EECS 31L: Introduction to Digital Design Lab LaTeX Tutorial

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What is LaTeX

LaTeX is a document preparation system for high-quality typesetting. It is most often used for medium-to-large technical or scientific documents but it can be used for almost any form of publishing.
LaTeX is *not* a word processor! Instead, LaTeX encourages authors *not* to worry too much about the appearance of their documents but to concentrate on getting the right content.

A Simple LaTeX Sample

Cartesian closed categories and the price of eggs
Jane Doe
September 1994

Hello world!

```
\documentclass{article}
\title{Cartesian closed categories and the price of eggs}
\author{Jane Doe}
\date{September 1994}
\begin{document}
   \maketitle
   Hello world!
\end{document}
```

In English:

- This document is an article.
- Its title is *Cartesian closed categories and the price of eggs*.
- Its author is *Jane Doe*.
- It was written in *September 1994*.
- The document consists of a *title* followed by the text *Hello world!*

LaTeX Resource

- Obtaining LaTeX: https://latex-project.org/ftp.html
- For windows: proTeXt http://www.tug.org/protext/
- For MAC: MACTeX http://www.tug.org/mactex/
- LaTeX Tutorial: http://www.latex-tutorial.com/
  http://latex.wikia.com/wiki/Main_page
- LaTeX Template: http://www.latextemplates.com/
- Sample report and its LaTeX files will be shared

LaTeX Basic Layout

Sample Code:

```
%Preamble
\documentclass[paper=letter, fontsize=11pt]{scrartcl} % A4 paper and 11pt font size
\usepackage[T1]{fontenc} % Use 8-bit encoding that has 256 glyphs
\usepackage{fourier} % Use the Adobe Utopia font for the document - comment this line to
return to the LaTeX default
\usepackage[english]{babel} % English language/hyphenation
\usepackage{amsmath,amsfonts,amsthm} % Math packages
\usepackage{graphicx}
\usepackage{lipsum} % Used for inserting dummy 'Lorem ipsum' text into the template
\usepackage{hyperref}
\usepackage{sectsty} % Allows customizing section commands

\title{
\normalfont \normalsize
\textsc{University of California Irvine} \\  % Your university, school and/or department
name(s)
\textsc{Course: Introduction to Digital Logic Lab (31L) Fall 2015} \\ [25pt]
\huge Lab 0 report\\ % The assignment title
}
\author{Peter Anteate \\ Student ID: 12345678} % Your name
\date{\normalsize\today} % Today's date or a custom date
%Main document
\begin{document}
\maketitle % Print the title
\section{Latex installation and tutorial}
Latex is a high-quality document preparation system. In order to set it up on your
Windows machine you need to download and install some tools which are discussed in the
following Section. However, there are hundreds of tools that you can use to set up Latex
and this tutorial is one of them.
\end{document}
```

LaTeX Basic Layout

Preview output:

UNIVERSITY OF CALIFORNIA IRVINE
COURSE: INTRODUCTION TO DIGITAL LOGIC LAB (31L) FALL 2015

Lab 0 report

Peter Anteate
Student ID: 12345678

September 28, 2015

1 Latex installation and tutorial

Latex is a high-quality document preparation system. In order to set it up on your Windows machine you need to download and install some tools which are discussed in the following Section. However, there are hundreds of tools that you can use to set up Latex and this tutorial is one of them.

