

Document with Some Tools

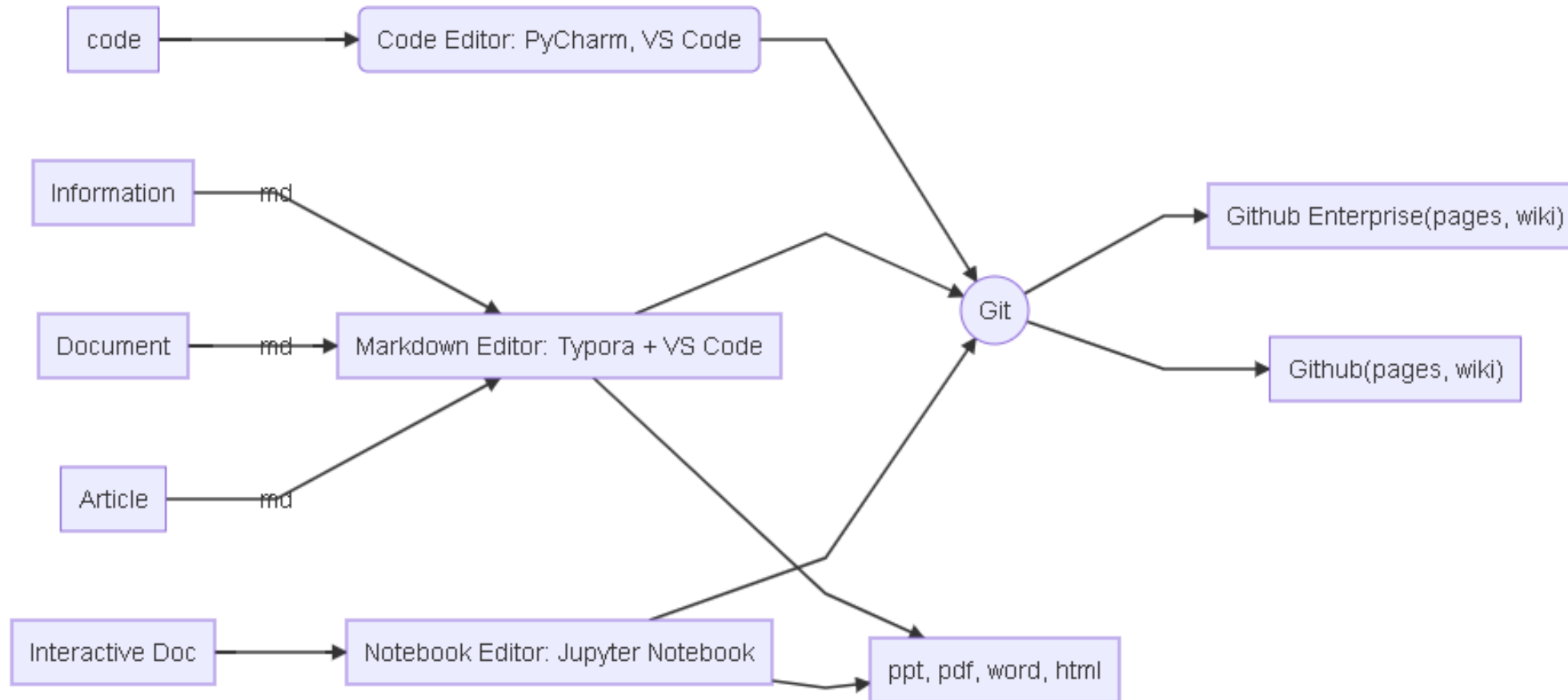
Michael
June, 2020

Agenda

- Basic
 - Workflow
 - Use Markdown
 - Write Documents in Typora
 - Share Documents With GitHub
- Advance
 - Write Slides in Visual Studio Code with Marp
 - Write Interactive Codes in Jupyter Notebook
 - Convert Markdown to Jupyter Notebook
 - Publish Documents with GitHub Pages



Workflow



Principles

- Most documents are written by Markdown.
- All history versions of documents are stored by Git and GitHub.

