IT WORK SHOP LABORARTORY
LAB MANUAL

Year	**:**	**2019 -2020**
Course Code	**:**	**ACSB02**
Regulations	**:**	**IARE –R18**
Semester	**:**	**III**
Branch	**:**	**CSE	IT**

Prepared by

Chatakunta   Praveen Kumar

Assistant Professor

DEPARTMENT OF INFORMATION TECHNOLOGY

INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal, Hyderabad - 500 043

	Program Outcomes
PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give andreceive clear instructions.
PO11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
	Program Specific Outcomes (CSE)
PSO1	**Professional Skills:** The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics,and networking for efficient analysis and design of computer - based systems of varying complexity.
PSO2	**Problem-Solving Skills:** The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success
PSO3	**Successful Career and Entrepreneurship:** The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.

INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal, Hyderabad – 500043

S No	Experiment	Program Outcome Attained	Program Specific Outcomes Attained
— ATTAINMENT OF PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES			
1	**LaTeX FORMATTING**	PO1, PO2, PO3	PSO1, PSO2
2	**TECHNICAL PAPER PREPARATION IN LaTeX**	PO1, PO2, PO3	PSO1, PSO2
3	**FORMATTING MATHEMATICAL EQUATIONS IN LaTeX**	PO1, PO2, PO3	PSO1, PSO2
4	**GRAPHICS AND TABLES IN LaTeX**	PO2, PO3	PSO1, PSO2
5	**VARIOUS FORMATTING STYLES IN LaTeX**	PO3, PO4	PSO1, PSO2
6	**EXCEL SPREADSHEETS**	PO2, PO3	PSO1, PSO2
7	**PREPARATION OF POWERPOINT PRESENTATION IN LaTeX**	PO2, PO3	PSO1, PSO2
8	**WEBPAGES CREATION AND DESIGNING**	PO2, PO3	PSO1, PSO2
9	**WEB DESIGN FOR SAMPLE PROJECT**	PO3, PO4	PSO1, PSO2
10	**NETWORK CONNECTIVITY**	PO3, PO4	PSO1, PSO2
11	**SURFING THE WEB**	PO2, PO3	PSO1, PSO2
12	**ROUTER CONFIGURATION**	PO2, PO3	PSO1, PSO2

Certificate

ThisistoCertifythatitisabonafiedrecordofPracticalworkdoneby

Sri/Kum. _____ *bearingthe*

Roll No. _____ *of* _____ *Class*

_____ *Branch in the*

_____ *laboratoryduringtheAcademic*

year _____ *under oursupervision.*

_____

Head oftheDepartment   **LectureIn-Charge**

ExternalExaminer   **InternalExaminer**

IT WORKSHOP LABORATORY

III Semester: CSE / IT

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
AITB02	**Core**	0	0	3	1.5	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 36**				**Total Classes: 36**		

COURSE OBJECTIVES:

The course should enable the students to:

I. Understand various data representation techniques in the realworld.
II. Implement linear and non-linear datastructures.
III. Analyze various algorithms based on their time and spacecomplexity.
IV. Develop real-time applications using suitable datastructure.
V. Identify suitable data structure to solve various computingproblems.

LIST OF EXPERIMENTS

Week -1	**LaTeX FORMATTING**

Introduction of LaTex and LateX document formatting:
Create a LaTeX document with following formatting: All margins with 1.5, headings with bold, text with normal, chapter name with blue color, line space with1.5.

Week -2	**TECHNICAL PAPER PREPARATION IN LaTeX**

Essential steps in writing the technical report:
Create a technical report according to IEEE format includes title of the paper, authors name and affiliations, abstract and keywords, introduction section, background section, and other sections, references.

Week -3	**FORMATTING MATHEMATICAL EQUATIONS IN LaTeX**

Create a LaTeX document with following mathematical equations along with equation numbers in Italic
format: summation (represent in sigma symbol), integration, integral of summation, average of summation, trigonometric equations, polynomial and non-polynomial equations

Week -4	**GRAPHICS AND TABLES IN LaTeX**

Create a LaTeX documents with images and image caption at centre alignment, table with thick border
and table caption with centre alignment, row height, content with cell centre alignment.

Week -5	**VARIOUS FORMATTING STYLES IN LaTeX**

Using LaTeX to create project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap
in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX

Week-6	**EXCEL SPREADSHEETS**

Spreadsheet Orientation: Accessing, overview of toolbars, saving spreadsheet files, Using help and resources.Creating a Scheduler:- Gridlines, Format Cells, Summation, auto fill, Formatting Text Calculating GPA - Features to be covered:- Cell Referencing, Formulae in spreadsheet – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, Sorting,Conditional formatting

Week -7	**PREPARATION OF POWERPOINT PRESENTATION IN LaTeX**

Student should work on basic power point utilities and tools in Latex which help them create basic power point presentation. PPT Orientation, Slide Layouts,InsertingText,Formatting   Text, Bullets and Numbering, Auto Shapes, Lines andArrows

Week -8	**WEBPAGES CREATION AND DESIGNING**

HTML, creating simple web pages, images and links, design of web pages.
Develop home page: Student should learn to develop his/her home page using HTML consisting of his/her photo, name, address and education details as a table and his/her skill set as a list.