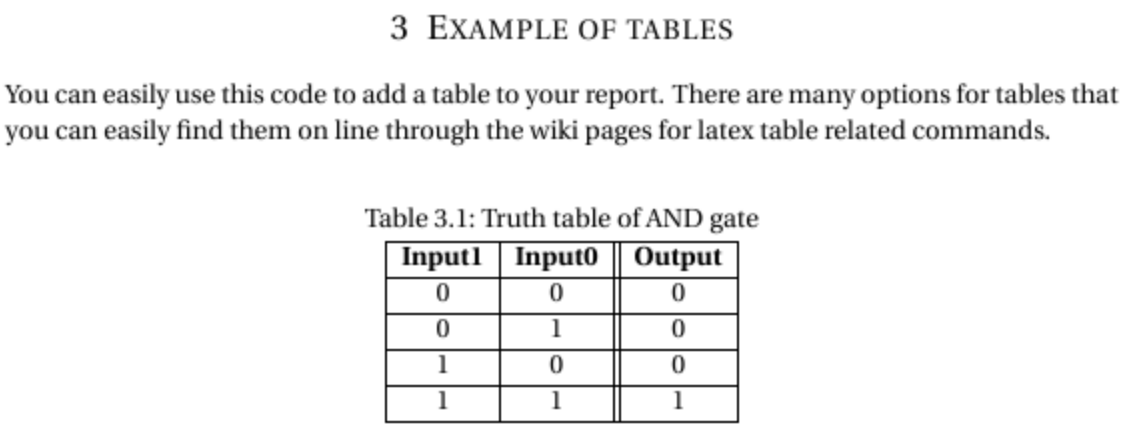
Main Document: Create Tables with LaTeX

- A lot of times, it is necessary to have data nicely structured in a table. LaTeX offers an environment for table creation. For this purpose we use the *table* and *tabular* as well as the *center environment*.
- Sample code:

```
%-------------------------------------------
% to add a table
\section{Example of tables}
You can easily use this code to add a table to your report. There are many options for
tables that you can easily find them on line through the wiki pages for latex table
related commands.
\begin{table}[h]
\centering
\caption{Truth table of AND gate}
\label{my-label}
\begin{tabular}{|c|c||c|} % Three columns, the letter tells how to align the content
%l left c center r right
\hline % create a horizontal line
\textbf{Input1} &\textbf{Input0} &\textbf{Output}    \\
\hline
 0 & 0  & 0    \\ % ampersands % as column seperators and newline symbols \\ as row
 seperators
\hline
 0 & 1  & 0    \\
\hline
 1 & 0  & 0 \\
\hline
 1 & 1  & 1  \\
\hline
\end{tabular}
\end{table}
```

Main Document: Create Tables with LaTeX

- Overview output:



3 EXAMPLE OF TABLES

You can easily use this code to add a table to your report. There are many options for tables that you can easily find them on line through the wiki pages for latex table related commands.

Table 3.1: Truth table of AND gate

Input1	Input0	Output
0	0	0
0	1	0
1	0	0
1	1	1

- To learn how to create tables and plots directly from spreadsheets(.csv) please read the tutorial: http://www.latex-tutorial.com/tutorials/advanced/lesson-9/

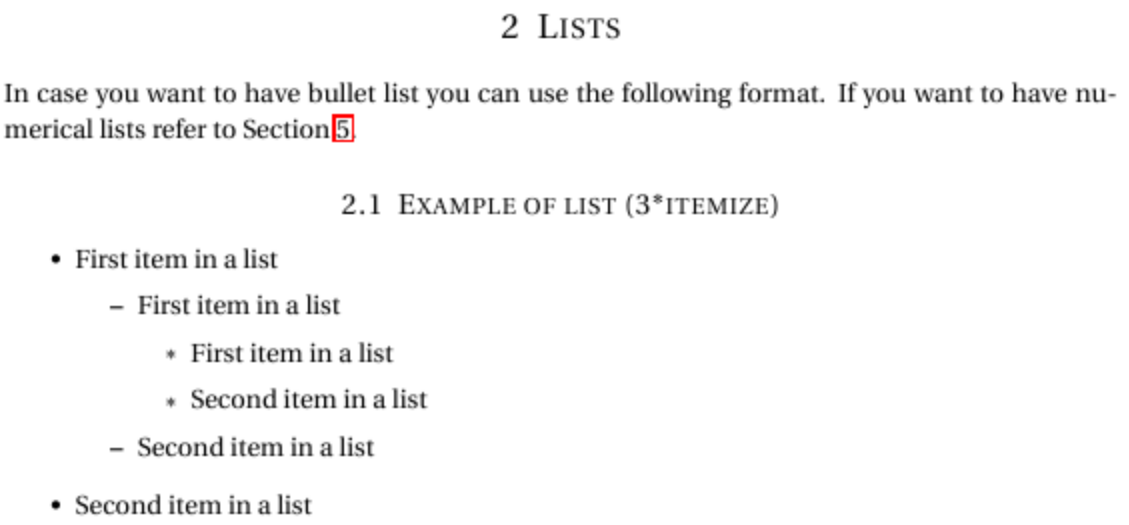
Main Document: Create Lists with LaTeX

- To create bullet list, we can use the following code:

```
101 \section{Lists}
102
103 %-----------------------------------------------
104 % to add a list to your report
105
106 In case you want to have bullet list you can use the following format. If you want to
    have numerical lists refer to Section~\ref{sec:general_notes}.
107 \subsection{Example of list (3*itemize)} %includes a 3-level-list
108 \begin{itemize}
109     \item First item in a list %each level need a begin and end statement
110         \begin{itemize} % decrease indent of next level list
111         \item First item in a list
112             \begin{itemize}
113             \item First item in a list
114             \item Second item in a list
115             \end{itemize}
116         \item Second item in a list
117         \end{itemize}
118     \item Second item in a list
119 \end{itemize}
120
```

Main Document: Create Lists with LaTeX

- Sample output:



2 Lists

In case you want to have bullet list you can use the following format. If you want to have numerical lists refer to Section 5.

2.1 Example of list (3*itemize)

- First item in a list
  - First item in a list
    - First item in a list
    - Second item in a list
  - Second item in a list
- Second item in a list

- If we want to have numerical lists, we have to use *enumerate* command. And we will learn this in a full-version report.

A Sample Report

- In this course, you can use the sample report as your reference, and it will save you a lot of time to reprogram the report.
- Next we are going to go through a full report in LaTeX to review all we covered in this tutorial.