Use Markdown

Markdown is a lightweight markup language with plain-text-formatting syntax, created in 2004.

- Fast: Without Rich Format
- Easy: Learn it in 5 minutes.

tutorial: <https://guides.github.com/features/mastering-markdown/>

Header 1

This is an R Markdown document. Markdown is a simple formatting syntax for authoring webpages.

Use an asterisk mark to provide emphasis, such as *italics* or **bold**.

Create lists with a dash:

- Item 1
- Item 2
- Item 3

...

Use back ticks to
create a block of code
...

Embed LaTeX or MathML equations,
$$\frac{1}{n} \sum_{i=1}^n x_i$$

Or even footnotes, citations, and a bibliography. ^[^1]



^[^1]: Markdown is great.

Header 1

This is an R Markdown document. Markdown is a simple formatting syntax for authoring web pages.

Use an asterisk mark to provide emphasis, such as *italics* or **bold**.

Create lists with a dash:

- Item 1
- Item 2
- Item 3

Use back ticks to
create a block of code

Embed LaTeX or MathML equations, $\frac{1}{n} \sum_{i=1}^n x_i$

Or even footnotes, citations, and a bibliography. ¹

1. Markdown is great. ↩

Show Mathematics using Tex/LaTeX syntax

All markdown tools supports rendering normal mathematics using Tex/LaTeX syntax.

$$\begin{aligned}y &= y(x, t) = Ae^{i\theta} \\&= A(\cos \theta + i \sin \theta) \\&= A(\cos(kx - \omega t) + i \sin(kx - \omega t)) \\&= A \cos(kx - \omega t) + iA \sin(kx - \omega t) \\&= A \cos\left(\frac{2\pi}{\lambda}x - \frac{2\pi v}{\lambda}t\right) + iA \sin\left(\frac{2\pi}{\lambda}x - \frac{2\pi v}{\lambda}t\right) \\&= A \cos \frac{2\pi}{\lambda}(x - vt) + iA \sin \frac{2\pi}{\lambda}(x - vt)\end{aligned}$$

Here are the codes behind the mathematics.

```
\begin{align*}
y = y(x,t) &= A e^{i\theta} \\
&= A (\cos \theta + i \sin \theta) \\
&= A (\cos(kx - \omega t) + i \sin(kx - \omega t)) \\
&= A \cos(kx - \omega t) + i A \sin(kx - \omega t) \\
&= A \cos \Big(\frac{2\pi}{\lambda}x - \frac{2\pi v}{\lambda} t \Big) + i A \sin \Big(\frac{2\pi}{\lambda}x - \frac{2\pi v}{\lambda} t \Big) \\
&= A \cos \frac{2\pi}{\lambda} (x - v t) + i A \sin \frac{2\pi}{\lambda} (x - v t)
\end{align*}
```


Show Diagrams using Mermaid

[Mermaid](#) is a tool to generate diagrams and flowcharts from text in a similar manner as markdown.

Mermaid was nominated and won the JS Open Source Awards (2019) in the category "The most exciting use of technology"!!!

The workflow diagram was done by Mermaid.

Though Mermaid is still much simpler than other commercial tools(like visio), it is faster to create and modify diagrams via codes.

Code

Load sample diagram :

