image

"dump-html" is a utility used to create static HTML dumps of MoinMoin wiki content. You may find it useful to create a static dump for a software release, a high-volume read-only copy for a busy website, or a thumb drive version to carry on trips when you do not have internet access.

To execute dump-html, use the command line interface. The following three commands are equivalent as the specified options are the defaults.

```
moin dump-html
moin dump-html --directory HTML --theme topside_cms --exclude-ns userprofiles --query .*
moin dump-html -d HTML -t topside_cms -e userprofiles -q .*
```

The –directory option may be a relative or absolute path. The default directory, HTML, will be placed under the wiki root.

The –theme option specifies the theme. See "Customize the CMS Theme" within the "Introduction into MoinMoin Configuration" section for alternatives.

The –exclude-ns option specifies a comma-separated list of namespaces that will be excluded from the dump. The "userprofiles" namespace should always be excluded. To exclude user home pages from the static dump, use **userprofiles,users** with no embedded spaces.

The –query option may be a single page name or a regular expression selecting the items to be included in the dump. The default of ".*" selects all items.

Once created, the HTML directory may be moved anywhere as all the internal links are relative. The pages may be served using your favorite web server. If you want to load pages directly from your local file system, then be warned: All modern browsers (Chrome, Edge, Firefox, Opera) serve files loaded from the OS file system as plain text.

There is an easy workaround, just start a Python server in a termminal window:

```
cd path/to/dump/html/directory
<python> -m http.server 5000
```

and point your browser to http://127.0.0.1:5000/

5.4 Introduction into MoinMoin Configuration

5.4.1 Kinds of configuration files

To change how MoinMoin behaves and looks, you may customize it by editing its configuration files:

- Wiki Engine Configuration
  - the file is often called wikiconfig.py, but it can have any name
  - in that file, there is a Config class; this is the wiki engine's configuration
  - it is written in Python
- Framework Configuration
  - this is also located in the same file as the Wiki Engine Configuration
  - there are some UPPERCASE settings at the bottom; this is the framework's config (for Flask and Flask extensions)
  - it is written in Python
- Logging Configuration
  - optional; if you don't configure this, it will use the built-in defaults
  - this is a separate file, often called logging.conf
  - it has an .ini-like file format

Do small steps and have backups

Start from one of the sample configs provided with moin and only perform small changes, then try it before testing the next change.

If you're not used to the config file format, backup your last working config so you can revert to it in case you make some hard to find typo or other error.

Editing Python files

When editing Python files, be careful with indentation, only use multiples of 4 spaces to indent, and no tabs!

Also, be careful with syntax in general, it must be valid Python code or else it will crash with some error when trying to load the config. If that happens, read the error message, it will usually tell the line number and what the problem is. If you can't fix it easily, then revert to your backup of your last working config.

Why use Python for configuration?

At first, you might wonder why we use Python code for configuration. One of the reasons is that it is a powerful language. MoinMoin itself is developed in Python and using something else would usually mean much more work when developing new functionality.

5.4.2 Directory Structure

Shown below are parts of the directory structure after cloning moin and running quickinstall.py. The default uses the OS file system for storage of wiki data and indexes. The directories and files shown are referenced in this section of documentation related to configuration:

```
moin/                    # clone root, default name
    contrib/             # scripts and docs of interest to developers
    docs/                # moin documentation in restructured text (.rst) format
        _build/
            html/        # local copy of moin documentation, created by running "./m␣
↪docs" command
    requirements.d/      # package requirements used by quickinstall.py
    scripts/             # misc. scripts of interest to developers
    src/
        moin/            # large directory containing moin application code
    wiki/                # the wiki instance; created by running "./m new-wiki" or
↪"moin create-instance" commands
        data/            # wiki data and metadata
        index/           # wiki indexes
    wiki_local/          # a convenient location to store custom CSS, JavaScript,␣
↪templates, logos, etc.
    wikiconfig.py        # main configuration file, modify this to add or change␣
↪features
    intermap.txt         # interwiki map: copied by quickinstall.py, updated by "./m␣
↪interwiki"
```

After installing Moin from PyPI or unpacking using a package manager, the directory structure will look like this:

```
myvenv/                # virtualenv root
    bin/               # Windows calls this directory Scripts
    include            # Windows calls this directory Include
    lib/               # Windows calls this directory Lib, includes moin package
```

After activating the above venv, *moin create-instance -p <mywiki>* creates the structure below. Multiple instances of *mywiki* can be created with different names. *mywiki* may be created as a subdirectory of *myvenv* or elsewhere. The *preview* and *sql* subdirectories are created when a user edits a wiki item. To run moin using the built-in server, cd to the <*mywiki*> directory and execute *moin run*.:

```
mywiki/                 # wikiconfig dir, use this as CWD for moin commands
    wiki/               # the wiki instance; created by `moin create-instance`
        data/           # wiki data and metadata
        index/          # wiki indexes
        preview/        # text item backups are created when user clicks edit Preview␣
↪button
        sql/            # SQLite database used for edit locking
    wiki_local/         # store custom CSS, JavaScript, templates, logos, etc. here
    wikiconfig.py       # main configuration file, modify this to add or change features
    intermap.txt        # list of external wikis used in wikilinks:␣
↪[[MeatBall:InterWiki]]
```

5.4.3 wikiconfig.py Layout

A wikiconfig.py looks like this:

```
# -*- coding: utf-8 -*-
from moin.config.default import DefaultConfig

class Config(DefaultConfig):
    # some comment
    sometext = 'your value'
    somelist = [1, 2, 3]

MOINCFG = Config  # Flask only likes uppercase characters
SOMETHING_FLASKY = 'foobar'
```

Let's go through this line-by-line:

0. this declares the encoding of the config file; make sure your editor uses the same encoding (character set), especially if you intend to use non-ASCII characters.
1. this gets the DefaultConfig class from the moin code; it has default values for all settings and this will save you work, because you only have to define the parts that should be different from the defaults.
2. empty line, for better readability
3. define a new class *Config* that inherits most content from *DefaultConfig*; this is the wiki engine configuration and if you define some setting within this class, it will overwrite the setting from DefaultConfig.
4. a # character defines a comment in your config. This line, as well as all other following lines with Config settings, is indented by 4 blanks, because Python defines blocks by indentation.
5. define a Config attribute called *sometext* with value 'your value'.
6. define a Config attribute called *somelist* with value [1, 2, 3]; this is a list with the numbers 1, 2 and 3 as its elements.
7. empty line, for better readability
8. the special line "MOINCFG = Config" must stay there in exactly this form for technical reasons.
9. UPPERCASE code at the bottom, outside the Config class is a framework configuration; usually something for Flask or some Flask extension.

A real-life example of a *wikiconfig.py* can be found in the *src/moin/config* directory. This file will be initially copied to your wiki path when you create a new wiki and *wikiconfig.py* is missing.

5.5 Wiki Engine Configuration

5.5.1 User Interface Customization

Customizing a wiki usually requires adding a few files that contain custom templates, logo image, CSS, etc. To accomplish this, a directory named "wiki_local" is provided. One advantage of using this directory and following the examples below is that MoinMoin will serve the files.

If desired, the name of this directory may be changed or a separate subdirectory for template files may be created by editing the wikiconfig file and changing the line that defines *template_dirs*:

```
template_dirs = [os.path.join(wikiconfig_dir, "wiki_local")]
```

Simple customizations using CSS can be made by providing a file named *custom.css* in the *wiki_local* subdirectory.

Using a custom snippets.html template

The user interface or html elements that often need customization are defined as macros in the template file *snippets.html*.

If you would like to customize some parts, you have to copy the built-in *src/moin/templates/snippets.html* file and save it in the *wiki_local* directory so moin can use your copy instead of the built-in one.

To customize something, you usually have to insert your code between the *{% macro ... %}* and *{% endmacro %}* lines, see below for more details.

Logo

To replace the default MoinMoin logo with your own logo, copy your logo to *wiki_local* and change the logo macro to something like:

```
{% macro logo() -%}
    <img src="{{ url_for('serve.files', name='wiki_local', filename='MyLogo.png') }}" id=
↪"moin-img-logo" alt="Logo">
{%- endmacro %}
```

This is recommended to allow your users to immediately recognize which wiki site they are currently on.

You can use text or even nothing at all for the logo, it is not required to be an image:

```
{% macro logo() -%}
    <span style="font-size: 50px; color: red;">My Wiki</span>
{%- endmacro %}
```

Make sure the dimensions of your logo image or text fit into the layout of the theme(s) your wiki users are using.

Displaying license information

If you need to display something like license information for your content or some other legalese, use this macro:

```
{# License information in the footer #}
{% macro license_info() -%}
```

(continues on next page)

(continued from previous page)

```
All wiki content is licensed under the WTFPL.
{%- endmacro %}
```

Inserting pieces of HTML

At some specific places, you can add a piece of your own html into the head or body of the theme's html output:

```
{# Additional HTML tags inside <head> #}
{% macro head() -%}
{%- endmacro %}

{# Additional HTML before #moin-header #}
{% macro before_header() -%}
{%- endmacro %}

{# Additional HTML after #moin-header #}
{% macro after_header() -%}
{%- endmacro %}

{# Additional HTML before #moin-footer #}
{% macro before_footer() -%}
{%- endmacro %}

{# Additional HTML after #moin-footer #}
{% macro after_footer() -%}
{%- endmacro %}
```

Credits and Credit Logos

At the bottom of your wiki pages, usually some text and image links are shown pointing out that the wiki runs MoinMoin, uses Python, that MoinMoin is GPL licensed, etc.

If you run a public site using MoinMoin, we would appreciate if you *keep* those links, especially the "MoinMoin powered" one.

However, if you can't do that for some reason, feel free to modify these macros to show something else:

```
{# Image links in the footer #}
{% macro creditlogos(start='<ul id="moin-creditlogos"><li>'|safe, end='</li></ul>'|safe,␣
↪sep='</li><li>'|safe) %}
{{ start }}
{{ creditlogo('https://moinmo.in/', url_for('.static', filename='logos/moinmoin_powered.
↪png'),
   'MoinMoin powered', 'This site uses the MoinMoin Wiki software.') }}
{{ sep }}
{{ creditlogo('https://moinmo.in/Python', url_for('.static', filename='logos/python_
↪powered.png'),
   'Python powered', 'MoinMoin is written in Python.') }}
{{ end }}
{% endmacro %}

{# Text links in the footer #}
```

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```
{% macro credits(start='<p id="moin-credits">'|safe, end='</p>'|safe, sep='<span>&bull;</
↪span>'|safe) %}
{{ start }}
{{ credit('https://moinmo.in/', 'MoinMoin Powered', 'This site uses the MoinMoin Wiki␣
↪software.') }}
{{ sep }}
{{ credit('https://moinmo.in/Python', 'Python Powered', 'MoinMoin is written in Python.
↪') }}
{{ sep }}
{{ credit('https://moinmo.in/GPL', 'GPL licensed', 'MoinMoin is GPL licensed.') }}
{{ sep }}
{{ credit('https://validator.w3.org/check?uri=referer', 'Valid HTML5', 'Click here to␣
↪validate this page.') }}
{{ end }}
{% endmacro %}
```

Adding scripts

You can add scripts like this:

```
{# Additional JavaScript #}
{% macro scripts() -%}
<script type="text/javascript" src="{{ url_for('serve.files', name='wiki_local',␣
↪filename='MyScript.js') }}"></script>
{% endmacro %}
```

Adding CSS

To apply some style changes, add some custom css and overwrite any style you don't like in the base theme:

```
{# Additional Stylesheets (after theme css, before user css #}
{% macro stylesheets() -%}
    <link media="screen" href="{{ url_for('serve.files', name='wiki_local', filename=
↪'company.css') }}" title="Company CSS" rel="stylesheet" />
    <link media="screen" href="{{ url_for('serve.files', name='wiki_local', filename=
↪'red.css') }}" title="Red Style" rel="alternate stylesheet" />
    <link media="screen" href="{{ url_for('serve.files', name='wiki_local', filename=
↪'green.css') }}" title="Green Style" rel="alternate stylesheet" />
{%- endmacro %}
```

You can either add some normal css stylesheet or add a choice of alternate stylesheets.

See:

- CSS media types
- Alternate Stylesheets

A good way to test a stylesheet is to first use it as user CSS before configuring it for the public.

Please note that *stylesheets* will be included no matter what theme the user has selected, so either only apply changes to all available themes or force all users to use the same theme, so that your CSS displays correctly.

Customize the CMS Theme

Moin provides one CMS theme: the Topside CMS Theme.

The CMS theme replaces the wiki navigation links used by editors and administrators with a few links to the most important items within your wiki. Wiki admins may want to make the CMS theme the default theme when:

- Casual visitors are interested in viewing the wiki content, but confused by the wiki navigation links.
- Errant bots are overloading your server by following the wiki navigation links on every page.
- Contributors do not mind logging in before editing.

Customizing the CMS header may be done as follows. Several restarts of the server may be required:

- Copy /templates/snippets.html to the wiki_local directory and find the *macro cms_header*.
- Usually the logo, sitename, and search form sections are not changed.
- If a link to login is wanted, leave the "request.user_agent" section as is, else remove the entire block.
- Add or remove links in the navibar section as required, defaults links include Home page and Global Index.
- If many links are desired, consider using *macro custom_panels*.
- Test by logging in and setting "Topside CMS Theme" as your preferred theme.
- After testing, make the cms theme the default theme by adding `theme_default = "topside_cms"` to wikiconfig.
- Inform your editors to login and set another theme as their preferred theme.
- If the login link was removed, the login page is available by keying `+login` as the page name in the browser URL.

Here is the source code segment from snippets.html:

```
{# Header/Sidebar for topside_cms theme - see docs for tips on customization #}
{% macro cms_header() %}
    <header id="moin-header" lang="{{ theme_supp.user_lang }}" dir="{{ theme_supp.user_
↪dir }}">
        {% block header %}

            {% if logo() %}
                <div id="moin-logo">
                    <a href="{{ url_for('frontend.show_item', item_name=cfg.root_mapping.
↪get('', cfg.default_root)) }}">
                        {{ logo() }}
                    </a>
                </div>
            {%- endif %}

            {% if cfg.sitename %}
                <a class="moin-sitename" href="{{ url_for('frontend.show_item', item_
↪name=cfg.root_mapping.get('', cfg.default_root)) }}">
                    {{ cfg.sitename }}
                </a>
                <br>
            {%- endif %}

            {% if request.user_agent and search_form %} {# request.user_agent is true if␣
```

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```
↪browser, false if run as moin dump-html #}
                {{ utils.header_search(search_form) }}
            {% endif %}

            {% if request.user_agent %} {# request.user_agent is true if browser, false␣
↪if run as moin dump-html #}
                <ul id="moin-username" class="moin-header-links">
                    {{ utils.user_login_logoff() }}
                </ul>
            {%- endif %}

            <ul id="moin-navibar" class="moin-header-links panel">
                {# wiki admins should add links and headings for key items within the␣
↪local wiki below #}
                <li class="moin-panel-heading">Navigation</li>
                <li class="wikilink"><a href="{{ url_for('frontend.show_item', item_name=
↪'Home') }}">Start</a></li>
                <li class="wikilink"><a href="{{ url_for('frontend.show_item', item_name=
↪'+index') }}">Index</a></li>
            </ul>

            {{ custom_panels() }}

        {% endblock %}
    </header>
    <br>
{% endmacro %}
```

Displaying user avatars

Optionally, moin can display avatar images for the users, using gravatar.com service. To enable it, add or uncomment this line in wikiconfig:

```
user_use_gravatar = True
```

If a user is not registered with gravar.com, a default image can be specified using the parameter user_gravatar_default_img, this can be a publicly available URL or a keyword “mp”, “identicon”, “monsterid”, “wavatar”, “retro” or “robohash”, the default value is “blank” (see https://docs.gravatar.com/api/avatars/images/ for details).

Please note that using the gravatar service has some privacy issues:

- to register your image for your email at gravatar.com, you need to give them your email address, which is the same as you use in your wiki user profile.
- when the wiki displays an avatar image on some item / view, the URL will be exposed as referrer to the avatar service provider, so they will roughly know which people read or work on which wiki items / views.

XStatic Packages

XStatic is a packaging standard to package external static files as a Python package, often third party. That way they are easily usable on all operating systems, whether it has a package management system or not.

In many cases, those external static files are maintained by someone else (like jQuery JavaScript library or larger JS libraries) and we definitely do not want to merge them into our project.

For MoinMoin we require the following XStatic Packages in pyproject.toml:

- jquery for jquery lib functions loaded in the template file base.html
- jquery_file_upload loaded in the template file of index view. It allows to upload many files at once.
- bootstrap used by the basic theme.
- font_awesome provides text icons.
- ckeditor used in template file modify_text_html. A WYSIWYG editor similar to word processing desktop editing applications.
- autosize used by basic theme to adjust textarea on modify view.
- svgedit_moin is loaded at template modify_svg-edit. It is a fast, web-based, JavaScript-driven SVG editor.
- jquery_tablesorter used to provide client side table sorting.
- pygments used to style code fragments.

These packages are imported in wikiconfig by:

```
# names below must be package names
mod_names = [
    'jquery', 'jquery_file_upload',
    'bootstrap',
    'font_awesome',
    'ckeditor',
    'autosize',
    'svgedit_moin',
    'jquery_tablesorter',
    'pygments',
]
serve_files.update(get_xstatic_module_path_map(mod_names))
```

In a template file you access the files of such a package by its module name:

```
url_for('serve.files', name='the mod name', filename='the file to load')
```

Adding XStatic Packages

The following example shows how you can enable the additional package XStatic-MathJax which is used for mathml or latex formulas in an item's content.

- install xstatic-mathjax (e.g. using `pip install xstatic-mathjax`)
- add the name 'mathjax' to to the list of mod_names in wikiconfig
- copy /templates/snippets.html to the wiki_local directory
- modify the snippets.html copy by adding the required fragment to the scripts macro:

```
{% macro scripts() -%}
<script type="text/x-mathjax-config">
MathJax.Hub.Config({
    extensions: ["tex2jax.js"],
    jax: ["input/TeX","output/HTML-CSS"],
    tex2jax: {inlineMath: [["$","$"],["\\(","\\)"]]}
});
</script>
```

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```
<script src="{{ url_for('serve.files', name='mathjax', filename='MathJax.js') }}"></
↪script>
{%- endmacro %}
```

Custom Themes

In case you want to do major changes to how MoinMoin displays its pages, you could also write your own theme.

Caution: developing your own theme means you also have to maintain and update it, which normally requires a long-term effort.

To add a new theme, add a new directory under src/moin/themes/ where the directory name is the name of your theme. Note the directory structure under the other existing themes. Copy an *info.json* file to your theme directory and edit as needed. Create a file named theme.css in the src/moin/themes/<theme name>/static/css/ directory.

MoinMoin uses Flask-theme for loading themes. As mentioned in the theme loader section, you can configure additional directories that Flask-theme searches for themes by setting the THEME_PATHS configuration. Here is an example how you would set THEME_PATHS in wikiconfig:

```
THEME_PATHS = os.path.join(Config.instance_dir, "themes")
```

To change the layout of the theme header, sidebar and footer, create a templates/ directory and copy and modify the files layout.html and show.html from either src/moin/templates/ or one of the existing theme templates directories.

For many themes, modifying the files noted above will be sufficient. If changes to views are required, copy additional template files. If there is a requirement to change the MoinMoin base code, please consider submitting a patch.

5.5.2 Authentication

MoinMoin uses a configurable *auth* list of authenticators, so the admin can configure whatever he/she likes to allow for authentication. Moin processes this list from left to right.

Each authenticator is an instance of some specific class, configuration of the authenticators usually works by giving them keyword arguments. Most have reasonable defaults though.

MoinAuth

This is the default authentication moin uses if you don't configure something else. The user logs in by filling out the login form with username and password, moin compares the password hash against the one stored in the user's profile and if both match, the user is authenticated:

```
from moin.auth import MoinAuth
auth = [MoinAuth()]  # this is the default!
```

HTTPAuthMoin

With HTTPAuthMoin moin does http basic authentication by itself without the help of the web server:

```
from moin.auth.http import HTTPAuthMoin
auth = [HTTPAuthMoin(autocreate=True)]
```

If configured like that, moin will request authentication by emitting a http header. Browsers then usually show some login dialogue to the user, asking for username and password. Both then gets transmitted to moin and it is compared against the password hash stored in the user's profile.

Note: when HTTPAuthMoin is used, the browser will show that login dialogue, so users must login to use the wiki.

GivenAuth

With GivenAuth moin relies on the webserver doing the authentication and giving the result to moin, usually via the environment variable REMOTE_USER:

```
from moin.auth import GivenAuth
auth = [GivenAuth(autocreate=True, coding='utf-8')]
```

Using this method has some pros and cons:

- you can use lots of authentication extensions available for your web server
- but the only information moin will get via REMOTE_USER is the authenticated user's name, nothing else. So, e.g. for LDAP/AD, you won't get additional content stored in the LDAP directory.
- everything you won't get, but which you need, will need to be manually stored and updated in the user's profile, e.g. the user's email address, etc.

Please note that you must give the correct character set so that moin can decode the username to unicode, if necessary. For environment variables like REMOTE_USER, the coding might depend on your operating system.

If you do not know the correct coding, try: 'utf-8', 'iso-8859-1', ...

Todo

add the usual coding(s) for some platforms (like windows)

To try it out, change configuration, restart moin and then use some non-ASCII username (like with german umlauts or accented characters). If moin does not crash (log a Unicode Error), you have likely found the correct coding.

For users configuring GivenAuth on Apache, an example virtual host configuration is included at *contrib/deployment/moin-http-basic-auth.conf*

LDAPAuth

With LDAPAuth you can authenticate users against a LDAP directory or MS Active Directory service.

LDAPAuth with single LDAP server

This example shows how to use LDAPAuth with a single LDAP/AD server:

```
from moin.auth.ldap_login import LDAPAuth
ldap_common_arguments = dict(
    # the values shown below are the DEFAULT values (you may remove them if you are␣
↪happy with them),
    # the examples shown in the comments are typical for Active Directory (AD) or␣
↪OpenLDAP.
    bind_dn='',  # We can either use some fixed user and password for binding to LDAP.
                 # Be careful if you need a % char in those strings - as they are used as
                 # a format string, you have to write %% to get a single % in the end.
                 #bind_dn = 'binduser@example.org' # (AD)
                 #bind_dn = 'cn=admin,dc=example,dc=org' # (OpenLDAP)
                 #bind_pw = 'secret'
                 # or we can use the username and password we got from the user:
                 #bind_dn = '%(username)s@example.org' # DN we use for first bind (AD)
                 #bind_pw = '%(password)s' # password we use for first bind
```

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```
                # or we can bind anonymously (if that is supported by your directory).
                # In any case, bind_dn and bind_pw must be defined.
    bind_pw='',
    base_dn='',  # base DN we use for searching
                 #base_dn = 'ou=SOMEUNIT,dc=example,dc=org'
    scope=2, # scope of the search we do (2 == ldap.SCOPE_SUBTREE)
    referrals=0, # LDAP REFERRALS (0 needed for AD)
    search_filter='(uid=%(username)s)',  # ldap filter used for searching:
                                         #search_filter = '(sAMAccountName=%(username)s)'
↪# (AD)
                                         #search_filter = '(uid=%(username)s)' #␣
↪(OpenLDAP)
                                         # you can also do more complex filtering like:
                                         # "(&(cn=%(username)s)(memberOf=CN=WikiUsers,
↪OU=Groups,DC=example,DC=org))"
    # some attribute names we use to extract information from LDAP (if not None,
    # if None, the attribute won't be extracted from LDAP):
    givenname_attribute=None, # often 'givenName' - ldap attribute we get the first name␣
↪from
    surname_attribute=None, # often 'sn' - ldap attribute we get the family name from
    aliasname_attribute=None, # often 'displayName' - ldap attribute we get the aliasname␣
↪from
    email_attribute=None, # often 'mail' - ldap attribute we get the email address from
    email_callback=None, # callback function called to make up email address
    coding='utf-8', # coding used for ldap queries and result values
    timeout=10, # how long we wait for the ldap server [s]
    start_tls=0, # usage of Transport Layer Security 0 = No, 1 = Try, 2 = Required
    tls_cacertdir=None,
    tls_cacertfile=None,
    tls_certfile=None,
    tls_keyfile=None,
    tls_require_cert=0, # 0 == ldap.OPT_X_TLS_NEVER (needed for self-signed certs)
    bind_once=False, # set to True to only do one bind - useful if configured to bind as␣
↪the user on the first attempt
    autocreate=True, # set to True to automatically create/update user profiles
    report_invalid_credentials=True, # whether to emit "invalid username or password"␣
↪msg at login time or not
)

ldap_authenticator1 = LDAPAuth(
    server_uri='ldap://localhost',  # ldap / active directory server URI
                                    # use ldaps://server:636 url for ldaps,
                                    # use  ldap://server for ldap without tls (and set␣
↪start_tls to 0),
                                    # use  ldap://server for ldap with tls (and set␣
↪start_tls to 1 or 2).
    name='ldap1',  # unique name for the ldap server, e.g. 'ldap_pdc' and 'ldap_bdc' (or
↪'ldap1' and 'ldap2')
    **ldap_common_arguments  # expand the common arguments
)

auth = [ldap_authenticator1, ] # this is a list, you may have multiple ldap␣
```

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```
↪authenticators
                                # as well as other authenticators

# customize user preferences (optional, see MoinMoin/config/multiconfig for internal␣
↪defaults)
# you maybe want to use user_checkbox_remove, user_checkbox_defaults, user_form_defaults,
# user_form_disable, user_form_remove.
```

LDAPAuth with two LDAP servers

This example shows how to use LDAPAuth with a two LDAP/AD servers, such as in a setup with a primary controller and backup domain controller:

```
# ... same as for single server (except the line with "auth =") ...
ldap_authenticator2 = LDAPAuth(
    server_uri='ldap://otherldap',  # ldap / active directory server URI for second␣
↪server
    name='ldap2',
    **ldap_common_arguments
)

auth = [ldap_authenticator1, ldap_authenticator2, ]
```

AuthLog

AuthLog is not a real authenticator in the sense that it authenticates (logs in) or deauthenticates (logs out) users. It is passively logging informations for authentication debugging:

```
from moin.auth import MoinAuth
from moin.auth.log import AuthLog
auth = [MoinAuth(), AuthLog(), ]
```

Example logging output:

```
2011-02-05 16:35:00,229 INFO MoinMoin.auth.log:22 login: user_obj=<moin.user.User at␣
↪0x90a0f0c name:'ThomasWaldmann' valid:1> kw={'username': 'ThomasWaldmann', 'attended':␣
↪True, 'multistage': None, 'login_password': 'secret', 'login_username': 'ThomasWaldmann
↪', 'password': 'secret', 'login_submit': ''}
2011-02-05 16:35:04,716 INFO MoinMoin.auth.log:22 session: user_obj=<MoinMoin.user.User␣
↪at 0x90a0f6c name:'ThomasWaldmann' valid:1> kw={}
2011-02-05 16:35:06,294 INFO MoinMoin.auth.log:22 logout: user_obj=<MoinMoin.user.User␣
↪at 0x92b5d4c name:'ThomasWaldmann' valid:False> kw={}
2011-02-05 16:35:06,328 INFO MoinMoin.auth.log:22 session: user_obj=None kw={}
```

Note: there is sensitive information like usernames and passwords in this log output. Make sure you only use this for testing only and delete the logs when done.

5.5.3 Transmission security

Credentials

Some of the authentication methods described above will transmit credentials, like usernames and password, in unencrypted form:

- MoinAuth: when the login form contents are transmitted to moin, they contain username and password in clear text.
- HTTPAuthMoin: your browser will transfer username and password in a encoded (but NOT encrypted) form with EVERY request; it uses http basic auth.
- GivenAuth: check the potential security issues of the authentication method used by your web server; for http basic auth please see HTTPAuthMoin.

Contents

http transmits everything in clear text and is therefore not encrypted.

Encryption

Transmitting unencrypted credentials or contents can cause serious issues in many scenarios.

We recommend you make sure the connections are encrypted, like with https or VPN or an ssh tunnel.

For public wikis with very low security / privacy needs, it might not be needed to encrypt the content transmissions, but there is still an issue for the credential transmissions.

When using unencrypted connections, wiki users are advised to make sure they use unique credentials and not reuse passwords that are used for other purposes.

5.5.4 Password security

Password strength

As you might know, many users are bad at choosing reasonable passwords and some are tempted to use easily crackable passwords.

To help users choose reasonable passwords, Moin has a simple built-in password checker that is enabled by default and does some sanity checks, so users don't choose easily crackable passwords.

It **does** check:

- length of password (default minimum: 8)
- amount of different characters in password (default minimum: 5)
- password does not contain user name
- user name does not contain password
- password is not a keyboard sequence (like "ASDFghjkl" or "987654321"), currently we have only US and DE keyboard data built-in.

It **does not** check:

- whether the password is in a well-known dictionary or password list
- whether a password cracker can break it

If you are not satisfied with the default values, you can easily customize the checker:

```
from moin.config.default import DefaultConfig, _default_password_checker
password_checker = lambda cfg, name, pw: _default_password_checker(
                       cfg, name, pw, min_length=10, min_different=6)
```

You could also completely replace it with your own implementation.

If your site has rather low security requirements, you can disable the checker by:

```
password_checker = None  # no password checking
```

Password storage

Moin never stores wiki user passwords in clear text, but uses strong cryptographic hashes. New passwords are hashed using Argon2id (via argon2-cffi), a modern memory-hard algorithm recommended by security experts.

For backward compatibility, Moin can verify legacy sha512_crypt password hashes (from Moin 1.9.x or earlier Moin 2.x installations). These legacy hashes are automatically upgraded to Argon2id when users log in successfully.

By default, we use Argon2id hashes with the following parameters:

```
password_hasher_config = dict(
    time_cost=2,          # Number of iterations
    memory_cost=102400,   # Memory usage in KiB (100 MiB)
    parallelism=8,        # Number of parallel threads
    hash_len=16,          # Hash length in bytes
    salt_len=16,          # Salt length in bytes
)
```

In case you experience slow logins or feel that you might need to tweak the hash generation, you can adjust these parameters. Higher values provide better security but slower performance. For more information about Argon2 parameters, see: https://argon2-cffi.readthedocs.io/

Note: Legacy sha512_crypt hashes are automatically upgraded to Argon2id upon successful login, so no manual migration is required.

5.5.5 Authorization

Moin uses Access Control Lists (ACLs) to specify who is authorized to perform a given action. ACLs enable wiki administrators and possibly users to choose between *soft security* and *hard security*.

- if your wiki is rather open (soft security), you make it easy to contribute, e.g. a user who is not a regular user of your wiki could fix some typos he has just found. However, a hostile user or bot could easily add spam into your wiki. In this case, an active user community can quickly detect and remove the spam.
- if your wiki is rather closed (hard security), e.g. you require every user to first apply for an account and to log in before being able to do changes, you will rarely get contributions from casual users and possibly discourage contributions from members of your community. But, getting spam is then less likely.
- ACLs provide the means of using both methods. Key wiki items that are frequently viewed and infrequently changed may be updated only by selected users while other items that are frequently changed may be updated by any user.

Moin's default configuration makes use of *hard security* to prevent unwanted spam. Wiki administrators may soften security by reconfiguring the default ACLs.

As wiki items are created and updated, the default configuration may be overridden on specific items by setting an ACL on that item.

Hardening security implies that there will be a registration and login process that enables individual users to gain privileges. While wikis with a small user community may function with ACLs specifying only usernames, larger wikis will make use of ACLs that reference groups or lists of usernames. The definitions of built-in groups and creation of groups are discussed below under the headings *ACLs - special groups* and *Groups*.

ACL for functions

Moin has some built in functions that are protected by ACLs:

- superuser - used for miscellaneous administrative functions. Give this only to highly trusted people

Example:

```
acl_functions = 'YourName:superuser'
```

ACLs for contents

This type of ACL controls access to content stored in the wiki. Wiki items may have ACLs defined in their metadata. Within wikiconfig, ACLs are specified per namespace and storage backend (see storage backend docs for details). The example below shows an entry for the default namespace:

```
default_acl=dict(before='SuperUser:read,write,create,destroy,admin',
                 default='TrustedEditorGroup:read,write,create,destroy,admin Known:read,
↪write,create',
                 after='All:read',
                 hierarchic=False, ),
```

As shown above, *before*, *default* and *after* ACLs are specified. The *default* ACL is only used if no ACL is specified in the metadata of the target item.

How to use before, default, and after:

- *before* is usually used to force something, for example if you want to give some wiki admin all permissions indiscriminately; in the example above, no one can create an item ACL rule locking out SuperUser's access
- *default* is the behavior if no ACL was created in the item's metadata; above, only members of a trusted group can write ACL rules or delete items, and a user must be logged in (known) to write or create items
- *after* is rarely used and when it is, it is used to "not forget something unless otherwise specified"; above, all users may read all items unless blocked (or given more privileges) by an ACL on the target item

When configuring content ACLs, you can choose between standard (flat) ACL processing and hierarchic ACL processing. Hierarchic processing means that subitems inherit ACLs from their parent items if they don't have an ACL themselves.

Note that while hierarchic ACLs are rather convenient sometimes, they make the system more complex. You have to be very careful with permission changes happening as a result of changes in the hierarchy, such as when you create, rename or delete items. When multiple item names are used the complexity increases even more because all parents are searched for ACLs – if conflicting allow/deny ACLs are found allow always wins.

Supported capabilities (rights):

- read - read content
- write - write (edit, modify, delete) content
- create - create new items
- destroy - completely destroy revisions or items; to be given only to *fully-trusted* users
- admin - change (create, remove) ACLs for the item; to be given only to *fully-trusted* users

The write capability includes the authority to delete an item since any user with write authority may edit and remove or replace all content. A deleted item does not appear in the Global Index, but the deletion event does appear in the global history. To recover a deleted item, find the deleted item line in global history, click the link to the item's history, and then click a revert link to one of the prior revisions.

ACLs - special groups

In addition to the groups provided by the group backend(s), there are some special group names available within ACLs. These names are case-sensitive and must be capitalized as shown:

- All - a virtual group containing every user, including users who have not logged in
- Known - a virtual group containing every logged-in user
- Trusted - a virtual group containing every logged-in user who was logged in by some specific "trusted" authentication method other than the default MoinAuth.

ACLs - basic syntax

An ACL is a unicode string with one or more access control entries which are space separated.

An entry is a colon-separated set of two values:

- the left side is a comma-separated list of user and/or group names
- the right side is a comma-separated list of rights / capabilities for those users/groups.

An ACL is processed from left to right, where the first left-side match counts.

Example:

```
"SuperMan,WonderWoman:read,write,create,destroy,admin All:read,write"
```

If "SuperMan" is currently logged in and moin processes this ACL, it will find a name match in the first entry. If moin wants to know whether he may destroy, the answer will be "yes", as destroy is one of the capabilities/rights listed on the right side of this entry.

If "JoeDoe" is currently logged in and moin processes this ACL, the first entry won't match, so moin will proceed left-to-right and look at the second entry. Here we have the special group name, "All" (and JoeDoe is obviously a member of this group), so this entry matches. If moin wants to know whether he may destroy, the answer will be "no", as destroy is not listed on the right side of the "All" entry. If moin wants to know whether he may write, the answer will be "yes".

Notes:

- As a consequence of the left-to-right and first-match-counts processing, you must order ACL entries so that the more specific ones (like for "SuperMan") are left of the less specific ones. Usually, you want this order:
  1) usernames
  2) special groups
  3) more general groups
  4) Trusted
  5) Known
  6) All
- Do not put any spaces into an ACL entry, unless it is part of a user or group name.
- A right that is not explicitly given by an applicable ACL is denied.

ACLs - entry prefixes

To make the system more flexible, there are two ways to modify an ACL entry: prefixing it with a '+' or a '-'.

If you use one of the two, MoinMoin will search for both a username and permission, and a match will have to match both the name of user (left-side) *and* the permission MoinMoin is searching for (right-side), otherwise it will continue with the next entry.

'+' indicates that MoinMoin should give the permission(s) specified on the right side.

'-' indicates that MoinMoin should deny the permission(s) specified on the right side.

Example:

```
"+SuperMan:create,destroy,admin -Idiot:write All:read,write"
```

If "SuperMan" is currently logged in and moin wants to know whether he may destroy, it'll find a match in the first entry, because the name matches *and* permission in question matches. As the prefix is '+', the answer is "yes".

If moin wants to know whether SuperMan may write, the first entry will not match on both sides, so moin will proceed and look at the second entry. It doesn't match, so it will look at the third entry. Of course "SuperMan" is a member of group "All", so we have a match here. As "write" is listed on the right side, the answer will be "yes".

If the rule above did not have a leading + before SuperMan and moin wants to know whether SuperMan may write, then the left side matches at the first entry and the answer will be "no" because "write" is not listed on the right side.

If "Idiot" is currently logged in and moin wants to know whether he may write, it will find no match in the first entry, but the second entry will match. As the prefix is '-', the answer will be "no". Because a match has been made, the third entry is not processed.

Notes:

- you usually use these modifiers if most of the rights for a given user shall be specified later, but a special user or group should be treated slightly different for a few special rights.

ACLs - Default entry

There is a special ACL entry, "Default", which expands itself in-place to the default ACL.

This is useful, for example, if when you mostly want the default ACL, but with a slight modification, but you don't want to type in the default ACL all the time and you also want to be able to change the default ACL without having to edit lots of items.

Example:

```
"-NotThisGuy:write Default"
```

This will behave as usual, except that "NotThisGuy" will never be given write permission.

5.5.6 Secrets

Moin uses secrets to encrypt or cryptographically sign something like:

- tickets

Secrets are long random strings and *not* a reuse of any of your passwords. Don't use the strings shown below, they are NOT secret as they are part of the moin documentation. Make up your own secrets:

```
secrets = {
    'security/ticket': 'asdasdvarebtZertbaoihnownbrrergfqe3r',
}
```

If you don't configure these secrets, moin will detect this and reuse Flask's SECRET_KEY for all secrets it needs.

5.5.7 Groups

Group names can be used in place of usernames within ACLs. There are three types of groups: WikiGroups, ConfigGroups, and CompositeGroups. A group is a list of unicode names, where a name may be either a username or another group name.

Use of groups will reduce the administrative effort required to maintain ACL rules, especially in wikis with a large community of users. Rather than change multiple ACL rules to reflect a new or departing member, a group may be updated. To achieve maximum benefit, some advance planning is required to determine the kind and names of groups suitable for your wiki.

The wiki server must be restarted to reflect updates made to ConfigGroups and CompositeGroups.

Names of WikiGroup items must end in "Group". There is no such requirement for the names of ConfigGroups or CompositeGroups.

Group backend configuration

The WikiGroups backend is enabled by default so there is no need to add the following to wikiconfig:

```
def groups(self):
    from moin.datastructures import WikiGroups
    return WikiGroups()
```

To create a WikiGroup that can be used in an ACL rule:

- Create a wiki item with a name ending in "Group" (the content of the item is not relevant).
- Edit the metadata and add entries under the heading "Wiki Groups", one entry per line.
- Leading and trailing spaces are ignored, internal spaces are accepted.:

  ```
  JaneDoe
  JohnDoe
  SomeOtherGroup
  ```

- Use the new group name in one or more ACL rules.
- For public wikis, it is recommended that a TrustedEditorGroup (or similar name) be created.

The ConfigGroups backend uses groups defined in the configuration file. Adding the following to wikiconfig creates an EditorGroup and an AdminGroup and prevents the use of any WikiGroups:

```
def groups(self):
    from moin.datastructures import ConfigGroups
    groups = {'EditorGroup': ['AdminGroup', 'John', 'JoeDoe', 'Editor1'],
              'AdminGroup': ['Admin1', 'Admin2', 'John']}
    return ConfigGroups(groups)
```

CompositeGroups enable both ConfigGroups and WikiGroups to be used. The example below defines the same ConfigGroups used above and enables the use of WikiGroups. Note that order matters! Since ConfigGroups backend is first in the return tuple, the EditGroup and AdminGroup defined below will be used should there be WikiGroup items with the same names:

```
def groups(self):
    from moin.datastructures import ConfigGroups, WikiGroups, CompositeGroups
    groups = {'EditorGroup': ['AdminGroup', 'John', 'JoeDoe', 'Editor1'],
              'AdminGroup': ['Admin1', 'Admin2', 'John']}
    return CompositeGroups(ConfigGroups(groups), WikiGroups())
```

Dict backend configuration

The dict backend provides a means for translating phrases in documentation through the use of the GetVal macro.

The WikiDicts backend is enabled by default so there is no need to add the following to wikiconfig:

```
def dicts(self):
    from moin.datastructures import WikiDicts
    return WikiDicts()
```

To create a WikiDict that can be used in an GetVal macro:

- Create a wiki item with a name ending in "Dict" (the content of the item is not relevant)
- Edit the metadata and add an entry under the heading "Wiki Dict":

```
apple=red
banana=yellow
pear=green
```

The ConfigDicts backend uses dicts defined in the configuration file. Adding the following to wikiconfig creates a OneDict and a NumbersDict and prevents the use of any WikiDicts:

```
def dicts(self):
    from moin.datastructures import ConfigDicts
    dicts = {'OneDict': {'first_key': 'first item',
                         'second_key': 'second item'},
             'NumbersDict': {'1': 'One',
                             '2': 'Two'}}
    return ConfigDicts(dicts)
```

CompositeDicts enable both ConfigDicts and WikiDicts to be used. The example below defines the same ConfigDicts used above and enables the use of WikiDicts. Note that order matters! Since ConfigDicts backend is first in the return tuple, the OneDict and NumbersDict defined below will be used should there be WikiDict items with the same names:

```
def dicts(self):
    from moin import ConfigDicts, WikiDicts, CompositeDicts
    dicts = {'OneDict': {'first_key': 'first item',
                         'second_key': 'second item'},
             'NumbersDict': {'1': 'One',
                             '2': 'Two'}}
    return CompositeDicts(ConfigDicts(dicts),
                          WikiDicts())
```

5.5.8 Content security policy (CSP)

MoinMoin offers a basic functionality for setting CSP headers and logging CSP reports from client browsers. The behavior can be configured with the options "content_security_policy" and "content_security_policy_report_only".

If one of these options is set to "", the corresponding header is not set. In the default configuration, no policy is set or enforced, but a header is added to report CSP violations in the log. To debug the settings, we recommend using the developer tools in your browser.

With the option "content_security_policy_limit_per_day", admins can limit the number of reports in the log per day to avoid log overflow.

The CSP configuration depends on the individual wiki landscape and the capabilities of web browsers vary. For details see https://developer.mozilla.org/en-US/docs/Web/HTTP/CSP.

5.5.9 Storage

MoinMoin supports storage backends as different ways of storing wiki items.

Setup of storage is rather complex and layered, involving:

- Routing middleware that dispatches by namespace to the respective backend
- ACL checking middleware that makes sure nobody accesses something he/she is not authorized to access
- Indexing mixin that indexes some data automatically on commit, so items can be selected / retrieved faster.
- storage backends that store wiki items

create_simple_mapping

This is a helper function to make storage setup easier when your wiki will be using only the predefined namespaces and one kind of backend (OS file system, sqla or sqlite). It creates a simple setup that defines storage backends for these namespaces:

- default - items that define wiki content
- users - personnal user content
- userprofiles - user metadata such as timezone, subscriptions, etc.
- help-en - English language help pages for editors
- help-common - media items used by help-en

For each namespace, the following structures are created:

- configure ACLs protecting the namespaces
- setup router middleware that dispatches to the namespace backends
- setup a indexing mixin that maintains an index of all namespaces

Call it as follows:

```
from moin.storage import create_simple_mapping

namespace_mapping, backend_mapping, acl_mapping = create_simple_mapping(
    uri=...,
    default_acl=dict(before=...,
                     default=...,
                     after=...,
                     hierarchic=..., ),
    users_acl=dict(before=...,
                   default=...,
                   after=...,
                   hierarchiv=False, ),
    userprofiles_acl=dict(before=...,
                          default=...,
                          after=...,
                          hierarchiv=False, ),
)
```

The **_acl* variables are dictionaries specifying the ACLs for each namespace. See the docs about ACLs.

The *uri* depends on the kind of storage backend and stores you want to use, see below. Usually it is a URL-like string in the form of:

```
stores:fs:/srv/mywiki/%(backend)s/%(kind)s
```

stores is the name of the backend, followed by a colon, followed by a store specification. *fs* is the type of the store, followed by a specification that makes sense for the fs (filesystem) store, i.e. a path with placeholders.

%(backend)s placeholder will be replaced by the namespace for the respective backend. *%(kind)s* will be replaced by 'meta' or 'data' later.

The mapping created will look like this:

Namespace	Filesystem path for storage
default	/srv/mywiki/default/
users	/srv/mywiki/users/
userprofiles	/srv/mywiki/userprofiles/
help-en	/srv/mywiki/help-en/
help-common	/srv/mywiki/help-common/

If your wiki will be using custom namespaces then you cannot use the *create_simple_mapping* method. See the *create_mapping* method in the *namespaces* section below.

protecting middleware

Features:

- protects access to lower storage layers by ACLs (Access Control Lists)
- makes sure there won't be ACL security issues, even if upper layers have bugs
- if you use create_simple_mapping, you just give the ACL parameters; the middleware will be set up automatically by moin.

routing middleware

Features:

- dispatches storage access to different backends depending on the namespace
- if you use create_simple_mapping, the router middleware will be set up automatically by moin.

indexing middleware

Features:

- maintains an index for important metadata values
- speeds up looking up / selecting items
- makes it possible for lower storage layers to be simpler
- the indexing middleware will be set up automatically by moin.

stores backend

This is a backend that ties together 2 stores to form a backend: one for meta, one for data

fs store

Features:

- stores into the filesystem
- store metadata and data into separate files/directories

Configuration:

```
from moin.storage import create_simple_mapping

data_dir = '/srv/mywiki/data'
namespace_mapping, acl_mapping = create_simple_mapping(
    uri='stores:fs:{0}/%(nsname)s/%(kind)s'.format(data_dir),
    default_acl=dict(before='WikiAdmin:read,write,create,destroy',
                     default='All:read,write,create',
                     after='', ),
    users_acl=dict(before='WikiAdmin:read,write,create,destroy',
                   default='All:read,write,create',
                   after='', ),
    # userprofiles is for internal use, contains only user metadata, access denied to all
    userprofiles_acl=dict(before='All:',
                          default='',
                          after='', ),
)
```

sqla store

Features:

- stores data into an (SQL) database / table
- can either use 1 database per store or 1 table per store and you need to give different table names then
- uses slqalchemy (without the ORM) for database abstraction
- supports multiple types of databases, for example:
  - SQLite (default, comes built into Python)
  - postgresql
  - mysql
  - and others, see sqlalchemy docs.

uri for *create_simple_mapping* looks like e.g.:

```
stores:sqla:sqlite:////srv/mywiki/data/mywiki_%(nsname)s_%(kind).db
stores:sqla:sqlite:////srv/mywiki/data/mywiki_%(nsname)s.db::%(kind)s
stores:sqla:mysql://myuser:mypassword@localhost/mywiki_%(nsname)s::%(kind)s
stores:sqla:postgres://myuser:mypassword@localhost/mywiki_%(nsname)s::%(kind)s
```

The uri part after “sqla:” is like:

```
DBURI::TABLENAME
```

Please see the sqlalchemy docs about the DBURI part.

Grant ‘myuser’ (his password: ‘mypassword’) full access to these databases.

SQLite store

Features:

- directly talks to SQLite, without using SQLAlchemy
- stores data into a SQLite database, which is a single file
- can either use 1 database per store or 1 table per store and you need to give different table names then
- can optionally compress/decompress the data using zlib: default compression level is 0, which means "do not compress"

uri for *create_simple_mapping* looks like e.g.:

```
stores:sqlite:/srv/mywiki/data/mywiki_%(nsname)s_%(kind)s.db
stores:sqlite:/srv/mywiki/data/mywiki_%(nsname)s.db::%(kind)s
stores:sqlite:/srv/mywiki/data/mywiki_%(nsname)s.db::%(kind)s::1
```

The URI part after "sqlite:" is like:

```
PATH::TABLENAME::COMPRESSION
```

It uses "::" as a separator to support Windows paths, which may have ":" after the drive letter.

memory store

Features:

- keeps everything in RAM
- if your system or the moin process crashes, all data is lost, so definitely not for production use
- mostly intended for testing
- single process only

fileserver backend

Features:

- exposes a part of the filesystem as read-only wiki items
  - files will show up as wiki items
    - with 1 revision
    - with as much metadata as can be made up from the filesystem metadata
  - directories will show up as index items, listing links to their contents

namespaces

Moin has support for multiple namespaces. You can configure them per your needs. URLs for items within a namespace are similar to sub-items.

To configure custom namespaces, find the section in wikiconfig.py that looks similar to this:

```
namespaces = {
    # maps namespace name -> backend name
    # these 3 standard namespaces are required, these have separate backends
    NAMESPACE_DEFAULT: 'default',
    NAMESPACE_USERS: 'users',
```

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```
    NAMESPACE_USERPROFILES: 'userprofiles',
    # namespaces for editor help files are optional, if unwanted delete here and in␣
↪backends and acls
    NAMESPACE_HELP_COMMON: 'help-common',  # contains media files used by other language␣
↪helps
    NAMESPACE_HELP_EN: 'help-en',  # replace this with help-de, help-ru, help-pt_BR etc.
    # define custom namespaces using the default backend
    # 'foo': 'default',
    # custom namespace with a separate backend (a wiki/data/bar directory will be␣
↪created)
    # 'bar': 'bar',
}
backends = {
    # maps backend name -> storage
    # the feature to use different storage types for each namespace is not implemented␣
↪so use None below.
    # the storage type for all backends is set in 'uri' above,
    # all values in `namespace` dict must be defined as keys in `backends` dict
    'default': None,
    'users': None,
    'userprofiles': None,
    # help namespaces are optional
    'help-common': None,
    'help-en': None,
    # required for bar namespace if defined above
    # 'bar': None,
}
acls = {
    # maps namespace name -> acl configuration dict for that namespace
    #
    # One way to customize this for large wikis is to create a TrustedEditorsGroup item␣
↪with
    # ACL = "TrustedEditorsGroup:read,write All:"
    # add a list of user names under the item's User Group metadata heading. Item content␣
↪does not matter.
    # Every user in YOUR-TRUSTED-EDITOR-GROUP will be able to add/delete users.
    #
    # most wiki data will be stored in NAMESPACE_DEFAULT
    NAMESPACE_DEFAULT: dict(
        before='YOUR-SUPER-EDITOR:read,write,create,destroy,admin',
        default='YOUR-TRUSTED-EDITORS-GROUP:read,write,create All:read',
        after='',
        hierarchic=False, ),
    # user home pages should be stored here
    NAMESPACE_USERS: dict(
        before='YOUR-SUPER-EDITOR:read,write,create,destroy,admin',
        default='YOUR-TRUSTED-EDITORS-GROUP:read,write,create All:read',
        after='',
        # True enables possibility of an admin creating ACL rules for a user's subpages
        hierarchic=True, ),
    # contains user data that must be kept secret, dis-allow access for all
    NAMESPACE_USERPROFILES: dict(
```

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```
        before='All:',
        default='',
        after='',
        hierarchic=False, ),
    # editor help namespacess are optional
    'help-common': dict(
        before='YOUR-SUPER-EDITOR:read,write,create,destroy,admin',
        default='YOUR-TRUSTED-EDITORS-GROUP:read,write,create All:read',
        after='',
        hierarchic=False, ),
    'help-en': dict(
        before='YOUR-SUPER-EDITOR:read,write,create,destroy,admin',
        default='YOUR-TRUSTED-EDITORS-GROUP:read,write,create All:read',
        after='',
        hierarchic=False, ),
}
namespace_mapping, backend_mapping, acl_mapping = create_mapping(uri, namespaces,␣
↪backends, acls, )
# define mapping of namespaces to unique root items (home pages within namespaces).
root_mapping = {'users': 'UserHome', }
# default root, use this value by default for all namespaces
default_root = 'Home'
```

Edit the above renaming or deleting the lines with foo and bar and adding the desired custom namespaces. Be sure all the names in the *namespaces* dict are also added to the *acls* dict. All of the values in the namespaces dict must be included as keys in the backends dict.

There cannot be an item with the same name as a namespace. Using the example above, if import19 is used to convert a moin 1.9 wiki to moin 2.0, then an item *foo* would be renamed to *foo/fooHome*.

5.5.10 Mail configuration

Sending Email

Moin can optionally send emails. Possible uses:

- send notifications about item changes
- enable users to reset forgotten passwords
- inform admins about runtime exceptions

You need to configure some settings before sending email can be supported:

```
# the "from:" email address
mail_from = "MoinWiki <wiki@example.org>"

# SMTP server with optional `:port` appendix, which defaults to 25
mail_smarthost = 'mail.example.org:587'

# usually you need to use SMTP AUTH at your mail_smarthost:
mail_username = "smtp_username"
mail_password = "smtp_password"
```

If either mail_from or mail_smarthost is not set, sending emails is disabled.

For CLI commands with the option '–notify' you need to configure some Flask options that are needed to build the URL for the password recovery link in the email. These options are part of the framework configuration at the end of wikiconfig:

```
# Following 3 lines are required for sending mails from CLI commands (e.g. account-
↪password)
# SERVER_NAME = "localhost:5000"  # The hostname your wiki uses
# APPLICATION_ROOT = "/"  # Base prefix of your wiki (e.g. "/wiki" if behind a prefix)
# PREFERRED_URL_SCHEME = "https"  # Protocol you want URLs to use
```

Todo

describe more moin configuration

Admin Traceback Emails

If you want to enable admins to receive Python tracebacks, you need to configure the following:

```
# list of admin emails
admin_emails = ["admin <admin@example.org>"]

# send tracebacks to admins
email_tracebacks = True
```

Please also check the logging configuration example in *contrib/logging/email*.

User Email Address Verification

At account creation time, Moin can require new users to verify their email address by clicking a link that is sent to them.

Make sure that Moin is able to send emails (see previous section) and add the following line to your configuration file to enable this feature:

```
user_email_verification = True
```

5.6 Framework Configuration

Things you may want to configure for Flask and its extensions (see their docs for details):

```
# Flask settings - see the flask documentation about their meaning - caps required
SECRET_KEY = "WARNING: set this to a unique string to create secure cookies"
DEBUG = False  # ignored by the built-in server
TESTING = False  # if True the built-in server will detect source file changes and␣
↪restart
# per https://flask.palletsprojects.com/en/stable/web-security/#set-cookie-options

SESSION_COOKIE_SECURE = False  # flask default is False
SESSION_COOKIE_HTTPONLY = True  # flask default is True
SESSION_COOKIE_SAMESITE = "Lax"  # flask default is None
# SESSION_COOKIE_NAME = 'session'
# from datetime import timedelta  # next line requires this
```

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```
# PERMANENT_SESSION_LIFETIME = timedelta(days=31)

# Set a default cache expiration time of 1 day
SEND_FILE_MAX_AGE_DEFAULT = 86400

# USE_X_SENDFILE = False
# LOGGER_NAME = 'MoinMoin'
# set TRUSTED_HOSTS to prevent host header injection (e.g. for public or intranet wikis)
TRUSTED_HOSTS = ["localhost", "127.0.0.1"]  # add your webserver hostnames

# Following 3 lines are required for sending mails from CLI commands (e.g. account-
↪password)
# SERVER_NAME = "localhost:5000"  # The hostname your wiki uses
# APPLICATION_ROOT = "/"  # Base prefix of your wiki (e.g. "/wiki" if behind a prefix)
# PREFERRED_URL_SCHEME = "https"  # Protocol you want URLs to use

# config for flask-cache
# CACHE_TYPE = 'filesystem'
# CACHE_DIR = '/path/to/flask-cache-dir'
# CACHE_DEFAULT_TIMEOUT = 300  # seconds
# CACHE_THRESHOLD = 500  # maximum number of items before it starts deleting some

# config for flask-theme
# THEME_PATHS = os.path.join(Config.instance_dir, "themes")
```

In production deployments, *TRUSTED_HOSTS* must be configured correctly. Otherwise, when generating absolute links for password reset, email verification, or similar flows, the application may trust unvalidated Host values, which can cause links in outgoing emails to point to an incorrect or attacker-controlled domain. Using a hostname in the request URL that is not in *TRUSTED_HOSTS* may lead to a "HTTP 400 - Bad Request"-Error with a message like *"Host <hostname> is not trusted."*.

For information on the most important security-related aspects of the Flask configuration, see https://flask.palletsprojects.com/en/stable/web-security.

5.7 Logging Configuration

By default, logging is configured to emit output to *stderr*. This works well for the built-in server (logs will appear in the console) or for Apache2 and similar setups (logs go to *error.log*).

Logging is highly configurable using the *logging* module from Python's standard library.

The configuration file format is described in the official documentation: https://docs.python.org/3/library/logging.config.html#configuration-file-format

Sample logging configurations can also be found in the *contrib/logging/* directory.

Logging must be configured very early during startup. There are two common ways to do this:

5.7.1 environment variable *MOINLOGGINGCONF*

You can create a custom logging configuration file and specify its path using the *MOINLOGGINGCONF* environment variable:

```
export MOINLOGGINGCONF=/absolute/path/to/logging.conf
```

This file will be loaded automatically during startup and takes precedence over all other methods.

Example *logging.conf* to enable debug-level logging:

```
[loggers]
keys=root,cspreport

[handlers]
keys=console,cspreport

[formatters]
keys=default,simple

[logger_root]
level=DEBUG
handlers=console,cspreport

[logger_cspreport]
level=INFO
handlers=cspreport
propagate=0
qualname=cspreport

[handler_console]
class=StreamHandler
level=DEBUG
formatter=default
args=(sys.stderr,)

[handler_cspreport]
class=FileHandler
level=NOTSET
formatter=simple
args=('cspreport.log', 'w')

[formatter_default]
format=%(asctime)s - %(levelname)s - %(name)s - %(message)s

[formatter_simple]
format=%(asctime)s %(message)s
datefmt=
```

5.7.2 configuration in adaptor script

Alternatively, you can load the logging configuration explicitly at the beginning of your adaptor script (e.g. *moin.wsgi*):

```
from moin import log
log.load_config('/absolute/path/to/logging.conf')
```

Make sure to use an absolute path that points to a valid logging configuration file.

Important: The logging configuration must be stored in a **separate file** — do **not** place it inside your *wikiconfig.py*.

If no configuration is provided, or if the provided configuration file cannot be loaded, Moin will fall back to a built-in default configuration, which logs to *stderr* at the *INFO* level.

5.8 Changes in MoinMoin

5.9 MoinMoin 2 Version History

Please note: It is recommended that existing wiki's be upgraded to the latest moin 1.9.x release before converting to Moin 2. However, this may not be a necessary step as the 1.9.x file structure has not changed recently.

5.9.1 Version 2.0.0b5 2026-03-24

This is an unstable beta release and is not suitable for a production wiki. Test carefully and report new issues and feature requests on the issue tracker: https://github.com/moinwiki/moin/issues

After installing this release as an upgrade on an existing Moin 2 wiki, be sure to:

- Copy or merge src/moin/config/wikiconfig.py into the root-level wikiconfig.py.
- Rebuild the Whoosh indexes:
  - moin index-destroy
  - moin index-create
  - moin index-build

Fixes

- 2026-03-19 Dump-Html: replace '+index' at the end of a href into 'index.html' (Roland Rüdenauer)
- 2026-03-19 Dump-Html: turn option –convenience-duplicates into a flag (Roland Rüdenauer)
- 2026-03-18 Update dump-html usage docs (RogerHaase)
- 2026-03-14 Dump-Html: use click.echo instead of print (Roland Rüdenauer)
- 2026-03-14 Dump-Html: render template dictionary.js and copy the resulting file into the static/js subfolder (Roland Rüdenauer)
- 2025-03-10 Dump-Html: fix issues with creating HTML dumps (Roland Rüdenauer)
- 2025-03-08 Dump-Html: split large function into smaller pieces (Roland Rüdenauer)
- 2025-03-08 Unit testing: add basic test for dump-html command (Roland Rüdenauer)
- 2026-03-16 Unit testing: add fixture 'moin_test_dir' (Roland Rüdenauer)
- 2026-03-16 Unit testing: rename getBackupPath into get_backup_path (Roland Rüdenauer)
- 2026-03-16 Unit testing: rename variables artifact_* (Roland Rüdenauer)
- 2026-03-16 Unit testing: rename fixtures artifact_dir, artifact_dir2 (Roland Rüdenauer)
- 2026-03-15 Unit testing: require pytest>=9.0.0 (Roland Rüdenauer)
- 2026-03-09 Unit testing: remove deprecated PYTHONIOENCODING from subprocess environment (Roland Rüdenauer)
- 2026-03-09 Unit testing: split the run function into run/start (Roland Rüdenauer)
- 2026-03-14 Markdown-In: prevent duplicate flash messages. (Günter Milde)
- 2026-03-12 Markdown-In: further simplify postproc_text() (Günter Milde)
- 2026-03-14 HTML-In: support <*center*> tag. Simplify visit_xhtml_list() (Günter Milde)
- 2025-10-27 Improve performance by caching the result of searching the file system for theme template files. (Roland Rüdenauer)

- 2026-03-12 HTML-In, Markdown-In: do not fail at an <*a*> without href attribute. (Günter Milde)
- 2026-03-11 Markdown-In: simplify *postproc_text()*. (Günter Milde)
- 2026-03-06 Markdown-In: Fix handling of HTML markup. (Günter Milde)
- 2026-03-06 Markdown-In: add/sort test samples. (Günter Milde)
- 2026-03-02 Markdown-In: Update docstrings and comments, add type hints. (Günter Milde)
- 2026-03-09 Unit testing: fix cond. expression in get_dirs (Roland Rüdenauer)
- 2026-03-09 Quickinstall: change the default virtual environment path (Roland Rüdenauer)
- 2026-03-08 Switch to HTMLWriter as default in conv_serialize to comply with HTML5 (UlrichB22)
- 2026-03-06 moinwiki_in.py: ignore unbalanced size element (UlrichB22)
- 2026-02-14 Add error handling for top_append_ifnotempty and moinwiki_in converter (UlrichB22)
- 2026-03-06 Templates: Trailing slash on void elements has no effect and interacts badly with unquoted attribute values (Roland Rüdenauer)
- 2026-03-06 Templates: fix warning: A table row was 7 columns wide and exceeded the column count established by the first row (6) (Roland Rüdenauer)
- 2026-03-06 dump-html: log the item name in case page rendering runs into an exception (Roland Rüdenauer)
- 2026-03-06 Quickinstall: turn argument 'target' of ViewLogFile into a positional argument (Roland Rüdenauer)
- 2025-03-11 dump-html: get location of wiki_local folder from the moin configuration settings (Roland Rüdenauer)
- 2026-03-06 Improve layout of sidebar (Christoph Klassen)
- 2026-03-05 Quickinstall: use command keys instead of string literals (Roland Rüdenauer)
- 2026-03-05 Quickinstall: fix issues found in code review (Roland Rüdenauer)
- 2026-03-04 Quickinstall: default to execute quick installation command after new clone and providing no arguments (Roland Rüdenauer)
- 2026-03-04 Cleanup quickinstall.py source code (Roland Rüdenauer)
- 2026-03-03 Templates: show itemview links when viewing 'subitems' (+index) (Roland Rüdenauer)
- 2026-03-02 Use sys.version_info instead of sys.hexversion (Roland Rüdenauer)
- 2026-03-02 README: add build status badges (Roland Rüdenauer)
- 2026-03-02 Update requirements for building documentation (Roland Rüdenauer)
- 2026-03-02 CI: use Python 3.12 to build documentation (Roland Rüdenauer)
- 2026-02-28 Update dependencies (Roland Rüdenauer)
- 2026-02-28 Fix name collision (Roland Rüdenauer)
- 2026-02-28 Type hints: remove no longer required casts (Roland Rüdenauer)
- 2026-02-27 Move import DefaultConfig to top of app.py (Roland Rüdenauer)
- 2026-02-27 Type hints: add type hints for globals app, flaskg (Roland Rüdenauer)
- 2026-02-27 Markdown-In: Stop placing spurious wrappers around blocks with inline HTML. (Günter Milde)
- 2025-03-06 Use class derived from flask.Flask as moin application class (Roland Rüdenauer)
- 2026-02-27 Add 'mypy' tox environment. (Roland Rüdenauer)

