

# Preamble

## *Classes and Packages*

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# This Presentation

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# Structure of L<sup>A</sup>T<sub>E</sub>X document

- Let's focus on the source file for documents (.tex).
- Every file has the same structure.
- A document is composed of a preamble and a body.
- The preamble tells L<sup>A</sup>T<sub>E</sub>X how the document is going to look (e.g. font size, margins) and the body is the actual text.
- We will concentrate on the preamble in these next two presentations.
- This presentation will look at Classes and Packages.

# Structure of L<sup>A</sup>T<sub>E</sub>X document

```
\documentclass[pdf]{article}
\usepackage{hhref}
\title{Exploitation and Unfreedom}
\author{Trin Turner}
\institution{Drake University}
\begin{document}
\maketitle
Some part of the body...
\end{document}
```

- Above is a generic layout of L<sup>A</sup>T<sub>E</sub>X commands for a very basic document.

# Preamble

- Preamble contains information that will be used by  $\text{\LaTeX}$  when it generates a document.
- The first two lines of a document are `\documentclass` and `\usepackage` commands.
- `\documentclass` tells  $\text{\LaTeX}$  what kind of document you are creating.
- `\usepackage` will load features you want to enable for the document.

# Classes

- Classes inform  $\text{\LaTeX}$  what kind of document you are creating.
- This is important because the layout of one type of document (e.g. article) is different from another (e.g. book)
- The Class command also lets you change the default options for a document (e.g. font size, paper format)
- The first line of every document should be the Class command<sup>a</sup>:

```
\documentclass[options]{class}
```

---

<sup>a</sup>Actually, the author may insert comments that will not be read by  $\text{\LaTeX}$  before the Class command. Beginning a line with % will tell  $\text{\LaTeX}$  to ignore everything on that line.

# Class

- The Class command consists of two operators, *class* and *options*.
- *Class* must be included because it specifically tells L<sup>A</sup>T<sub>E</sub>X the document type.
  - A list of common classes are listed on slide 9.
- *Options* lets the author choose her own default parameters for the document (e.g. font size).
  - A list of common options are listed on slide 10.

# Class (con't)

- Using the `[options]` command is optional, but the author *must* define the class:

Acceptable: `\documentclass{article}`

Acceptable: `\documentclass[12pt]{article}`

Not Acceptable: `\documentclass[12pt]`

- When the author defines the class but chooses no options, the document uses the default options for that class.



# List of Common Classes

- There are a handful of common classes:

`article`    Short/medium papers with sections.

`book`        for books with chapters and title page.

`report`     for shorter books (e.g. PhD. Thesis)

`slides`     for presentations (e.g. this tutorial)

`letter`     for professional/personal letters

- Only one class can be used for each document.
- Students should generally use the `article` class.
- There are a lot of other classes, Google for “classes, LaTeX”

# List of Common Class Options

- Each class can be slightly modified by using options. Below are options for the `article` class (defaults are in bold).

**10pt**, 11pt, 12pt

Font for the entire document.

**letterpaper**, legalpaper, a4paper, a5paper

The dimensions of the document.

**onecolumn**, twocolumn

The number of columns on the page.

**oneside**, twoside

Single-sided or two-sided print layout.

**portrait**, landscape

Either a vertical or horizontal orientation of the page.

# Class Options (con't)

- Unlike classes themselves, an author may use many classes, for example, she may want to use A4 paper and make it two-sided.
- The author may separate several packages with a comma (,):

```
\documentclass[a4,twoside]{article}
```

- Remember that only one class may be used for a document.
- However, the author may use as many options as she wishes, as long as they are properly separated in the command.

# Review of Classes

- Remember the first line of every document should be `\documentclass[options]{article}`
- The author does not have to define the option, but does have to define the class.
- Many people have created their own classes, Google for “class, LaTeX” for some examples. Undergraduate and Graduate Departments often create their own class to meet certain spacing/margin requirements.

# Packages

- Packages load features for a document you are typing.
- For instance, you can use the `multicol` package so a document layout has multiple columns.
- We can also use packages to load fancy headers or bibliography styles.
- Packages are not as important as classes, since they are *features*.
- The *packages* command should follow the *document class* command:

```
\documentclass[options]{package}
```

- *Packages* are not required for a document.

# Packages (con't)

- Similar to `\documentclass`, we do not always need to use options for a package.
- If we wanted to use the `graphicx` package (don't worry what it does yet):

```
\usepackage{graphicx}
```

- We may want to use the `dvips` option too:

```
\usepackage[dvips]{graphicx}
```

- Either command is acceptable, it depends on what you need for your document.

# Package Options

- There are a lot of packages and options, so we really can't list many of the useful ones.
- We will introduce applicable packages related to topics we encounter during this tutorial.
- It is likely a document will use multiple packages (this one does), there are two ways to list them:

Acceptable: `\usepackage{babel,ams}`

Acceptable: `\usepackage{babel}`

`\usepackage{ams}`

Not Acceptable: `\usepackage[german]{babel,ams}`

Acceptable: `\usepackage[german]{babel}`

`\usepackage{ams}`

# Packages Review

- Packages enable features for our documents we may want to use.
- The package command(s) come immediately after the `\documentclass` command.
- Multiple packages for a single document can be loaded in a single line or multiple lines.
- We will introduce useful packages as we explore several features in  $\text{\LaTeX}$ .



# Preamble Review

- The preamble of the document is from `\documentclass` to `\begin{document}`.
- `\documentclass` tells L<sup>A</sup>T<sub>E</sub>X the type of document it wants to be.
- `\usepackage` loads features we want to use for our document.
- `\documentclass` *must* be use for each document, `\usepackage` is optional.

# Preamble Review (con't)

- The preamble will look similar to the one shown below:

```
\documentclass[pdf]{article}  
\usepackage{graphicx,fancybox}  
\usepackage{chem}  
\begin{document}
```

- NEXT: Title, Author, and Page Layout.