Flow Chart

Sequence Diagram

Class Diagram

State Diagram

Gantt Chart

Pie Chart

ER Diagram

```

1 erDiagram
2     CUSTOMER }|--}| DELIVERY-ADDRESS : has
3     CUSTOMER ||--o{ ORDER : places
4     CUSTOMER ||--o{ INVOICE : "liable for"
5     DELIVERY-ADDRESS ||--o{ ORDER : receives
6     INVOICE ||--}| ORDER : covers
7     ORDER ||--}| ORDER-ITEM : includes
8     PRODUCT-CATEGORY ||--}| PRODUCT : contains
9     PRODUCT ||--o{ ORDER-ITEM : "ordered in"
10

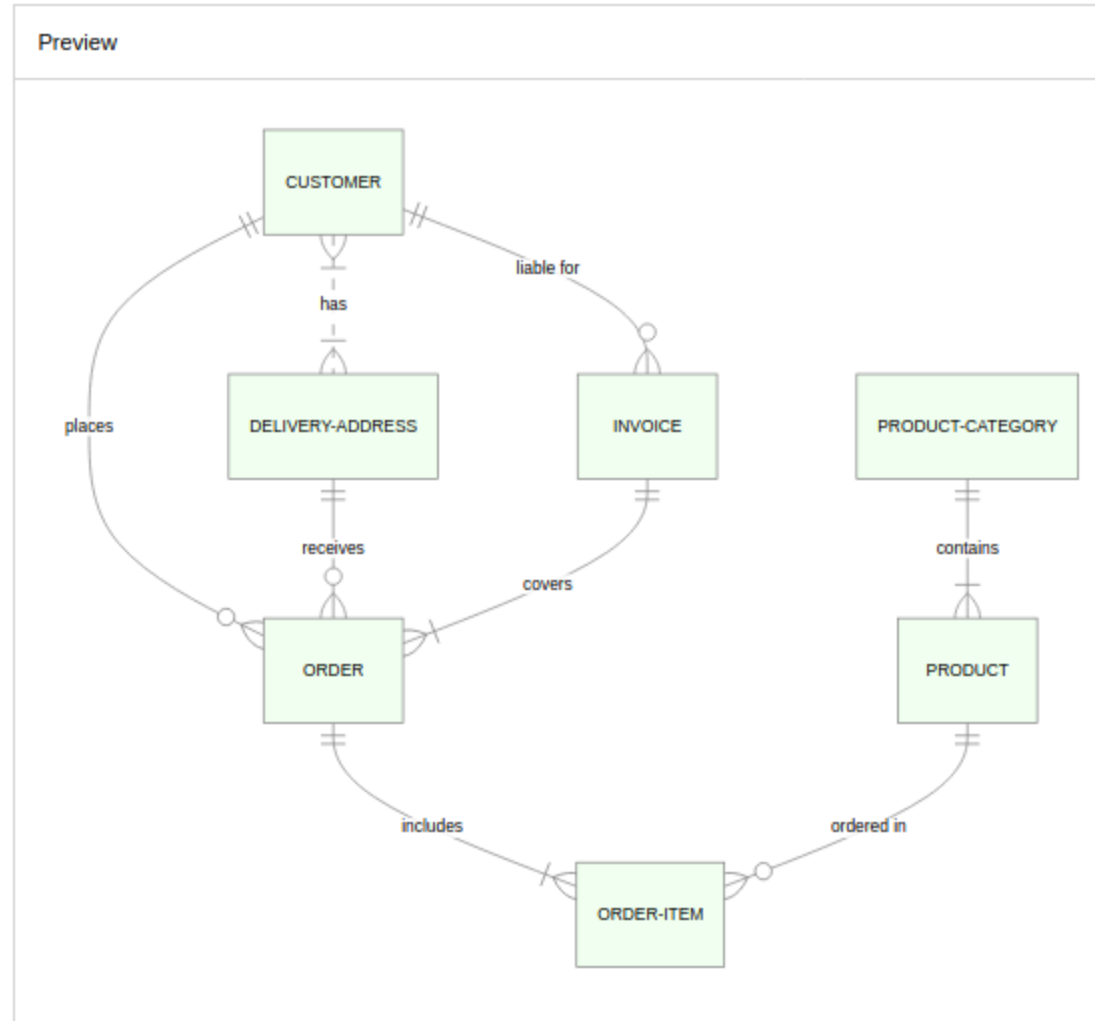
```

Mermaid Configuration

```

1 {
2   "theme": "default"
3 }

```



Write Documents in Typora

Typora is a markdown editor. It gives you a seamless experience as both a reader and a writer.

- Distractions Free
- Seamless Live Preview
- What You See Is What You Mean

Typora is commercial software (not open source), but is free during beta.