- 2026-02-26 Markdown-In: Handle more HTML tags with embedded Markdown markup. (Günter Milde)
- 2026-02-26 Markdown-In: Fix handling of inline tag attributes. (Günter Milde)
- 2026-02-26 Markdown-In: simplify *_create_element_for_tag()*. (Günter Milde)
- 2026-02-27 Markdown-In: Update/Fix tests. (Günter Milde)
- 2026-02-26 Prevent jumping width of sidebar (Christoph Klassen)
- 2026-02-26 Show aliases only on hovering (Christoph Klassen)
- 2026-02-26 Re-add borders for tables (Christoph Klassen)
- 2026-02-25 Markdown-In: samples for failing HTML with embedded Markup. (Günter Milde)
- 2026-02-25 Markdown-In: Test ignored HTML tags. (Günter Milde)
- 2026-02-24 Markdown-In: test update. (Günter Milde)
- 2026-02-24 Markdown-In: small code simplification. (Günter Milde)
- 2026-02-17 Fix markdown parser crash on emphasized text inside HTML tags (#1838) (Apoorv Darshan)
- 2026-02-23 wikiutil.py: handle NotFound exception for invalid url path (UlrichB22)
- 2026-02-23 Wiki config: remove unsed config options group "Storage Namespaces" (Roland Rüdenauer)
- 2026-02-23 Make decode_names a class attribute (Roland Rüdenauer)
- 2026-02-22 Refactoring: split moin flask app configuration into separate functions (Roland Rüdenauer)
- 2026-02-22 Wiki config: fix declaration of configuration parameters (Roland Rüdenauer)
- 2026-02-22 Wiki config: declare and initialize field "custom_css_path" (Roland Rüdenauer)
- 2026-02-22 Wiki config: add new field "wiki_local_dir" (Roland Rüdenauer)
- 2026-02-22 Turn IndexStorageConfig into a NamedTuple (Roland Rüdenauer)
- 2026-02-22 Unit testing: use PasswordHasherConfig in wikiconfig.py (Roland Rüdenauer)
- 2026-02-22 Set wiki local path in wikiconfig.py (Roland Rüdenauer)
- 2026-02-22 Type hints: correct type IndexStorageConfig (Roland Rüdenauer)
- 2026-02-22 Quickinstall: "make ./m css" work again using the setup prepared in contrib/css-build (Roland Rüdenauer)
- 2026-02-21 jquery 4 breaks Global Index/index_action.js "$.trim" #2165 (RogerHaase)
- 2026-01-22 Simplify storage backend class hierarchy and add more type hints to moin configuration classes (Roland Rüdenauer)
- 2026-02-20 Type hints: correct type hint of split_namespace (Roland Rüdenauer)
- 2026-02-20 Add mypy configuration to pyproject.toml (Roland Rüdenauer)
- 2026-02-19 Cleanup file upload on index page (Roland Rüdenauer)
- 2026-02-19 Index form: fix wrong label texts generated for content-type filter (Roland Rüdenauer)
- 2026-02-09 Improve moin.log.load_config (Roland Rüdenauer)
- 2026-02-17 Fix: Set background-color to transparent for Pygments classes in dark mode (srikaaviya)
- 2026-02-17 Remove unused XStatic packages also from dump_html code (Roland Rüdenauer)
- 2026-02-17 Remove unused XStatic packages (Roland Rüdenauer)

- 2026-02-17 Fix errors in jQuery File Upload caused by removed jQuery 4.X functions/methods (Roland Rüdenauer)
- 2026-02-17 Bundle the blueimp jQuery File Upload plugin version 10.32.0 (Roland Rüdenauer)
- 2026-02-17 Bundle fork of the jquery tablesorter plugin working with jQuery 4 (Roland Rüdenauer)
- 2026-02-16 Do not convert smileys inside “kbd” and “sample” elements. (Günter Milde)
- 2026-02-15 minor css changes to improve long search form and user settings > appearance (RogerHaase)
- 2026-02-14 comment out several checkboxes that are no longer used (RogerHaase)
- 2026-02-13 adding .js files to static/js breaks “/m coding-std” fixes #2159 (RogerHaase)
- 2026-02-10 Config data cache: rename field ‘pwd_context’ into ‘pwd_hasher’ (Roland Rüdenauer)
- 2026-02-10 url_for_item: require keyword arguments after the first argument ‘item_name’ (Roland Rüdenauer)
- 2026-02-12 Smiley converter: prevent smiley replacment inside of a literal element (Roland Rüdenauer)
- 2026-02-13 Smiley converter tests: add test for smiley gets ignored inside a literal element (Roland Rüdenauer)
- 2026-02-13 Smiley converter tests: fix tests for smiley ignored in code element (Roland Rüdenauer)
- 2026-02-11 Apply some recommendations from stylelint for CSS files (UlrichB22)
- 2026-02-11 Replace use of no longer available pkg_resources.get_distribution using importlib (Roland Rüdenauer)
- 2026-02-09 Format editor.js (Roland Rüdenauer)
- 2026-02-08 Support editing Markdown content using CKEditor5 (Roland Rüdenauer)
- 2026-02-09 Add safe_markup() as a wrapper around markupsafe.Markup. This avoids repeated Bandit B704 warnings. (UlrichB22)
- 2026-02-09 Fix for Python 3.10: use LiteralString from package typing_extensions (Roland Rüdenauer)
- 2026-02-08 Improve type hints for class moin.items.Content (Roland Rüdenauer)
- 2026-02-08 Remove dependency XStatic-Bootstrap (Roland Rüdenauer)
- 2026-02-08 Bundle bootstrap.min.js form Bootstrap 5.3.8 (Roland Rüdenauer)
- 2026-02-08 Limit black to version 26.x (UlrichB22)
- 2026-02-08 Run black 26.1 on more files (UlrichB22)
- 2026-02-08 Run black 26.1 - the multiline_string_handling makes some strings more compact (UlrichB22)
- 2026-02-08 Raise black version to 26.1 (UlrichB22)
- 2026-02-07 remove _valued_label workaround for flatland radio/checkbox bug #2114 (RogerHaase)
- 2026-02-07 Fix: Added dark mode Pygments syntax highlighting for topside theme (srikaaviya)
- 2026-01-27 Converters: Update conversion of “monospace” inline elements. (Günter Milde)
- 2026-02-05 Add page creation timing data to the page footer (Roland Rüdenauer)
- 2026-02-06 Fix Clock.stop(): remove the first element of the timer’s entries, not the last one (Roland Rüdenauer)
- 2026-02-05 Theming: handle the case where a user has no theme configured without logging a warning message (Roland Rüdenauer)
- 2026-01-29 Markdown-out: Use HTML tag instead of trailing spaces for hard line break. (Günter Milde)
- 2026-01-28 Markdown tests: Simplify base tests in Markdown round-trip (Günter Milde)

- 2026-01-28 Markdown-out: reduce redundant code, remove dead code. (Günter Milde)
- 2026-02-02 Update pre-commit hooks (Roland Rüdenauer)
- 2026-02-03 Update jQuery to version 4.0.0 (Roland Rüdenauer)
- 2026-02-03 Exclude some files from pre-commit hooks (Roland Rüdenauer)
- 2026-02-02 Revert pyproject.toml to match upstream master (srikaaviya)
- 2026-02-01 Fix: Handle binary file uploads in diff view and improve error messaging (srikaaviya)
- 2026-01-31 Adjust moin editor help links (Roland Rüdenauer)
- 2026-01-25 Bundle version 47.4.0 of CKEditor5 (Roland Rüdenauer)
- 2026-01-24 Converters: Use "moin-big" and "moin-small" class values for font-size change. (Günter Milde)
- 2026-01-26 Markdown-out: Add supported attributes to HTML inline tags. (Günter Milde)
- 2026-01-25 Remove unused function wikiutil.drawing2fname() (Günter Milde)
- 2026-01-25 Remove unused function wikiutil.get_hostname() (Günter Milde)
- 2026-01-25 Remove unused function wikiutil.split_ancor() (Günter Milde)
- 2026-01-25 Remove unused function wikiutil.clean_input() (Günter Milde)
- 2026-01-25 Remove unused function wikiutil.normalize_pagename() (Günter Milde)
- 2026-01-24 HTML in/out: support the <*aside*> element. (Günter Milde)
- 2026-01-24 Converters: Use "html-tag" attribute for HTML tags without matching Moinpage tag. (Günter Milde)
- 2026-01-23 HTML in: simplify "br" conversion, add some comments. (Günter Milde)
- 2026-01-23 Converters: Use moin_page.sub and moin_page.sup for sub- and superscript. (Günter Milde)
- 2025-04-03 Fix issues: a form field element should have an id or name attribute (Roland Rüdenauer)
- 2026-01-09 Bundle version 3.7.1 of jQuery (Roland Rüdenauer)
- 2025-04-03 Bundle version 6.0.1 of the jQuery autosize plugin (Roland Rüdenauer)
- 2026-01-23 Use Flatland HTML generator mode for HTML5-compliant markup (UlrichB22)
- 2026-01-22 Small documentation fixes. (Günter Milde)
- 2026-01-23 Fix method Item.destroy_revision (see discussion in #2103) (Roland Rüdenauer)
- 2026-01-23 HTML in/out: Graceful degradation for <*mark*>. (Günter Milde)
- 2026-01-22 Markdown out: Don't use obsolete tag <*strike*>, keep "editorial tags" distinct. (Günter Milde)
- 2026-01-21 HTML in/out: Graceful degradation for markup rendered in italics. (Günter Milde)
- 2026-01-21 HTML in/out: Fix name mixup for inline quote element. (Günter Milde)
- 2026-01-22 Restore itemid and tags of rst.meta and markdown.meta help items. (Günter Milde)
- 2026-01-21 Small fixes for the Markdown and rST help pages. (Günter Milde)
- 2026-01-21 Tell Git to end text lines with just LF also on Windows. (Günter Milde)
- 2026-01-21 fix(search): add create page link when no results found (srikaaviya)
- 2026-01-20 Fix: Pass display_name to create_user in CLI (srikaaviya)
- 2026-01-20 Move middleware exception classes into moin.storage.middleware.exceptions (Roland Rüdenauer)

- 2026-01-20 Move wiki naming related classes and functions into src/moin/utils/names.py (Roland Rüdenauer)
- 2025-10-09 Don't drop attributes in HTML-export of "admonitions". (Günter Milde)
- 2026-01-18 Mark moin help files as binary content (Roland Rüdenauer)
- 2026-01-18 Parameter overwrite in cli_PutItem/PutItem has type bool (Roland Rüdenauer)
- 2026-01-18 Adapt CLI unit tests to new behavior of the backend (Roland Rüdenauer)
- 2026-01-18 Adapt unit tests of storage backends to new backend behavior (Roland Rüdenauer)
- 2026-01-18 Always compute size and hash value when storing an item in the moin backend. (Roland Rüdenauer)
- 2026-01-18 Put item name in validation error (Roland Rüdenauer)
- 2026-01-18 Use the click CliRunner to allow easy debugging of unit tested code (Roland Rüdenauer)
- 2026-01-18 Fix size and hash values in src/moin/help/welcome/users-Home.meta (Roland Rüdenauer)
- 2026-01-18 Correct spelling in test code comments (Roland Rüdenauer)
- 2026-01-17 Always write data and meta in MutableBackend.store(). (Roland Rüdenauer)
- 2026-01-17 Improve readability of ReduceRevisions (Roland Rüdenauer)
- 2026-01-17 ReduceRevisions: turn option '–test' into a flag (Roland Rüdenauer)
- 2026-01-17 Simplify MutableBackend._store_meta (Roland Rüdenauer)
- 2026-01-17 Remove old 'XXX Idea: …' comments from storage code (Roland Rüdenauer)
- 2026-01-11 Item preview: add missing check if contenttype is not None (Roland Rüdenauer)
- 2026-01-11 Function flash() expecting string argument (not LazyString) (Roland Rüdenauer)
- 2026-01-11 Correct type hints of acl_validate and resolve type checker warnings (Roland Rüdenauer)
- 2026-01-11 Tests: adapt moin.utils.registry (Roland Rüdenauer)
- 2025-12-11 Add type hints to Item/Content/Converter registration code. (Roland Rüdenauer)
- 2026-01-18 rST in: Support custom "text-level semantics" roles based on "literal". (Günter Milde)
- 2025-12-26 Save/restore HTML tag info for more elements. (Günter Milde)
- 2026-01-17 CSS fix: No border around inline code. (Günter Milde)
- 2026-01-11 Switch to new Static-Bootstrap 5.3.8.0 release (Roland Rüdenauer)
- 2026-01-11 reset timestamp in 'moin maint-validate-metadata' (UlrichB22)
- 2026-01-11 Add types-docutils to development requirements (Roland Rüdenauer)
- 2026-01-11 Add .editorconfig file (Roland Rüdenauer)
- 2026-01-11 account-password cli: fix text-from-file option and add error handling (UlrichB22)
- 2026-01-10 Run pre-commit hooks on all files. (Günter Milde)
- 2026-01-10 Don't use trailing whitespace in Markdown help. (Günter Milde)
- 2026-01-10 fix comment for setuptools dependency, see #2096 (Thomas Waldmann)
- 2026-01-10 remove passlib requirement, fixes #2096 (Thomas Waldmann)
- 2026-01-09 Basic theme: regenerate 'src/moin/themes/basic/static/css/theme.css' (Roland Rüdenauer)
- 2026-01-09 Basic theme: change theme colors to improve contrast (Roland Rüdenauer)
- 2026-01-09 Basic theme: regenerate 'src/moin/themes/basic/static/css/theme.css' (Roland Rüdenauer)

- 2026-01-09 Migrate vom Bootstrap version 4 to 5 (Roland Rüdenauer)
- 2026-01-08 Better sample text for "address" in converter tests. (Günter Milde)
- 2026-01-07 HTML out: restore elements represented by a special html:class value. (Günter Milde)
- 2025-12-22 Add basic theme compilation support contrib/css-build (Roland Rüdenauer)
- 2025-12-22 Use Bootstrap static resource files (Roland Rüdenauer)
- 2025-12-22 Add Bootstrap v5.3.8 minified JS file as static resource (Roland Rüdenauer)
- 2025-12-12 rST in: Update handling of inline text markup. (Günter Milde)
- 2025-11-25 Add end-of-line and end-of-file fixers to pre-commit configuration. (Günter Milde)
- 2026-01-01 HTML in: Fix conversion of "acronym" and "address" elements. (Günter Milde)
- 2026-01-05 Improve error handling for account-password cli command (UlrichB22)
- 2026-01-05 Fix './moin dump-html' using theme 'basic' (Roland Rüdenauer)
- 2025-12-22 Basic theme: apply changes made in theme.css to the .scss file (Roland Rüdenauer)
- 2026-01-02 CSS: Fix styling of preformatted blocks and inline code. (Günter Milde)
- 2026-01-02 Fix mail delivery in CLI command 'moin account-password –notify' (UlrichB22)
- 2025-12-31 New Wiki help item "help-en/autoscroll". (Günter Milde)
- 2025-12-31 Suggestion for a more user-friendly Wiki Help Home. (Günter Milde)
- 2025-12-28 Less less code duplication in *markdown_in* converter. (Günter Milde)
- 2025-12-31 rST in: update tests. (Günter Milde)
- 2025-12-30 rST in: fix side-effect of rST "sidebar" styling. (Günter Milde)
- 2025-12-30 rST docs: Synchronise sources. (Günter Milde)
- 2025-12-30 rST docs: Revise "line-block" section. (Günter Milde)
- 2025-12-11 rST docs: Document semantic markup roles added by <*html-roles.txt*>. (Günter Milde)
- 2025-12-11 rST docs: Document the "include" directive. (Günter Milde)
- 2025-12-11 rST docs: Document standard "text roles". (Günter Milde)
- 2025-12-08 rST docs: Small fixes. (Günter Milde)
- 2025-12-28 HTML in: Simplify and fix typos. (Günter Milde)
- 2025-12-26 Small fixes for HTML-in. (Günter Milde)
- 2025-12-11 rST in: (re)enable inclusion of rST standard definition files. (Günter Milde)
- 2025-12-20 Require keyword arguments in Item.create for any argument besides the item name (Roland Rüdenauer)
- 2025-12-16 Add more type hints and fix a few minor issues (Roland Rüdenauer)
- 2025-12-14 Import 'Self' from typing_extensions (backport for Python < 3.11) (Roland Rüdenauer)
- 2025-12-13 Focus theme: extend layout.html from base.html (Roland Rüdenauer)
- 2025-12-13 Item modification: disable preview for binary content (might be refined later) (Roland Rüdenauer)
- 2025-12-13 Item modification: prevent crashes when preparing view data for preview rendering (Roland Rüdenauer)
- 2025-12-13 Edit locking: apply data encoding for draft creation only to Text content (Roland Rüdenauer)

- 2025-12-13 “everything” converter: deal with ‘rev’ parameter values not of type Revision (Roland Rüdenauer)
- 2025-12-13 Add more type hints (Roland Rüdenauer)
- 2025-12-20 sendmail: improve logging and error handling (UlrichB22)
- 2025-12-12 rST in: Use class interface for “parser” directive. (Günter Milde)
- 2025-12-12 rST in: Use class interface for “contents” directive. (Günter Milde)
- 2025-12-12 rST in: Use class interface for “macro” directive. (Günter Milde)
- 2025-12-11 rST in: Use class interface for “include” directive. (Günter Milde)
- 2025-12-18 Use attribute syntax instead of *xlink(“href”)*. (Günter Milde)
- 2025-12-18 Unit tests: add addional mime type test patterns (Roland Rüdenauer)
- 2025-12-18 Async file upload endpoint: fix content type detection (+jfu-server) (Roland Rüdenauer)
- 2025-12-18 Test/fix handling of URIs with schemes that are not in the whitelist. (Günter Milde)
- 2025-12-17 Correct code comments for tar content items (Roland Rüdenauer)
- 2025-12-17 Async file upload endpoint: fix content type detection (+jfu-server) (Roland Rüdenauer)
- 2025-12-17 Add mime type sanitizing mappings for “application/x-gzip” and “application/x-zip-compressed” (Roland Rüdenauer)
- 2025-12-17 Use SMPT_SSL if the SMTP port is 465 (UlrichB22)
- 2025-12-16 remove incomplete mail_sendmail cli feature (UlrichB22)
- 2025-12-16 add timeout to smtplib.SMPT call (UlrichB22)
- 2025-12-15 Fix the sitename substitution in the subject of the password recovery mail (UlrichB22)
- 2025-12-10 rST in: Ignore “meta” directives and “raw” content in “foreign” format. (Günter Milde)
- 2025-12-11 rST in: Support standard “interpreted text roles”. (Günter Milde)
- 2025-12-11 rST in: Transfer “class” and “ids” attributes for more nodes. (Günter Milde)
- 2025-12-11 rST in: Update/Fix some comments and docstrings. (Günter Milde)
- 2025-12-11 rST in: Sort test samples. (Günter Milde)
- 2025-12-10 rST in: More concise test samples. (Günter Milde)
- 2025-12-13 Add support for WebP images (Roland Rüdenauer)
- 2025-12-13 Adjust for SpooledTemporaryFile not deriving from IOBase in Python versions before 3.11 (Roland Rüdenauer)
- 2025-12-11 Fix handling of form data in +modify request. (Roland Rüdenauer)
- 2025-12-09 Adapt test of “html_in”-converter to new handling of “off-list” URI schemes. (Günter Milde)
- 2025-12-08 Unify handling of URIs with schemes that are not in the whitelist. (Günter Milde)
- 2025-12-08 rST in: fixes for transitions and line-blocks, test sidebar fix. (Günter Milde)
- 2025-12-08 rST docs: Synchronise sources. (Günter Milde)
- 2025-12-08 rST docs: Update “hyperlinks” section. (Günter Milde)
- 2025-12-07 rST docs: Document recent fixes (Günter Milde)
- 2025-12-07 rST docs: New section “preformatted text”. (Günter Milde)
- 2025-12-07 rST docs: Update “blockquotes” section. (Günter Milde)

