Lab: 2
Getting started with LaTeX

1. Go to https://www.overleaf.com/register

2. Register for a free account (probably best to use your university email.) You'll have to create a password at this point—make a note of it.[1]

3. It's probably best to skip their "Try the premium version for free" offer.

4. Click the "Create First Project" button—choose a blank project and name it "hello."

5. You'll see two main panels (there's also some junk above and to the left, but ignore all that for now.) The left-hand panel contains the LaTeX source code for your project and the right-hand panel gives a preview of the resulting document.

6. The "blank project" isn't completely blank. The source code panel will be pre-populated with:

```
\documentclass{article}
\usepackage{graphicx} % Required for inserting images

\title{hello}
\author{myemail}
\date{August 2023}

\begin{document}

\maketitle

\section{Introduction}

\end{document}
```

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[1]Overleaf isn't exactly a "high stakes" setting, your password needn't be super complicated—just don't re-use a password that protects a more critical account!

You should see your document on the right side. It has a title section (which is what the `\maketitle` command created) and a section heading (this is what the `\section{Introduction}` command did). Scroll down to the bottom of the page and you will see the number 1, the page number. Pages of articles are normally numbered, so LaTeX puts that in for you! The area between the `\documentclass{article}` and the `\begin{document}` tags is known as the **preamble** of the LaTeX document. You should see that the preamble contains some commands that effect how the title looks. The default stuff that Overleaf stuck in there probably isn't quite what you want.

Let's fix that!

7. Make whatever changes you deem appropriate to the title, author and date commands. (BTW, "date" doesn't necessarily have to literally be the date.) To see what the effect of your changes is, you'll need to press the "Recompile" button.

8. Put some words, introducing yourself after the `\section{Introduction}` command, and recompile. (There is an old and slightly unfunny tradition that the first program you write when learning a new programming language is called "hello world!" Please make your introduction something other than that.)

At this point the source code might look something like:

```
\documentclass{article}
\usepackage{graphicx} % Required for inserting images

\title{My first LaTeX document}
\author{Ima Dumi}
\date{just checking that I can put whatever I want in the date}

\begin{document}

\maketitle

\section{Introduction}

Something other than that.

\end{document}
```
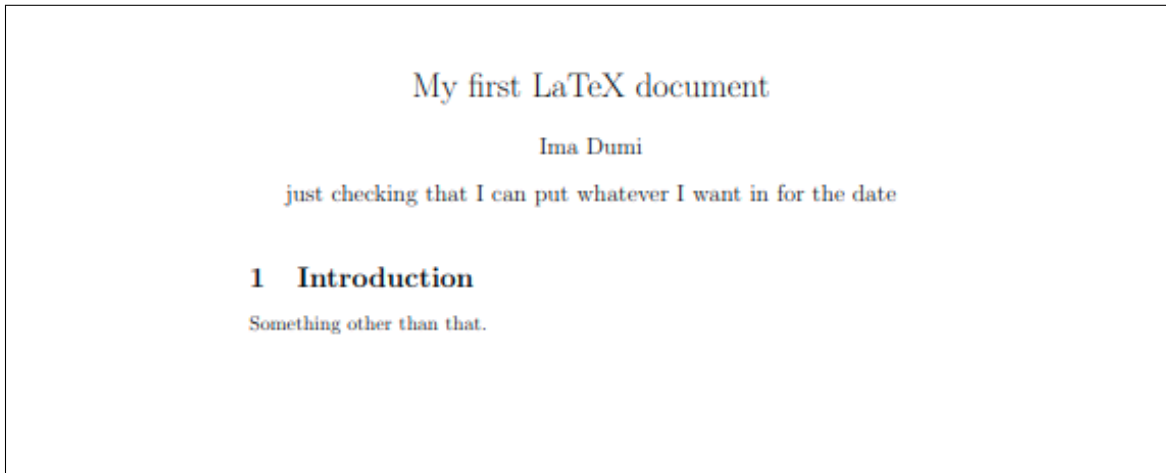
Which should render like so:

My first LaTeX document

Ima Dumi

just checking that I can put whatever I want in for the date

1 Introduction

Something other than that.

Adding a list

Now add a list of your three favorite classes of all time—of course math class is first on your list, so that one has been put in for you. You'll have to supply the next two...

9. Copy and paste the following markup into your document after your greeting, but before `\end{document}`.

```
\par
My three favorite classes of all time are

\begin{enumerate}
  \item Math
\end{enumerate}
```

   Notice that the `\par` tag does not have a begin or end. It only marks where a new paragraph should start. Same with the `\item` tag. It only marks where a new item in the list should start.

10. Add two items to the enumeration (and you can change the first item if by some strange chance math is not your all time favorite class).

11. There are several list-making environments in LaTeX. Try some googling (Maybe "list making latex environments") and you should discover the other list-making environments.

12. Make versions of your list of favorite classes that are (1) bulleted rather than numbered, (2) name the class, and also (3) give a comment about ~~why math is so awesome~~ why you liked it.

Adding an equation

Equations in LaTeX come in two varieties—inline and display. An inline equation is any mathematical expression that appears in the middle of a sentence (like the π right here and earlier in this document). A display equation is any mathematical expression that should appear centered on its own line (because it's super important or just because it's too big to put in the middle of a sentence).

To put an equation in the middle of a sentence, enclose the math between two dollar signs ($). To add a display equation, enclose the math between double dollar signs ($$). Try it!

13. Copy and paste the following markup into your document.

```
My favorite mathematical constant is $\pi$, but I like $e$ too.
Did you know that $$e^{i\pi}=-1?$$ Weird...
```

14. Notice that exponents are typeset using the same notation as used on a calculator! Can you add markup to your document that will produce the following?

The Pythagorean Theorem states that if a triangle has legs of lengths a and b and hypotenuse of length c, then

$$a^2 + b^2 = c^2.$$