Easy to locate the chapter in Outline.

git_github_splunk.md - Typora

File Edit Paragraph Format View Themes Help

Files

Outline

Git and GitHub Guide For Splunk

1. Splunk on Git

1.1 Requirement

1.2 Solution

2. Installation

2.1 Git

2.2 GUI Client

2.21 GitHub Desktop

2.22 Git Extensions

3. Quick Guide

3.1 Tutorial

3.2 GitHub Enterprise

3.21 Login HP GitHub Enterprise

3.22 Add SSH Key to your Account

3.3 Create Repository

3.4 Clone the repository

4. Git Workflow

4.1 Principle

4.2 Practice

4.21 Create a new feature or fix a bug

4.22 Publish a release

4. Git Workflow



Git workflow is mainly used by app development. We will use [GitHub flow](#) as the standard workflow.

There are other popular workflows for git, for example, [Git flow](#) and [Gitlab flow](#). See also [Git Workflow](#).

4.1 Principle

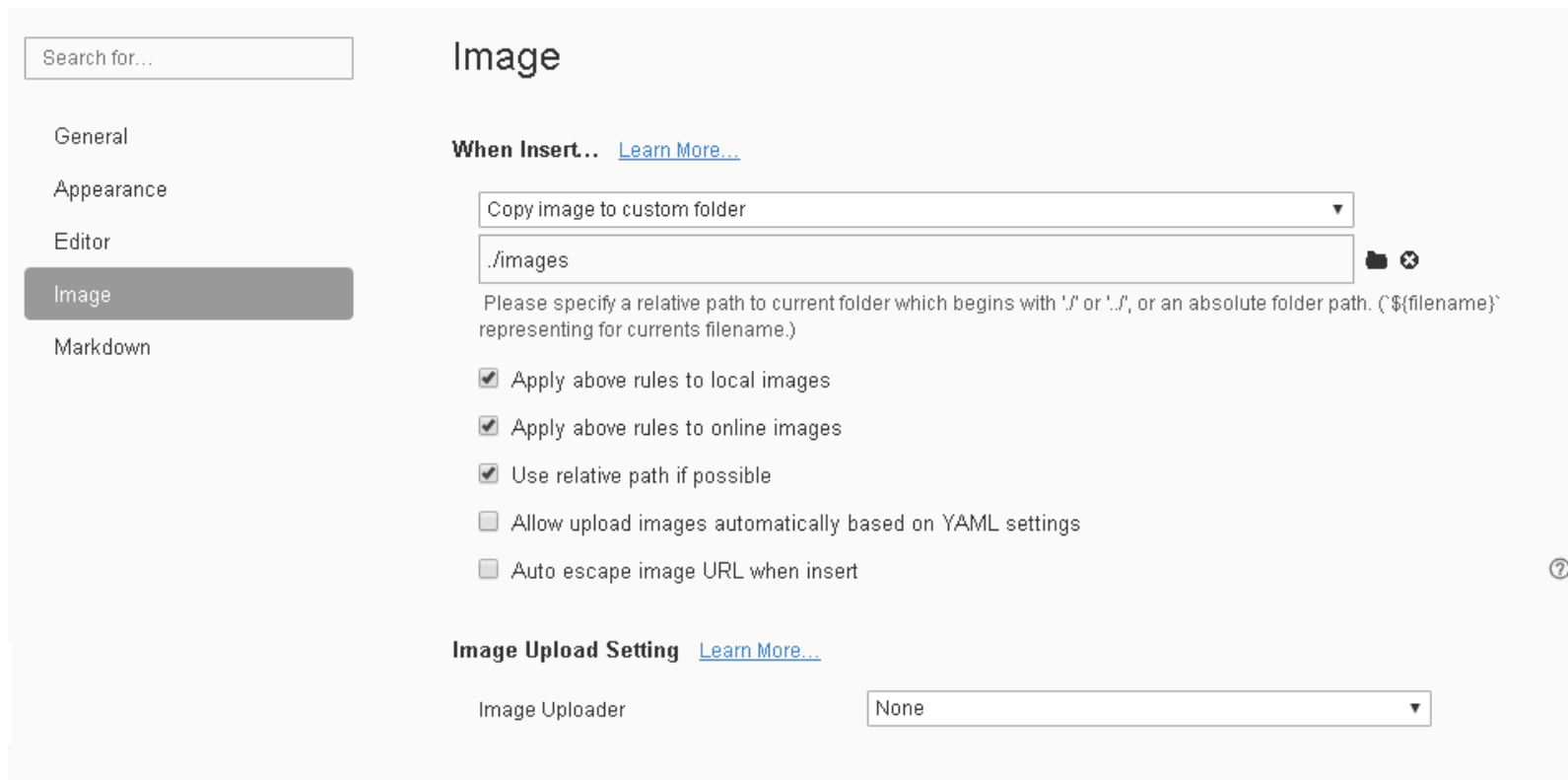
GitHub flow only has one long-term branch: *master*, so the principles are simple.