- 2025-12-05 rST docs: Update “comments” section. (Günter Milde)
- 2025-12-05 rST docs: Document rubrics, sidebars, and topics. (Günter Milde)
- 2025-12-07 Override the “read the docs” “nowrap” rule. (Günter Milde)
- 2025-12-05 rST docs: Improve readability. (Günter Milde)
- 2025-12-04 rST in: Fix citation label, pass CSS classes to sidebar. (Günter Milde)
- 2025-12-03 rST-in: Fix field-list, option-list, and docinfo. (Günter Milde)
- 2025-11-29 rST-in: Fix syntax highlighting. (Günter Milde)
- 2025-12-02 FileNameValidator: apply recommended code enhancements (UlrichB22)
- 2025-12-01 Replace user option CSS_URL with CSS_FILE to avoid security vulnerabilities (UlrichB22)
- 2025-11-29 UI: clear any currently displayed flash messages before sending form data to the moin backend (Roland Rüdenauer)
- 2025-11-29 Basic theme: adjust styling of moin error messages (Roland Rüdenauer)
- 2025-11-27 Improve display of moin form error messages (Roland Rüdenauer)
- 2025-11-27 Fix typo in code comment (Roland Rüdenauer)
- 2025-11-27 Adapt markdown-in converter test. (Günter Milde)
- 2025-11-27 Save handling of unknown URI schemes in Markdown. (Günter Milde)
- 2025-11-26 rST in: Fix subtitles. (Günter Milde)
- 2025-11-25 Fix informal title, support rubric, sidebar, and topic. (Günter Milde)
- 2025-10-01 Clarify naming in “rst_in” converter. (Günter Milde)
- 2025-11-25 Saving user settings: avoid displaying the same flash message multiple times (Roland Rüdenauer)
- 2025-11-25 common.js: no page reload if the backend reports back errors in saving user settings (Roland Rüdenauer)
- 2025-11-25 Sort and document meaning of *constants.misc.URI_SCHEMES*. (Günter Milde)
- 2025-11-25 rST docs: small fixes, update help-en/rst. (Günter Milde)
- 2025-11-25 rST docs: Refactor “Hyperlinks” section. (Günter Milde)
- 2025-11-25 rST docs: Update table documentation. (Günter Milde)
- 2025-11-21 rST docs: Update Transitions (Thematic Breaks) and Backslash Escapes. (Günter Milde)
- 2025-11-19 rST docs: Examples for custom interpreted text roles. (Günter Milde)
- 2025-11-18 rST docs: Examples for all “admonition” types. (Günter Milde)
- 2025-11-17 rST docs: Update list documentation. (Günter Milde)
- 2025-11-17 rST doc fixups. (Günter Milde)
- 2025-11-24 add timezone_default to config/wikiconfig.py; fixes #1887 (RogerHaase)
- 2025-11-23 Use new utils methods to detect change in the tags of a wiki item. (Roland Rüdenauer)
- 2025-11-23 Detect a change in the names of an item when checking for changed metadata. (Roland Rüdenauer)
- 2025-11-20 Replace unmaintained passlib with argon2-cffi (Thomas Waldmann)
- 2025-11-20 fix crash on any python >= 3.12 due to missing pkg_resources (Thomas Waldmann)
- 2025-11-18 Bandit check in CI workflow: raise codeql-action to v4 (UlrichB22)

- 2025-11-18 Fix crash caused by use of unbound local variables (Roland Rüdenauer)
- 2025-11-18 CSS styles: use literal em-dash for rST quote attribution. (Günter Milde)
- 2025-11-17 Move development docs to "development" chapter fixes #906 (RogerHaase)
- 2025-11-12 Apply changes to the metadata validation functions (Roland Rüdenauer)
- 2025-11-11 Convert validation functions into Validator classes (don't change the actual validation code) (Roland Rüdenauer)
- 2025-11-11 test_indexing: add comment on possible problem with mtime resultion (Roland Rüdenauer)
- 2025-11-11 test_protecting: add missing charset when storing xml document (Roland Rüdenauer)
- 2025-11-11 Update indexing test cases (Roland Rüdenauer)
- 2025-11-10 store_revision: always use strict validation (Roland Rüdenauer)
- 2025-11-10 store_revision: add missing validation of new item metadata (Roland Rüdenauer)
- 2025-11-16 update development.rst, remove virtualenv, add sass workaround, etc. (RogerHaase)
- 2025-11-08 rST in: Support "classes" attribute and "custom interpreted text roles". (Günter Milde)
- 2025-11-10 store_revision: make sure we get a new timestamp for untrusted item changes (Roland Rüdenauer)
- 2025-11-10 Improve readability of indexing middleware (Roland Rüdenauer)
- 2025-11-10 moin.storage: add more type hints (Roland Rüdenauer)
- 2025-11-10 pytest: ignore folder _ui_tests (Roland Rüdenauer)
- 2025-11-09 Update "theme.css" of the basic theme after generating CSS files using sass. (Roland Rüdenauer)
- 2025-11-09 Revert the basic theme CSS and add a "float-right" style to the download button in the template file modify.html instead. (Roland Rüdenauer)
- 2025-11-09 Remove the basic theme CSS source map file. (Roland Rüdenauer)
- 2025-11-09 Workaround for bug in Sphinx LaTeX writer (Günter Milde)
- 2025-11-09 CI: try to build the docs, fixes #2039 (Thomas Waldmann)
- 2025-11-09 changes: fix rst syntax (Thomas Waldmann)
- 2025-10-31 Improve existing test code (Roland Rüdenauer)
- 2025-11-07 Fix issue 2031: 'Config' object has no attribute 'pkg' (Roland Rüdenauer)
- 2025-11-07 fix authorship (Thomas Waldmann)
- 2025-11-07 CHANGES: fix typos and grammar (Thomas Waldmann)

5.9.2 Version 2.0.0b4 2025-11-07

This is an unstable beta release and is not suitable for a production wiki. Test carefully and report new issues and feature requests on the issue tracker: https://github.com/moinwiki/moin/issues

After installing this release as an upgrade on an existing Moin 2 wiki, be sure to:

- Copy or merge src/moin/config/wikiconfig.py into the root-level wikiconfig.py.
- Rebuild the Whoosh indexes:
  - moin index-destroy
  - moin index-create
  - moin index-build

Fixes

- 2025-11-07 Replace table style attributes in help-en to avoid CSP warnings (UlrichB22)
- 2025-11-06 Update docs/changes/CHANGES for 2.0.0b4 release (RogerHaase)
- 2025-11-06 rST in: Handle <*problematic*> elements. (Günter Milde)
- 2025-11-05 rST in: activate default "transforms". (Günter Milde)
- 2025-11-05 rST in: More informative system messages. (Günter Milde)
- 2025-11-05 rST in: support ordered lists with custom start value. (Günter Milde)
- 2025-11-04 rST in: support custom "text roles". (Günter Milde)
- 2025-11-04 Feature: Add dark theme as per system settings (UlrichB22)
- 2025-11-02 rST documentation: do not link to nonexistent item. (Günter Milde)
- 2025-11-01 rST in: Fix non-section titles (Günter Milde)
- 2025-11-01 Replace white_clouds with gray background (UlrichB22)
- 2025-10-30 Add test case for user login POST request (Roland Rüdenauer)
- 2025-10-28 Add test case for page modification with preview (POST request) (Roland Rüdenauer)
- 2025-10-29 rST in: Keep leading slash in wiki-local references (Günter Milde)
- 2025-10-28 Set wikiconfig_dir and instance_dir in wikiconfig.py used for testing (Roland Rüdenauer)
- 2025-10-28 Remove workarounds in test code dealing with Werkzeug versions < 3.0.0 (Roland Rüdenauer)
- 2025-10-23 Add support for Python 3.14 (Roland Rüdenauer)
- 2025-10-23 Remove support for Python 3.9 (Roland Rüdenauer)
- 2025-06-02 Synchronize rST parser documentation files (Günter Milde)
- 2025-10-11 Improve moin_dir setting to fix tox tests (UlrichB22)
- 2025-10-01 Fix handling of target elements in rST; fixes #1680 (Günter Milde)
- 2025-10-09 Add Swedish translation (Daniel Nylander)
- 2025-10-07 Pass variable 'subitem_target' instead of 'item_name' into search templates (Roland Rüdenauer)
- 2025-10-07 Fix code and Jinja templates accessing the no longer existing wiki configuration setting 'item_root' (Roland Rüdenauer)
- 2025-10-05 Remove unused methods (Protected)Revision.set_context (Roland Rüdenauer)
- 2025-04-25 Set item_type and rev_number for userprofile items (Roland Rüdenauer)
- 2025-10-01 Change get_document to a method of IndexingMiddleware (UlrichB22)
- 2025-10-01 Rename get_doc to get_document and other code improvements (UlrichB22)
- 2025-10-01 rST converter: Fix handling of internal cross-references (Günter Milde)
- 2025-10-01 Add test cases for hyperlinks to sections in reStructuredText (Günter Milde)
- 2025-09-28 Babel: Move config to pyproject.toml (Thomas Waldmann)
- 2025-09-27 Rename and rework get_indexer function (UlrichB22)
- 2025-09-24 Modify form: Make loading content from file upload work (Roland Rüdenauer)
- 2025-09-24 Basic theme fixes - Show "Load Draft" button on modify form if a draft is available (Roland Rüdenauer)

- 2025-09-23 Fix help-en meta using maint-validate-metadata (UlrichB22)
- 2025-09-23 Fix unexpected keyword argument 'fqname' when running +feed/atom; fixes #1990 (RogerHaase)
- 2025-09-12 Remove inline styles from Basic theme #1816 (RogerHaase)
- 2025-09-11 Improve User Accounts documentation (RogerHaase)
- 2025-09-11 mediawiki.rst: Fix table markup (Thomas Waldmann)
- 2025-09-10 Correct CSP report log path used in before_wiki (add leading slash) (Roland Rüdenauer)
- 2025-09-05 "Moin Wiki" -> "MoinWiki" when referring to markup type (Thomas Waldmann)
- 2025-09-05 search.rst: Fix table markup/width (Thomas Waldmann)
- 2025-09-05 index.rst: Re-add bold, remove mm2 (Thomas Waldmann)
- 2025-09-05 Docs: Fix typos and grammar (Junie AI)
- 2025-09-03 Remove inline styles from index.html and forms.html #1816 (RogerHaase)
- 2025-09-01 Fix invalid escape sequence '' (Thomas Waldmann)
- 2025-08-29 Fix typos and grammar (Thomas Waldmann)
- 2025-08-29 Bandit: Exclude scripts/ and contrib/loadtesting/ (Thomas Waldmann)
- 2025-08-19 Fix CSP warning on items containing TOC macro; fixes #1976 (RogerHaase)
- 2025-07-20 Support Python 3.13 (Thomas Waldmann)
- 2025-08-17 HTML error on TitleIndex macro; fixes #1979 (RogerHaase)
- 2025-08-13 Suppress printing of slideshow start button (UlrichB22)
- 2025-08-12 Add buffer reset to Whoosh BufferFile.close (UlrichB22)
- 2025-08-11 Add custom.css feature (UlrichB22)
- 2025-08-07 get_open_wiki_files: Add file mode to output for debugging (UlrichB22)
- 2025-08-04 Fix search not supporting namespaces; fixes #1907 (RogerHaase)
- 2025-08-04 Fix load draft in focus theme (Christoph Klassen)
- 2025-08-04 Fix empty lines in diff in focus theme (Christoph Klassen)
- 2025-07-30 Log only invalid metadata properties (Roland Rüdenauer)
- 2025-07-30 Fix logging of invalid element (empty log output before) (Roland Rüdenauer)
- 2025-07-13 Metadata revision already set in MutableBackend._store_meta (Roland Rüdenauer)
- 2025-07-28 test_indexing.py: Fix code dumping items (Roland Rüdenauer)
- 2025-07-25 Configuration option for markdown extensions (Sebastian Wagner)
- 2025-07-20 Use SPDX license metadata in pyproject.toml (Thomas Waldmann)
- 2025-07-13 Make use of metadata key constants (Roland Rüdenauer)
- 2025-07-13 Raise the year of copyright for RTD (UlrichB22)
- 2025-07-02 Fix failing test cases (Roland Rüdenauer)
- 2025-07-02 Fix errors caused by importing 'override' (Roland Rüdenauer)
- 2025-07-02 Replace use of Python 3.12 'type' statement with PEP 613 TypeAlias declaration (Roland Rüdenauer)
- 2025-06-02 Add more type hints (Roland Rüdenauer)

- 2025-07-01 WikiLinkAnalyzer: Allow colon in wiki.local page name (Roland Rüdenauer)
- 2025-05-13 Fix issue #1874: Correct handling of wiki item links (Roland Rüdenauer)
- 2025-06-20 Moinwiki converter: Add additional test cases (Roland Rüdenauer)
- 2025-06-20 Moinwiki converter: Pop top of stack for closing strikethrough character sequence (Roland Rüdenauer)
- 2025-06-20 Moinwiki converter: Make definition lists have lowest precedence in indent_re (Roland Rüdenauer)
- 2025-06-18 Prevent IndexError in search when wiki contains deleted items #1885 (RogerHaase)
- 2025-06-15 Update favicon.ico (Roland Rüdenauer)
- 2025-06-15 Update docs for searching an item's subitems #1885 (RogerHaase)
- 2025-06-15 Topside: Fix footer width on small screen (UlrichB22)
- 2025-06-14 Remove show.html template from theme 'focus' (UlrichB22)
- 2025-06-13 Fix error in test_views.py #1885 (RogerHaase)
- 2025-06-11 Change focus theme layout.html to load main.js after other scripts (RogerHaase)
- 2025-06-06 Move slideshow inline JS script to a separate file (UlrichB22)
- 2025-06-05 Remove leftover class definition from rST converter (Günter Milde)
- 2025-06-04 Remove inline styles and onclick from item_acl_report.html #1816 (RogerHaase)
- 2025-04-05 Convert Basic theme from Bootstrap 3 to Bootstrap 4 and use Sass instead of lessc (fixes #1770) (Roland Rüdenauer)
- 2025-06-02 Use member 'cfg' of class ThemeSupport consistently instead of taking it from the Flask application context (Roland Rüdenauer)
- 2025-05-28 Fix extraction of open document format files for indexing (UlrichB22)
- 2025-05-27 Re-enable "Wiki links" (Günter Milde)
- 2025-05-27 Set default for EDIT_ON_DOUBLECLICK to False (UlrichB22)
- 2025-05-26 Skip before_wiki and teardown_wiki for content in _themes (UlrichB22)
- 2025-05-26 Move 'user.may.destroy' call from template to views.py (UlrichB22)
- 2025-05-26 Improve focus theme layout (especially on mobile) (Christoph Klassen)
- 2025-05-26 Improve focus theme consistency between tables (Christoph Klassen)
- 2025-05-26 Add focus theme missing changes from templates (Christoph Klassen)
- 2025-05-26 Remove focus theme font for better performance (Christoph Klassen)
- 2025-05-24 Update pyproject.toml Development Status to 4 - Beta (RogerHaase)
- 2025-05-24 Add icon for +admin/user and some fault tolerance (UlrichB22)
- 2025-05-23 Switch to native pyproject tox configuration (Roland Rüdenauer)

New features

- Add support for Python 3.13 and 3.14; remove support for Python 3.9
- Add Swedish translation

5.9.3 Version 2.0.0b3 2025-05-24

This is an unstable beta release not suitable for a production wiki, test carefully and report new issues and feature requests on the issue tracker: https://github.com/moinwiki/moin/issues.

After installing this release as a upgrade on an existing moin2 wiki be sure to:

- copy or merge src/moin/config/wikiconfig.py into the root version of wikiconfig.py.
- rebuild the Whoosh indexes
  - moin index-destroy
  - moin index-create
  - moin index-build

Fixes

- Fix duplicate namespace in discussion link (#1847)
- updated docs for package releases
- Add FullSearch macro migration for moin1.9 categories
- markupsafe was pinned to <= 2.2.0, change to >= 3.0.2
- Fix handling of namespace root items in +misc/sitemap
- Fix download link for binary content (missing namespace)
- Localize download link text
- add "pre-commit run" to development.rst docs
- Fix undefined name 'revs' in diff view
- Fix dump-html: remove item id of links to binary data (#1742)
- remove exists check from itemviews template to improve performance
- User settings: support setting the theme name to 'system default' (#1532)
- Document use of THEME_PATHS in moin wiki
- Remove WIKINAME from schema and queries
- Improve the check in get_open_wiki_files()
- User settings: fix handling of flash messages (#1872)
- ajaxsearch: add check whether content exists
- bandit configuration: exclude ui tests
- docs: improve logging configuration docs with MOINLOGGINGCONF and debug example
- docs: convert logging section titles to headings for Read the Docs navigation
- Make use of Referrer request header value (if available) when redirecting from subscribe (#1841)
- Replace text "Highlight" with "Markup" (#1860)
- Fix index out range error (list with validation errors might be empty)
- Escape html content placed into <pre> section (avoid running again into the same error)
- Fix IndexError in markdown converter (triggered by mismatching tags in html content)
- Make getInterwikiHome() return a fqname

- search query: add some more clickable options, fixes #60
- sanitize Markup() input and ignore bandit B704
- adapt wsgi bench script
- Simplify packaging of moin by removing useless or misleading packaging instructions
- Render item metadata as a table
- Add table header to metadata view
- Metadata view: remove the ugly quotes around some values
- Metadata view: remove the colons in column 'Keys'
- Execute wiki creation in it's own app context
- wikiconfig.py: Add comment on deactivation of discussion feature
- .gitignore: mark some files as not to be ignored
- run black on src/moin/_tests/wikiconfig.py
- Fix build of query in tagged_items() if namespace is 'all'
- Refactoring of 3rd index code, rename index, add handling of missing indexes
- Move code to determine xstatic module paths from wikiconfig.py to moin.utils
- Persist view state (expanded/collapsed) of sidebar elements in browser local storage
- Improve print layout for focus theme
- pin xstatic packages to legacy versions
- Set email_tracebacks to false in the wikiconfig.py used for test execution.
- Catch AttributeError in EmailHandler.emit()
- Add type hints
- Replace ugly static moin png with prettier one from help-common
- IriPath improvements: better argument type checking and add test case for argument of type str
- Fix ConverterBase.absolute_path: return an instance of IriPath
- Focus: fix itemview icons, remove globe-rotate-left-solid, add login icon
- Replace magnifying-glass-solid with free version

New features

- added new theme 'focus'

5.9.4 Version 2.0.0b2 2025-03-01

This is an unstable beta release not suitable for a production wiki, test carefully and report new issues and feature requests on the issue tracker: https://github.com/moinwiki/moin/issues.

Fixes

- updated docs for Python 3.12 pkg_resources workaround
- add docs and key control to SlideShow macro
- removed spam links in contrib/intermap.txt

- fixed bug when creating list of dirs returned by make_flat_index
- ignore empty table attributes within moinwiki_in converter
- fix “moin dump-html” to dump raw data for pdf, tar, and other items
- fix “moin import19” to migrate links only if target namespace is specified
- SlideShow macro uses url_for
- improve footer layout
- fix CSS for Show Wiki Configuration
- moin import19 handles namespace attachments
- restrict all admin views to superuser, partially backed off
- remove ACL form help-en/TemplateSample
- add request.path to clock total timer message
- skip before_wiki and teardown_wiki for static content
- ignore closing stroke tag if no opening tag found within moinwiki_in converter
- change position and order of Submit buttons
- remove “General meta” from modify view
- set url_map.strict_slashes to False
- creating items now uses current namespace ACL
- stricter detection of embedded markup on markdown_in converter
- fix convert_to_indexable for items in a namespace
- fix delete/destroy from index view
- fix several namespace bugs where wrong item names were used
- bump Xstatic_Bootstrap to 4.5.3.1 fixing potential XSS attacks
- add tag parameter to ItemList macro
- wikiconfig.py configuration PERMANENT_SESSION_LIFETIME requres datetime import
- eliminate traceback when destroying a deleted item
- highlight search results: treat each word separately and ignore case
- move ‘user.may.write’ call from template to views.py
- fix traceback: add may permission in _do_modify_show_templates
- deactivate exists checks for page trail and do not show non-existent items
- performance: add aliases to trail and remove exists check
- import19: Add procs and limitmb options to increase performance
- import19: add exception handling for drop_and_recreate_index
- add missing attribute ‘may’ to diff.html template
- import19: add option latest-rev-only
- _args_wiki parse: ignore keys with empty value
- support different storage types for each namespace

- import19: add missing parents
- update intermap.txt removing dead links, spam; change to https when possible
- performance: _get_acls: use meta data if available to avoid index query
- fix traceback when viewing item with @itemid
- update development docs with more info about "pre-commit install"
- page_trail: add type checks
- fix search result highlighting for itemlist macro
- fix itemlist arguments in help-en/MoinWikiMacros
- itemList: use _args_wiki parser
- same messages for not found and access denied
- itemList performance: mv regex handling to search_meta
- update, cleanup translations, add few German translations
- remove subprocess call from create_instance
- remove smb_mount module and docs
- add usedforsecurity False in hash functions
- rework of the send_file exception handling
- remove obsolete SubProcess.py
- send_file: seek to the beginning of the file in any case
- use new gravatar hash routine
- remove obsolete profile.py
- fix UnboundLocalError in import19
- show blank page after passwort reset
- remove sistersite feature.
- do not show USERPROFILES ns within a list of selectable namespaces
- add pre-commit for bandit security scan, add to github workflow
- add CSP header and receiver
- correct hit count display when ajax search options use whoosh filters
- fix CSP warning, remove inline style on moin-options-for-javascript
- rename and update README, add CONTRIBUTING.md

New features

- Add RandomQuote macro

5.9.5 Version 2.0.0b1 2024-08-07

This is an unstable beta release not suitable for a production wiki, test carefully and report new issues and feature requests on the issue tracker: https://github.com/moinwiki/moin/issues.