Week -9	**WEB DESIGN FOR SAMPLE PROJECT**

Create a webpage with HTML describing your department. Use paragraph and list tags.
  Apply various colors to suitably distinguish key words. Also apply font styling like italics, underline and two other fonts to words you find appropriate. Also use header tags.
  Create links on the words e.g. "Wi-Fi" and "LAN" to link them to Wikipedia pages. Insert an image and create a link such that clicking on image takes user to other page. Change the background color of the page.
  At the bottom create a link to take user to the top of the page.

Week -10	**NETWORK CONNECTIVITY**

Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate how to access the websites and email.

Week -11	**SURFING THE WEB**

Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers..

Week -12	**ROUTER CONFIGURATION**

Cabling a network using CCNA, basic and challenge router configuration, subnetting, practical test router connections and settings, troubleshooting challenges.

LIST OF REFERENCE BOOKS:

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education India,2005
2. LaTeX Companion – Leslie Lamport,PHI/Pearson.
3. David Anfinson and Ken Quamme, IT Essentials: PC Hardware and Software Companion Guide, Third Edition, Cisco Press,2008

WEB REFERENCES:

1.https://www.latex-tutorial.com/tutorials/
2.https://tutorial.techaltum.com/webdesigning.html

SOFTWARE AND HARDWARE REQUIREMENTS FOR A BATCH OF 24 STUDENTS:
HARDWARE: Desktop Computer Systems: 24 nos.
SOFTWARE: LaTeX

EXPERIMENT-1
LaTeX FORMATTING

Importance of latex:

LaTeX is a TeX format written by a computer scientist named Leslie Lamport. LaTeX is based on the principle that authors should concentrate on logical design rather than visual design when writing their documents. Thus instead of writing

```
\vspace{1.5cm}
\begin{centering}
\Large \bf
2. Section Title
\end{centering}
```

LaTeX provides infrastructure that makes it possible for authors to write

```
\section{Section Title}
```

and have not only the visual appearance but even the numbering be done automatically. LaTeX also has certain features designed to be used in conjunction with auxiliary programs such as make index and BibTeX that help automate the tasks of making indexes andbibliographies.

LaTeX is a typesetting system that is extremely useful for typing and formatting scientific documents. Typing in math equations is very intuitive and easy in LaTeX. One of the biggest advantages in using this software is that the user need not concentrate on the layout of the document because LaTeX takes care of all that by itself, resulting in really good looking and cleanly professional documents.

LaTeX is for science, Word for general use (and even for that...) LaTeX makes it very simple to handle equations, figures, bibliographies, indexes, etc. With LateX you focus on the content of the document and let the program handle how the output is formatted.

If you want to write a paper with LaTeX you can start from a template like this:

```
---
\section{Introduction}
Write the introductionhere.....
\section{Title of firstsection}
Write the first section of the paper here....
\section{Title of second section}
Write the second section of the paper here....
\subsection{Title of the subsection}
This is a subsection of the second section....
\subsection{Title of the subsection}
This is another subsection of the second section....
\section{Conclusions}
The conclusions arehere...
\end{document}
---
```

and that is all.

Feature of LATEX:

Portability

LaTeX portability comes in multiple ways:

1. An actual LaTeX file is merely a text file, which is just about the most portable format in computing.
2. The LaTeX system that processes the text file and produces the finished document has been implemented on just about every mainstream platform you care tomention.
3. The default output file format for LaTeX is DVI (which stands for device independent). This was around well before PDF was dreamed up and the high quality files can be viewed via software viewers or printed out. DVI is an open standard, so once again, readers are extremely portable and exist on most operating systems. Admittedly, DVI is hardly ubiquitous and nowadays it's often bypassed in favour for PDF (or it's very simple to convert to other formats like PS or HTML)

Flexibility

You can get LaTeX to do just about anything you can think of! Over the years, an overwhelming selection of packages to extend its potential and macros that can simplify complex tasks have come into being, most of which are freely available on CTAN. For example, LaTeX's main users are within academia and research institutions and they benefit hugely thanks to the Bibtex package that provides bibliography management - I pity my Word-using colleagues who suffer by actually manually word-processing their bibliographies (unless they've shelled out for a program like Endnote).

Control

Whilst LaTeX makes decent typesetting decisions for you, if you want to, you can have total control over the presentation of your document.