- Anything in the *master* branch is deployable

Easy to Insert Image

- insert images via capturing screen
- copy images from web pages

Don't need to download or upload, it only takes less than 3 seconds to add an image in the document.



The screenshot shows the 'Image' settings panel in a document editor. On the left is a sidebar with a search bar and navigation links: General, Appearance, Editor, Image (selected), and Markdown. The main panel is titled 'Image' and contains the following settings:

- When Insert...** [Learn More...](#)
 - A dropdown menu set to 'Copy image to custom folder'.
 - A text input field containing '/images' with a folder icon and a clear button.
 - Help text: 'Please specify a relative path to current folder which begins with '/' or './', or an absolute folder path. (`\${filename}` representing for current filename.)'
 - Checkboxes:
 - ☒ Apply above rules to local images
 - ☒ Apply above rules to online images
 - ☒ Use relative path if possible
 - ☐ Allow upload images automatically based on YAML settings
 - ☐ Auto escape image URL when insert
 - A help icon (?) is located at the bottom right of this section.
- Image Upload Setting** [Learn More...](#)
 - A dropdown menu for 'Image Uploader' set to 'None'.

Share Documents With GitHub

There are 3 actions.

1. Commit the changes with description.

2. Push to GitHub

Share the changes to others.

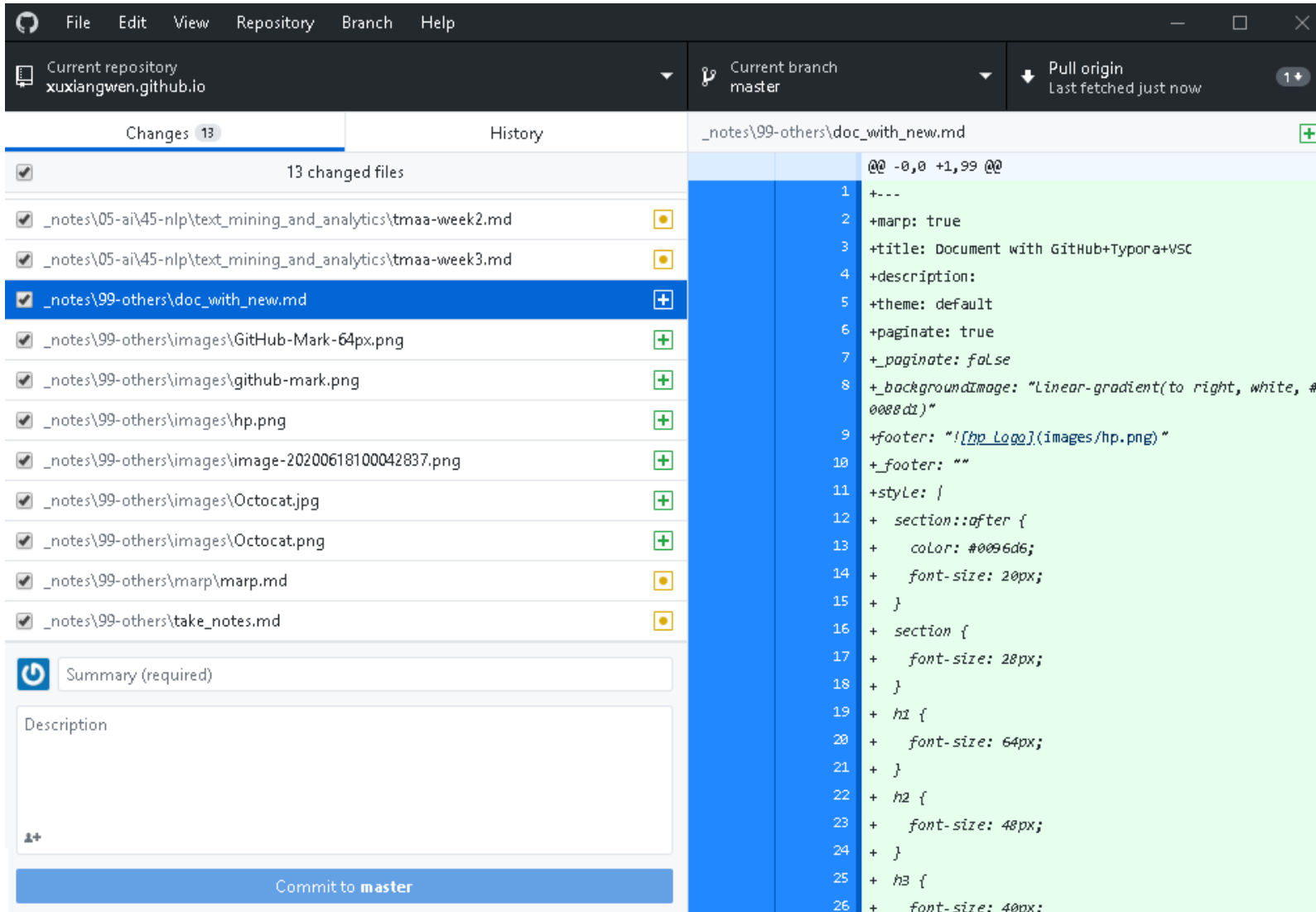
3. Pull from GitHub

Get updates from others.

Suggest to use [GitHub Desktop](#).