Fixes

- added config option to enable or disable contenttypes
- mass source code changes using pyupgrade to upgrade syntax to 3.9
- removed unused imports
- create SECURITY.md
- update .readthedocs.yaml to generate readthedocs content using Python 3.10
- remove use of obsolete setuptools
- change use of whoosh lru cache to lfu cache
- update Flask and Werkzeug to >=3.0.0
- upgrade feedgen (atom feed lib) to >= 1.0.0
- removed parentid to fix welcome/users_home_meta
- mass source code changes after integrating "black" code auto-formater
- supress false "unused import" when importing flatland.Form
- replace deprecated datetime.utc* calls
- add language auto-detect to user personal settings
- readthedocs now has access to docs/examples
- fix maint-validate-metadata to skip userprofiles backend
- Add REV_NUMBER in sort for history view replacing mtime
- Fix CI workflow to test with all supported python versions, run py39 with Ubuntu 22.04
- add support for SQLAlchemy >=2.0.0
- macros with user editing errors should not fill log with tracebacks
- cleanup redundant icon directories
- add itemlinks validator replacing wikilinks validator where needed
- itemlinks beginning with + were incorrectly given non-existent class (+meta/Home)
- remove trailing /> from void elements to comply with W3C standard
- add validity check if user changes name/alias/display-name in UserSettings>Personal
- add test to prove icons from CSS URLs is a subset of files in icon dir
- add RSS link to global history
- fix search-options font and fix HTML validation errors
- update and add German translations

New features

- add slideshow macro and view

5.9.6 Version 2.0.0a1 2024-03-27

This is an unstable alpha release not suitable for a production wiki, test carefully and report new issues and feature requests on the issue tracker: https://github.com/moinwiki/moin/issues.

Fixes

- Major rewrite of MoinMoin 1.9.x

New features

- Python3.9+
- Supports moinwiki, markdown, rst, and DocBook markup languages
- HTML markup support by CKEditor, same version used in moin 1.9.x
- MediaWiki markup support needs work
- Editor help docs optional, can be loaded into a wiki namespace
- New/revised themes: topside, topside-cms, modernized, basic
- EmeraldTree
- Flask
- Flatland
- FontAwesome
- Jinja2
- Jquery
- Whoosh
- Xstatic

Missing features from 1.9.x

- SVG editor
- LDAP may have missing dependencies depending upon OS flavor
- WikiDicts have limited function, does not use Babel translations
- language support limited to English, German, Portuguese (Brasil), Russian
- some macros have not been converted
- no contributed themes
- no contributed macros

Other changes

- GitHub used for issue tracking: https://github.com/moinwiki/moin/issues
- See https://moin-20.readthedocs.io/en/latest/ for Sphinx formatted docs

5.10 Upgrading

Note

Internally, Moin2 is very different from Moin 1.x.

Moin 2.0 is *not* just a +0.1 step from 1.9 (like 1.8 -> 1.9), but the change of the major version number indicates *major and incompatible changes*.

So please consider it to be different and incompatible software that tries to be compatible in some areas:

- Server and wiki engine configuration: expect to review/rewrite it
- Wiki content: expect ~90% compatibility for existing Moin 1.9 content.
  - The most commonly used simple Moin wiki markup (like headlines, lists, bold) has not changed
  - CamelCase auto links will be converted to explicit [[CamelCase]] links
  - [[attachment:my.jpg]] will be converted to [[/my.jpg]]
  - {{attachment:my.jpg}} will be converted to {{/my.jpg}}
  - Expect to change custom macros, parsers, action links, 3rd-party extensions

5.10.1 From Moin < 1.9

If you run an older moin version than 1.9, please first upgrade to a recent moin 1.9.x version (preferably >= 1.9.7) before upgrading to moin2. You may want to run that for a while to be sure everything is working as expected.

Note: Both moin 1.9.x and moin2 are WSGI applications. Upgrading to 1.9 first also makes sense concerning the WSGI / server side.

5.10.2 From Moin 1.9.x

If you want to keep your user's password hashes and migrate them to moin2, make sure you use moin >= 1.9.7 WITH enabled passlib support and that all password hashes stored in user profiles are {PASSLIB} hashes. Other hashes will get removed in the migration process and users will need to do password recovery via email (or with admin help, if that does not work).

Backup

Have a backup of everything, so you can go back in case it doesn't do what you expect. If you have a testing machine, it is a good idea to try it there first and not directly modify your production machine.

Install Moin2

Install and configure moin2, make it work, and start configuring it from the moin2 sample config. Do *not* just use your 1.9 wikiconfig.

Adjusting the moin2 configuration

It is essential that you edit wikiconfig.py before you import your 1.9 data. In particular, review the settings for:

- sitename
- interwikiname
- SECRET_KEY
- secrets

- default_acl
- users_acl

Clean up your Moin 1.9 data

It is a good idea to clean up your 1.9 data first, before trying to import it into moin2. In doing so you can avoid quite some warnings that the moin2 importer would produce.

You do this with moin *1.9*, using these commands:

```
moin ... maint cleanpage
moin ... maint cleancache
```

Deleted pages will not be migrated. A message will be written to the log for each deleted page.

Importing your Moin 1.9 data

Before importing your existing wiki data please ensure you have created an instance and index as described in the install section above using commands:

```
moin create-instance
moin index-create
```

The import19 CLI subcommand needs your 1.9 data directory with pages, attachments, and users. Usually you set up moin2 on a new current operating system and copy the old data directory to a temporary location. The utility will read the moin1.9 data, convert it and write it to your moin2 storage and build the index:

```
moin import19 --data_dir /<path to moin1.9>/wiki/data
```

Please review the log file to find out whether the importer had critical issues with your data.

By default, all items using moin 1.9 markup are converted to moin 2 markup. The converted revision will have a timestamp one second later than the last revision's timestamp to preserve revision history.

Page revisions that were created with leading *#format creole* and *#format rst* commands will retain the Creole and reST markups.

There is an additional option to convert pages with Moin wiki markup using one of the other Moin2 output converters: Markdown, reST, HTML, or DocBook. Add the *–markup_out* or *-m* option to the *moin import19* command above. To convert the last revision of all pages with moin wiki markup to markdown:

```
-m markdown
```

With the *–latest-rev-only* option, you can omit the history of the pages and only import the latest revision of each item into the new wiki. This is particularly useful for testing the migration to moin2.

The import19 process will create a wiki directory structure different from moin 1.9. There will be three namespaces under /wiki/data: "default", "userprofiles", and "users". Each namespace will have "data" and "meta" subdirectories. Additional custom namespaces can be created by editing wikiconfig.py.

Most of the data from the 1.9 pages directory will be converted to the "default" directory. User home pages and subpages will be converted to the "users" directory. The data from the 1.9 "users" directory will be converted to the "userprofiles" directory. The "userprofiles" directory contains data used internally and should always be protected from any access by ACLs.

If you are importing a large wiki with more than 1000 entries or revisions, the index building part of the import will be time-consuming. You can use the following options to speed up the process:

```
--procs <number of processors> --limitmb <memory in MB for each process>
```

Choose the values according to your available hardware resources. The defaults are 1 process and 256 MB memory. See the Whoosh Tips for speeding up batch indexing docs for details.

Use the following command to get an overview of all available options:

```
moin import19 --help
```

Testing

Review the logs for error messages. Start the Moin server and try the "Index" and "History" views to see what is included. Check whether your data is complete and rendering correctly.

If you find issues with data migration from moin 1.9 to 2, please check the moin2 issue tracker.

Keep your backups

Make sure you keep all backups of your moin 1.9 installation, such as code, config, data, just in case you are not happy with moin2 and need to revert to the old version.

Converting after reverting

The import19 process converts text items using MoinMoin 1.9 syntax to MoinMoin 2.0 syntax.

The conversion is accomplished by creating a new revision of each Moin wiki text item. Click the History link under the Item Views panel to view the revisions. The latest revision will have a content type of "MoinMoin" while the older revisions created prior to conversion will have a content type of "MoinMoin 1.9" Click the Diff link to see the content changes made by import19.

If a Moin wiki item is reverted to a revision having a content type of "MoinMoin 1.9" with embedded old-style CamelCase autolinks and/or attachments (*{{attachment:my.jpg}}*), the revision is not converted to the MoinMoin 2 syntax automatically. Editors must do the conversion by clicking the Convert link within the Item Views panel.

Reverted revisions left in the MoinMoin 1.9 format will render correctly and the reverted item may be updated and saved using the old 1.9 syntax. However, it is recommended that all such revisions be converted to the new Moin syntax because the old CamelCase and attachment conventions are deprecated and will never be included in the Moin 2 docs.

5.11 Backup and Restore

5.11.1 Full Backup / Restore

The best way to recover from data loss is to have a **full** backup of your machine. With this backup you can easily restore your machine to a working condition.

The procedure below explains how to selectively back up only the files essential to your MoinMoin installation. While there is no need to maintain both a full and a selective backup, having at least one of the two is strongly recommended.

5.11.2 Selective Backup

If you want a backup of MoinMoin and your data, then back up the following:

- your data, usually everything under wiki/
- Moin configuration, e.g., wikiconfig.py
- logging configuration, e.g., logging.conf

- Moin deployment script, e.g., moin.wsgi
- web server configuration, e.g., Apache VirtualHost config
- optional: Moin code + dependencies; you should at least know which version you ran, so you can reinstall that version when you need to restore

To create a dump of all data stored in MoinMoin (wiki items, user profiles), run the following command:

```
moin save --all-backends --file backup.moin
```

Please note that this file contains sensitive data like user profiles and wiki contents, so store your backups in a safe place that no unauthorized individual can access.

Backups require valid metadata to produce files that can be loaded; in particular, the size attribute must be correct for each revision. If bad metadata is found during the backup, a warning will be logged and it is recommended to run `moin maint-validate-metadata --all-backends --fix`. See *Validate and Optionally Fix Metadata*.

5.11.3 Selective Restore

To restore all software and configuration files to their original place, create an empty wiki first:

```
moin index-create
```

To load the backup file into your empty wiki, run:

```
moin load --file backup.moin
```

The index is removed and automatically recreated by the load command.

5.12 Indexes

5.12.1 General

MoinMoin relies strongly on indexes that accelerate access to item metadata and data, and makes it possible to have simple backends, because the index layer is doing all the hard and complex work.

Indexes are used internally for many operations like item lookup, history, iterating over items, search, interactive search, etc.

MoinMoin won't be able to start with damaged, inaccessible, or non-existing indexes. As a result, you will need to configure and initialize indexing correctly first.

Moin will automatically update the index when items are created, updated, deleted, destroyed, or renamed via the storage API of Moin, the indexing layer, or above.

5.12.2 Configuration

You need to have an `index_storage` entry in your wiki config.

We use Whoosh for indexing and, as Whoosh supports multiple storage backends, this entry is made to potentially support any storage supported by Whoosh.

In general, this entry has the form of:

```
index_storage = kind, (p1, p2, ...), {kw1=..., kw2=..., ...}
```

Currently, we only support the 'FileStorage' kind of index storage, which only has one parameter - the index directory:

```
index_storage = 'FileStorage', ("/path/to/moin-2.0/wiki/index", ), {}
```

Notes for FileStorage:

- The path MUST be absolute, writable and should be on a fast, local filesystem.
- Moin will use *index.temp* directory as well, if you build an index at the *temporary location*.

5.12.3 moin index subcommand reference

You can use the `moin index-*` group of CLI subcommands to manage indexes.

Many of the CLI commands for index management support a *–tmp* option to use the temporary index location. This is useful if you want to do index operations in parallel to a running wiki which is still using the index at the normal index location.

moin index-create

Creates an empty but valid index.

Note: The Moin WSGI application needs an index and storage to successfully start up. Please see the command moin create-instance.

moin index-build

Process all revisions of the wiki and add the indexable documents to the index.

Note:

- For big wikis, this can take rather long; consider using –tmp.
- index-build does NOT clear the index at the beginning.
- index-build does not check the current contents of the index. Therefore you must not run index-build multiple times for the same data or the same wiki.

moin index-update

Compare an index to the current storage contents and update the index as needed (add, remove, update) to reflect the current storage contents.

Note: You can use this after building at the tmp location to get the changes that happened to the wiki while building the index as well. You can run index-update multiple times to keep even more caught up.

moin index-destroy

Destroy an index such that nothing is left at the respective location.

moin index-move

Move the index from the temporary location to the normal location.

moin index-optimize

Optimize an index; see Whoosh docs for more details.

moin index-dump

Output index contents in human-readable form, e.g., for debugging purposes.

Note: only fields with attribute `stored=True` can be displayed.

5.12.4 Building an index for a single wiki

If your wiki is fresh and empty

Use:

```
moin index-create
```

Storage and index are now initialized and both empty.

If you add data to your wiki, the index will get updated automatically.

If your wiki has data and is shut down

If the index needs a rebuild for some reason (e.g., index lost, index damaged, incompatible upgrade, etc.), use:

```
moin index-destroy
moin index-create
moin index-build  # can take a while...
```

If your wiki has data and should stay online

Use:

```
moin index-create --tmp
moin index-build --tmp  # can take a while...
moin index-update --tmp  # should be quicker, make sure we have 99.x%
# better shut down the wiki now or at least make sure it is not changed
moin index-update --tmp  # make sure we have indexed all content, should be even quicker.
moin index-move  # instantaneously
# start the wiki again or allow changes now again
```

Note: Indexing puts load onto your server, so if you like to do regular index rebuilds, schedule them at some time when your server is not too busy.

5.12.5 Building an index for a wiki farm

If you run a wiki farm (multiple related wikis), you may share the index between the wikis so users will be able to search in one wiki and also see results from the other wikis.

Before you start, you must prepare your wiki configs. For example, for a company that uses two farm wikis, such as `Sales` and `Engineering`. Their respective wiki configs could look like:

`Sales`:

```
interwikiname = "Sales"
index_storage = 'FileStorage', ("/path/to/moin-2.0/wiki/index", ), {}
```

`Engineering`:

```
interwikiname = "Engineering"
index_storage = 'FileStorage', ("/path/to/moin-2.0/wiki/index", ), {}
```

Now do the initial index building:

```
moin index-create  # create an empty index
# now add the indexes from both other wikis:
moin index-build  # with Sales wiki configuration
moin index-build  # with Engineering wiki configuration
```

Now you should have a shared index for all wikis.

Note: Do not build indexes for multiple wikis in parallel. This is not supported.

5.13 Password Resetting/Invalidation

There might be circumstances when the wiki admin wants or needs to reset one user's or all users' password (hash).

For example:

- you had a security breach on your wiki server (or somewhere else) and the old password hashes (or passwords) were exposed
- you want to make sure some user or all users set a new password, e.g., if:
  - your password policy has changed (requiring longer passwords, for example)
  - you changed your password hasher configuration and want to immediately have all hashes upgraded

Note: if we say "reset a password" (to use a commonly used term), we mean to "invalidate the password hash" (so that no password exists that validates against that hash). MoinMoin does not keep user passwords in cleartext.

The files we refer to below are located in contrib/password-reset/...

5.13.1 Resetting one or a few password(s)

If you can interact with the users corresponding to the user accounts in question (by phone or directly), you don't need the extensive procedure below; just use:

```
moin account-password --name JoeDoe
```

That will reset JoeDoe's password. Tell him to visit the login URL and use the "forgot my password" functionality to define a new password.

If that doesn't work (e.g., if email is not enabled for your wiki or he has a non-working email address in his profile), you can also set a password for him:

```
moin account-password --name JoeDoe --password uIkV9.-a3
```

Choose a rather complicated password to make sure they change it a minute afterwards (to another, hopefully safe password).

5.13.2 Resetting many or all password(s)

If you have a lot of passwords to reset, you need a better procedure that avoids having to deal with too many users individually.

Preparing your users

Tell your users beforehand that you will be doing a password reset; otherwise they might find the automatically generated email they'll get suspicious and you'll have to explain to them individually that the email is legitimate.

Also, remind your users that having a valid email address in their user settings is essential for getting a password recovery email.

If an active user does not get such an email, you will likely have to manually define a valid email address (or even a password) for that user.

Make sure email functionality works

If you know you have working email functionality, skip this section.

Password recovery and password reset notification work via email. Make sure that Moin is able to send emails; see *Mail configuration*.

You can test whether it works by using the "forgot my password" functionality on the login page.

Editing mailtemplate.txt

If you edit mailtemplate.txt, please be very careful and follow these rules (otherwise you might just see the script command crashing):

The contents must be UTF-8 (or ASCII, which is a subset of UTF-8). In case of doubt, just use plain English.

Some places you likely should edit are marked with XXX.

Do not use any % character in your text (except for the placeholders). If you need a verbatim % character, you need to write %%.

It is a very good idea to give some URL (e.g., of a web or wiki page) in the text where users can read more information.

Of course, the information at that URL should be readable without requiring a wiki login (you just invalidated his/her password!), so the user can get informed before clicking links received via email.

We have added a wikitemplate.txt you can use to create such a wiki page.

Instead of creating a web or wiki page with the information, you could also write all the stuff into the mail template directly, but please consider that email delivery to some users might fail for miscellaneous reasons, so having some information on the web/wiki is usually better.

Editing wikitemplate.txt

Just copy and paste it to some public page in your wiki, e.g., "PasswordReset".

Some places you likely should edit are marked with XXX.

Doing the password reset

Maybe first try it with a single user account:

```
moin account-password --name JoeDoe --notify --subject 'Wiki password reset' --text-from-
↪file mailtemplate.txt
```

Use some valid name, maybe a testing account of yourself. You should now have mail. If that worked OK, you can now do a global password reset for your wiki:

```
moin account-password --verbose --all-users --notify --subject 'Wiki password reset' --
↪text-from-file mailtemplate.txt
```

The subject may contain a placeholder for the sitename, which is useful for wiki farms (showing the built-in default here):

```
'[%(sitename)s] Your wiki account data'
```

5.14 Maintenance

5.14.1 Reduce Revisions

This process removes all but the current revision of selected items, it reduces the storage required for your wiki at the expense of loss of history.

To perform on the entire wiki, run the following command:

```
moin maint-reduce-revisions
```

To perform on an item named "ItemName", run the following command:

```
moin maint-reduce-revisions -q ItemName
```

5.14.2 Set Metadata

Manually modify item metadata.

5.14.3 Validate and Optionally Fix Metadata

Modifications of wiki data outside of edits via the web app, such as using the load-help and item-put moin commands, can result in invalid metadata.

The processes below check for and optionally fix the following issues:

- size does not match the size of the revision's data in bytes
- SHA1 hash does not match the hash of the revision's data
- parent id should not be present for revision number 1 of a given item
- parent id for each revision should be the data id for the previous revision number for that item
- every revision should have a revision number
- an item should not have repeated revision numbers

To check for invalid metadata, run the following command:

```
moin maint-validate-metadata --all-backends
```

To view a detailed list of invalid items:

```
moin maint-validate-metadata --all-backends --verbose
```

To fix issues, add the `--fix` option to any of the above commands.

To operate on only a selection of backends, replace the `--all-backends` option with `--backends`, followed by a comma-separated list of backends to process.

5.15 Security Guide

This guide lists the **essential steps** to securely deploy a public Moin2 wiki instance. It helps wiki admins and server admins review the security of their Moin2 installation.

Ensure these settings are in place before exposing your wiki to the internet.

