Documentation

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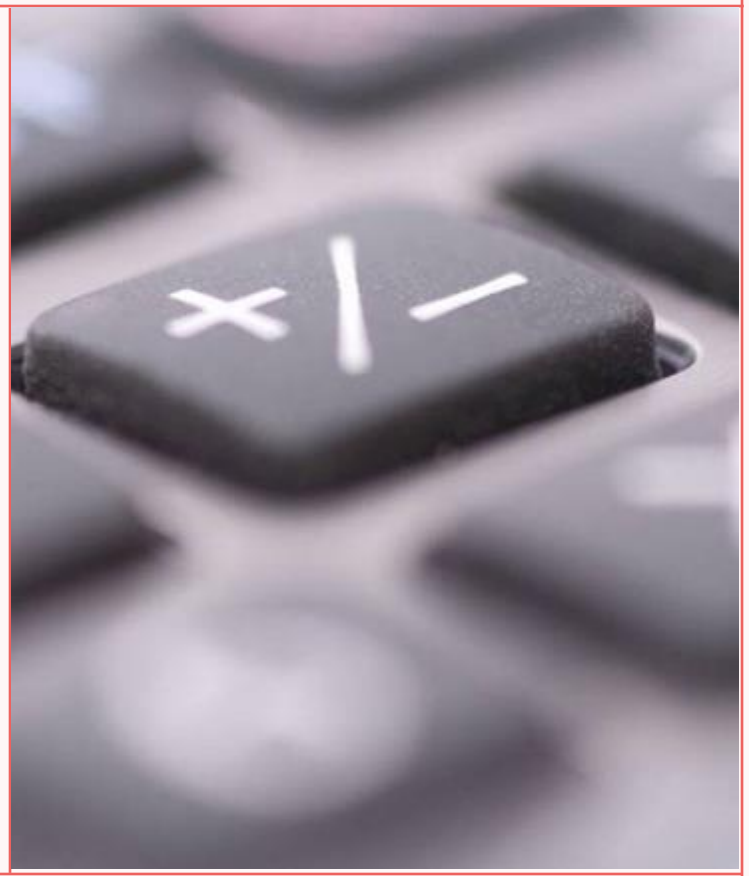
CSCI 5210 Software Engineering I, Fall 2024

Agenda

Introduction
README Files
Commit Messages
GitHub Pages & Wiki
Auto-Documentation



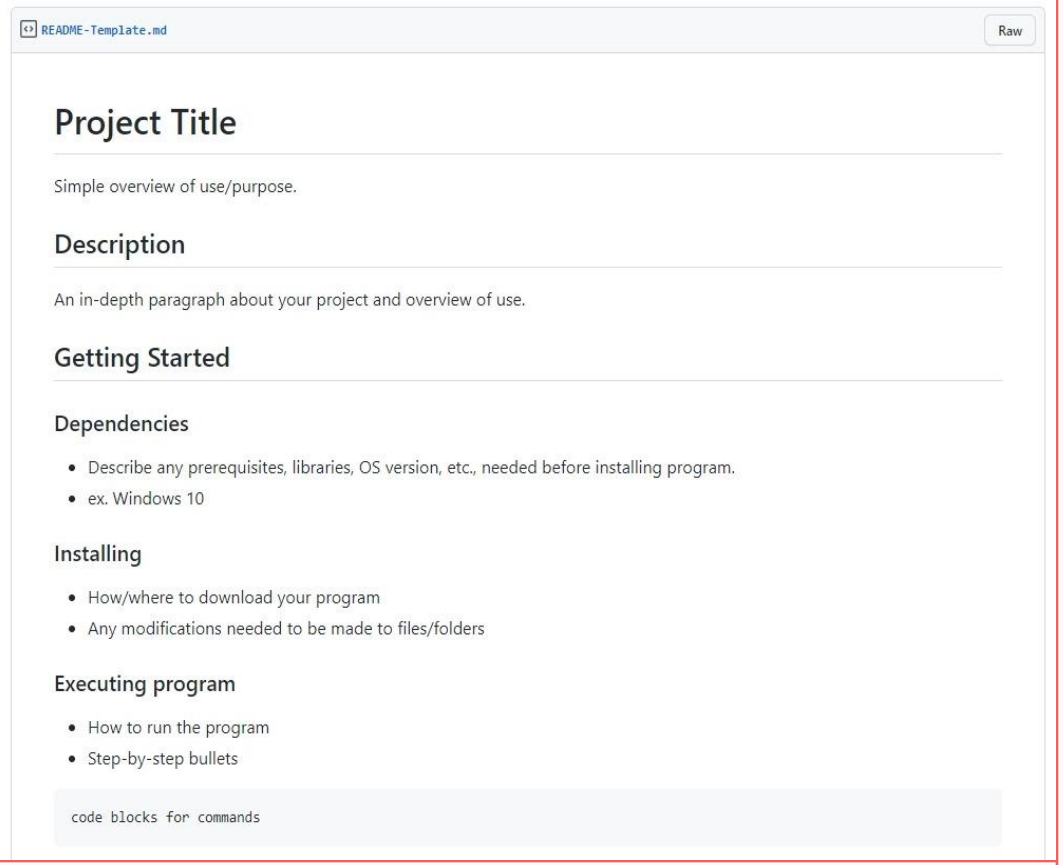
Introduction

- What is documentation?
- Why is documentation important?
- Types of documentation

https://blog.codacy.com/code-documentation#:~:text=Share:,better%20documentation%20for%20your%20code

README Files

- Introduction to project
- Communicates important information
- Especially crucial for open-source


README-Template.md

Raw

Project Title

Simple overview of use/purpose.

Description

An in-depth paragraph about your project and overview of use.

Getting Started

Dependencies

- Describe any prerequisites, libraries, OS version, etc., needed before installing program.
- ex. Windows 10

Installing

- How/where to download your program
- Any modifications needed to be made to files/folders

Executing program

- How to run the program
- Step-by-step bullets

```
code blocks for commands
```

README Components

- At a **minimum**:
  - Title
  - Description
  - Installation & Usage
  - How to Contribute
  - Licensing
  - Contact Information

```
# Project Title

**Description:**
[Brief overview of the project]

**Installation:**
[Prerequisites]
[Installation steps]

**Usage:**
[Basic usage examples]
[Advanced usage examples]

**Contributing:**
[Code of conduct]
[Development process]
[Issue tracker]

**License:**
[License type]
[Link to license text]

**Contact:**
[Author/maintainer]
[Contact information]

**Additional Sections (optional):**
[Changelog]
[Acknowledgements]
[FAQs]
```

GitHub-Flavored Markdown

- Markdown is...
  - Intuitive
  - Portable
  - Efficient
  - Versatile

Hyperlink	This is an [example link](https://www.makeuseof.com)
Image	![Alt Text](http://example.com/image/path.png)
Ignore Markdown	Prefix Markdown characters with *backslashes* to ignore formatting.

Basic Elements

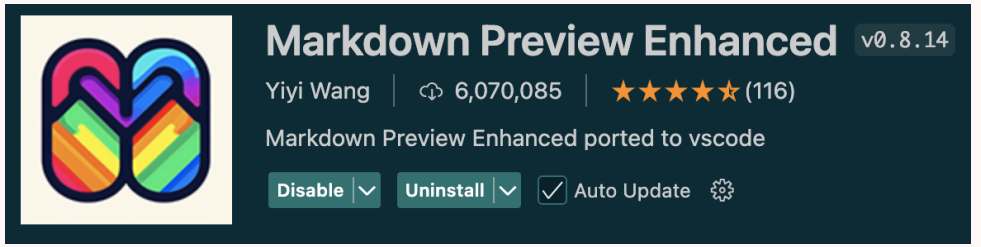
Format Type	Markdown Syntax
H1 to H6 Headings	# Heading Text ## Heading Text ### Heading Text #### Heading Text ##### Heading Text ###### Heading Text
Italics	*This text is italicized*
Bold	**This text is bold**
Blockquote	> Blockquote paragraphs must have > a right-arrow bracket at the start > of every single line. > > Use a blank line for multiple paragraphs.
Unordered List	- Bullet list item - Bullet list item - Bullet list item - Use a two-space indent for nested lists
Ordered List	1. Bullet list item 2. Bullet list item 3. Bullet list item 1. Ordered lists can also be nested
Mixed List	1. Can you mix list types? - Yes, you can!
Horizontal Line	--- *** ---

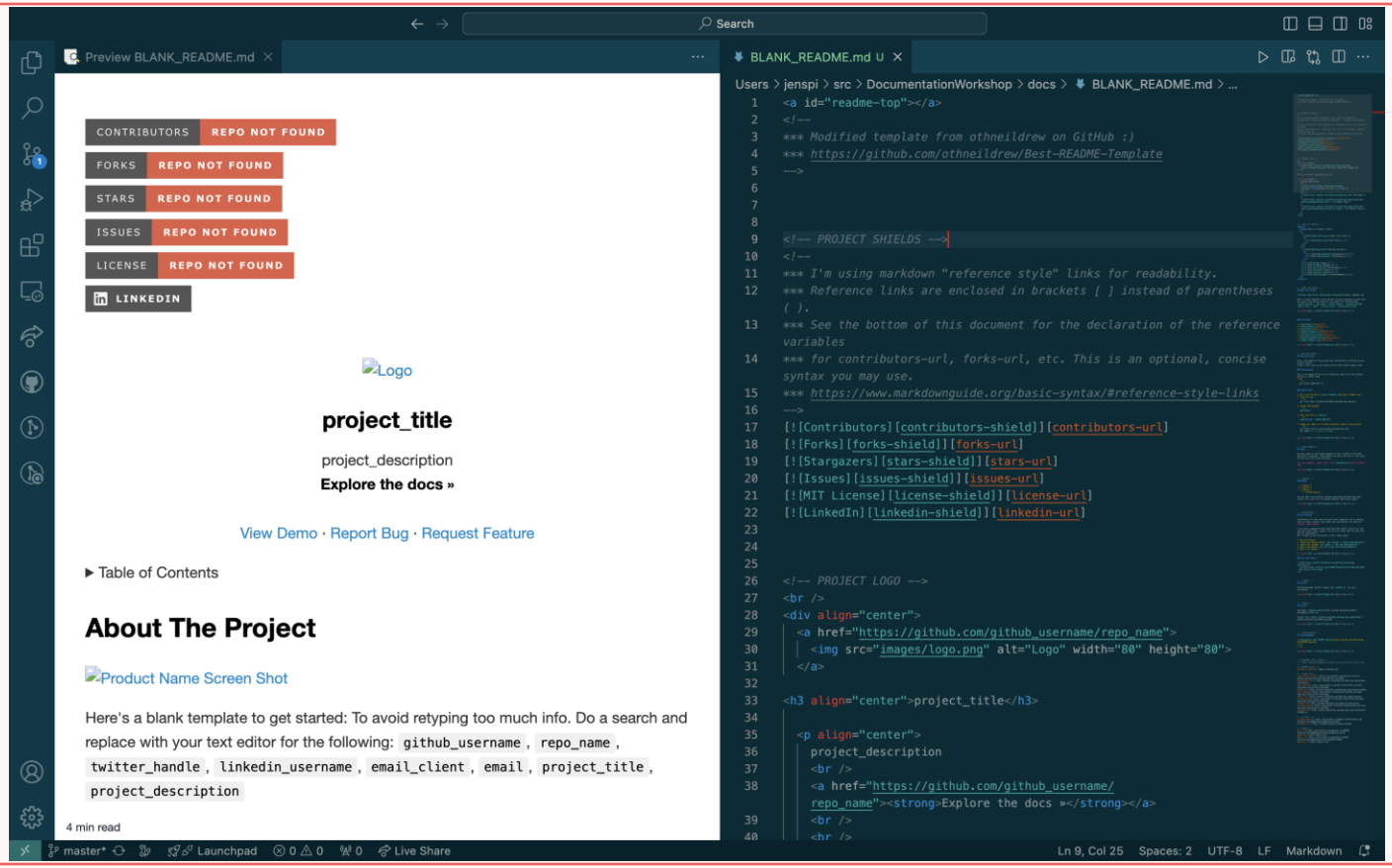
Extended Elements

Format Type	Markdown Syntax
Code (Inline)	`This is inline code`
Code (Block)	~~~ This is a block of code It supports multiple lines ~~~
Strikethrough	~~This text is crossed out~~
Hard Line Break	This is some text\ This text is a new line, not a new paragraph
Table	| First Header | Second Header | | ------------ | ------------- | | Content cell 1 | Content cell 2 | | Content column 1 | Content column 2 | **Note:** Preceding blank line is necessary.
Task Lists	- [x] Completed task item - [ ] Unfinished task item - [ ] \(Optional) Mark parentheses to be ignored
Mention	You can mention @users and @teams on GitHub. Mainly useful when submitting or commenting on bugs and issues.
Emoji	:emojicode:

https://www.markdownguide.org/basic-syntax/

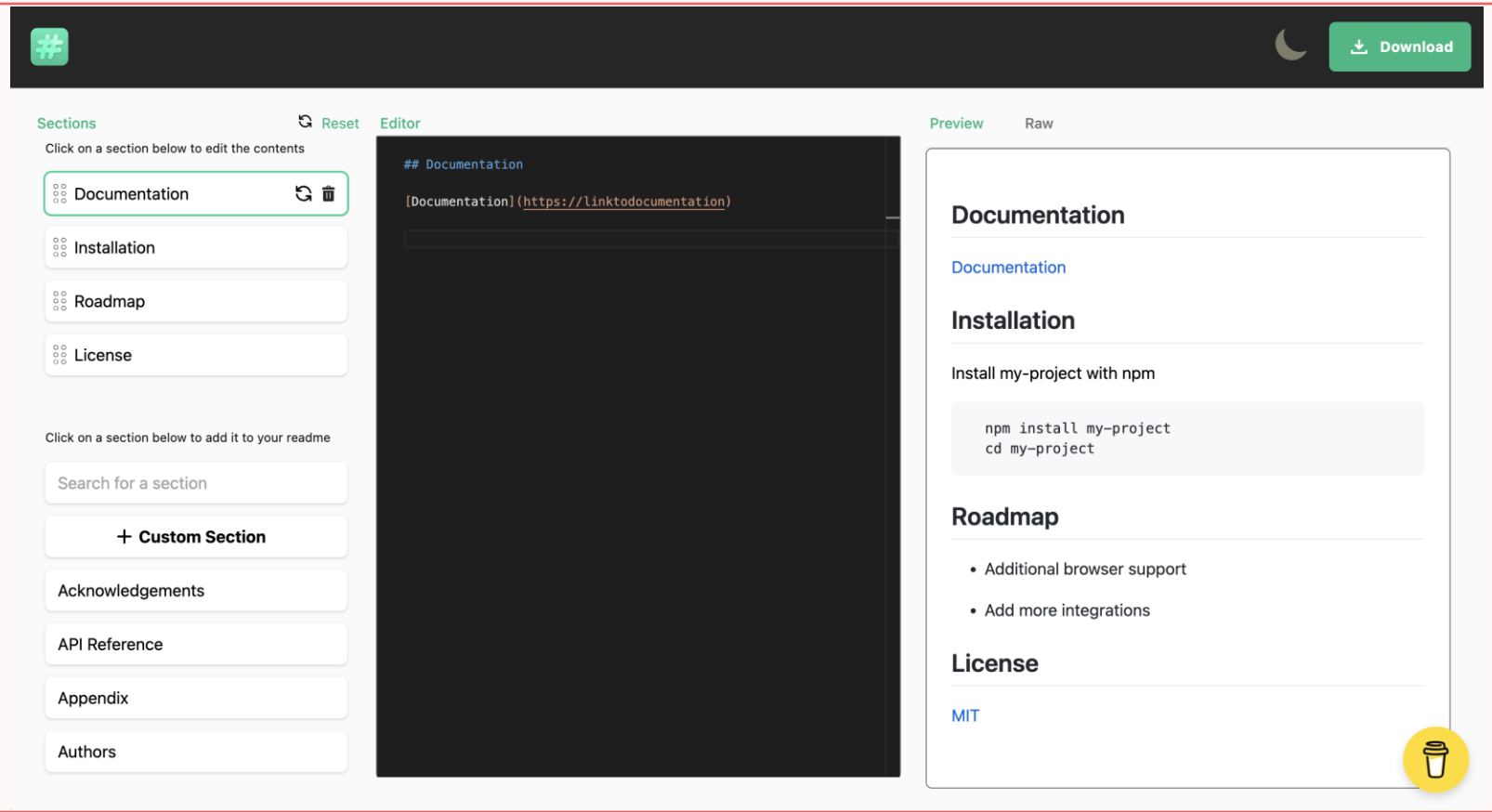
Easier README:





https://marketplace.visualstudio.com/items?itemName=shd101wyy.markdown-preview-enhanced

Easier README: readme.so



https://readme.so/

Keep Your README Up to Date!

