LATEXWorkshop*

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Contents

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*Note: All the cross-references in this document are hyperlinks, i.e., in the PDF file they are clickable.

1 Introduction

1.1 What are TeX, LaTeX, and LaTeX2e?

1. TeX is pronounced "teck."

2. "TeX is a typesetting program designed and implemented by Donald Knuth" [1]. "TeX is a typesetting system written by Donald E. Knuth, who says that it is 'intended for the creation of beautiful books - and especially for books that contain a lot of mathematics'." [6].

Figure 1: Donald Knuth [5]

3. LaTeX is pronounced "lay-teck."

4. LaTeX [2] (and its current version LaTeX2e) "is an extensive set of TeX commands written by Leslie Lamport" [1].

5. LaTeX2e is a de facto standard for most academic publications.

1.2 Why LaTeX?

What You See Is What You Mean (WYSIWYM) vs. What You See Is What You Get (WYSIWYG).

Also see Andrew Roberts's post on Latex vs. MS Word at `http://www.andy-roberts.net/misc/latex/latexvsword.html`.

1.3 Documentation for TeX?

There are many references for learning LaTeX, both as book and online. Following are two samples.

1. To make yourself familiar with Latex, start from `http://www.ctan.org/starter.html`.

2. As a short introductory document to Latex, I recommend Dr. Peter Grogono's "A LaTeX2e Gallimaufry" [1].

3. After that, you can find enormous online references on the web, one of the best is "On-line Tutorial on LaTeX" [7].

1.4 Installation

1. For Windows, install MiKTeX: "MiKTeX (pronounced mick-tech) is an up-to-date implementation of TeX and related programs for Windows" [6]. The current stable version is MiKTeX 2.7.

2. For Linux, install TeXLive [8].

3. For Mac, install TeXShop [14].

2 Latex Document Structure

1. The Structure of a Latex document is as follows.

   \documentclass[*options*]{*format*}
         preamble
   \begin{document}
         body
   \end{document}

2. The *options*, that must be separated by comma, are:

   - The font size: `10pt`, `11pt`, `12pt`. The default size is `10pt`.
   - The paper size: `letterpaper` , `a4paper` , `legalpaper` , `a5paper` , `executivepaper` , `b5paper`
   - The `landscape` option.
   - The `onecolumn` or `twocolumn` options. The default is `onecolumn`.

3. The *format* must be one of `article`, `book`, `report`, or `letter`. The most common format is `article`.

4. The *preamble* contains definitions that apply to the entire document.

   - Packages: For instance, to insert figures into your document, you must use the `graphicx` package:
     `\usepackage{graphicx}`
   - Line spacing: For instance, to have a double space document:
     `\renewcommand{\baselinestretch}{2}`
   - Text width and hight:
     ```
     \textwidth    6.5in
     \textheight    9in
     ```
   - Margins:
     ```
     \topmargin   -0.5in
     \oddsidemargin  0in
     \evensidemargin 0in
     ```

5. The *body* of the document is what that will appear in the output. Ten characters to remember are:

   ```
   # $ % & _ { } \ ^ ~
   ```

   For writing the first seven characters use \ in front of each character, and for the last three use the `\verb` command. For instance, `\#` creates # ,and `\verb"~\~"` translates to ~\~.

3 Latex in Command Line (First Latex Program)

1. At first step, maybe you need to find the place where `latex.exe` is located. With the following command you can find it. We suppose that you have access to all the Latex commands.

   ```
   c:\>dir latex.exe /s
   ```

2. Make a directory for your files, e.g., `myFiles`, and create a text file with extension ".tex" , e.g., `tex1.tex`, with the following content.

   ```
   \documentclass{article} %This is a comment
   \begin{document}
     This is only a test text with Tex.
   \end{document}
   ```

3. Latex your TeX file, i.e., compile the file with `latex.exe`. Look at Latex Tutorial [9] for more details.

   ```
   C:\myFiles>latex tex1
   ```

4. You will see that some files are generated all with `tex1` name but with different extensions. The output of your TeX file is `tex1.dvi`. It is in Device Independent (DVI) format.

5. You must have a DVI viewer installed in your system, YAP (Yet Another Previewer) [11] (`yap.exe`)is the MiKTeX program for viewing DVI files. Type the following command to see the result.