5.15.1 Use Encrypted Transport (HTTPS)

- Serve the wiki **only via HTTPS**
- Redirect all HTTP traffic to HTTPS
- Use a valid TLS certificate

See: *Transmission security*

5.15.2 Configure Secure Authentication

- Ensure authentication is only used over HTTPS
- Avoid insecure authentication mechanisms

See: *Authentication*

5.15.3 Enable Authorization (ACLs)

- Configure Access Control Lists (ACLs)
- Use a **deny-by-default** strategy
- Restrict editing to authenticated users where possible

Typical baseline:

- Anonymous users: read-only
- Authenticated users: limited write access
- Admin group: full access

See: *Authorization*

5.15.4 Use Groups for Permissions

- Define groups for admins and editors
- Assign permissions to groups instead of individual users

See: *Groups*

5.15.5 Configure Cryptographic Secrets

- Set a strong, random `SECRET_KEY`
- Do not reuse secrets across environments
- Keep secrets out of version control

See: *Framework Configuration*

5.15.6 Enforce Strong Password Policies

- Enable password strength checking
- Require sufficient length and complexity

See: *Password strength*

5.15.7 Use Secure Password Storage

- Ensure password hashing is properly configured
- MoinMoin uses modern hashing (Argon2id) by default

See: *Password storage*

5.15.8 Configure Content Security Policy (CSP)

- Enable CSP headers
- Start with report-only mode, then enforce

See: *Content security policy (CSP)*

5.15.9 Use a Production-Ready Web Server

- Do **not** use the built-in development server
- Deploy using a WSGI server (e.g. gunicorn, uWSGI)
- Place behind a reverse proxy (e.g. nginx, Apache)
- Disable debug mode

See: *Servers*

5.15.10 Keep the System Updated

- Regularly update MoinMoin and dependencies
- Apply security fixes promptly

See: *Installation*

5.15.11 Verify Software Integrity

- Verify downloads using GPG signatures when available

See: *Verifying signed releases*

5.15.12 Perform Regular Backups

- Backup data before upgrades or major configuration changes

See: *Backup and Restore*

5.15.13 Enable Logging and Monitoring

- Configure logging
- Monitor authentication attempts and errors

See: *Logging Configuration*

5.15.14 Handle Migration Securely

- Remove unsupported password hashes
- Force password resets if needed

See: *Upgrading*

5.15.15 Validate Host Headers (TRUSTED_HOSTS)

- Configure `TRUSTED_HOSTS` in `wikiconfig.py`
- Allow only known domain names
- Enforce validation at proxy or WSGI level

See: *Framework Configuration*

5.15.16 Further Considerations

- Fine-tune CSP policies
- Use a reverse proxy (nginx or Apache) with HTTPS
- Apply rate limiting and firewall rules where appropriate
- Monitor logs regularly and review user permissions
- Test backups and recovery procedures
- Keep the operating system and dependencies updated
- Use a dedicated user account for running the wiki
- Run the wiki with the least privileges required
- Ensure configuration files are not writable by the web server user

5.16 Moin Command Line Interface

moin is the command line interface to miscellaneous MoinMoin Wiki related tools.

If you invoke **moin** without any arguments, it will show a short quick help,

moin –help will show a more complete overview:

```
Usage: moin [OPTIONS] COMMAND [ARGS]...

  Moin extensions to the Flask CLI

Options:
  -e, --env-file FILE   Load environment variables from this file. python-
                        dotenv must be installed.
  -A, --app IMPORT      The Flask application or factory function to load, in
                        the form 'module:name'. Module can be a dotted import
                        or file path. Name is not required if it is 'app',
                        'application', 'create_app', or 'make_app', and can be
                        'name(args)' to pass arguments.
  --debug / --no-debug  Set debug mode.
  --version             Show the Flask version.
  --help                Show this message and exit.
```

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```
Commands:
  account-create           Create a user account
  account-disable          Disable user accounts
  account-password         Set user passwords
  create-instance          Create wikiconfig and wiki instance...
  dump-help                Dump a namespace of user help items to .data...
  dump-html                Create a static HTML image of this wiki
  help                     Quick help
  import19                 Import content and user data from a moin 1.9 wiki
  index-build              Build the indexes
  index-create             Create empty indexes
  index-destroy            Destroy the indexes
  index-dump               Dump the indexes in readable form to stdout
  index-move               Move the indexes from the temporary to the...
  index-optimize           Optimize the indexes
  index-update             Update the indexes
  item-get                 Get an item revision from the wiki
  item-put                 Put an item revision into the wiki
  load                     Deserialize a file into the backend; with...
  load-help                Load a directory of help .data and .meta file...
  maint-reduce-revisions   Remove all revisions but the last one from all...
  maint-set-meta           Set meta data of a new revision
  maint-validate-metadata  Find and optionally fix issues with item metadata
  routes                   Show the routes for the app.
  run                      Run a development server.
  save                     Serialize the backend into a file
  shell                    Run a shell in the app context.
  welcome                  Load initial welcome page into an empty wiki
```

5.16.1 See also

moinmoin(1)

CHAPTER

SIX

GETTING SUPPORT FOR AND CONTRIBUTING TO MOINMOIN

6.1 MoinMoin Supports You

6.1.1 Free Support

You can get free support and information here:

- on our chat channels, see https://moinmo.in/MoinMoinChat
- on our wiki, see https://moinmo.in/ — please note that quite a lot of the content there is about Moin 1.x and does not apply to Moin2. One page has a lot of information about Moin2 and also links to all sorts of Moin2 resources: https://moinmo.in/MoinMoin2.0
- on our mailing list, see https://moinmo.in/MoinMoinMailingLists
- on GitHub: https://github.com/moinwiki/moin

Note

All free support is done voluntarily by helpful MoinMoin community members. Thanks to everyone who is helping!

If you enjoy or want to enjoy free community support, please also consider being an active part of the community and supporting it.

6.1.2 Commercial Support

As MoinMoin 2.0 is not released yet, there is no support for production systems based on it.

If you want to discuss development topics, please contact the developers.

6.2 You Support MoinMoin

6.2.1 Like to help others?

Stay connected to IRC, our wiki, and the mailing list (see above), and help others who are searching for support there.

6.2.2 Found a bug?

- File a bug report on the issue tracker.
- Even better: fix the bug, submit a pull request with a unit test and a fix.

6.2.3 Have an idea?

- Discuss it on IRC and file a feature request.
- Even better: discuss and write some Python code implementing it.

6.2.4 Born to code?

- Help work on the Moin2 core so it gets released sooner.
- Help maintain Moin 1.9 until Moin2 is ready.

6.2.5 Loving UI / UX design?

- Help us make Moin2 look and feel better!

6.2.6 Have good language or documentation skills?

- If you are a native speaker of a language other than English, with a good understanding of English, consider helping improve the translation into your language. (Not yet for Moin2 — too early.) See also *Translating MoinMoin*
- Improve the documentation (see below). Here is a list of all TODOs in this documentation:

Todo

add the usual coding(s) for some platforms (like windows)

(The original entry is located in /home/docs/checkouts/readthedocs.org/user_builds/moin-20/checkouts/latest/docs/admin/configure.rst, line 571.)

Todo

describe more moin configuration

(The original entry is located in /home/docs/checkouts/readthedocs.org/user_builds/moin-20/checkouts/latest/docs/admin/configure.rst, line 1521.)

6.3 Translating MoinMoin

6.3.1 If your language already exists

To find out whether someone has already started a translation of MoinMoin 2 into your language, check the folder moin/translations in the source tree. If there is a folder with your language code (locale)[1], you can start with the steps below. If not, please take a look at *If your language doesn't exist yet*.

1. Make sure you have the latest version of the source tree (git). You will also need to have python installed, with setuptools and babel packages.
2. Go to the top directory and execute:

```
pybabel update -l <locale> -i src/moin/translations/MoinMoin.pot \
        -d src/moin/translations/ -w 116
```

[1] For more information on locale strings, see https://www.gnu.org/software/gettext/manual/html_node/Locale-Names.html.

where locale is the short language descriptor of your desired language. It should be the name of a folder in MoinMoin/translations. For German it is "de".

3. Open the file `src/moin/translations/<locale>/LC_MESSAGES/messages.po` and do your translation. A short explanation of this process follows:

   - Find an entry with an empty or bad translated text, the text after msgstr, and apply your changes.
   - **never** edit the 'msgid' string, and only edit the 'msgstr' field
   - Variables like `%(name)x`, where x is any character, must be kept as

     they are. They must appear in the translated text.
   - For better readability you can split a text string across multiple lines by surrounding each line with double quotes ("). It is common convention to have a maximum line length of 80

     characters.
   - Comments starting with "#.", "*#:*" or "*#|*" are auto-generated and should not be modified.
   - Comments starting with "# " (# and at least one space) are translator comments. You can modify or add them. They have to be placed directly before the auto-generated comments.
   - Comments starting with "*#,*" and separated with "," are flags. They can be auto-generated, but they can also be set by the translator.

     An important flag is "fuzzy". It shows that the msgstr string might not be a correct translation. Only the translator can judge if the translation requires further modification, or is acceptable as it is. Once satisfied with the translation, the translator then

     removes this fuzzy attribute.

4. Save the messages.po file and execute:

```
pybabel compile -l <locale> -d src/moin/translations/
```

Guidelines for translators

In languages where a separate polite form of address exists, like the German "Sie"/"Du", always use the polite form.

6.3.2 If your language doesn't exist yet

You want to translate moin2 to your language? Great! Get in contact with the developers, but ...

> **Note**
>
> please don't ask us whether we want other translations, we currently do not want them, it is still too early. We just want 1 translation and it needs to be German because that is what many moin developers can maintain themselves.

1. Initialize a new catalog:

```
pybabel init -l <locale> -i src/moin/translations/MoinMoin.pot \
       -d src/moin/translations/ -w 116
```

2. Adjust the `src/moin/translations/<locale>/LC_MESSAGES/messages.po`.

   Follow the instructions in *First steps with a new *.po file* and then you can remove the fuzzy flag, which prevents the file from being compiled.

3. Follow the steps above, see *If your language already exists*.

First steps with a new *.po file

A newly created translation needs a few initial preparations:

- replace "PROJECT" with "MoinMoin 2"
- replace "FIRST AUTHOR <EMAIL@ADDRESS>" with the appropriate information about yourself
- replace "PROJECT VERSION" in the header msgstr with "MoinMoin 2.0" or newer if necessary
- change the value of "Last-Translator" to your data
- change the value of "Language-Team" to "Language <moin-user@lists.sourceforge.net>"

6.3.3 Note for developers

We use the `format()` method in internationalized strings, e.g. `_('Hello {name}').format(name='World')`. `_()` is an alias for `gettext()`

If the translatable string contains a variable plural, that means the string contains an object whose exact number you don't know, you will have to use `N_()`, which is an alias for `ngettext()`. Note that this is not only needed for the decision between one and more objects, because other languages have other and more difficult plurals than English. The usage is `N_(singular, plural, num).format(**variables)`. `**variables` are used to substitute the keys by `format()` as explained above.

Example: `N_('{number} file removed from {directory}', '{number} files removed from {directory}', num=n).format(number=n, directory=directory)`

n has to appear twice because the first gives ngettext() information about the exact number and the second is the variable for the format string replacement.

If you made changes to any gettext() string, please update the .pot file using:

```
pybabel extract -F pyproject.toml -o src/moin/translations/MoinMoin.pot \
        -k "_ gettext L_ lazy_gettext N_ ngettext" \
        --msgid-bugs-address "English <moin-user@python.org>" \
        --copyright-holder "Moin Core Team, see http://moinmo.in/MoinCoreTeamGroup" \
        --project "moin" --version "<version>" -w 116 src/
```

Because this sometimes creates large diffs, just because of a change in line numbers, you can of course use this command sparingly. Another option for better readability is to make a separate commit for this purpose.

CHAPTER

SEVEN

DEVELOPING MOINMOIN

7.1 Development

7.1.1 Useful Resources

If you have any questions about MoinWiki you can use the following resources:

Documentation (installation, configuration, user docs, API reference):

- https://moin-20.readthedocs.io/en/latest/

Repository, Issue tracker (bugs, proposals, todo), Code Review, Discussions, etc.:

- https://github.com/moinwiki/moin

Wiki:

- https://moinmo.in/MoinMoin2.0 (production wiki, using moin 1.9)

IRC channel on libera.chat (quick communication and discussion):

- #moin (Web Chat: https://web.libera.chat/?#moin)

7.1.2 Requirements for development

Git is required if you wish to contribute patches to the Moin2 development effort. Even if you do not intend to contribute, Git is highly recommended as it will make it easy for you to obtain fixes and enhancements from the moin2 repositories. Git can be installed with most Linux package managers or downloaded from https://git-scm.com/. You can also find many alternative GUI clients there for Unix, macOS and Windows.

7.1.3 Typical development workflow

Once setup is completed, you will have created two repos that work together with the existing moin master repo hosted on GitHub. One new repo will be a fork of the moin master repo hosted on GitHub. The other new repo will be a clone of your forked repo that will reside on your local PC. These three repos will be updated in a cycle:

- keep your cloned repo up to date by pulling changes from the GitHub master repo
- contribute by coding changes in your local cloned repo and pushing to your forked GitHub repo
- after review by an administrator, the new changes in your GItHub forked repo will be merged into the moin GitHub master repo
- repeat

create your development environment

- if you do not have a GitHub account, create one at https://github.com/
- fork the main repository: https://github.com/moinwiki/moin to your GitHub user account
- clone your GitHub repo to your local development machine:

```
cd <parent_directory_of_your_future_repo>
git clone https://github.com/yourname/moin.git
```

- cd to repo root:

```
cd moin
```

- create a new venv (Virtual ENVironment) and download packages:

```
python quickinstall.py
```

- activate venv:

```
. activate  # Windows: activate
```

- You should have a `moin` command available, try it:

```
moin --help
```

- there is a second CLI with tools for developers, try it:

```
./m  # Windows: m
```

- create a wiki instance and load help data and welcome pages:

```
moin create-instance --full
```

- start the built-in server:

```
moin run
```

- point your browser at http://127.0.0.1:5000/ to access your development wiki
- press Ctrl+C to stop the built-in server
- add the GitHub moin master as a remote, "moinwiki" is used as the remote name below and elsewhere

  git remote add moinwiki https://github.com/moinwiki/moin.git

- verify it works, ensure your local repo up to date

  git pull moinwiki master

add more tools, exercise tools

- install additional software that developers may require:

```
./m extras  # Windows: m extras
```

- run the unit tests, if there are test failures check for open issues:

```
./m tests  # Windows: m tests
```

- Node.js and npm are required to install sass. Install Node.js and npm with a Linux package manager; Windows users may download both from https://nodejs.org/download/
  - On Ubuntu 14.04 or any distribution based on Ubuntu you need to install "npm" and "nodejs-legacy" (to get the "node" command).
- sass is required to update Basic theme CSS files, install sass:

```
sudo npm install -g sass  # Windows: npm install -g sass
sass --version  # show version number to prove it works
```

- regenerate CSS files:

```
./m css  # Windows: m css
git diff  # verify nothing changed
```

- check for coding errors (tabs, trailing spaces, line endings, template indentation and spacing):

```
./m coding-std  # Windows: m coding-std
git diff  # verify nothing changed
```

- revert any changes from above:

```
git reset --hard
```

- create local docs:

```
./m docs  # Windows: m docs
```

- set options on your favorite editor or IDE
  - convert tabs to 4 spaces
  - delete trailing blanks on file save
  - use unix line endings almost everywhere, use Windows line endings on .bat and .cmd files
  - use monospaced font for editing
- if you are new to git, read about it (https://git-scm.com/book/), consider printing a cheat sheet
- if you want a Python IDE, try https://www.jetbrains.com/pycharm/ Free Community Edition
- join #moin-dev IRC channel; ask questions, learn what other developers are doing

install pre-commit hooks

These tools will inspect your staged changes as part of Git commit processing.

- Black formats Python code to make it consistent and readable according to PEP 8 guidelines.
- Ruff is a linter that detects style issues, errors and potential problems.
- Bandit analyzes the code for possible security vulnerabilities and potential risks.

Setup pre-commit hooks:

```
pre-commit install
```

Running pre-commmit will stash any changed and unstaged files, then black, ruff, and bandit will examine and report violations on any staged files. Finally, any stashed files will be restored. Try running pre-commit now:

```
pre-commit run
```

If your code change violates Black's coding standards (a line of code is > 120 characters) Black will update the file and fail the commit. Your repo will have 2 versions of the offending file: the staged file with your changes and an unstaged version with Black's corrections.

To fix, unstage the file to merge your changes into Black's version, then restage the file and rerun pre-commit.

If Ruff or Bandit find errors, they will create error messages that will cause the commit to fail. In this case, unstage the offending file, fix the error, restage the file and rerun pre-commit.

Note that these same checks will be made as part of GitHub push-merge processing. If there is an error the merge will fail. Fix the error, restage the file, and commit. Next time, remember the easier way is to run pre-commit locally before pushing changes.

Read more about

- Black at https://black.readthedocs.io/en/stable/index.html
- Ruff at https://github.com/astral-sh/ruff?tab=readme-ov-file#ruff
- Bandit at https://bandit.readthedocs.io/en/latest/

review configuration options

- review https://moin-20.readthedocs.io/en/latest/admin/configure.html
- configure options by reading the comments and editing wikiconfig.py
  - the default options in wikiconfig.py are secure, changes are required to edit and save items
  - set superuser privileges on at least one username

find a task to work on

- look at the issue tracker to find a task you can solve
- in case you find a new bug or want to work on some (non-trivial) new issue or idea that is not on the issue tracker, create an issue with a detailed description
- discuss your chosen task with other developers on the #moin-dev IRC channel
- to avoid duplicate work, add a comment on the issue tracker that you are working on that issue
- just before you start to code changes, bring your repo up to date:

```
git checkout master       # make sure you are on master branch
git pull moinwiki master  # update your master branch
git checkout -b mychange  # create a new branch "mychange"
```

develop a testing strategy

- if you fix something that had no test, first try to write a correct, but failing test for it, then fix the code and see a successful test
- if you implement new functionality, write tests for it first, then implement it
- when changing a theme, test with multiple browsers

develop a working solution

- work in your local repo on your local development machine (be sure you work in the right branch)
- concentrate on one issue / one topic, create a clean set of changes (that means not doing more than needed to fix the issue, but also it means fixing the issue completely and everywhere)
- write good, clean, easy-to-understand code
- obey PEP-8
- do not fix or change code unrelated to your task, if you find unrelated bugs, create new issues on the tracker
  - or, stash your changes and create a new branch to fix the new issue
- regularly run the unit tests ("./m tests"), do not create failing tests

review your working solution

- stage your changed files and do "pre-commit run" to check for style and security issues using Black, Ruff, and Bandit
- do "./m coding-std" to check for coding errors (trailing spaces, template indentation and spacing)
- use git diff, git status - read everything you changed - slowly, look for things that can be improved
- look for poor variable names, spelling errors in comments, accidental addition or deletion of blank lines, complex code without comments, missing/extra spaces
- if JavaScript files were changed, run https://www.jslint.com/
- run tests again "./m tests"
- do some final testing - edit an item and save, etc.

publish your change

- commit your changes to your local repo, use a concise commit comment describing the change
  - while a commit message may have multiple lines, many tools show only 80 characters of the first line
  - stuff as much info as possible into those first 80 characters:

    ```
    <concise description of your change>, fixes #1234
    ```

  - if "fixes #1234" is included in the description, the issue will be closed when your changed is merged into the master
  - if your patch partially fixes an open issue, include the number in the commit message, "#1234"
- push the changeset to your public GitHub repo
- create a pull request so your changes will get reviewed and pulled into the main repository
- if you fixed an issue from the issue tracker, be sure the issue gets closed after your fix has been pulled into main repo.
- celebrate, loop back to "find a task to work on"

update your venv

Every week or so, do "./m quickinstall" and "./m extras" to install new releases of dependent packages. If any new packages are installed, do a quick check for breakages by running tests, starting the built-in server, modify an item, etc.

7.1.4 MoinMoin architecture

moin2 is a WSGI application and uses:

- flask as framework
  - flask cli and click for command line interface
  - flask-babel / babel / pytz for i18n/l10n
  - flask-theme for theme switching
  - flask-caching as cache storage abstraction
- werkzeug for low level web/http page serving, debugging, builtin server, etc.
- jinja2 for templating, such as the theme and user interface
- flatland for form data processing
- EmeraldTree for xml and tree processing
- blinker for signalling
- pygments for syntax highlighting
- for stores: filesystem, sqlite3, sqlalchemy, memory
- jquery javascript lib, a simple jQuery i18n plugin Plugin
- CKeditor, the GUI editor for (x)html

7.1.5 How MoinMoin works

This is a very high level overview about how moin works. If you would like to acquire a more in-depth understanding, please read the other docs and code.

WSGI application creation

First, the moin Flask application is created; see *moin.app.create_app*:

- load the configuration (app.cfg)
- register some modules that handle different parts of the functionality
  - moin.apps.frontend - most of what a normal user uses
  - moin.apps.admin - for admins
  - moin.apps.feed - feeds, e.g. atom
  - moin.apps.serve - serving some configurable static third party code
- register before/after request handlers
- initialize the cache (app.cache)
- initialize index and storage (app.storage)
- initialize the translation system
- initialize theme support

This app is then given to a WSGI compatible server somehow and will be called by the server for each request for it.

Request processing

Let's look at how it shows a wiki item:

- the Flask app receives a GET request for /WikiItem
- Flask's routing rules determine that this request should be served by *moin.apps.frontend.show_item*.
- Flask calls the before request handler of this module, which:
  - sets up the user as flaskg.user - an anonymous user or logged in user
  - initializes dicts/groups as flaskg.dicts, flaskg.groups
  - initializes jinja2 environment - templating
- Flask then calls the handler function *moin.apps.frontend.show_item*, which:
  - creates an in-memory Item
    - by fetching the item of name "WikiItem" from storage
    - it looks at the contenttype of this item, which is stored in the metadata
    - it creates an appropriately typed Item instance, depending on the contenttype
  - calls Item._render_data() to determine what the rendered item looks like as HTML
  - renders the *show_item.html* template and returns the rendered item html
  - returns the result to Flask
- Flask calls the after request handler which does some cleanup
- Flask returns an appropriate response to the server

Storage

Moin supports different stores, like storing directly into files / directories, using key/value stores, using an SQL database etc, see *moin.storage.stores*. A store is extremely simple: store a value for a key and retrieve the value using the key + iteration over keys.

A backend is one layer above. It deals with objects that have metadata and data, see *moin.storage.backends*.

Above that, there is miscellaneous functionality in *moin.storage.middleware* for:

- routing by namespace to some specific backend
- indexing metadata and data + comfortable and fast index-based access, selection and search
- protecting items by ACLs (Access Control Lists)

DOM based transformations

How does moin know what the HTML rendering of an item looks like?

Each Item has some contenttype that is stored in the metadata, also called the input contenttype. We also know what we want as output, also called the output contenttype.

Moin uses converters to transform the input data into the output data in multiple steps. It also has a registry that knows all converters and their supported input and output mimetypes / contenttypes.

For example, if the contenttype is *text/x-moin-wiki;charset=utf-8*, it will find that the input converter handling this is the one defined in *converters.moinwiki_in*. It then feeds the data of this item into this converter. The converter parses this input and creates an in-memory *dom tree* representation from it.

This dom tree is then transformed through multiple dom-to-dom converters for example:

- link processing
- include processing
- smileys
- macros

Finally, the dom-tree will reach the output converter, which will transform it into the desired output format, such as *text/html*.

This is just one example of a supported transformation. There are quite a few converters in *moin.converters* supporting different input formats, dom-dom transformations and output formats.

Templates and Themes

Moin uses jinja2 as its templating engine and Flask-Themes as a flask extension to support multiple themes. There is a `moin/templates` directory that contains a base set of templates designed for the Modernized theme. Other themes may override or add to the base templates with a directory named `themes/<theme_name>/templates`.

When rendering a template, the template is expanded within an environment of values it can use. In addition to this general environment, parameters can also be given directly to the render call.

Each theme has a `static/css` directory. Stylesheets for the Basic theme in MoinMoin are compiled using the source `theme.scss` file in the Basic theme's `custom` directory.