GitHub Desktop monitors the documents automatically. It is pretty easy to commit, push and pull changes on GitHub Desktop.



Write Slides in Visual Studio Code with Marp

[Marp for VS Code](#) is a tool to create slide deck written in Marp Markdown on VS Code.

- Install [Marp for VS Code](#) in VS Code.
- Tutorial: <https://marpit.marp.app/markdown>

This PPT itself was done by Marp for VS Code.

Write Interactive Codes in Jupyter Notebook

The [Jupyter Notebook](#) is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text.

- Jupyter supports over 40 programming languages, including Python, R, Julia, and Scala.
- Install [Jupyter Notebook](#)

SymPy: Open Source Symbolic Mathematics

This notebook uses the [SymPy](#) package to perform symbolic manipulations, and combined with numpy and matplotlib, also displays numerical visualizations of symbolically constructed expressions.

We first load sympy printing extensions, as well as all of sympy:

```
In [1]: from IPython.display import display

        from sympy.interactive import printing
        printing.init_printing()

        from __future__ import division
        import sympy as sym
        from sympy import *
        x, y, z = symbols("x y z")
        k, m, n = symbols("k m n", integer=True)
        f, g, h = map(Function, 'fgh')
```

Elementary operations

```
In [2]: Rational(3,2)*pi + exp(I*x) / (x**2 + y)
```

```
Out[2]:  $\frac{3\pi}{2} + \frac{e^{iz}}{x^2 + y}$ 
```

```
In [3]: exp(I*x).subs(x,pi).evalf()
```

```
Out[3]: -1.0
```