   ```
   C:\myFiles>yap tex1
   ```

6. To convert the DVI file to an output file in the PostScript (PS) format (An ASCII and portable file format), you can use the Dvips (`dvips.exe`) program which is included in your MiKTeX installation:

   ```
   C:\myFiles>dvips tex1
   ```

7. To see the PS files, you must have GSView installed on your computer. "GSview is a graphical interface for Ghostscript" [12]. We suppose that you have access to the `GSView32.exe` application, then type:

   ```
   C:\myFiles>gsview32 tex1
   ```

8. To generate an output file in the Portable Document Format (PDF), directly from the TeX file, you can use the PDFLatex(`pdflatex.exe`) program which is included in your MiKTeX installation:

   ```
   C:\myFiles>pdflatex tex1
   ```

9. As a result of compiling a TeX file (with `latex` or with `pdflatex`), you will see lots of information and messages. Check the resulting log file (`tex1.log`) to see Errors and Warnings. Normally, you can ignore warnings (even sometimes the errors), but it is a good idea to review all the error messages and fix the problems. For instance, some Warnings are produced because of an unknown reference!

10. How to write TeX logo? Edit your file as follows and repeat step 8 to create the PDF again.

    ```
    \documentclass{article} %This is a comment
    \begin{document}
      This is only a test text with \TeX. %Note that X in \TeX is capital.
    \end{document}
    ```

11. Review: Create your TeX file / Compile it with `latex` or `pdflatex` to build the output / View the out put with a viewer.

4 Latex with TeXnicCenter (Second Latex Program)

1. "TeXnicCenter is a feature rich and easy-to-use integrated environment for creating LaTeX documents on the Windows platform [...] TeXnicCenter is open source software and available completely free of charge!" [13].

2. TeXnicCenter is installed on all ENCS-managed desktops at Concordia University.

3. Install TeXnicCenter after MiKTeX. This way, TeXnicCenter is configured automatically.

4. Following are some of the main features of TeXnicCenter:

   (a) Syntax highlighting, auto completion, and real time spell checking.

   (b) LaTeX commands from the menus.

   (c) Flexible and fully configurable build system.

   (d) Possibility to define output profiles.

   (e) An embedded reference to Latex: "Latex Help e-Book."

5. From now on we will work in TeXnicCenter environment.

6. Now open the `tex1.tex` file with TeXnicCenter, build the DVI output (using the LateX => DVI profile), and view the output.

7. Save the file as `tex2.tex`, and add some sections to the document: Introduction, Background, Conclusion. Try to use the **auto completion** feature, e.g., type \sub and press "Ctrl+Space" to select the `subsection` command. Following is our `tex2.tex`.

```
\documentclass{article} %This is a comment
\begin{document}
This is only a test text with \TeX. %Note that X in \TeX is capital.
This is supposed to be a paper about the \TeX. %Note that this line is printed immediately after th

This is a new paragraph since it is separated from the previous paragraph with a blank line.
\section{Introduction}
This is the introduction section of my paper.
\section{Background}
This is the background section of my paper. It has two subsections.
\subsection{Background Part I}
This is the first subsection of my background.
\subsection{Background Part II}
This is the second subsection of my background.
\section{Conclusion}
This is the conclusion section of my paper.
\end{document}
```

8. Add more sections, subsections, subsubsections, and paragraphs to your document.

9. Compile your file and see the output, both in DVI and in PDF.

5 Cross References & Lists (Third Latex Program)

Save your TeX file as `tex3.tex`, and follow the steps to add cross-references and lists to your document. Remember that you have to rebuild the DVI file as the output.

5.1 Cross References

1. We want to add references to the sections Introduction, Background, Conclusion. To create cross-references, we must first create labels for the entries that we want to refer to them.

2. Create labels using the `\label{`*label-name*`}`, e.g., define `\label{`*sec:intro*`}` for the *Introduction* section of your document, as indicated in the following. Note that the "sec:intro" is my naming convention, you might name it just "intro."

   ```
   \section{Introduction}\label{sec:intro}
   ```

3. Using the command `\ref{`*label-name*`}` you can print the number corresponding to that label, e.g., in the *Conclusion* section, you can refer to the *Introduction* section by writing:

   ```
   "In Section~\ref{sec:intro}, we introduced our work."
   ```

4. Note the usage of the `~` symbol. Also, note the usage of word `Section`, that is there because the `\ref` command creates the corresponding number only.

5. Labels can be defined in several places, *Sections* (see Section 4), Items in an *Enumerated list* (see Section 4), *Figures* (see Section 6), and *Tables* (see Section 7), to name a few.