- First point of contact
- Saves time
- Encourages collaboration
- Shows organization and professionalism
- Discoverability

README Examples

- **Ours:**

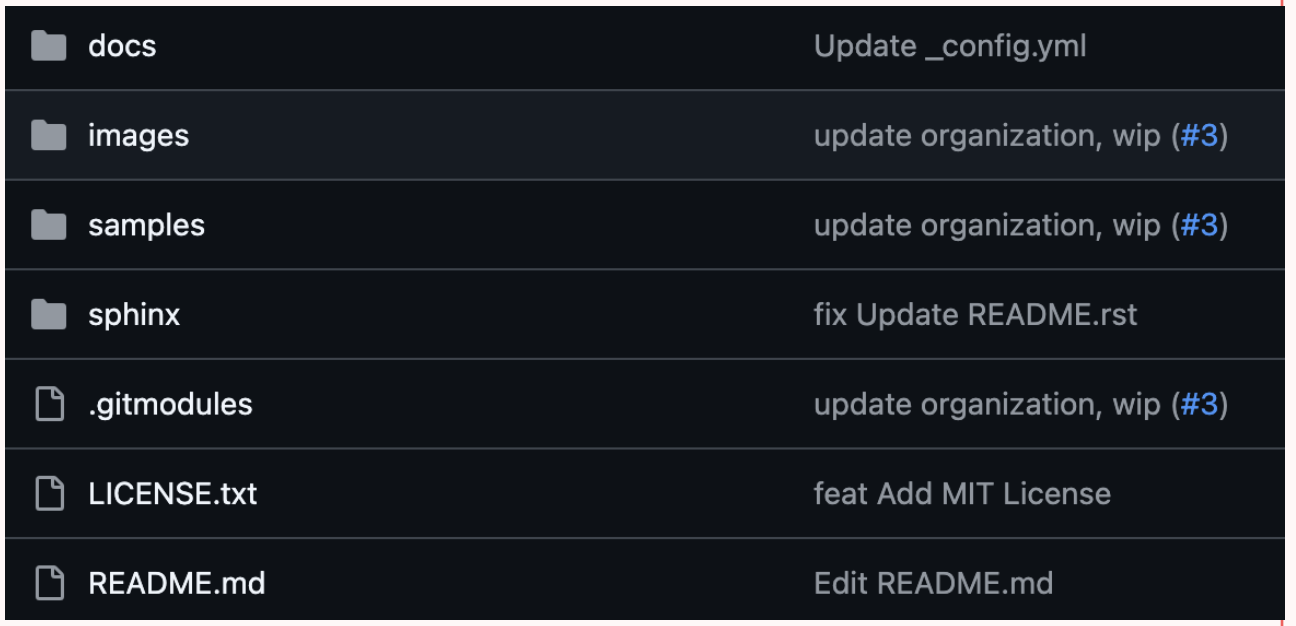
  https://github.com/bunnhimaybe/DocumentationWorkshop

- **Explore in your free time:**

  https://github.com/matiassingers/awesome-readme

Introduction to Commit Messages

- **What** is a commit message?
  - Brief description(s)
- **Why** it is important
  - Tracking changes
  - Collaboration
  - Debugging
  - Code Review



Edit README.md
actuallyvee committed 4 hours ago · ✓ 3 / 3

fix Update README.rst
actuallyvee committed 4 hours ago · ✓ 3 / 3

Add Sphinx screenshots
actuallyvee committed 6 hours ago · ✓ 3 / 3

Add in Sphinx directory documentation
actuallyvee committed 6 hours ago · ✓ 3 / 3

Create README.rst
actuallyvee committed 6 hours ago · ✓ 3 / 3

Delete Sphinx directory
actuallyvee committed 6 hours ago · ✓ 3 / 3

Delete Sphinx HTML
actuallyvee committed 6 hours ago · ✓ 3 / 3

Delete Sphinx build
actuallyvee committed 6 hours ago · ✗ 0 / 3

Update README.rst
actuallyvee committed 6 hours ago · ✓ 3 / 3

Update README.rst
actuallyvee committed 6 hours ago · ✗ 0 / 3

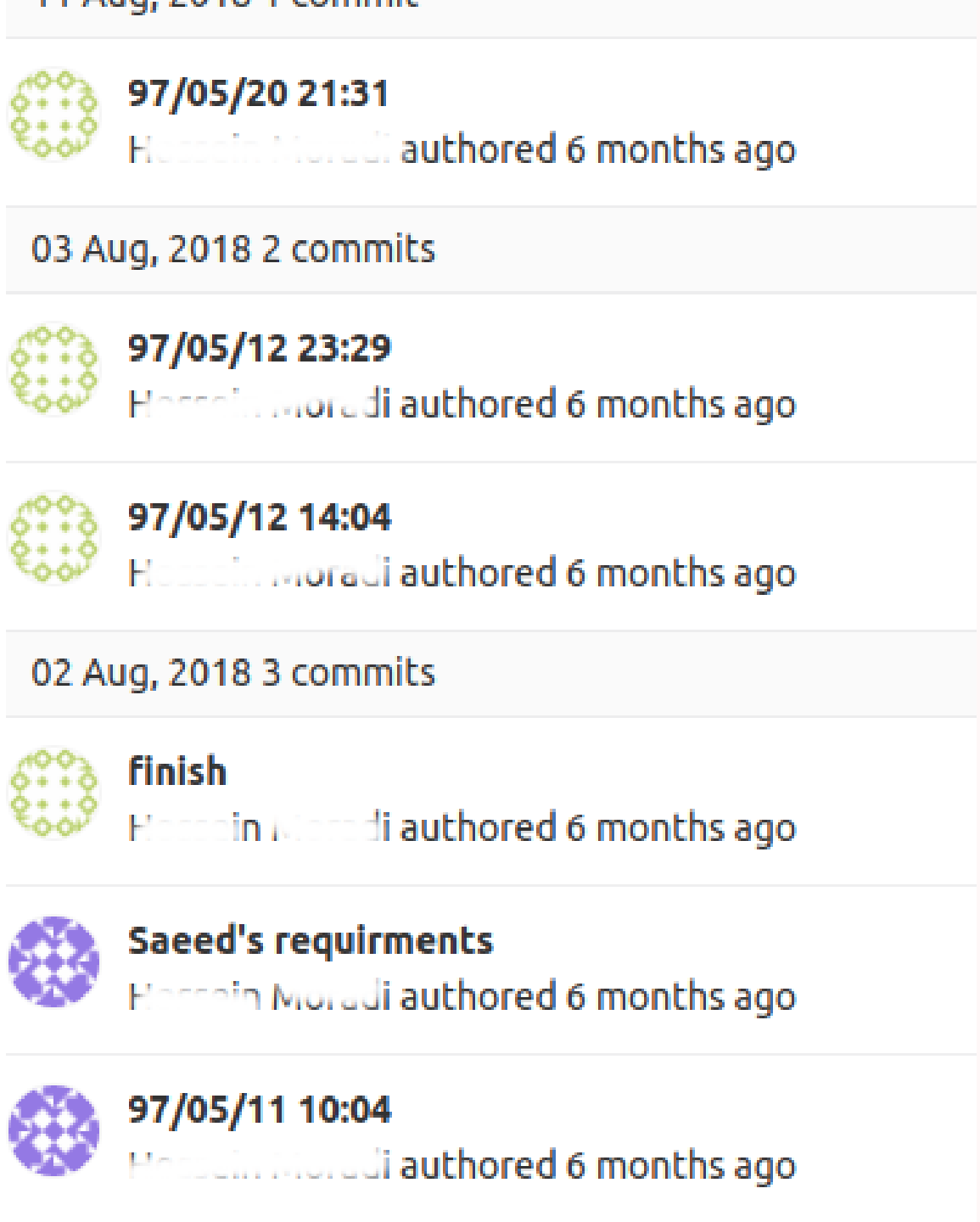
Merge pull request #6 from bunnhimaybe/actuallyvee-patch-5
actuallyvee committed 6 hours ago · ✓ 3 / 3

Add Sphinx README
actuallyvee committed 6 hours ago

Best Practices

COMMIT MESSAGES

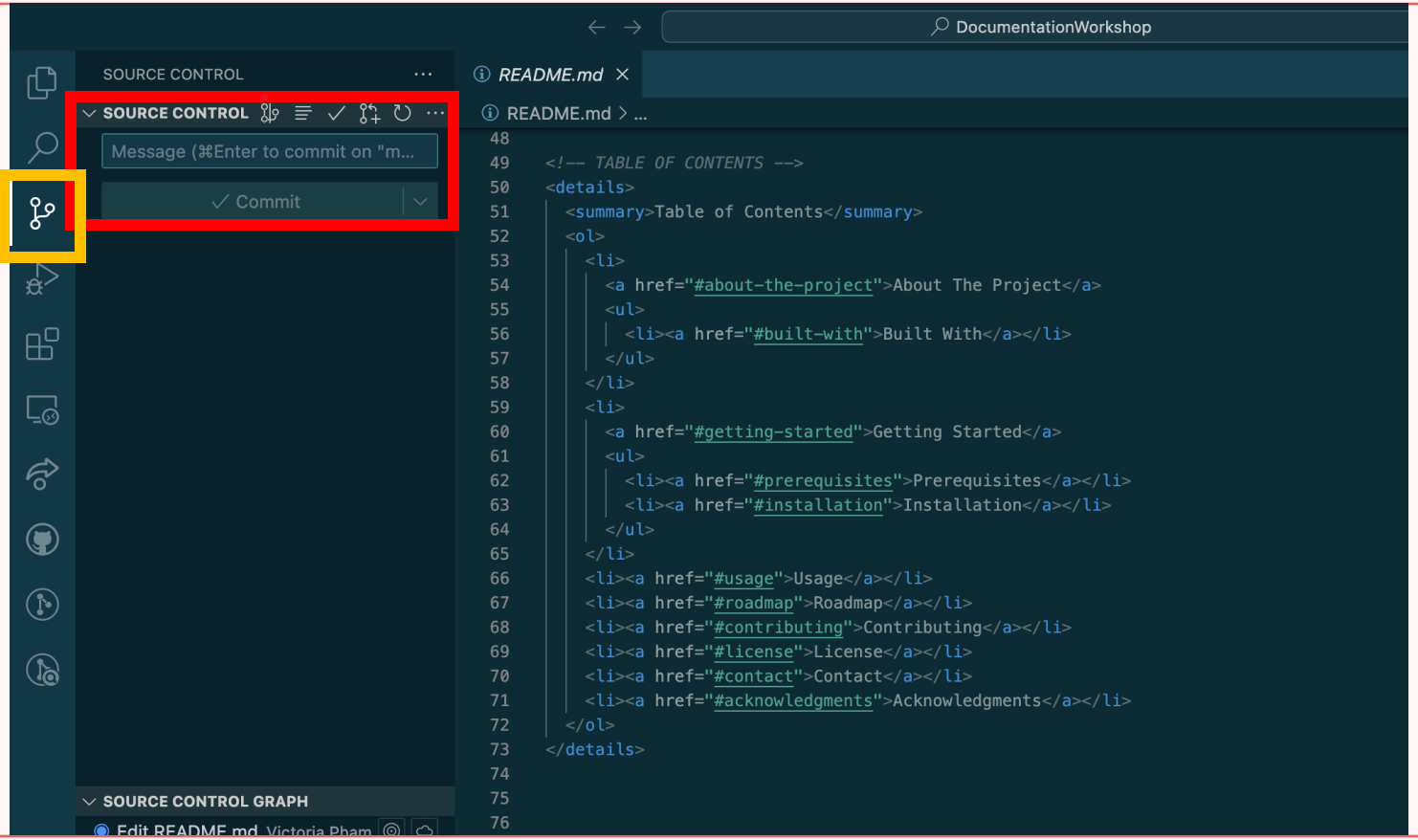
- Capitalization and Punctuation
- Imperative Action
- Commit Type
  - feat , fix, refactor, docs, style
- Length
- Content



Common Mistakes

- Rambling
- Doesn't contain objective

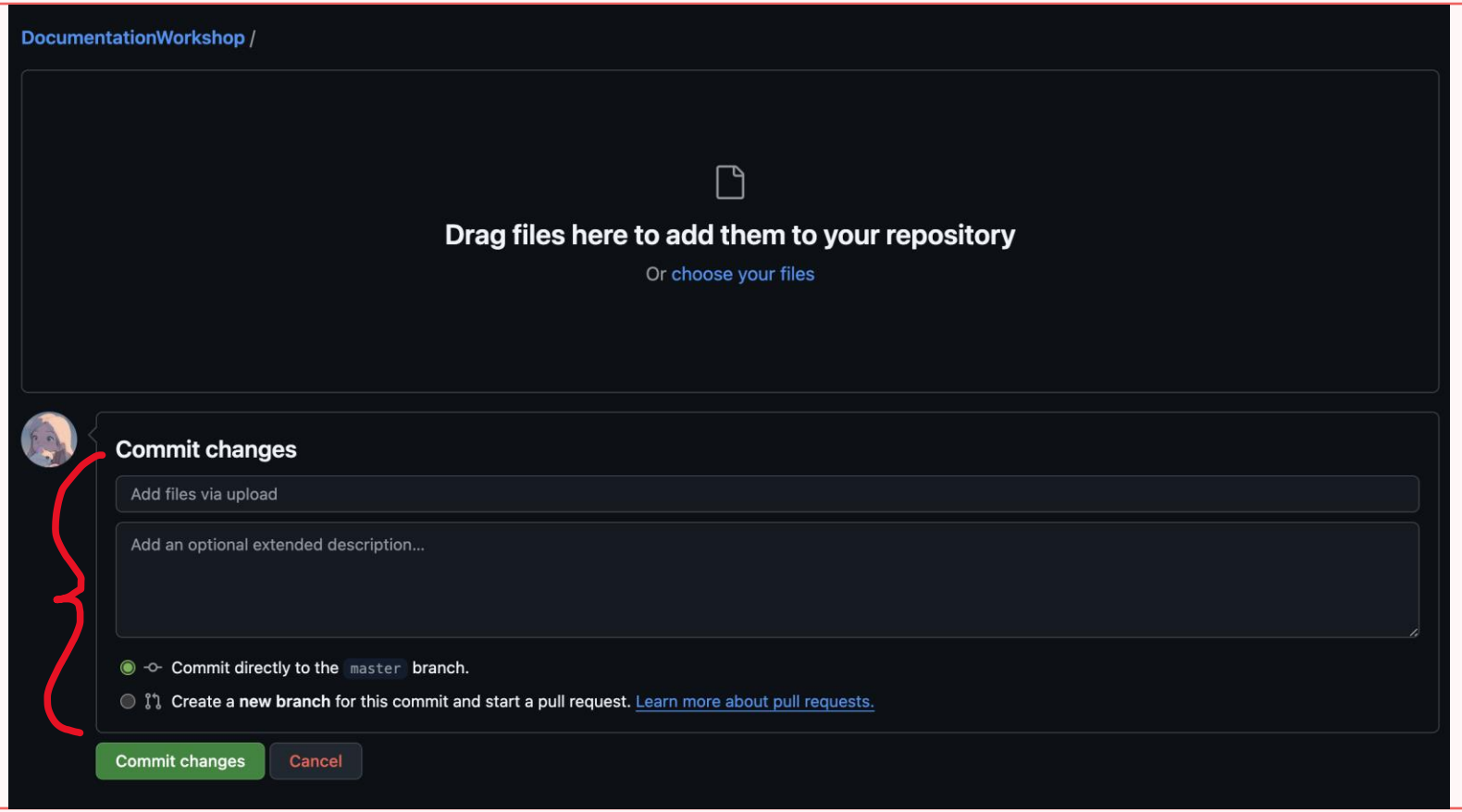
Commit How-to: VSCode



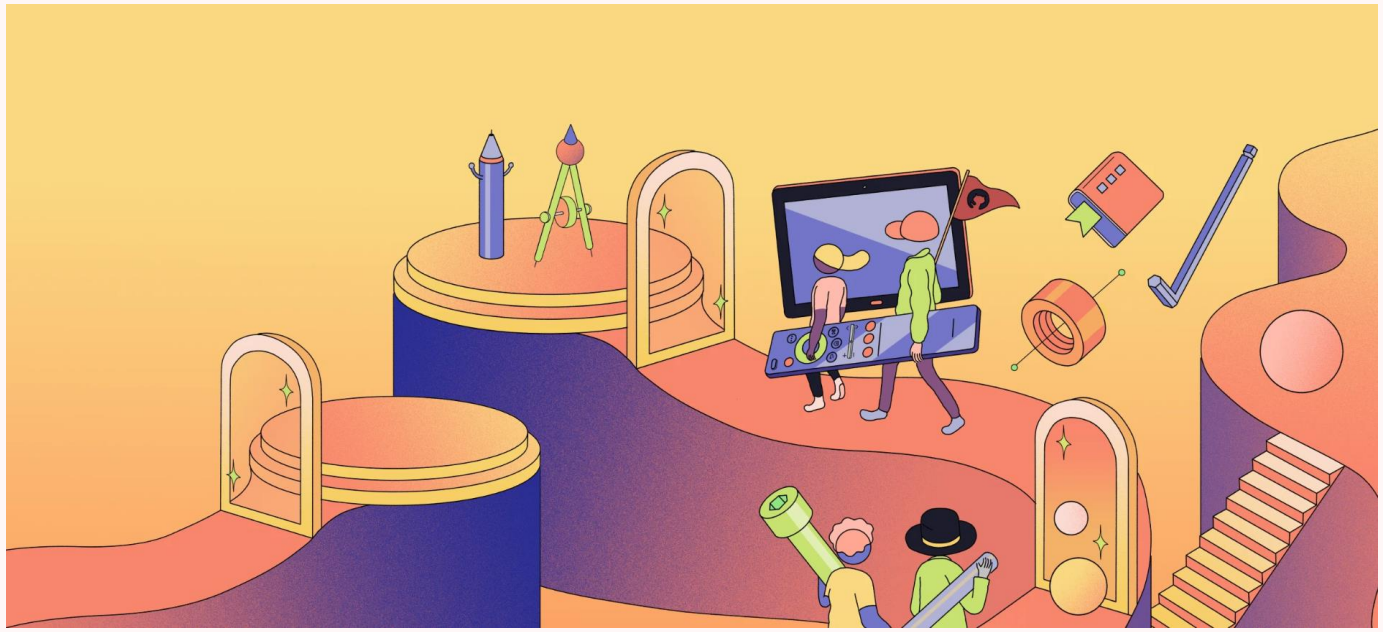
Commit How-to: Terminal

```
@LAPTOP-U24S3V3Q MINGW64 /d/git_repo/Demo_folder/Demo_repository (main)
$ git commit -m "Making my first commit"
[main 110f27f] Making my first commit
 4 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 image_1.jpg
 create mode 100644 image_2.jpg
 create mode 100644 image_3.jpg
 create mode 100644 image_4.jpg

@LAPTOP-U24S3V3Q MINGW64 /d/git_repo/Demo_folder/Demo_repository (main)
$ git status
On branch main
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
```