Convert Markdown to Jupyter Notebook

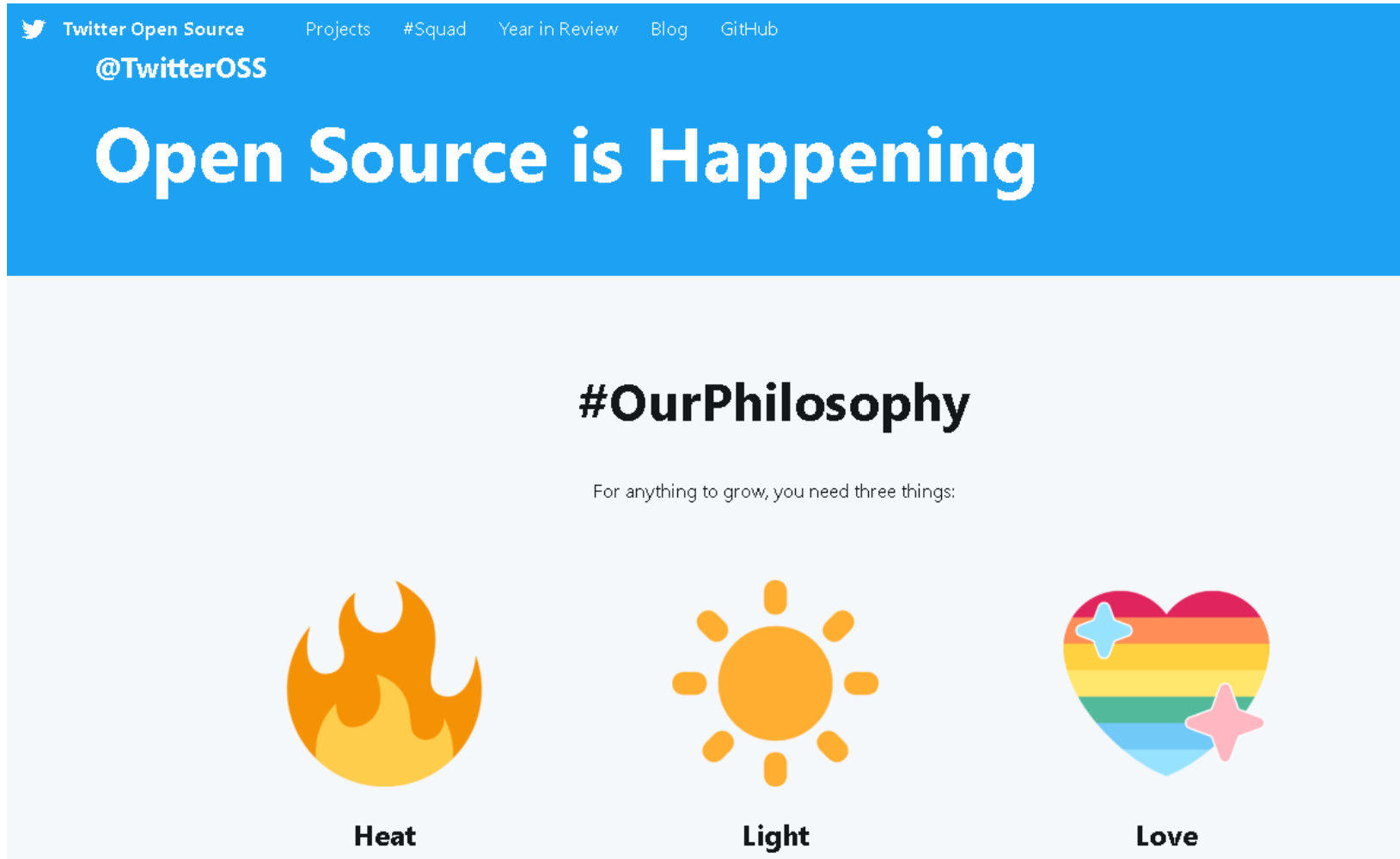
`notedown` is a simple tool to create [IPython notebooks](#) from markdown (and r-markdown).

```
# Install
sudo pip3 install notedown
# Convert
notedown tutorial.md > tutorial.ipynb
```

Publish Documents with GitHub Pages

use [GitHub Pages](#) to host a website about yourself, your organization, or your project directly from a GitHub repository.

Example: Twitter GitHub



Thank You 😊