```
./m css  # Windows: m css
```

Internationalization in MoinMoin's JS

Any string which has to be translated and used in the JavaScript code, has to be defined at `moin/templates/dictionary.js`. This dictionary is loaded when the page loads and the translation for any string can be received by passing it as a parameter to the _ function, also defined in the same file.

For example, if we add the following to `i18n_dict` in `dictionary.js`

```
"Delete this"  : "{{  _("Delete this") }}",
```

The translated version of "somestring" can be accessed in the JavaScript code by

```
var a = _("Delete this");
```

7.1.6 Testing

We use pytest for automated testing. It is currently automatically installed into your venv as a dependency.

Running the tests

To run all the tests, the easiest way is to do:

```
./m tests  # windows:  m tests
```

To run selected tests, activate your venv and invoke pytest from the top-level directory:

```
pytest --pep8  # run all tests, including pep8 checks
pytest -rs  # run all tests and output information about skipped tests
pytest -k somekeyword  # run the tests matching somekeyword only
pytest --pep8 -k pep8  # runs pep8 checks only
pytest sometests.py  # run the tests contained in sometests.py
```

Tests output

Most output is quite self-explanatory. The characters mean:

```
. test ran OK
s test was skipped
E error happened while running the test
F test failed
x test was expected to fail (xfail)
```

If something goes wrong, you will also see tracebacks in stdout/stderr.

Writing tests

Writing tests with *pytest* is easy and has little overhead. Just use the *assert* statements.

For more information, please read: https://docs.pytest.org/

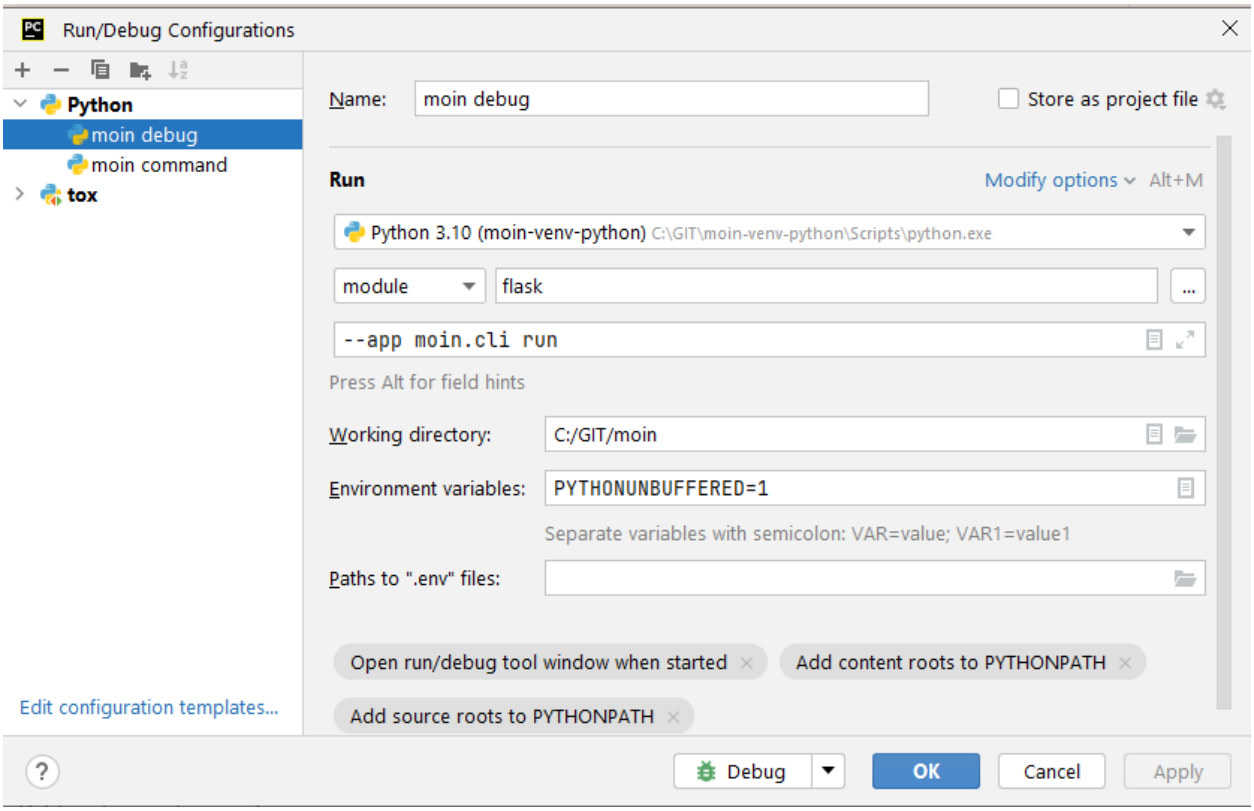
IDE Setup

Most MoinMoin developers use PyCharm, either the Professional Edition or the Free Community Edition. Choose one or the other and follow the PyCharm setup instructions.

The screenshots below are from Windows 10, using Python 3.10 and PyCharm Community Edition to debug Moin2 code. *nix setup is similar.

Debug a Transaction

When setting up the Run/Debug Configurations, it is important to get the right values for the Script path, Parameters, Python interpreter, and Working directory. For general debugging of the moin2 code base those parameters should be similar to:

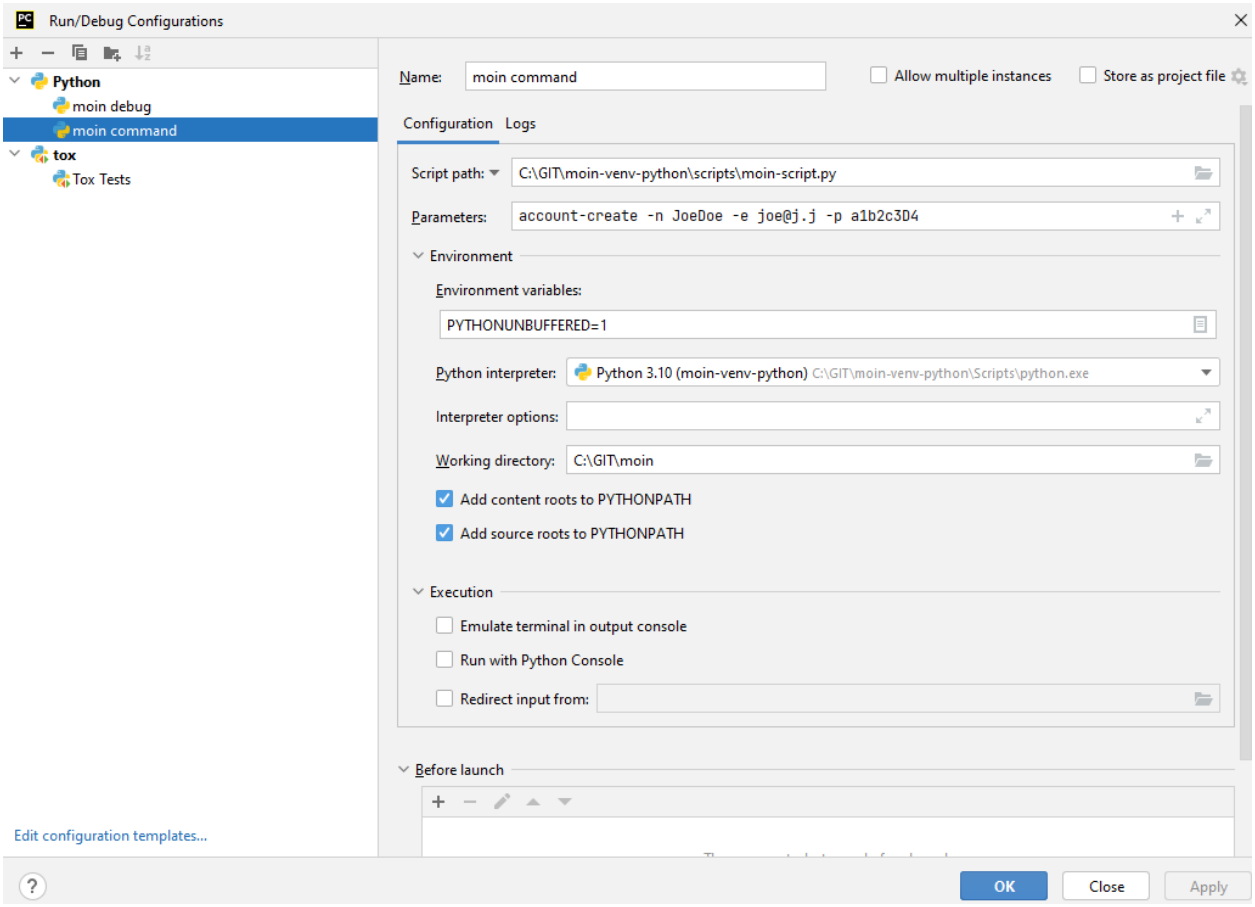


If the parameters are correct, then the Run dropdown menu will show green icons for run and debug. If the only choice under the Run menu is Edit Configuration, then one of the parameters is wrong, try again. Note: Py``Charm has a tendency to change the Working Directory field when other values are edited. Be sure it points to the repo root.

Once the configuration is correct, load a source program, set a break point and run the debugger. Point your browser to http://127.0.0.1:5000.

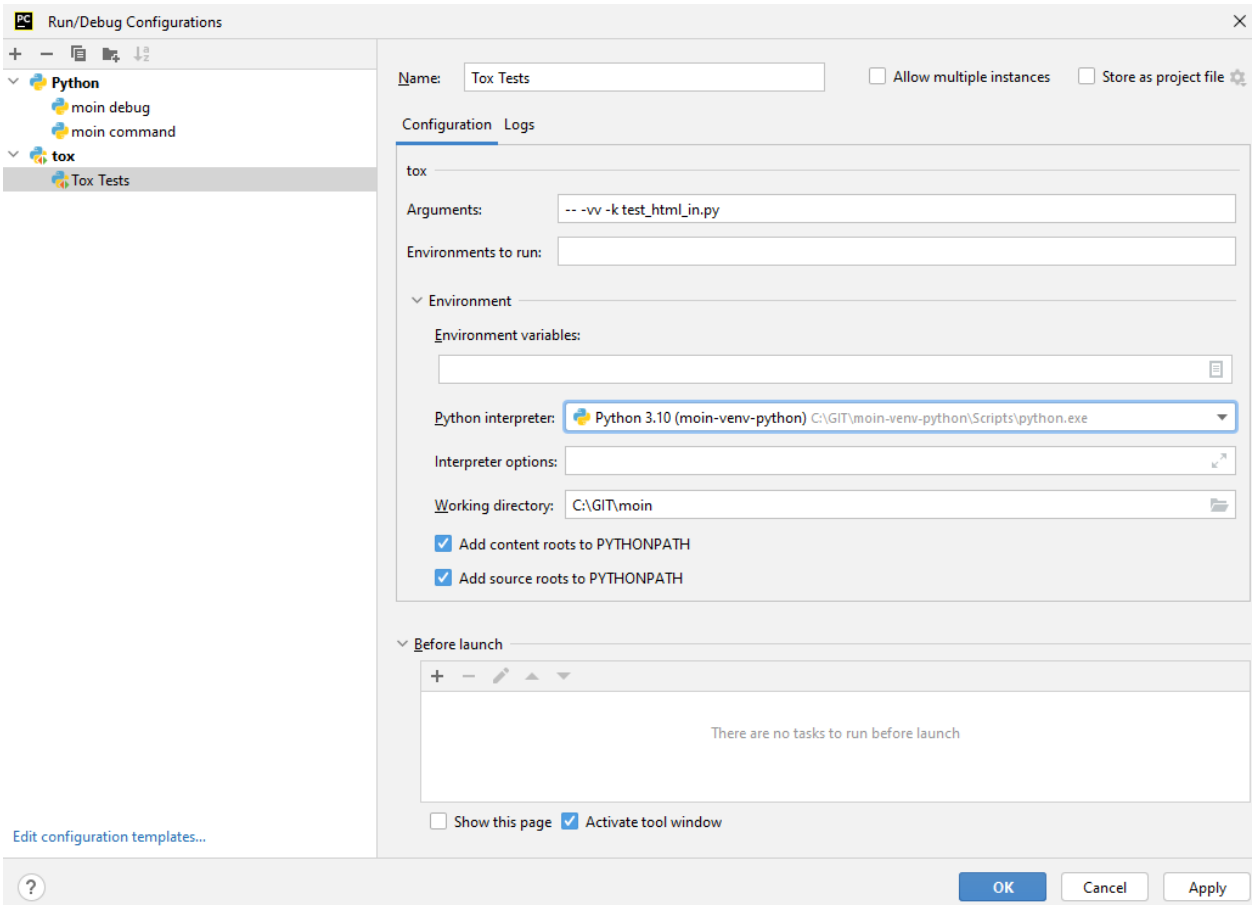
Debug a Moin Script

To debug one of the moin commands that are normally executed in a terminal window, follow the example below. You can view the list of moin commands by activating the venv and doing a "moin –help".



Debug a Test

To debug a test, start by going to the Py``Charm edit configuration view. Click the + in the upper left corner to show the popup list of configuration types. Choose Tox, and then follow the example below for other field values. Note the test startup will be rather slow; be patient.



Debugging with the Werkzeug debugger

The Werkzeug debugger requires no setup but is less powerful than PyCharm.

> **Warning**
>
> Note that this debugger must only be used in a secure test environment that cannot be accessed by the public!

To use, just start the built-in server with the debug option:

```
moin run --debug
```

See Werkzeug docs for more information.

7.1.7 Documentation

Moin provides two types of documentation. The Sphinx docs (https://www.sphinx-doc.org) are written in reST markup, and have a target audience of developers and wiki admins. The Help docs have a target audience of wiki editors and are written in markups supported by moin.

The Help docs are a minor subset of the Sphinx docs and may be available in several languages. The Sphinx docs are available only in English.

Sphinx docs are available at https://moin-20.readthedocs.io/en/latest/ or may be created locally on Moin wiki's installed by developers. Documentation reST source code, example files and some other text files are located in the *moin/docs/*

directory in the source tree.

Creating local Sphinx docs

Sphinx can create all kinds of documentation formats. The most common are the local HTML docs that are linked to under the User tab. To generate local docs:

```
./m docs  # Windows: m docs
```

Loading the Help docs

Wiki admins must load the help docs to make them available to editors. Help docs are located in the *moin/src/moin/help/* directory in the source tree. Most themes will provide a link to the markup help above the edit textarea or the entire help namespace may be accessed through the User tab. Write permission to help files is granted by default. Wiki admins can change permissions via the ACL rules.

To load the help docs:

```
moin load-help --namespace help-common  # images common to all languages
moin load-help --namespace help-en      # English text
```

Multiple languages may be loaded. Current languages include:

```
en
```

Updating the Help docs

Developers may update the help files or add new files through the normal edit process. When editing is complete run one or more of:

```
moin maint-reduce-revisions  # updates all items in all namespaces
moin maint-reduce-revisions -q <item-name> -n help-en --test true # lists selected items,
↪ no updates
moin maint-reduce-revisions -q <item-name> -n help-en  # updates selected items
```

Dump all the English help files to the version controlled directory:

```
moin dump-help -n help-en
```

The above command may may be useful after updating one or more files. All of the files will be rewritten but only the changed files will be highlighted in version control.

7.1.8 Moin Shell

While the make.py utility provides a menu of the most frequently used commands, there may be an occasional need to access the moin shell directly:

```
source <path-to-venv>/bin/activate  # or ". activate"  windows: "activate"
moin -h                             # show help
```

7.1.9 Package Release on pypi.org and GitHub Releases

- Update docs/changes/CHANGES, run git log and edit results:

```
git log --pretty=format:"* %ad %s (%an)" --no-merges --date=short
```

- Commit or stash all versioned changes.
- Create a GIT branch for release: *release-a1*
- Pull all updates from master repo.
- If running on Windows, delete .venv, m.bat, activate.bat, deactivate.bat else delete .venv, activate, and m
- Run *<python> quickinstall.py* and *./m extras* to update the venv and translations.
- Update Development Status, etc. in pyproject.toml
- Run tests.
- Add a signed, annotated tag with the next release number to master branch:

```
git tag -s 2.0.0a1 -m "alpha release"
```

- Install or upgrade release tools:

```
pip install --upgrade setuptools wheel
pip install --upgrade twine
pip install --upgrade build
```

- Delete all old releases from the moin/dist directory, else twine will upload them in the next step.
- Build the distribution and upload to pypi.org:

```
py -m build > build.log 2>&1  # check build.log for errors
py -m twine upload dist/*
```

- Enter ID and password or API Token as requested.

Test Build

Create a new venv, install moin, create instance, start server, create item, modify and save an item:

```
<python> -m venv </path/to/new/venv>
cd </path/to/new/venv>
source bin/activate  # or "scripts\activate" on windows
pip install --pre moin
moin --help  # prove it works
# update wikiconfig.py  # default allows read-only, admins may load data
moin create-instance --path <path/to/new/wikiconfig/dir>  # path optional, defaults to␣
↪CWD
cd <path/to/new/wikiconfig/dir>  # skip if using default CWD
moin index-create

moin welcome  # load welcome page (e.g. Home)
moin load-help -n help-en # load English help
moin load-help -n help-common # load help images
moin run  # wiki with English help and welcome pages
```

Continue with Package Release

Push the signed, annotated tag created above to github master:

```
git push moinwiki 2.0.0a1
```

Create an ASCII-format detached signature named moin-2.0.0a1.tar.gz.asc. Windows developers should use Git-Bash to work around #1723.:

```
cd dist
gpg --detach-sign -a moin-2.0.0a1.tar.gz
cd ..
```

Follow the instructions in the url below to update GitHub; drag & drop moin-2.0.0a1.tar.gz and moin-2.0.0a1.tar.gz.asc to upload files area. These files serve as a backup for the release sdist and the signature, so anybody can verify the sdist is authentic:

```
https://docs.github.com/en/repositories/releasing-projects-on-github/managing-releases-
↪in-a-repository
```

Test the GitHub package release:

```
<python> -m venv </path/to/new/venv>
cd </path/to/new/venv>
source bin/activate  # or "scripts\activate" on windows
pip install git+https://github.com/moinwiki/moin@2.0.0a1
moin --help  # prove it works
# update wikiconfig.py  # default allows read-only, admins may load data
moin create-instance --path <path/to/new/wikiconfig/dir>  # path optional, defaults to␣
↪CWD
cd <path/to/new/wikiconfig/dir>  # skip if using default CWD
moin index-create

moin welcome  # load welcome page (e.g. Home)
moin load-help -n help-en # load English help
moin load-help -n help-common # load help images
moin run  # wiki with English help and welcome pages
```

Announce update on #moin, moin-devel@python.org, moin-user@python.org:

```
Moinmoin 2.0.0a1 has been released on https://pypi.org/project/moin/#history
and https://github.com/moinwiki/moin/releases. See https://moin-20.readthedocs.io/en/
↪latest/,
use https://github.com/moinwiki/moin/issues to report bugs.
```

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