Commit How-to: In-browser



GitHub Education
Student Developer Pack

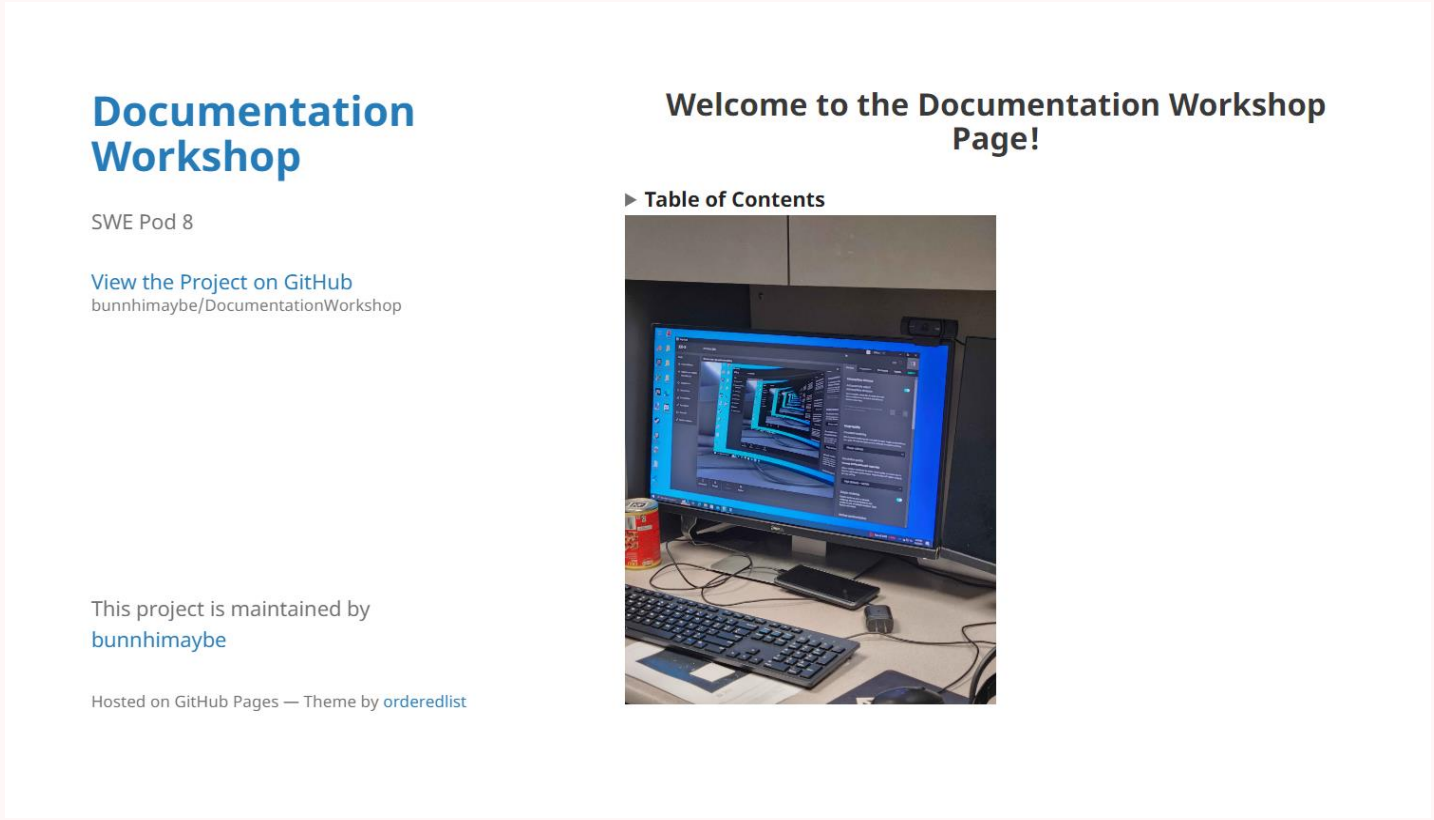


Learning Paths
Experiences
Community Exchange
Events
Custom Domains

GitHub Pro –
Unlimited repositories
Packages
Codespaces
Copilot

https://education.github.com/pack

GitHub Pages

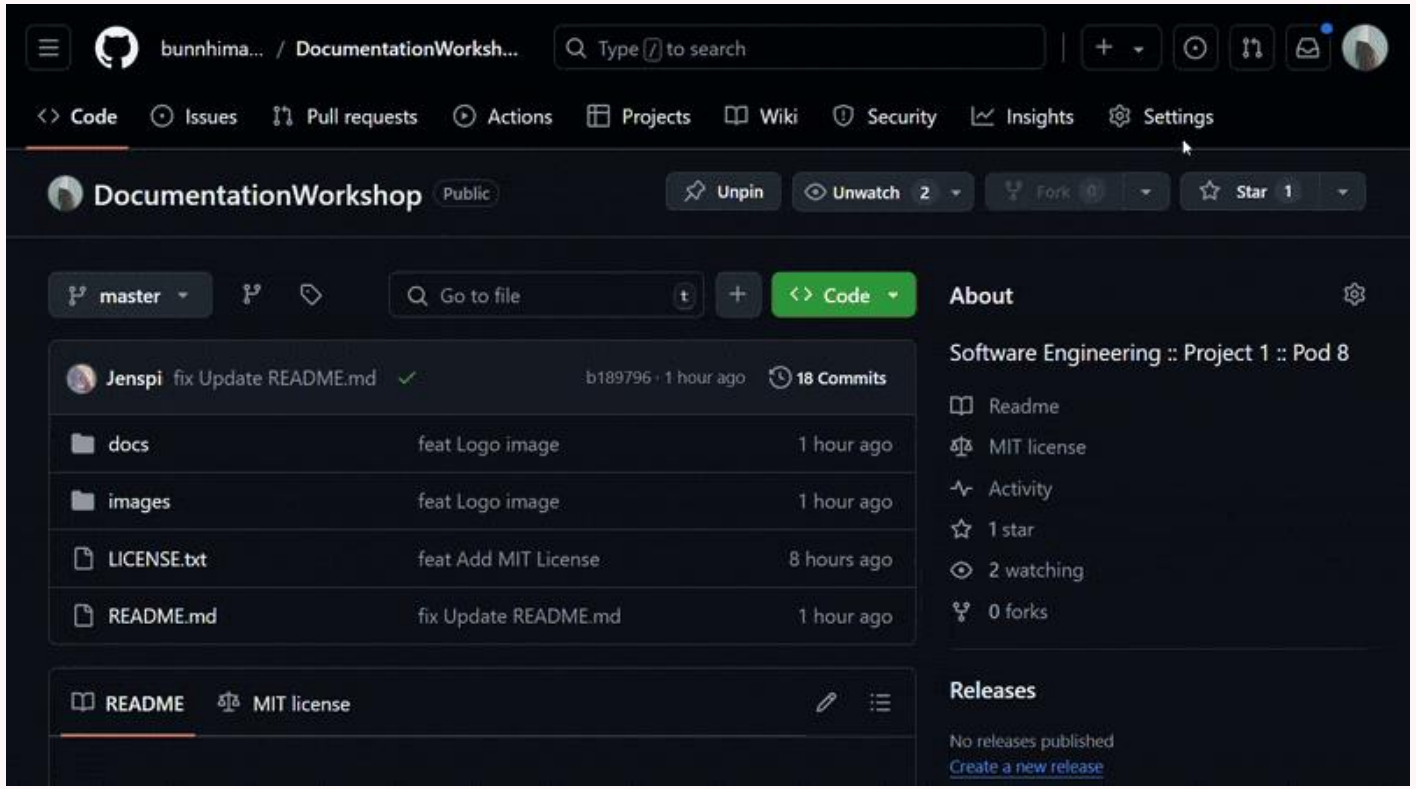


https://bunnhimaybe.github.io/DocumentationWorkshop/

- Free static web hosting service
- Accounts can have one user site and unlimited project sites

https://docs.github.com/en/pages

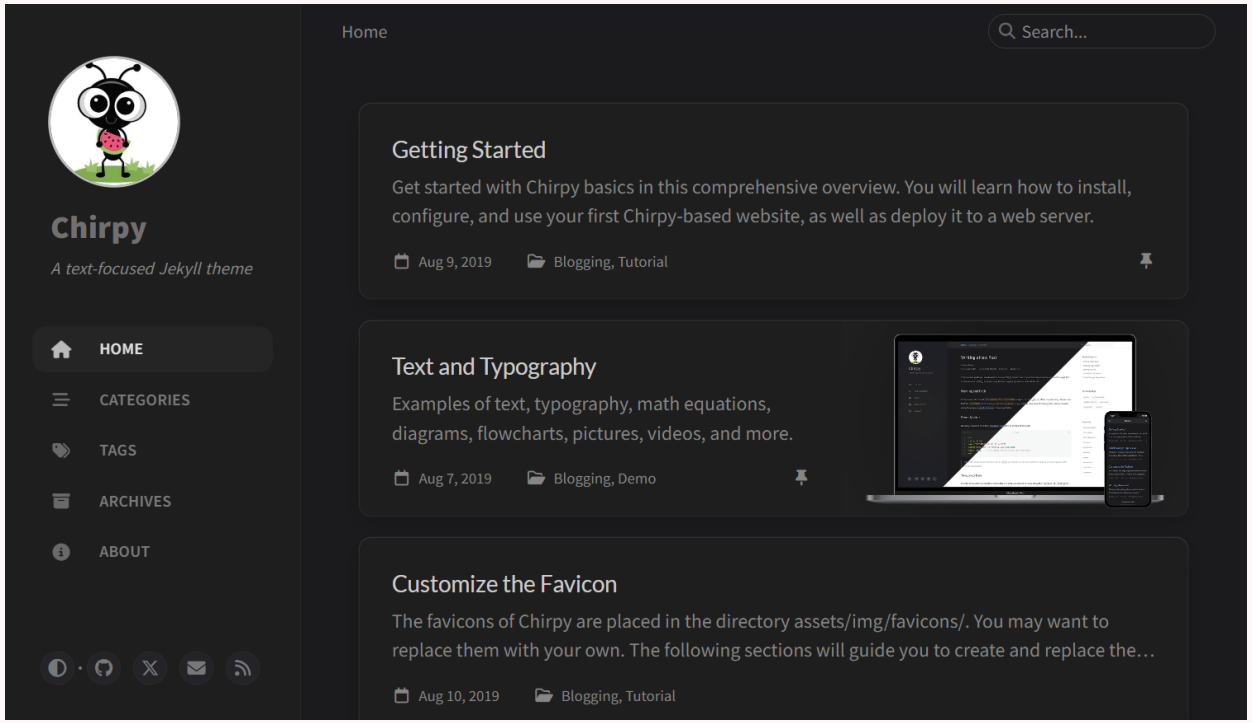
Set Up GitHub Pages



1. Create repository
   * User default: ***username*.github.io**
2. Clone repository
3. Create entry file (index.html or README.md)
4. Publish
5. **Enable GitHub Pages**

https://pages.github.com/

https://github.com/cotes2020/jekyll-theme-chirpy



Deployment

GitHub Actions

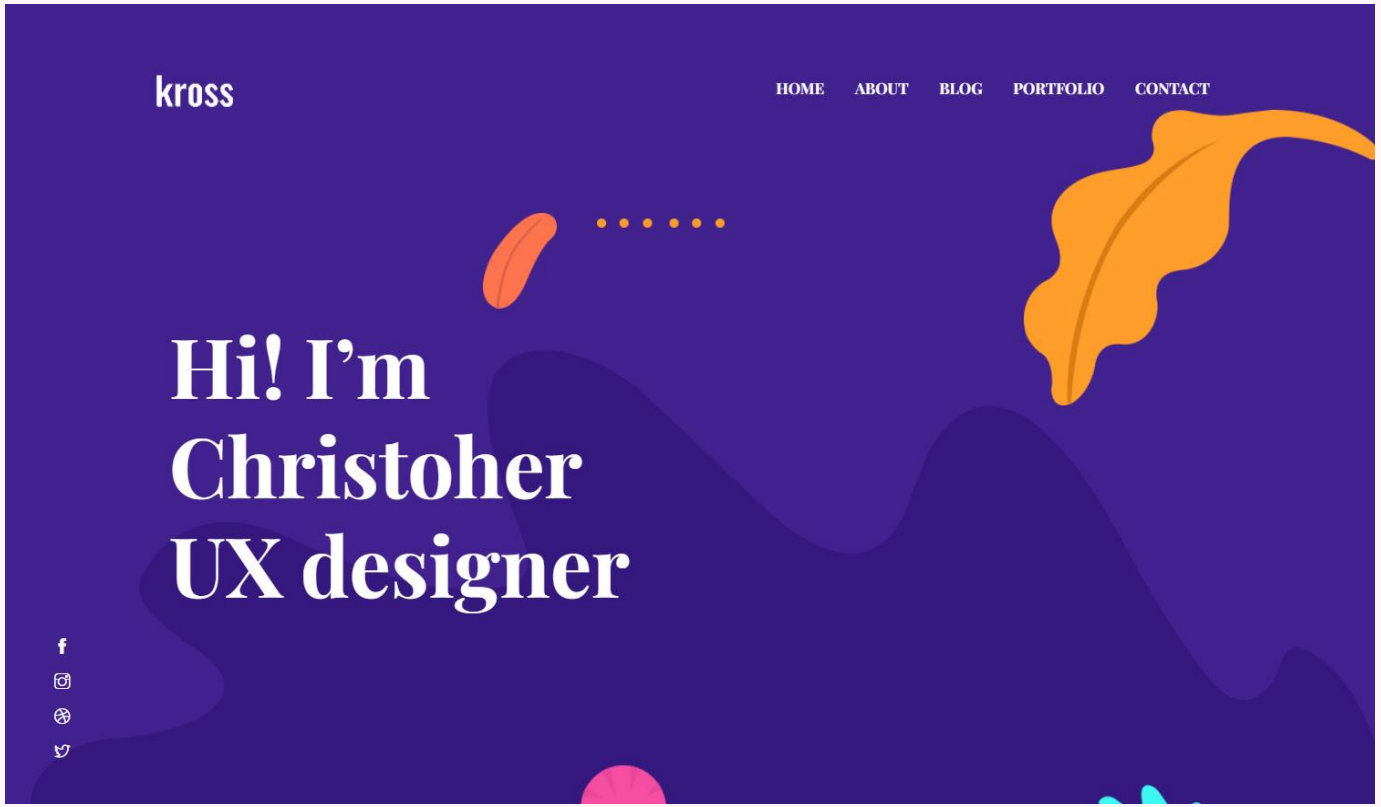
- enabled to use built-in Jekyll

From a branch

- Other builds
- Disable Github Actions and add **.nojekyll** file to root to deploy the content directly

https://docs.github.com/en/pages/getting-started-with-github-pages/configuring-a-publishing-source-for-your-github-pages-site