6. To avoid typing the words such as `Section` or `Figure` every time that you refer a section or a figure, you can define the following commands in the *preamble* of your document (Inspired by [1]).

   ```
   % Cross-reference commands.
   \newcommand{\xs}[1]{Section~\ref{#1}}
   \newcommand{\xp}[1]{Page~\pageref{#1}}
   \newcommand{\xf}[1]{Figure~\ref{#1}}
   \newcommand{\xt}[1]{Table~\ref{#1}}
   \newcommand{\xa}[1]{Appendix~\ref{#1}}
   ```

7. Now we can write "In `\xs{sec:intro}, we introduced our work.`" Do you see the difference between this case and the one in Step 3.

5.2 Lists

1. In Latex there are several environment that you can use to create lists. Two useful ones are `itemize` and `enumerate`. Following is an itemized list.

   ```
   \begin{itemize}
     \item This is the first item.
     \item This is the second item.
   \end{itemize}
   ```

2. Both `itemize` and `enumerate` have similar structure.

3. Add one `itemize` and one `enumerate` list to your document. Try to add some cross references to one of the items in the list.

6   Figures (Forth Latex Program)

In this section, we will add some figures to our Tex file. There are several issues regarding inserting figures in a Latex program. Save the file as `tex4.tex` and try the following examples.

6.1   Drawing simple figures using Latex Commands

1. There are drawing commands in Latex which enable you to draw pictures, however, due to complication, I do not recommend it. Following are three commands.
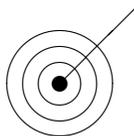
    (a) Circles: `\circle{`*diameter*`}`
    (b) Filled circles: `\circle*{`*diameter*`}`
    (c) Lines: `\line(`*x slope*`,`*y slope*`){`*length*`}`, where *slope* = *x/y*.

2. Following is an example. For more examples, see [15].

```
\setlength{\unitlength}{1mm}
\begin{picture}(60, 40)
  \put(20, 20){\line(1, 1){10}}
  \put(20, 20){\circle*{2}}
  \put(20, 20){\circle{6}}
  \put(20, 20){\circle{10}}
  \put(20, 20){\circle{14}}
\end{picture}
```


3. The generated figure is as follows.

4. Latex treats figures as *floats*, i.e., there is no guaranty that they are printed in the places that you define them in your Tex file, Latex finds the best place to put those items. In order to be able to control more on the placement of floats, and also to have `caption` and `label` for the figures, we put them inside a `figure` environment. Type figure in TeXnicCenter and use the auto completion to complete the structure of this environment for you. Try the following example.

```
\begin{figure}[ht]
  \centering
  \setlength{\unitlength}{1mm}
  \begin{picture}(60, 40)
    \put(20, 20){\line(1, 1){10}}
    \put(20, 20){\circle*{2}}
    \put(20, 20){\circle{6}}
    \put(20, 20){\circle{10}}
    \put(20, 20){\circle{14}}
  \end{picture}
  \label{fig:circles}
  \caption{A test figure drawn by \texttt{Circle} command}
\end{figure}
```

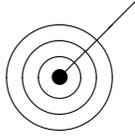5. The generated figure is shown in Figure 2.

Figure 2: A test figure drawn by `Circle` and `Line` commands

6.2 Importing figures into the float figure environment

1. For including graphics, put `\usepackage{graphicx}` in the preamble of the document.

2. We can include an existing graphic file, using the command `\includegraphics`, to a figure environment. Following is an example. We suppose that the figure `tree.eps` exists on the current directory.

```
\begin{figure}[ht]
  \centering
  \includegraphics[scale=0.5]{tree.eps}
  \label{fig:treeEPS}
  \caption{This is test figure of type EPS}
\end{figure}
```

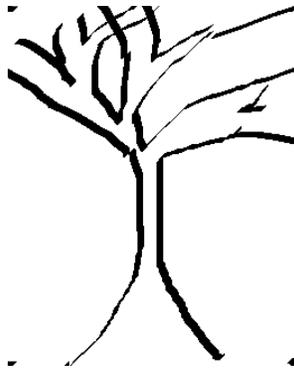3. The generated figure is shown in Figure 3.

Figure 3: This is test figure of type EPS

4. Options for placing the figure are: `[t]` for top, `[b]` for bottom, `[h]` for here, and `[p]` for (float) page. The default option is `[tbp]`.

