Fall 2021: Computational Science I

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Module 3: Typesetting and LaTeX

Word processors

Markdown

LaTeX

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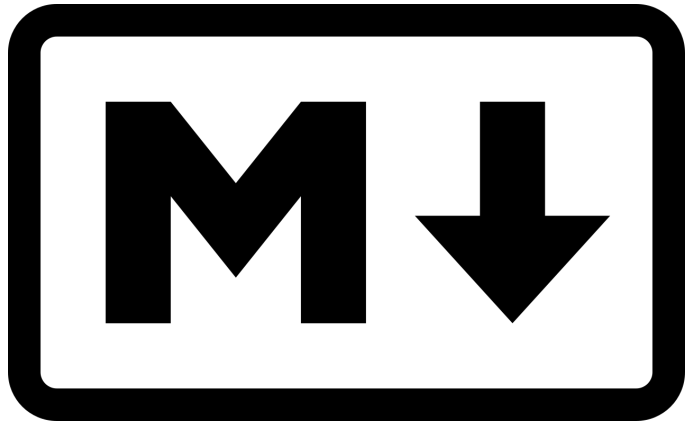
Markup is a Markup?



- Markdown is a *markup* language that is an extremely **lightweight** that can convert plaintext to HTML code.
- A **markup** language is one which uses **tags** to define elements (e.g. HTML)
- It is **not one particular program**, like Microsoft Word. Rather, it is closer to a programming language, specialized for typesetting formatted text.
- By just using a few extra characters, you can encode formatting specifications directly in your text; things like headers, italics, hyplinks, lists, and so on.
- math formatting is nonexistent (by default)

basic functionality

To start, it's easiest to list the basic functionality

- Headers

```
# First level header
## Second level header
## Third level header
```

- Emphasis

```
*italicized*
**bolded**
```

- Lists

```
* First item
```

- Ordered lists

```
1. First item
2. Second item
```

- Hyperlinks

```
[Markdown spec](https://https://daringfireball.net/projects/markdown/basics)
```

- code

```
Inline with `ls -al`
Block of code (with the "sh" denotes the language for code highlighting)
```sh
cd ~
mkdir markdown
```
```

- blockquote (add `>` in front of a paragraph)

```
> First line of block quote...
> ...second line here, and so on.
```

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a quick introduction to LaTeX

To install LaTeX, use the terminal command:

```
sudo apt-get install texlive-full
```

LaTeX is a typesetting software for making documents that might include lots of mathematical symbols and equations. It has other capabilities like bibliography management (bibtex) and presentation building (beamer).

One of the best and easiest references for LaTeX is the WikiBook https://en.wikibooks.org/wiki/LaTeX.

a simple article with LaTeX

```
\documentclass[11pt]{article}

\author{Your Name}
\title{Your Title}

\begin{document}

\maketitle

\section{most confusing \texttt{git} command}

\section{your favorite equation}

\end{document}
```

This is stored in a `foo.tex` file and "compiled" as:

```
pdflatex foo.tex
```

The output of this command is a pdf file `foo.pdf` with a nice structure.

editing tex files

LaTeX `tex` files can be edited and compiled in the terminal. I often use vim equipped with **vimtex** plugin. but they can also be edited and compiled in a text editor such as TexStudio: https://www.texstudio.org/.

There are many options for text editors that also compile LaTeX files. There are also web interfaces, like overleaf, that allow for easy collaboration.

If you decide you want to edit LaTeX files within an editor, you may want to do this within your native operating system, instead of within our VirtualBox.