Customization

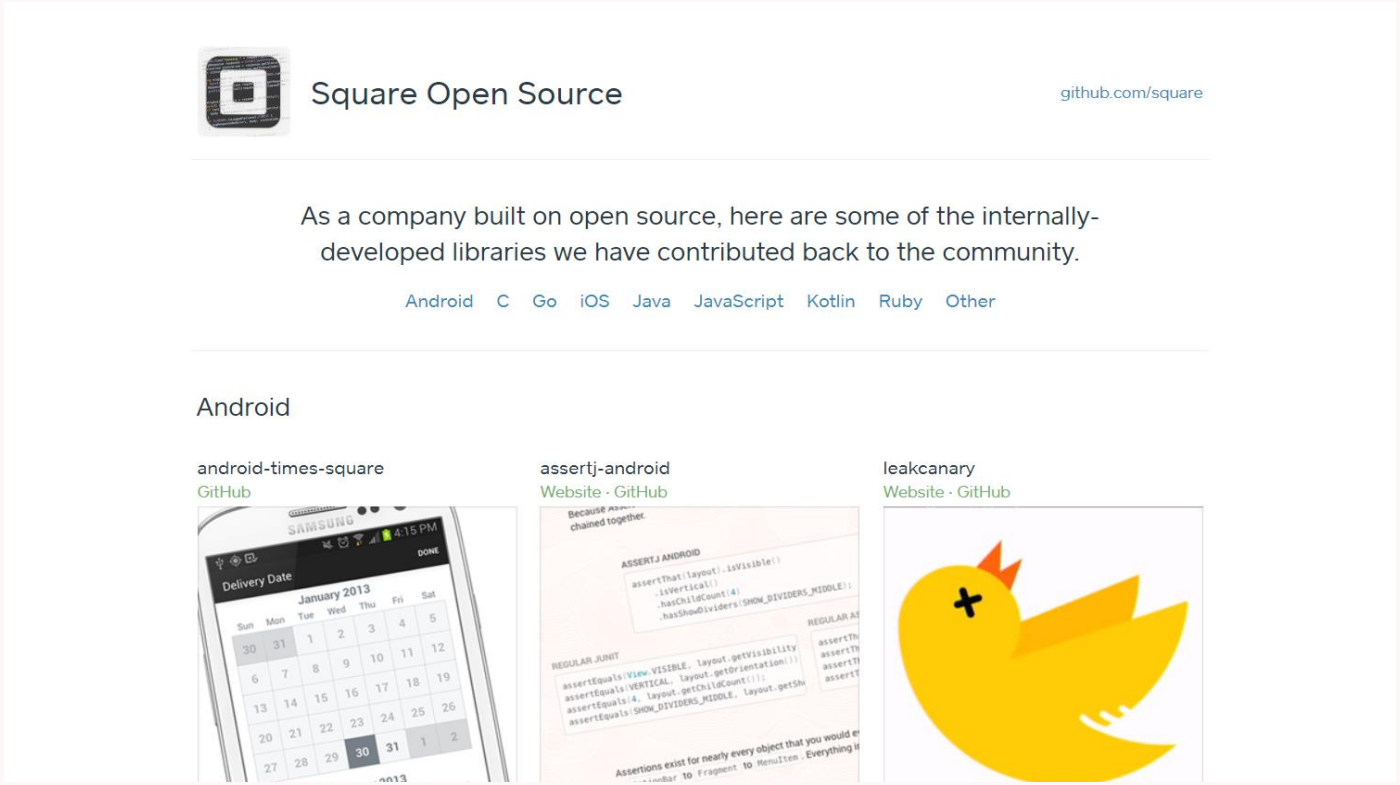


- Jekyll Themes
- Supported Themes

  https://pages.github.com/themes/
- Templetes
  - HTML
  - Repositories
- Custom Domains

https://themefisher.com/products/kross-bootstrap

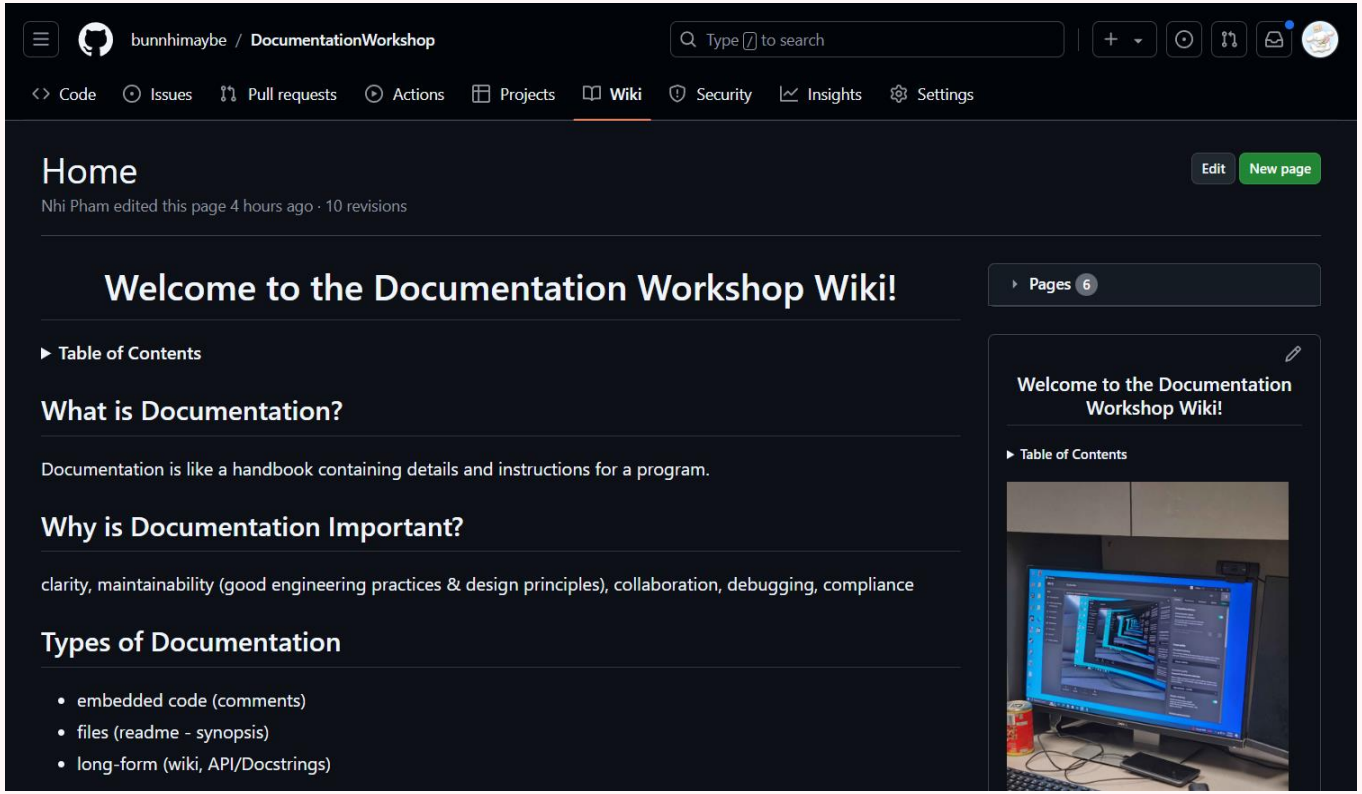
Best Practices



- detailed
- up-to-date
- well-structured and easy to navigate
- uses Markdown formatting

https://square.github.io

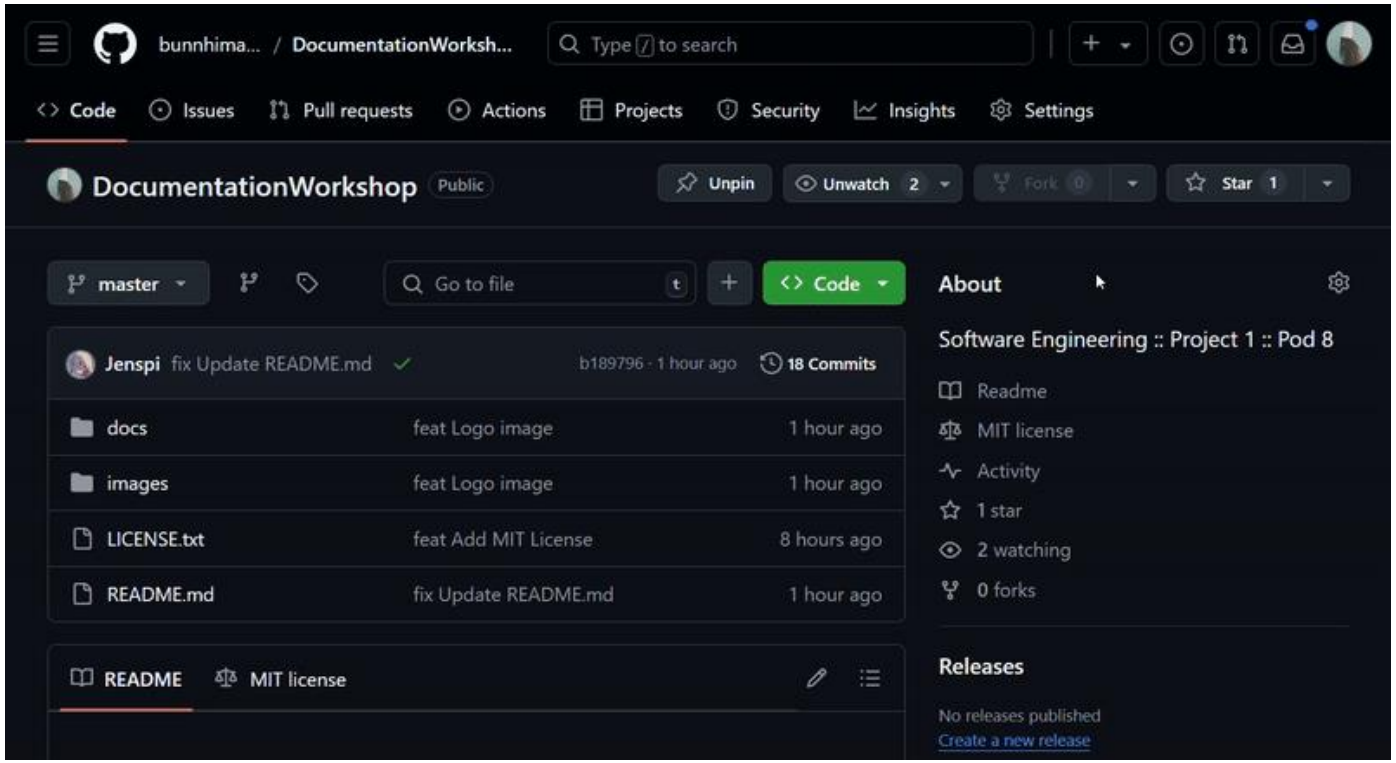
GitHub Wikis



- Host long-form documentation within repositories
- Edit in-browser or clone locally

https://github.com/bunnhimaybe/DocumentationWorkshop/wiki

Set Up GitHub Wikis

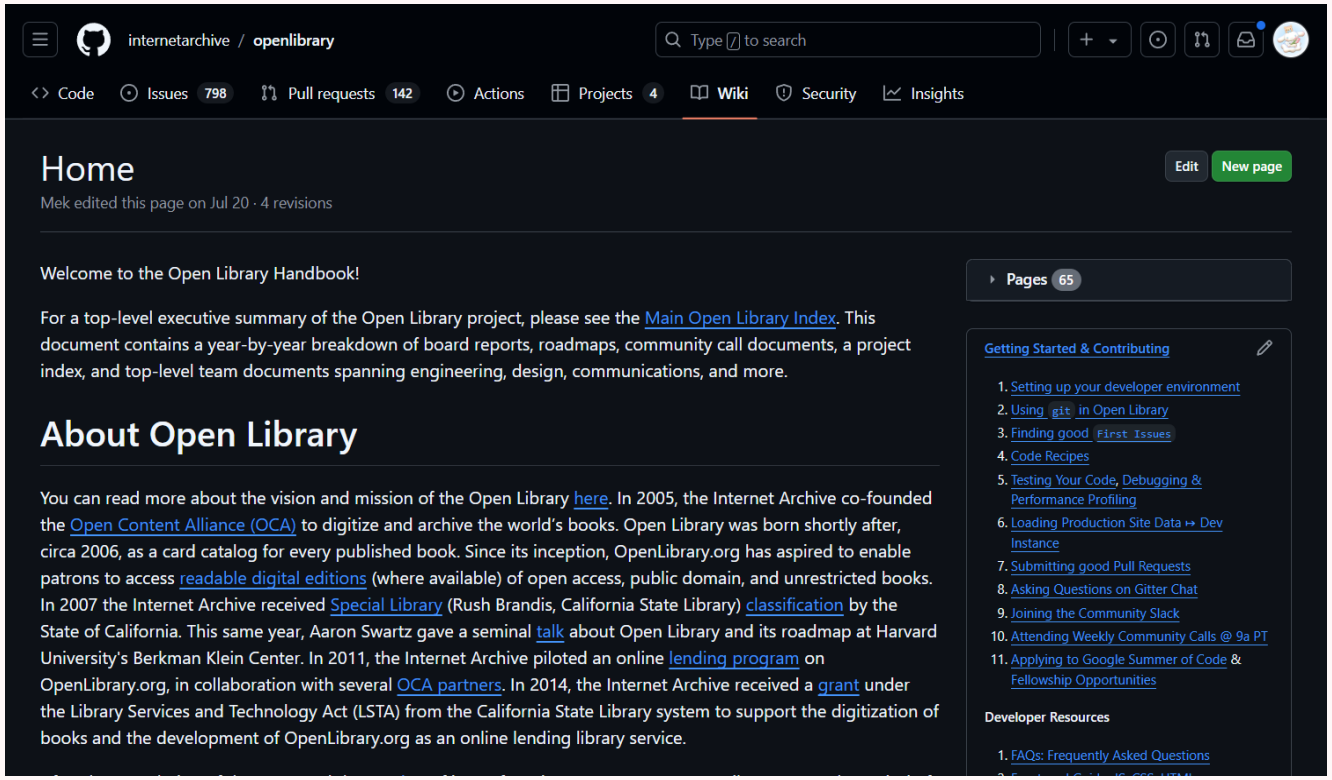


A section to host long-form documentation within your repository

- Cloning
- Header
- Footer
- Sidebar

https://docs.github.com/communities/about-wikis

Best Practices



- detailed and up-to-date
- well-structured and easy to navigate
- uses Markdown formatting
- doesn't repeat README information
- **Guidelines:** https://github.com/MyHoneyBadger/awesome-github-wiki
- **Example:** https://github.com/internetarchive/openlibrary/wiki

https://github.com/bunnhimaybe/DocumentationWorkshop/wiki

GITHUB WIKIS

Sphinx

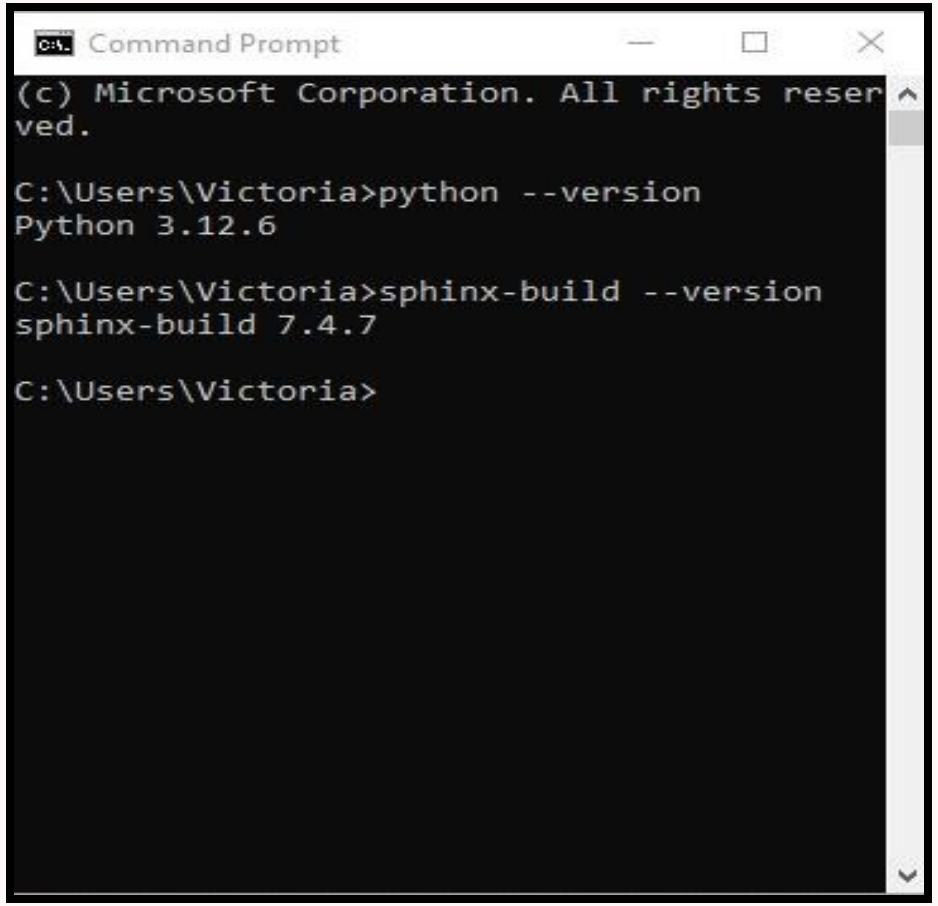
- Auto-documentation generator tool for various documentation files that can create webpages, PDF, and ePub
- Uses reStructured Text and Markdowns

Installation of Sphinx

- **Prerequisite**: Must have Python V.3+ installed.
- **Windows:** Make sure to check-mark 'pip' and 'PATH' during download set-up.
- **MacOS:** Check version via 'python3' command

TERMINAL COMMAND:

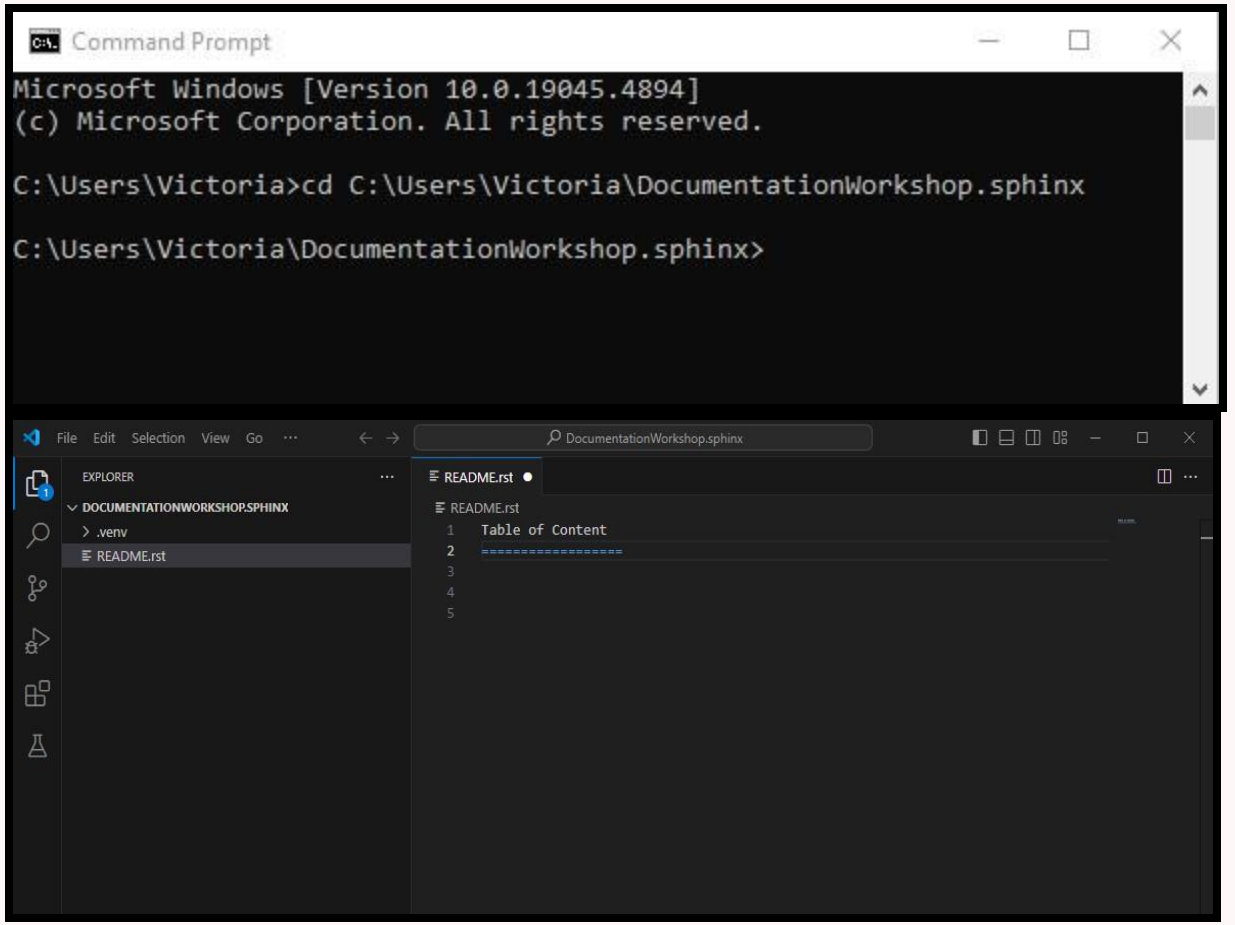
- **Windows**: $ pip install -U sphinx
- **Linux**: $ apt-get install python3-sphinx
- **MacOS**: $ brew install sphinx-doc



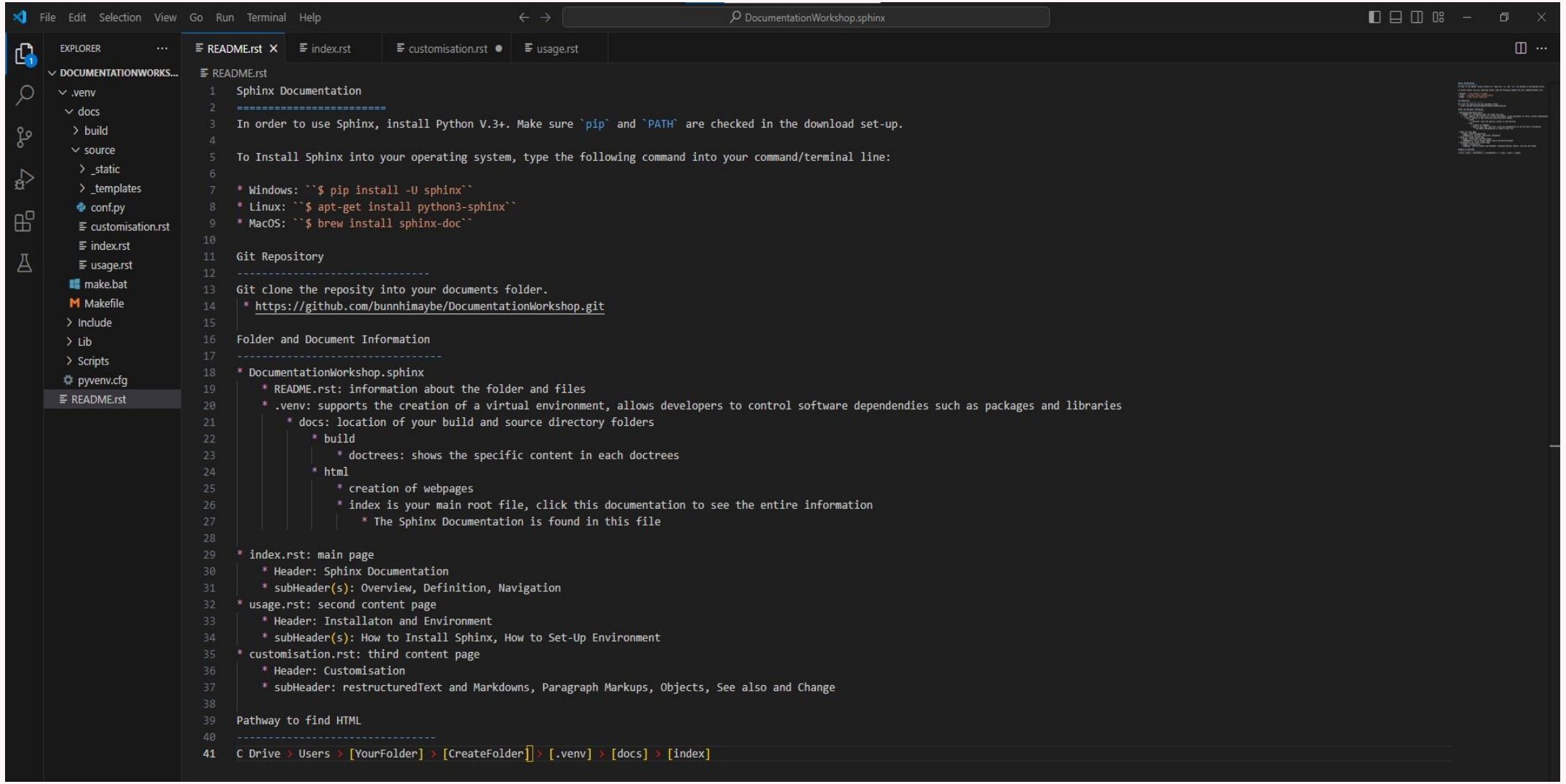
Environment Set-Up

FOLDER AND PATHWAY:

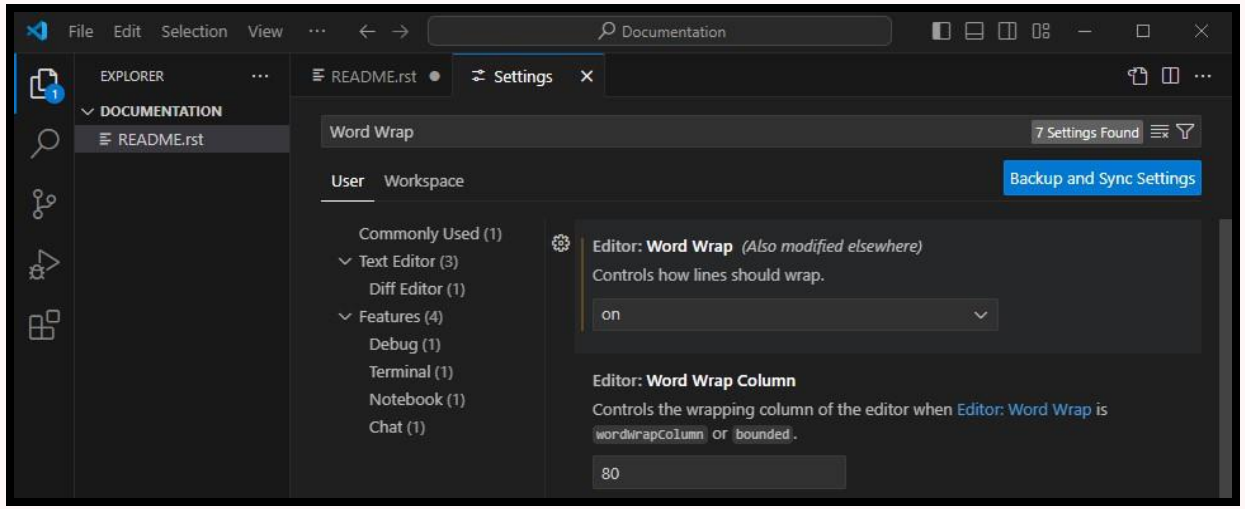
- Create a folder in a directory
- Pathway: C Drive > Users > [YourFolder] > [CreateFolder]
- Open [CreateFolder] in Visual Code Studio (VS)
- Create a new file and name it README.rst



README.rst


File Edit Selection View Go Run Terminal Help
DocumentationWorkshop.sphinx
EXPLORER
README.rst
index.rst
customisation.rst
usage.rst
DOCUMENTATIONWORKS...
.venv
docs
build
source
_static
_templates
conf.py
customisation.rst
index.rst
usage.rst
make.bat
Makefile
Include
Lib
Scripts
pyvenv.cfg
README.rst
Sphinx Documentation
In order to use Sphinx, install Python V.3+. Make sure `pip` and `PATH` are checked in the download set-up.
To Install Sphinx into your operating system, type the following command into your command/terminal line:
* Windows: ``$ pip install -U sphinx``
* Linux: ``$ apt-get install python3-sphinx``
* MacOS: ``$ brew install sphinx-doc``
Git Repository
Git clone the reposity into your documents folder.
* https://github.com/bunnhimaybe/DocumentationWorkshop.git
Folder and Document Information
* DocumentationWorkshop.sphinx
* README.rst: information about the folder and files
* .venv: supports the creation of a virtual environment, allows developers to control software dependendies such as packages and libraries
* docs: location of your build and source directory folders
* build
* doctrees: shows the specific content in each doctrees
* html
* creation of webpages
* index is your main root file, click this documentation to see the entire information
* The Sphinx Documentation is found in this file
* index.rst: main page
* Header: Sphinx Documentation
* subHeader(s): Overview, Definition, Navigation
* usage.rst: second content page
* Header: Installaton and Environment
* subHeader(s): How to Install Sphinx, How to Set-Up Environment
* customisation.rst: third content page
* Header: Customisation
* subHeader: restructuredText and Markdowns, Paragraph Markups, Objects, See also and Change
Pathway to find HTML
C Drive > Users > [YourFolder] > [CreateFolder] > [.venv] > [docs] > [index]

VS SETTINGS & EXTENSIONS



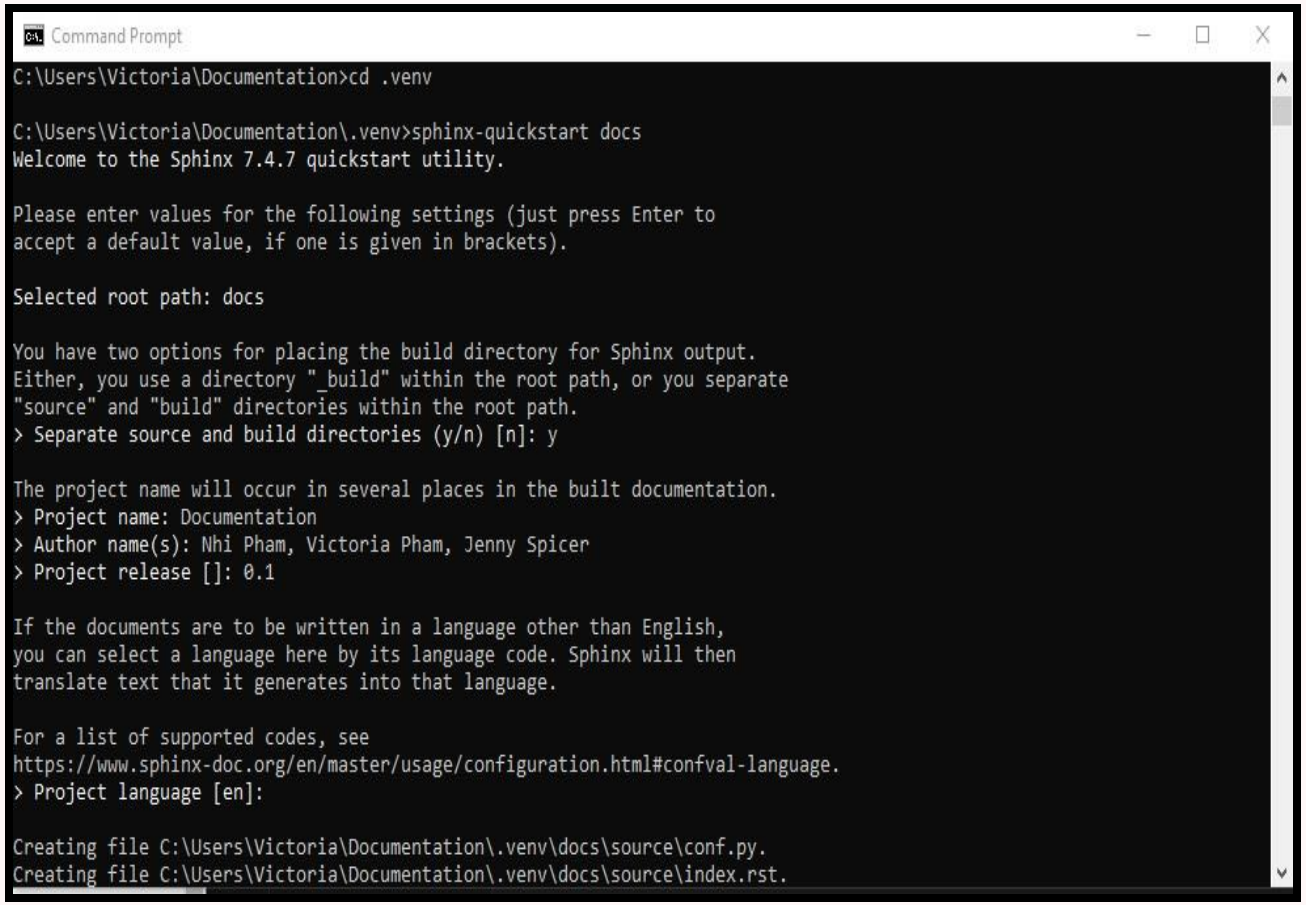
Wordwrap allows a string to be broken into new lines when it reaches a specific length

reStructured Text language support, note the extension should be customised to allow 'enter' and 'backspacing'

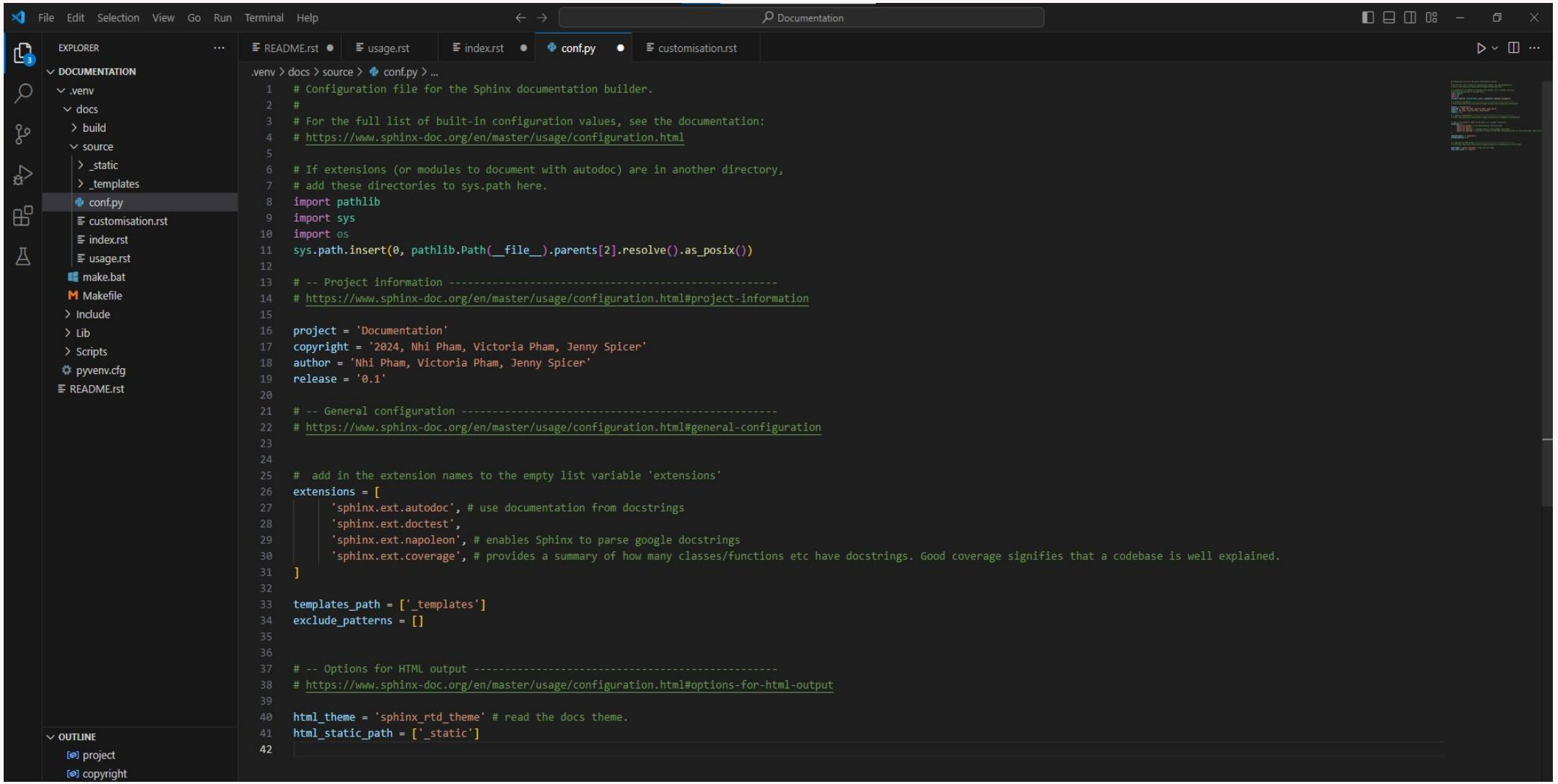
Environment Set-Up

TERMINAL COMMAND AND VS:

- Change directory to the [CreateFolder] pathway and type the following:
  - python -m venv .venv
- Change directory to the \CreateFolder\.venv pathway and type the following:
  - sphinx-quickstart docs
- Separate source and build directory, choose 'yes'
- Insert project name, author, release, and language information

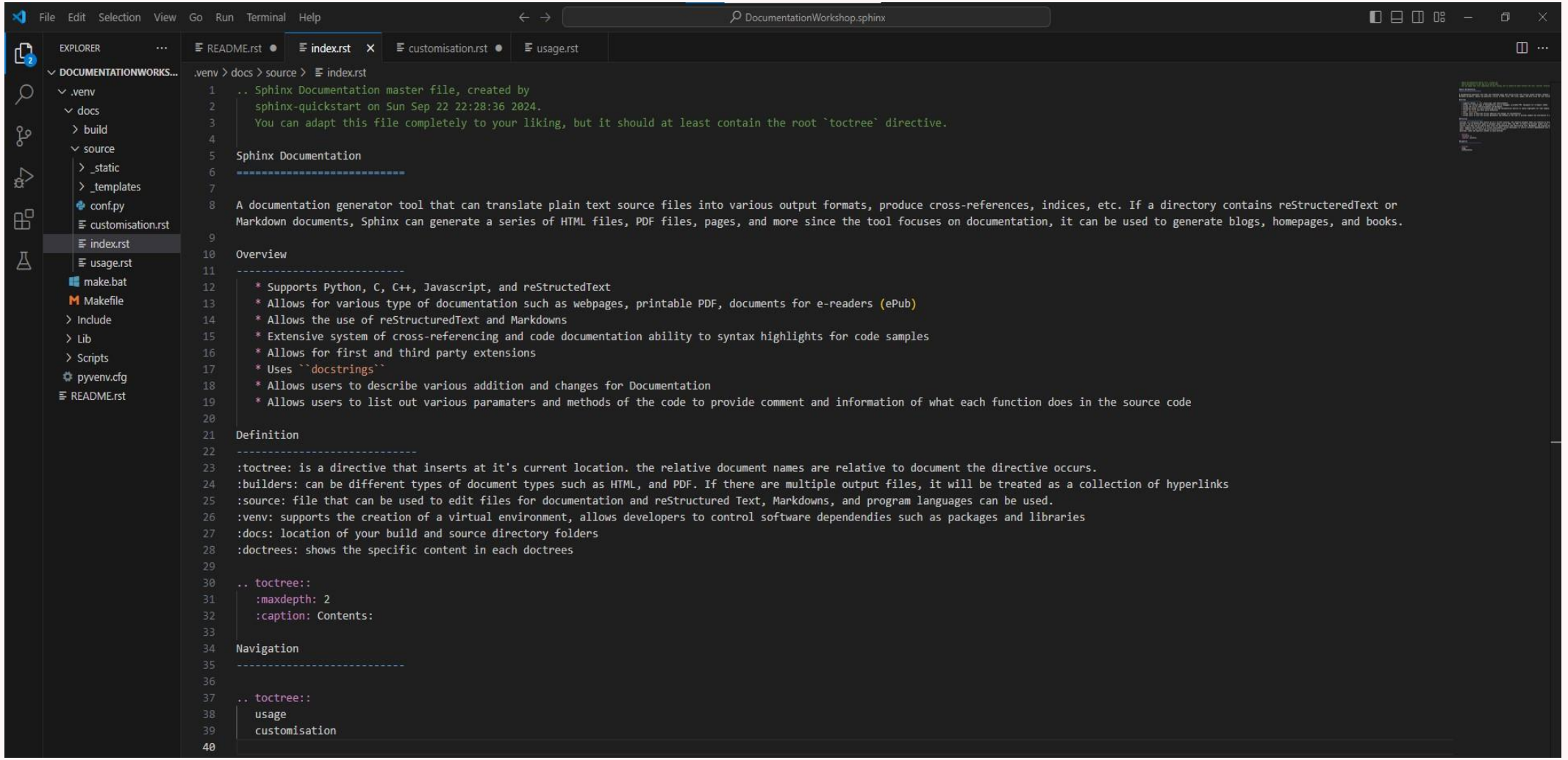


CONFIG.PY



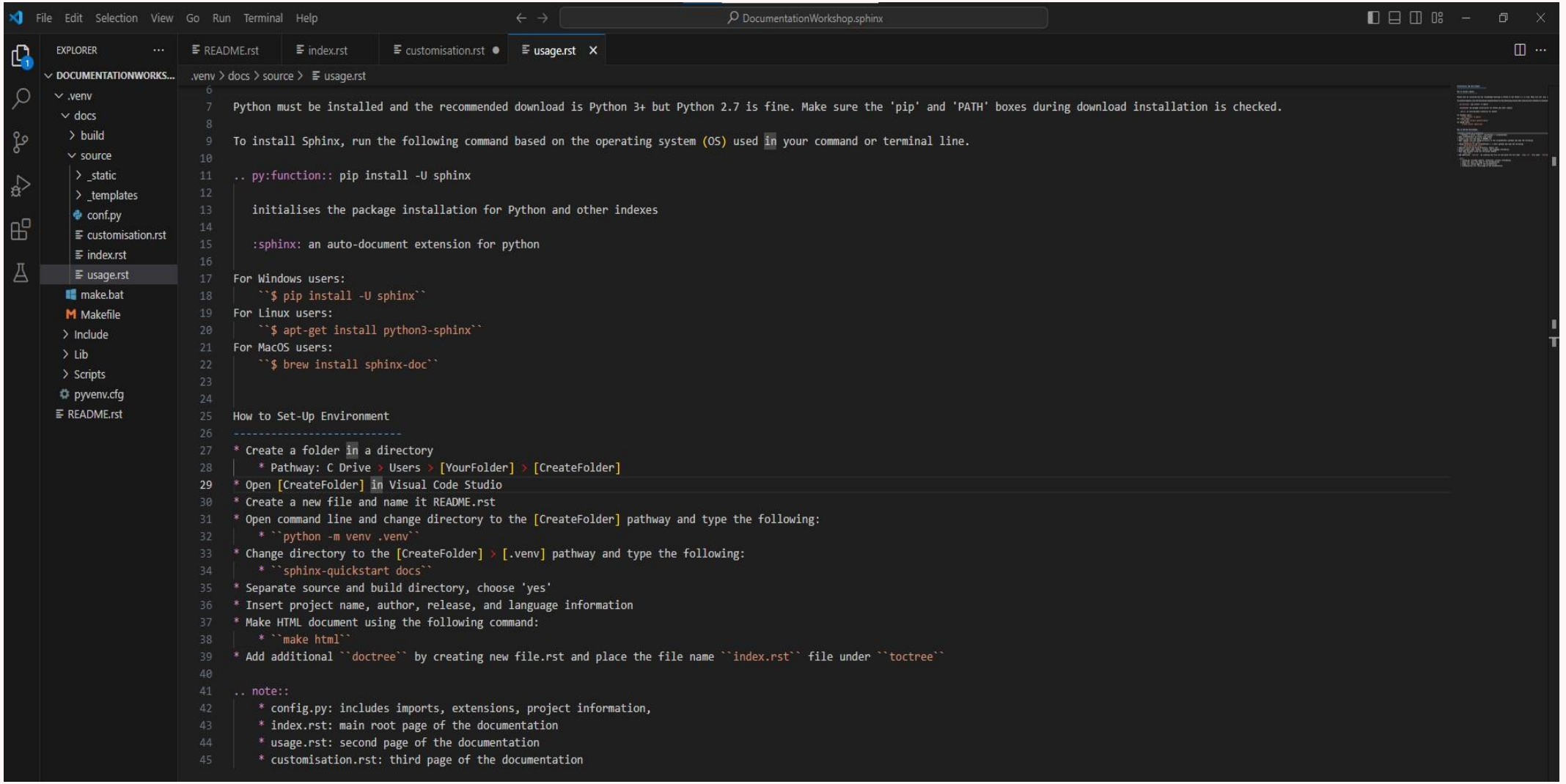
system libraries, source codes (py), project information, extensions, themes

INDEX RST FILE



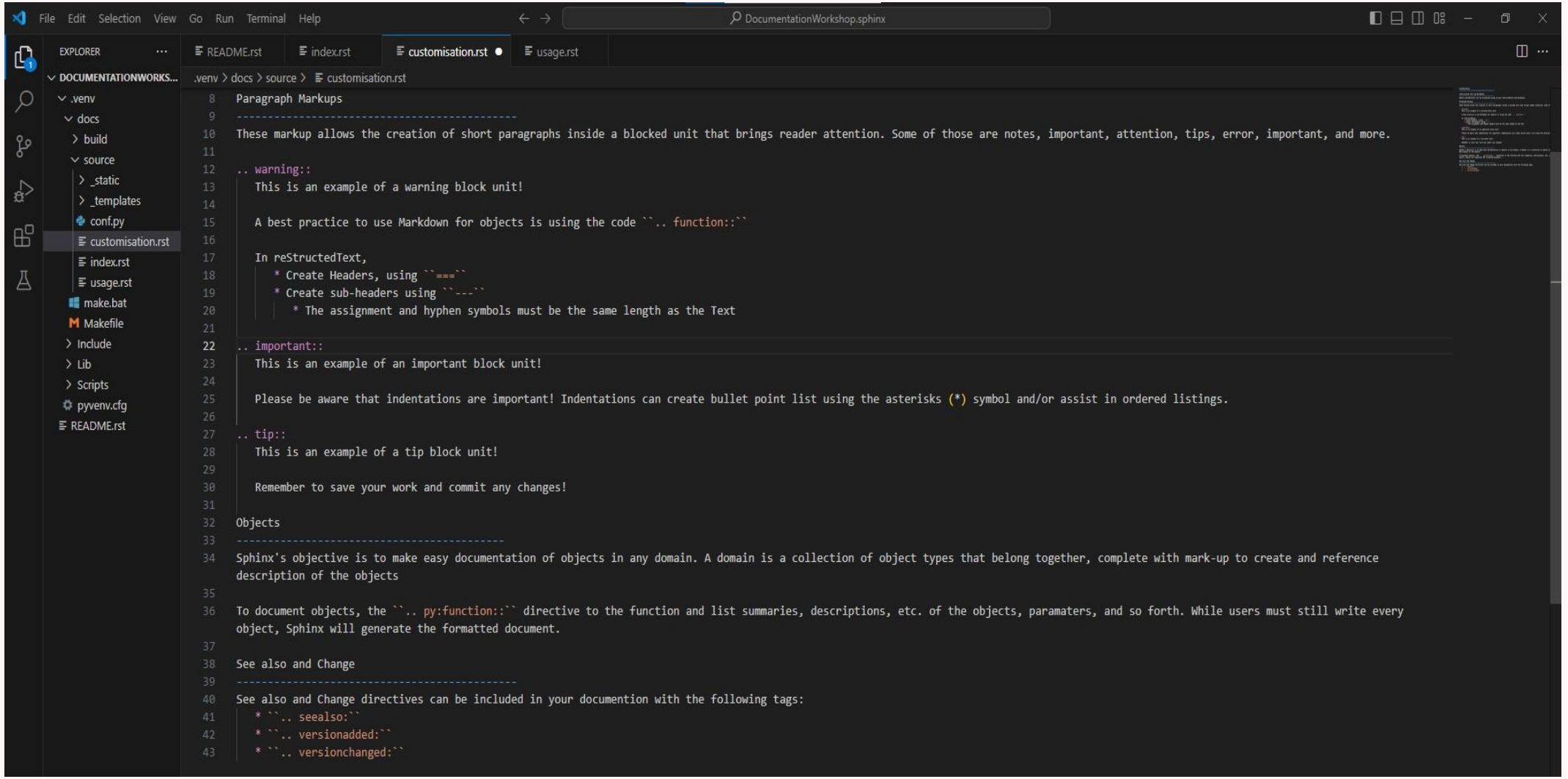
main root file, first page seen in the document, includes toctree and navigation

USAGE RST FILE



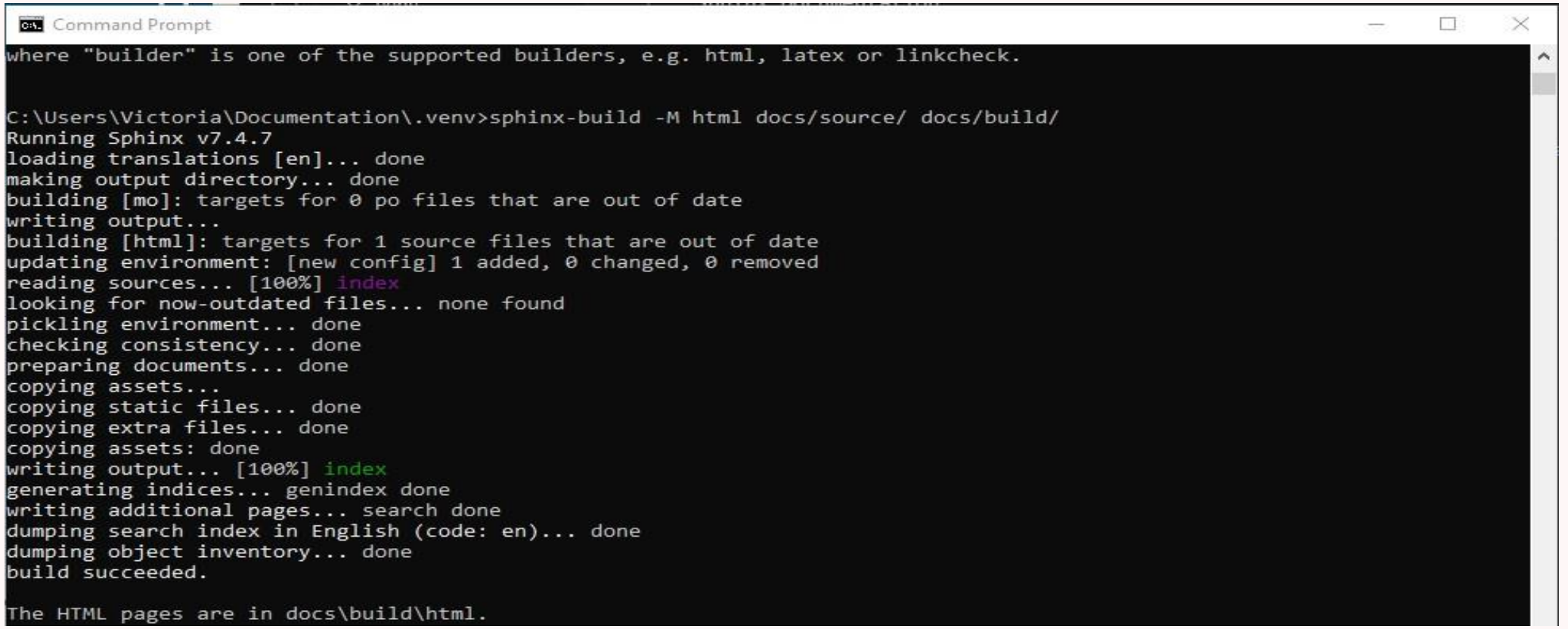
second navigation file, file name '**usage**' must be included in index file in the toctree