5. Two well-known formats for a graphic file that can be used in a figure in Latex are: EPS (Encapsulated PostScript) and PDF (Portable Document Format).

6. An EPS file can be converted to a PDF format using the program `epstopdf` which is included in MiKTeX installation. The command line is shown in the following example.

```
C:\myFiles>epstopdf tree
```

7. Now make another figure in your document using the `tree.pdf` file, and see the output. Note the next two steps and try both cases to see the errors.

8. If the figure is of type EPS, "LateX => DVI" profile of TeXnicCenter works well, but "LateX => PDF" gives error. For making PDF output, we must select "LateX => PS => PDF" profile.

9. If the figure is of type PDF, "LateX => PDF" profile of TeXnicCenter works well, but "LateX => DVI" gives error. You can not make a DVI file for a TeX file which contains a figure of type PDF!

10. How to make an EPS figure? The best way is to use a drawing tool which exports the figure into the EPS format. A well-known program is the XFIG in Linux. In Windows, Microsoft Visio has export to EPS feature.

11. To convert an existing figure which is in formats such as JPG, BMP, or GIF, to the EPS format, I recommend using the OLETeX Utility [16].

12. If you see that your figure is not placed correctly in the page, or there are white spaces around it, maybe you need to fix its `BoundingBox` parameters. For doing this, open the EPS file with the TeXnicCenter (or any other text editor) and change the values of `BoundingBox` parameters to appropriate numbers. As an example, replace the `tree.eps` with the `treeBad.eps` which its `BoundingBox` parameters are not set correctly.

13. If you want the caption of your figures to be printed at the top of the figures, move the `\caption` command before the `\includegraphics`.

14. You can print the list of figures that exist in your document by using the `\listoffigures` command.

15. If you want to have a wide figure in a two column document, you must use `\begin{figure*}` and `\end{figure*}`.

7 Tables (Fifth Latex Program)

In this section, we will add tables to our Tex file. Save the file as `tex5.tex` and try the following examples.

1. There are two commands to know: `tabular` and `table`. The former is a powerful way of text alignment. The later creates a *float* which is automatically located in the document, can have caption, and can be referenced.

2. The format of a `tabular` environment is as follows. The `cols` defines the format of the columns and the `rows` contains the text of each column. We use `&` to separate the columns and use `\\` to end a row.

```
\begin{tabular}{cols }
  rows
\end{tabular}
```

3. Following is an example for a table.

```
\begin{tabular}{l|l}
  \textbf{Fiscal Year} & \textbf{Income of the Year} \\  \hline
  2002 & \$20000 \\
  2004 & \$40000 \\
  2006 & \$80000 \\
\end{tabular}
```

4. The generated table looks like the following. Complete the border of this table by using more vertical bars | and `\hline` commands. Also try using `c` or `r` instead of `l`.

Fiscal Year	Income of the Year
2002	$20000
2004	$40000
2006	$80000

5. Placing the tabular environment in a table, enables us to define a caption for the table and have references for it. Following is an example of a table.

```
\begin{table}[htbp]
  \centering
  \begin{tabular}{|c|c|}
    \textbf{Fiscal Year} & \textbf{Income of the Year} \\  \hline
    2002 & \$20000 \\ \hline
    2004 & \$40000 \\ \hline
    2006 & \$80000 \\ \hline
  \end{tabular}
  \caption{This is a sample table}
  \label{tab:tab}
\end{table}
```

6. Table 1 shows the resulting table. Note the differences between the view of this table with the previous one (the borders and lines).

Fiscal Year	Income of the Year
2002	$20000
2004	$40000
2006	$80000

Table 1: This is a sample table

7. You can print the list of tables that exist in your document by the `\listoftables` command.

8. If you want to have a wide table in a two column document, you must use `\begin{table*}` and `\end{table*}`.

9. Now add more columns to the table and try having a wide table in a two-column document.

8 Mathematics (Sixth Latex Program)

Writing mathematic formula is one the strengths of LaTeX. Save your TeX file as `tex6.tex`, and add some math to it.

1. Embedded math formula must be placed between two \$ signs, for instance: $x^2 = y^2 + z^2$ or $f(x) = ax^2 + bx + c$ or $g(x) = \Sigma_0^n x^i$.

