

L^AT_EX Seminar Week 9

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Adding Sectioning to a Document

\LaTeX has several commands built in that help to organize longer documents into different sections. The most common of these commands are as follows:

- `\part{name of part}`
- `\chapter[shorter name]{full name of chapter}`
- `\section{name of section}`
- `\subsection{name of subsection}`
- `\subsubsection{name of subsubsection}`
- `\paragraph{paragraph heading}`
- `\subparagraph{subparagraph heading}`

Adding Sectioning to a Document

Notes:

- Parts, chapters, section, subsections, and subsections are numbered within the document.
- Paragraphs and subparagraphs are not numbered, but, like the other categories, they are given a bold heading. Smaller categories get smaller heading fonts.
- All these commands are built into the article document class, with the exception of the chapter command, which works in the report document class.

Example:

- Open up TexnicCenter, start a new file, and declare the report document class.
- Introduce (and name) each of the following in your document:
 - A Part named “The Phantom Menace”
 - A Chapter named “I am Born”
 - A Section named “Section Eight: Seek and Destroy”
 - A Subsection named “With All Due Haste”
 - A subsection named “Don’t Fire Until You See the Whites of their Eyes”
 - A subsection named “Never Tell Me the Odds”
 - A Subsection named “Boom Goes the Dynamite”
 - A section named “Veni, Vede, Vici”
 - A paragraph with heading “This is My **BoomStick!!**”
- Then compile your document. It should look something like this:

Placing Labeled Figures in a Document:

- Another nice feature that is built into \LaTeX is the ability to include figures in the body of a document
- We already learned how to include image files of various types into a document.
- Designating an image file as a figure allows the \LaTeX compiler some flexibility in where the figure is placed within the final compiled page.
- It also allows us to give the figure a label and to include it in list of figures at the beginning of the document.
- Here is the syntax for inputting a figure:

```
\begin{figure}[location: h, t, b, or p]
\begin{center}
\includegraphics[sizing command]{name of image file}
\end{center}
\caption{whatever caption you want underneath the figure}
\label{fig:<reference name for figure>}
\end{figure}
```

Placing Labeled Figures in a Document:

Notes:

- The location designations are as follows:
 - h (“here”): place the figure as close to the current location as possible.
 - t (“top”): place the figure toward the top of the page.
 - b (“bottom”): place the figure toward the bottom of the page.
 - p (“page”): place the figure on its own page.
- The caption can also be placed above the figure. Just move the caption to before the centering command.
- A figure can also be placed flushleft or flushright on a page, although this often ends up looking a bit silly.

Examples:

- Let's practice adding figures to a document by modifying our previous example.
- Begin by going to the handouts page of the course website
- Follow the link: [LaTeX Seminar Week 9 Example Files](#), then save figure1.eps through figure6.eps
- Make sure to save each file in the same location you saved the \LaTeX file that you are working on.
- Now add each image file as a figure somewhere in your document along with an appropriate caption.
- Try experimenting with both the size and placement location commands.
- Add labels to each of your figures.

Examples:

- For example, you could enter the following for the first figure:

```
\begin{figure}[t]
\begin{center}
\includegraphics[scale=0.5]{figure1.eps}
\end{center}
```

```
\caption{Watch Out! Those Lizards are Totally Crawling Out of the Page
to Get You!}
```

```
\label{fig:EscherLizards}
\end{figure}
```

Note: Include the “graphicx” package in the preamble to your document.

Note: To reference this figure type: `Figure \ref{fig:EscherLizards}`

Creating a Title Page:

- Now that we have some content in place, let's go back and create a title page, a table on contents, and a table of figures.
- To create a Title Page do the following:
 - Use the “author” command to add the author information.

```
\author{name (or add \\ name 2, etc)}
```

- Use the “date” command to add a date other than the current date (If this step is skipped, the current date will be supplied).

```
\date{enter desired date}
```

- Use the “title” command to add the author information.

```
\title{title text}
```

- Then type the following command at the very beginning of your document:

```
\maketitle
```

Creating a Table of Contents and a List of Figures:

- To create a table of contents, just type the following command at the beginning of your document:

```
\tableofcontents
```

- To create a list of figures in the document, just type the following command at the beginning of your document:

```
\listoffigures
```

Including and Inputting Files

- Sometimes, when we are creating a very large documents, you may want to create the final document by piecing several smaller documents together.
- \LaTeX has nice commands for doing this:
- You can use either the “include” command or the “input” command.
 - To use these commands, we first create a separate .tex file that contains all of the material that we want to include as a portion of the larger document
 - This file has *only* the material we want to include (no beginning or preamble or packages. Not even begin and end document commands.)
 - When this material is included, it will be read by the compiler as if it was actually typed into the main document

Example:

- Go back to the page: LaTeX Seminar Week 9 Example Files
- Download and save the file ExampleWk9.tex on your computer workstation.
- Make sure to save this file in the same location you saved the \LaTeX file that you are currently working on.
- Add the contents of this file to our running example by typing:

```
\input{ExampleWk9.tex}
```

or

```
\include{ExampleWk9}
```

- Compile the document and take a look to see how the new material is incorporated. You should compile twice to update the table of contents to include the new material.

Including Maple Graphics:

- Although we already know how to include graphics and figures in \LaTeX documents, Maple is one of the most common computational programs that we use.
- For this reason, we want to take a few moments to look at how to incorporate output from Maple into \LaTeX files.
- Launch Maple on your workstation, and then download the following files from LaTeX Seminar Week 9 Example Files web page:
 - LaTeX11MaplePlot1.mw
 - LaTeX11MaplePlot2.mw
 - LaTeX11MaplePlot3.mw

Including Maple Graphics:

- As before, make sure to save these in the same file as your example file.
- Open one of these files in Maple. Once the worksheet runs and produced a graph, adjust the size and orientation of the figure to get the view that you want.
- Then right click on the graph window and scroll down to the export sub menu.
- Choose the file type you want to export (normally .eps)
- Name the file as you see fit, and save it in the same folder as your current \LaTeX file.
- You may now include it in your document like any other image file (as either in graphic or as part of a figure).
- Practice with one or more of the files you downloaded.