CUSTOMISATION RST FILE



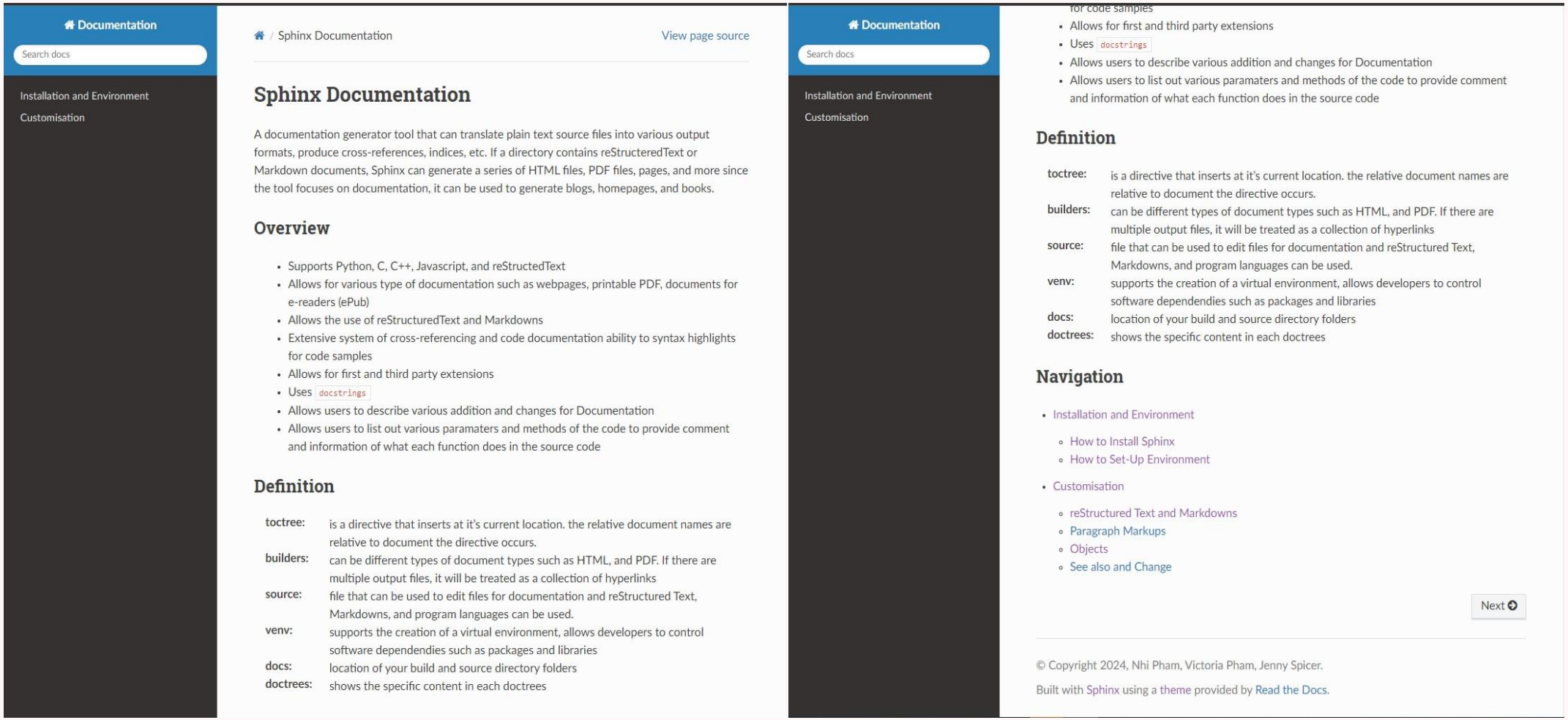
third navigation file, file name '**customisation**' must be included in index file in the toctree

SPHINX BUILD: HTML FILE



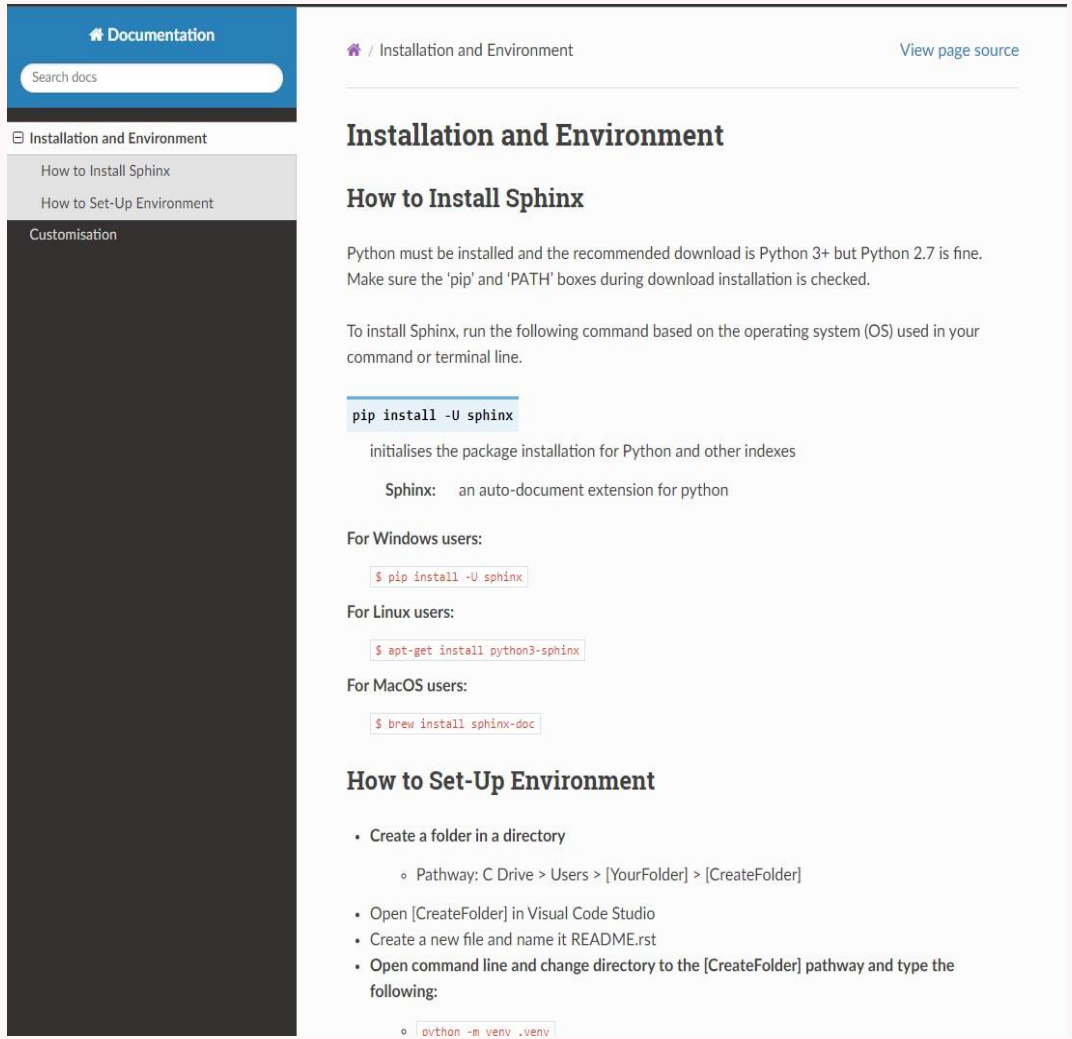
sphinx build M html docs/source docs/build , build and source folders

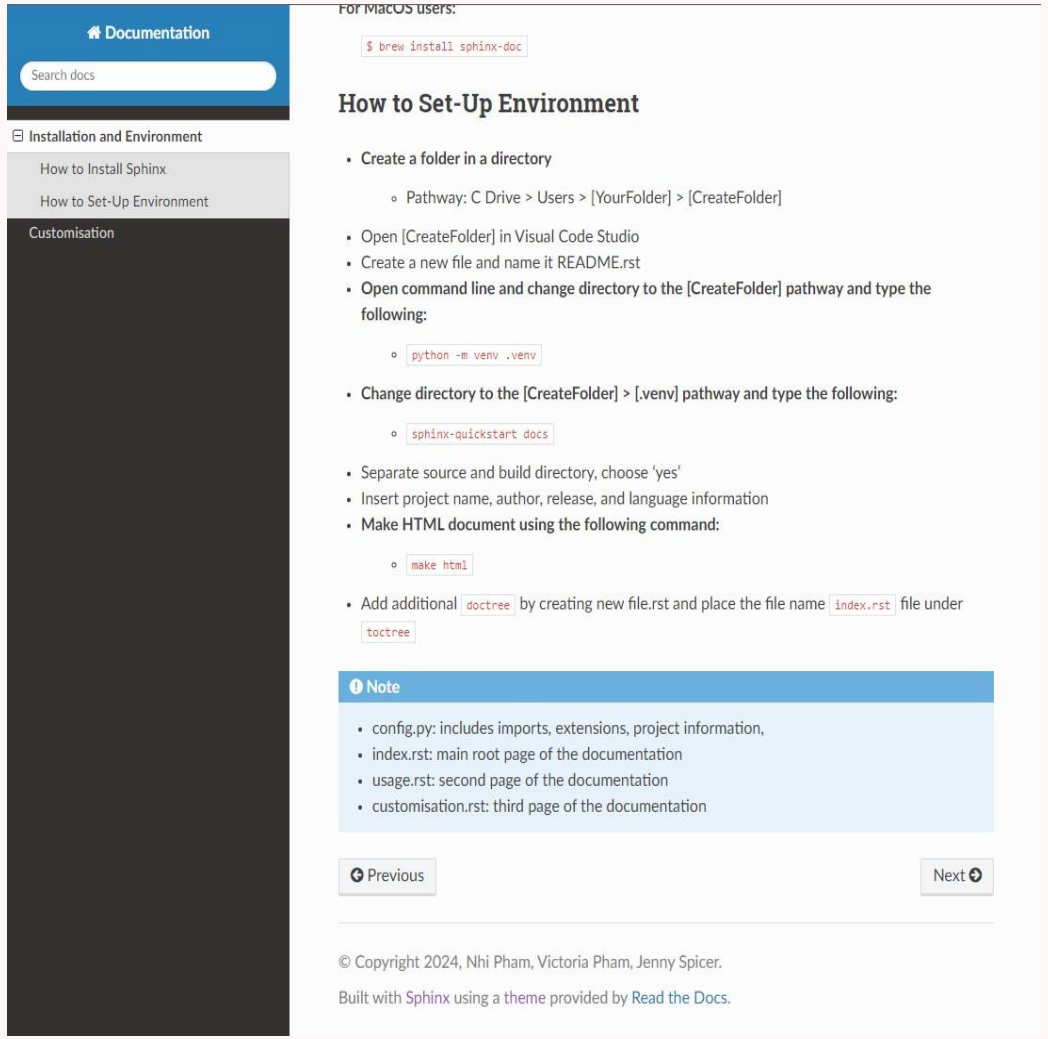
SPHINX DOCUMENTATION RESULTS



GitHub Page: **https://actuallyvee.github.io/sphinx/**

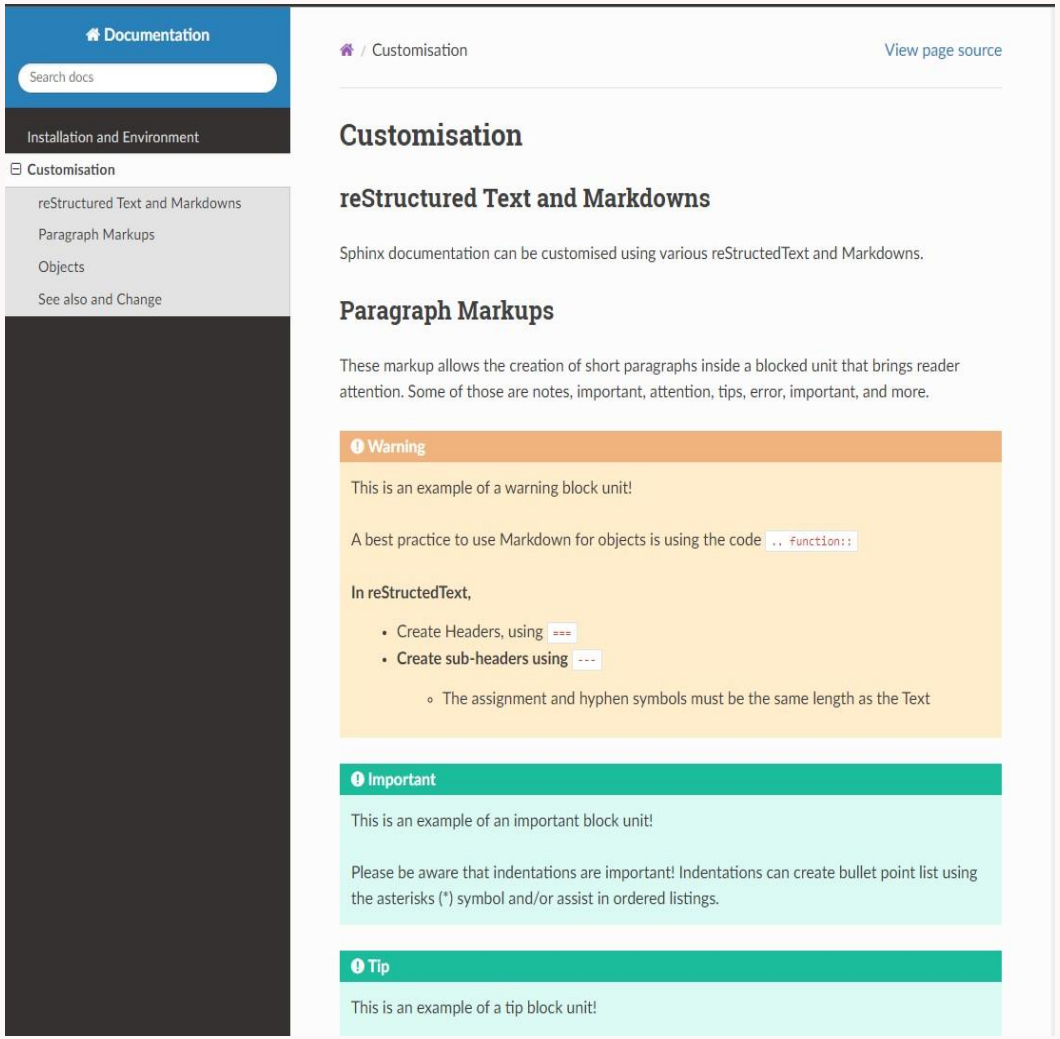
SPHINX DOCUMENTATION RESULTS

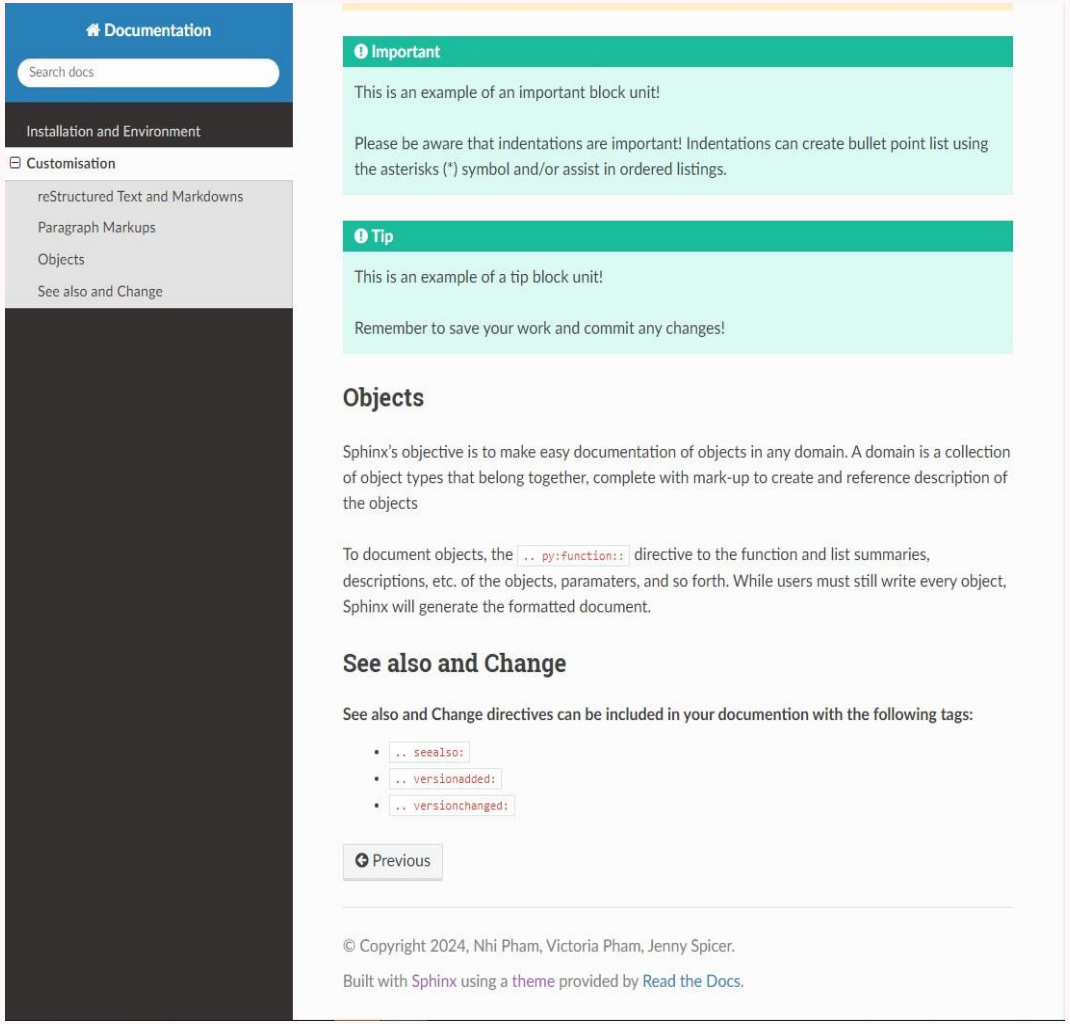




header: installation and environment, subHeader: how-to install, set-up, and folder directory