2. Using \$\$ causes the formula to be aligned at the center of the line. Following example is taken from [1, p. 15].

   ```
   $$ {\cal L} \left\{ \frac{\partial w}{\partial x} \right\}
   = \int_0^{\infty} e^{-st} \, \frac{\partial w}{\partial x} \, dt
   = \frac{\partial}{\partial x} \int_0^{\infty} e^{-st} w(x,t) \, dt
   = \frac{\partial}{\partial x} {\cal L} \{ w(x,t) \} . $$
   ```

$$\mathcal{L}\left\{\frac{\partial w}{\partial x}\right\} = \int_0^\infty e^{-st}\frac{\partial w}{\partial x}\,dt = \frac{\partial}{\partial x}\int_0^\infty e^{-st}w(x,t)\,dt = \frac{\partial}{\partial x}\mathcal{L}\{w(x,t)\}.$$

3. Use the `eqnarray` as in the following example, taken from [1, p. 21].

   ```
   \begin{eqnarray*}
   \xi & = & \theta - \theta_0 \\
   & = & \xi_0\cos\left(
   \sqrt{\frac{gb}{l}+\epsilon}
   \right)
   \end{eqnarray*}
   ```

$$\begin{aligned}
\xi & = & \theta - \theta_0 \\
& = & \xi_0 \cos\left(\sqrt{\frac{gb}{l}+\epsilon}\right)
\end{aligned}$$

4. Labeling and cross-referencing of math equations is easily done in Latex. For example the following equation can be referenced by `\ref{imagine}`.

   ```
   \begin{equation} \label{imagine} e^{-i\pi} = -1 \end{equation}
   ```

5. Equation 1 shows the output for this equation.

$$e^{-i\pi} = -1 \tag{1}$$

9 Bibliography (Seventh Latex Program)

Save your TeX file as `tex7.tex`. In this section, we will add bibliography (references) to our document. Try the steps that are described in the following two sub-sections.

There are two options for making the bibliography for your paper. If you plan to use Latex for a long time during your academic career, I recommend the second option, i.e., to make a database of your references and reuse it in all your papers, thesis, reports, etc.

9.1 Bibliography Entries Inside the Document

1. Make your bibliography inside the `\thebibliography` environment.

2. Place this environment where you want your references to appear, mostly at the end of the document. Following is the structure of this environment.

   ```
   \begin{thebibliography}[longest-label]
     \bibitem{key1} FIRST REFERENCE. ADD THE ENTRY HERE. THERE IS NO SYNTAX FOR IT!
     \bibitem{key2} FIRST REFERENCE.
   \begin{thebibliography}
   ```

3. The argument *longest-label* must be 9, if you have less than ten references, and it must be 99 if you have between 10 to 99 references, and so on.

4. Define the entries by the `\bibitem` command. Following is a book entry. Note that the only important thing is the key. In this example, Latex does know not which one is the author's name, and which one is the publisher.

   ```
   \bibitem{lam94} Lamport, L., {\it LaTeX : A Documentation Preparation System User's
   Guide and Reference Manual}, Addison-Wesley Pub Co., 2nd edition, August 1994.
   ```

5. Inside your document, you can cite any of the defined BibItem entries using the `\cite` command, e.g. `\cite{lam94}`.

6. Use `\cite{key1,key2,key3}` to cite many references together.

7. Use `\cite[p. 78]{lam94}` to cite page 78 of Lamport's book, the result of this citation is shown as [2, p. 78].

8. Note that when you have citations inside your document, you need to compile the document at least twice.

9.2 Bibliography Database Outside the Document

BibTeX is a companion program for LaTeX that manages the references. BibTeX needs a `.bib` file that acts as a database of *all* your references. You build it once, but you use it many times. Every time that you have a new reference, you add it to the BibTeX file, without changing any of your old TeX files. That means you need to work on two files: 1) your BibTeX file, and 2) your LateX file.

1. **Separate from your document:** Prepare a BibTeX file, e.g. `myRefs.bib`, and enter all your reference entries. You can use TeXnicCenter for creating/editing the `.bib` files too.

2. There are several entries that you can add to your BibTeX file. The main categories are as follows.

   (a) `@article` for journal papers.
   (b) `@conference` or `@inproceedings` for conference papers.
   (c) `@book` for books with well-known publishers.
   (d) `@phdthesis` for thesis.

(e) `@misc` for miscellaneous references, including web sites.

3. Each entry must have a **unique key**. This is the key that you use when you cite a reference in your document using the `\cite` command.