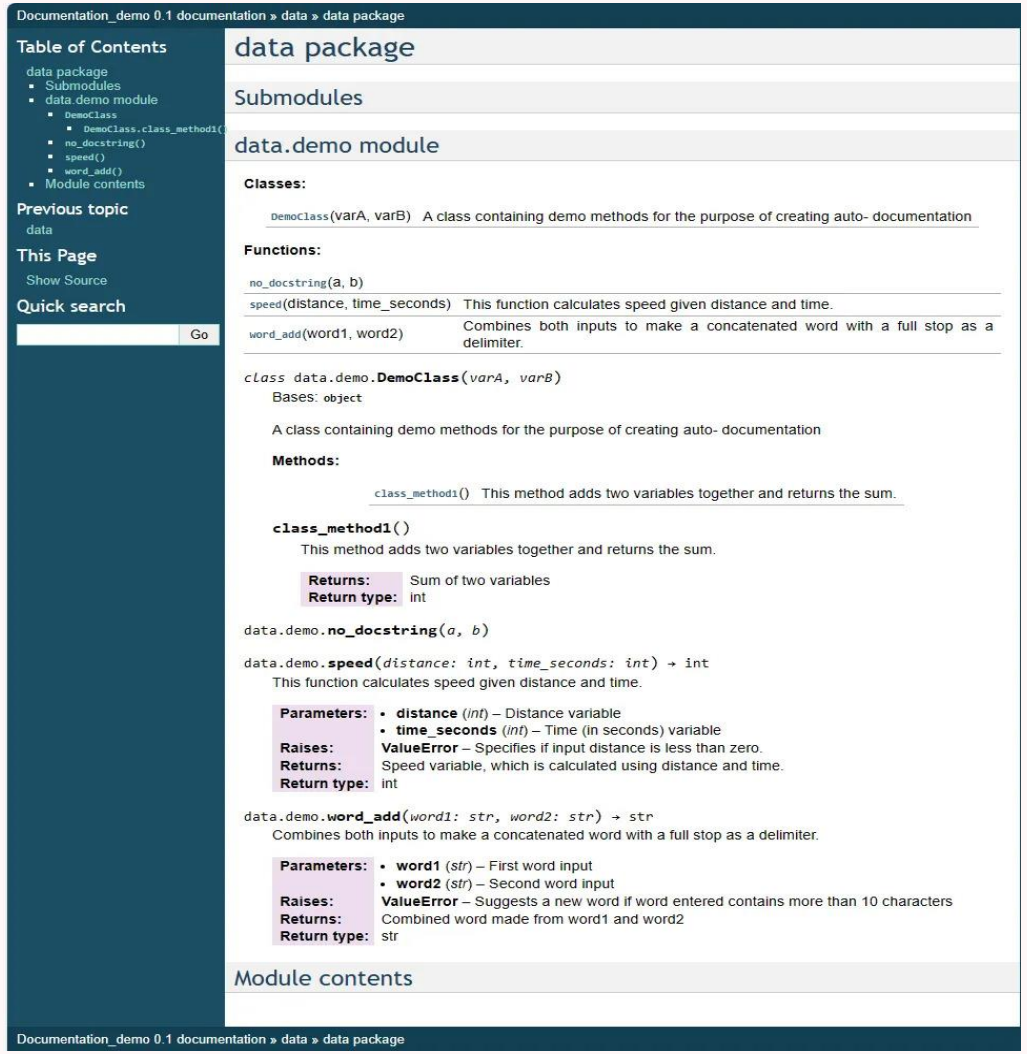
SPHINX DOCUMENTATION RESULTS

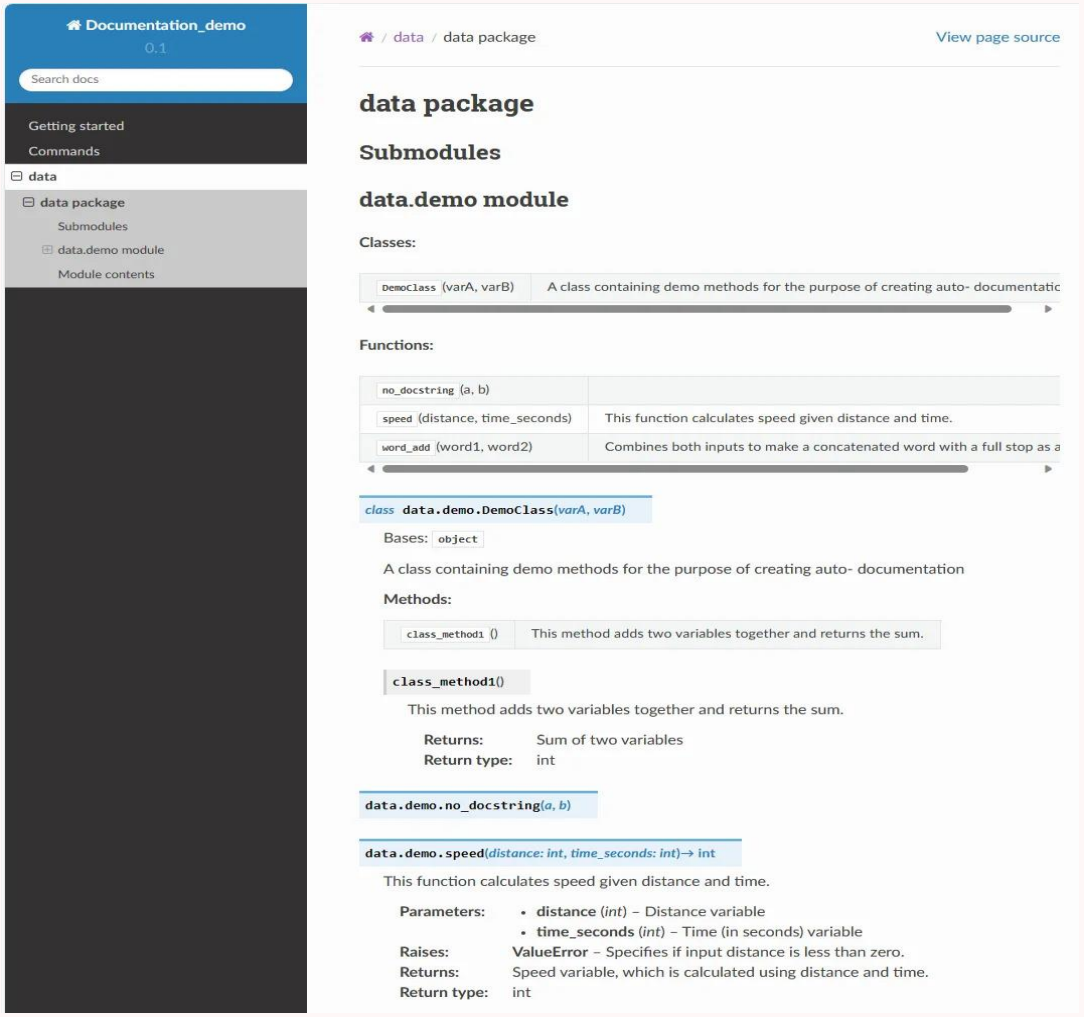




header: customisation , subheader: reStructuredtext, objects, see also and change

OTHER EXAMPLES (MORE OBJECT)

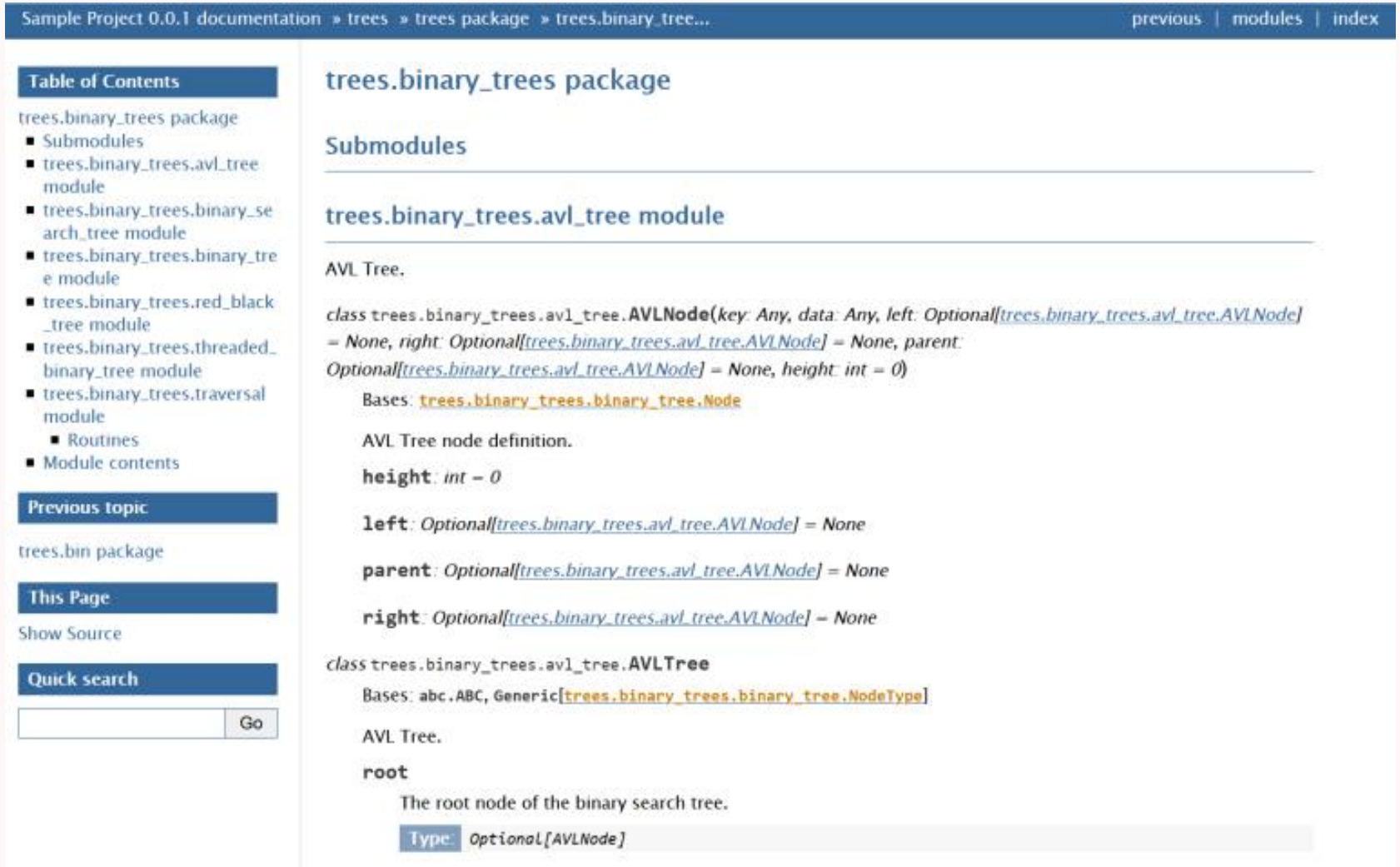




SPHINX: AUTO DOCUMENTATION

Lucy Dickinson: Code Autodocumentation , expected input and output in source file codes, similar to creating a javadoc but markdowns

OTHER EXAMPLES (MORE OBJECT)



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trees.binary_trees package

Submodules

trees.binary_trees.avl_tree module

AVL Tree.

class trees.binary_trees.avl_tree.**AVLNode**(*key: Any, data: Any, left: Optional[trees.binary_trees.avl_tree.AVLNode] = None, right: Optional[trees.binary_trees.avl_tree.AVLNode] = None, parent: Optional[trees.binary_trees.avl_tree.AVLNode] = None, height: int = 0*)

Bases: trees.binary_trees.binary_tree.Node

AVL Tree node definition.

height: *int = 0*

left: *Optional[trees.binary_trees.avl_tree.AVLNode] = None*

parent: *Optional[trees.binary_trees.avl_tree.AVLNode] = None*

right: *Optional[trees.binary_trees.avl_tree.AVLNode] = None*

class trees.binary_trees.avl_tree.**AVLTree**

Bases: abc.ABC, Generic[trees.binary_trees.binary_tree.NodeType]

AVL Tree.

root

The root node of the binary search tree.

Type: *Optional[AVLNode]*

OTHER EXAMPLES (MORE OBJECT)

Creating recipes

To retrieve a list of random ingredients, you can use the `lumache.get_random_ingredients()` function:

lumache.**get_random_ingredients**(kind=None)

Return a list of random ingredients as strings.

PARAMETERS

kind (*list[str] or None*) – Optional "kind" of ingredients.

RETURNS

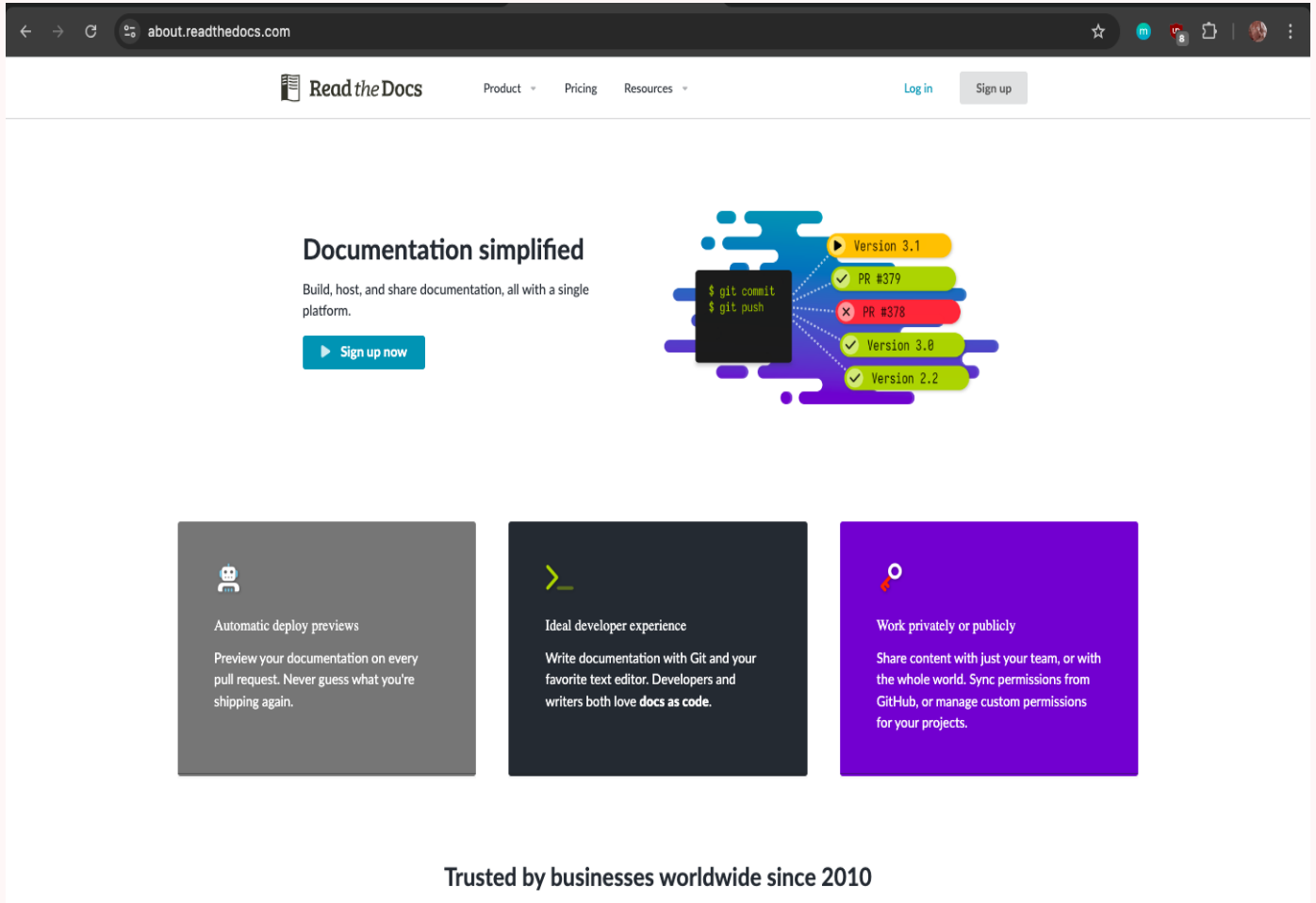
The ingredients list.

RETURN TYPE

list[str]

Read the Docs

- Sphinx documentation can be hosted on Read the Docs
- Theme was chosen from this platform
- Another resourceful documentation tool
- Sign-up using email or GitHub account
- Should be able to clone and/or import repository



ACTIVITY

In-Class Activity

Looking at a sample README...

https://github.com/bunnhimaybe/DocumentationWorkshop/blob/master/samples/BAD_README.md

What makes it good or not good?

What changes could be made?

Something's kinda weird about it....

Deliverables

Each pod chooses at least 1 documentation tool to create and deliver:

- GitHub README
- GitHub User or Project Page
- GitHub Wiki