4. Each entry has its own fields. Following is an example of a book entry.

```
@book{GUW08,
  title={{Database systems: the complete book}},
  author={Garcia-Molina, H. and Ullman, J.D. and Widom, J.},
  year={2008},
  publisher={Prentice Hall Press Upper Saddle River, NJ, USA}
}
```

5. **Inside your document:** Specify the name of your BibTeX file for the Latex by the `\bibliography` command, e.g., `\bibliography{myRefs}`. Place this command where you want your bibliography to appear, mostly at the end of the document.

6. Using the BibTeX file requires a Bibliography Style, that must be specified by the `\bibliographystyle{`*style-name*`}` command. The best place for this command is right after the `\bibliography` command. There are several styles for organizing the bibliography, `plain, alpha, abbrv, acm`, to name a few. Let us use the first one: `\bibliographystyle{plain}`.

7. Inside your document, you can cite any of the defined entries using the `\cite` command, e.g., in the *Background* section of your document write:

```
Ullman~\cite{GUW08} defines a Relational Algebra as follows.
```

8. You must compile your BibTeX file with `bibtex.exe` program. That means, if you are using Latex in command line, you must 1) `latex` your document, 2) `bibtex` your BibTeX file, and 3) `latex` your document again.

9. In TeXnicCenter, you do not need to compile your BibTeX file separately; TeXnicCenter does everything for you. You just deal with the TeX file.

9.3 Where to Find BibTeX Entries?

1. You can find the BibTeX entry of the most of the academic references from the publisher's search engines, e.g., `IEEE, ACM, AMS, LNCS`, or from the `Google Scholar`. Try to find the BibTeX entry of some of the references that you know.

2. Note that not all the BibTeX entries that you copy from the Internet are complete, or even valid! Following are some reliable online references that you can find almost complete BibTeX entries.

   (a) For Electrical and Computer Engineering: IEEE [18], ACM [19]
   (b) For Computer Science and Software Engineering: DBLP [17], IEEE [18], ACM [19]
   (c) For Mechanical and Industrial Engineering: Engineering Village (Compendex) [20]
   (d) For Building, Civil, and Environmental Engineering: Engineering Village (Compendex) [20]
   (e) Mathematics: The AMS MathSciNet [21]
   (f) Multidisciplinary Databases: The Elsevier ScienceDirect [22]

3. Now try to find some references from the online sources, insert them into your BibTeX file, and cite them in your document.

4. Select different styles and check how it affects the appearance of the bibliography section of your document.

10 Indexes (Eighth Latex Program)

Making indexes in Latex is a mixture of manual and automatic process, but it is not cumbersome. Save the file as `tex8.tex`, and try the following examples.

1. You need to use the `makeidx` package, i.e., put `\usepackage{makeidx}` in the *preamble*.

2. Use command `\makeindex` in the *preamble* of your document.

3. Use command `\printindex` before the end of your document. You can print index everywhere in the document, but the regular place is at the end of the document.

4. Place `\index{`*indexed-word*`}` exactly after the word, without space, that you want to index it.

5. For hierarchical indexes use this format: `\index{`*indexed-word1*`!`*indexed-word2*`}`, this way *word2* will be indexed as a sub category of *word1*.

6. Now create some indexes for your document.

7. When you work with indexes, maybe you need to compile your TeX file more than once.

11 Presentations (Ninth Latex Program)

There exist several packages written for Latex that enable you to prepare a presentation. Here, we introduce the *Beamer* class [10].

Note that making fancy presentations is not easy in Latex. But, if you have your data, e.g., your tables and math formula, already in Tex format, and if you like the default/ready-made layouts of the available packages, it's not so hard to use it. The following is just the start point.

1. Create a new TeX file named `tex9.tex`.

2. Type the following as the content of the file.

   ```
   \documentclass{Beamer}
   \title{Your Title}
   \author{Your Name}
   \date{Date of Presentation}

   \begin{document}
   \begin{frame}
     \titlepage
   \end{frame}

   \section{Introduction}
   \begin{frame}\frametitle{Title of first slide}
     Content of first slide, which can contain (almost) anything you have in a \LaTeX file!
   \end{frame}

   \end{document}
   ```

3. Add more sections, sub-sections, and frames (slides) to your presentation.

4. Make a PDF of this with `pdflatex` command. Maybe you need to compile your document more than once.

5. View the resulting PDf file in the full-screen mode.

12 Acronyms

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