Quality

It's difficult to disagree that the output from LaTeX is far superior to what Word can produce. This is emphasised greatest when it comes to documents with high mathematical content, which is a major strength for LaTeX. It also has much better kerning, hyphenation and justification algorithms that simply make the output far more professional than what any word processor. Its algorithms for laying out text are more sophisticated and extremely fine-grained.

Output

As mentioned, the default output is a DVI file. DVI was a clever little standard but unfortunately didn't take-off. It takes little effort to convert your document into a Postscript or PDF file (in fact, you can just use the 'pdflatex' command instead of normal 'latex' if you only ever want to create PDFs). There's no need to buy additional software such as Adobe Acrobat like you need to do to convert a Word document into PDF. (At least OpenOffice has its 'Export to PDF' functionality!)

Scalability

In my personal experience, using Word for documents with more than 20 pages has not been a pleasant experience. Obviously, that could be my own bad luck, but that is also the impression I've got from other users too.

With LaTeX, I've never found such problems. Additionally, you are free to split up large documents into smaller chunks and then let LaTeX combine them altogether later (like one

chapter per file). It can also create tables of content, indexes and bibliographies easily, even on multi-file projects.

Stability
One of the reasons why perhaps so many people struggle with Word when creating large documents, is because it is prone to crashes. 'Document recovery' is now a high ranking feature ofWord.

Cost
Well, this is one area where LaTeX wins hands down, since it is **free**! As with most open source software, the phrase "you get what you pay for" doesn't hold true. You get an extremely mature system, that is still years ahead of its competition.

What about spell checking?
It's a good point. This is not a deficiency of LaTeX, because it just processes the words you give it. However, within your text-editor, you do not get fancy lines highlighting your spelling errors or bad grammar as you type, like you get with Word, yet it's a feature users have come to expect when writing documents.

Overview of toolbars, saving files and using help and resources:

Latex Toolbar with menu bar:

Latex toolbar contains the following options:
- New
- Open
- Save
- Undo
- Redo
- Cut
- Copy
- Find
- Replace
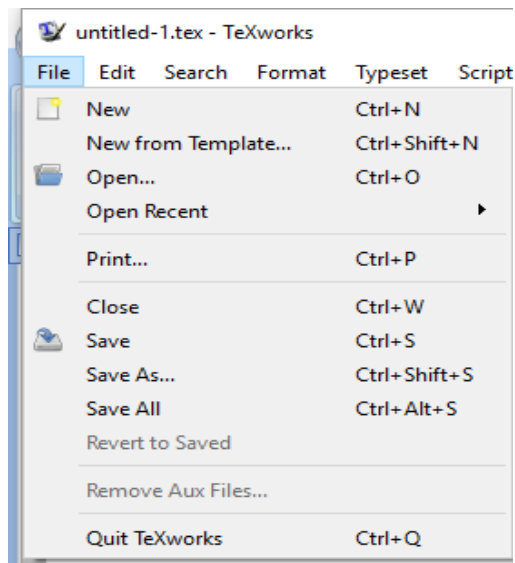
FileMenubar: **Edit Menubar:**
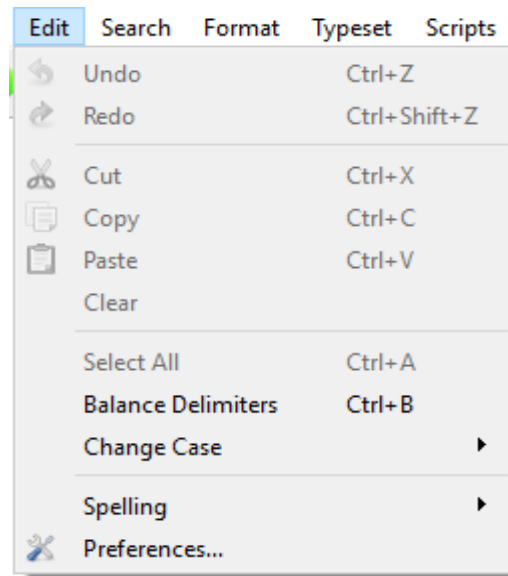
File menu is used for creating the new file and for opening and saving the document. We close or print the documents.
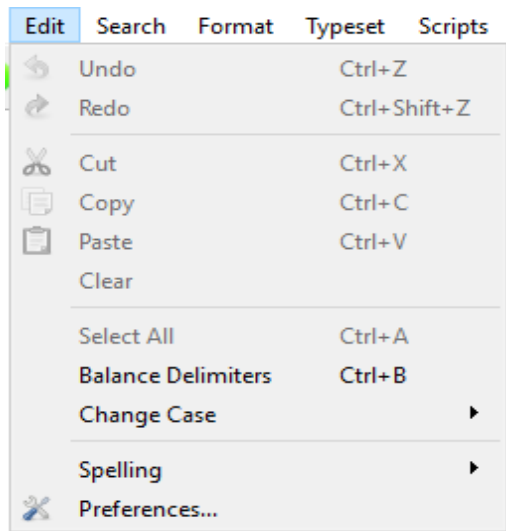
EditMenubar: **Search menubar:**
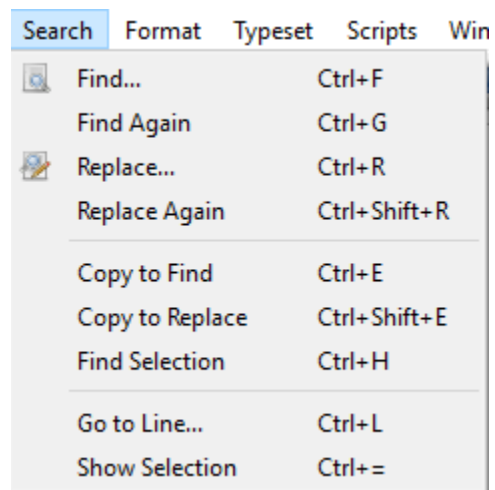
Format menu bar:

Typeset Menu bar:
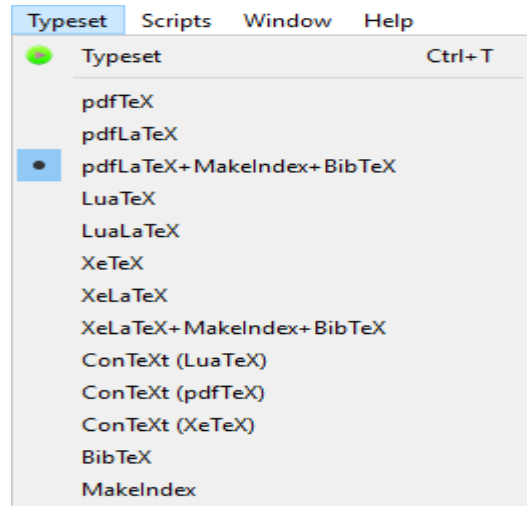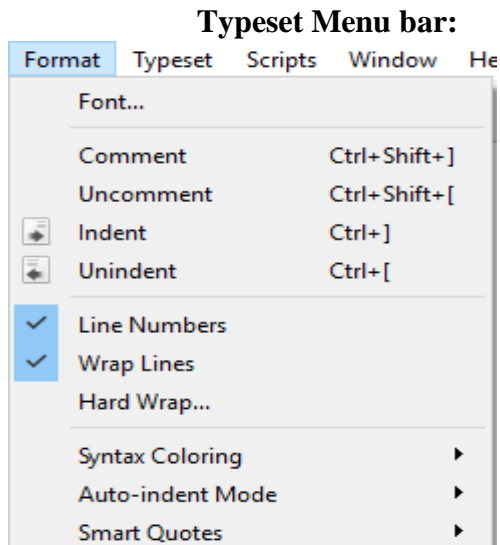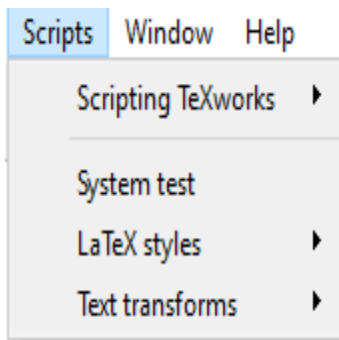
ScriptsMenubar: **Windowmenubar:**   **Help Menu bar:**
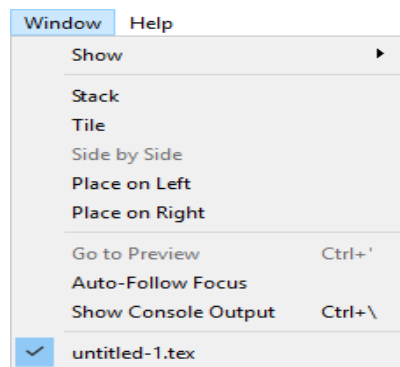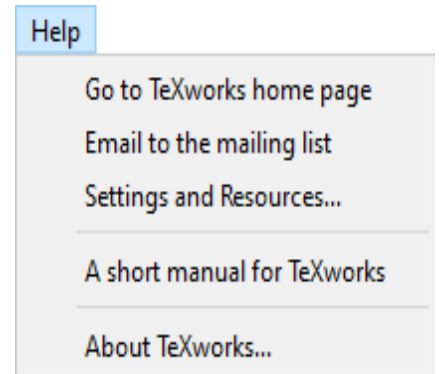
PRE LAB VIVA QUESTIONS:
a. What is LaTex? What are the benefits of usingLaTex?
b. Write a to 'Document recovery' ?
c. State any five Features of LaTex?
d. What are the different between LaTex and Ms word doc ?
e. State Different Commands in laTex?

LAB ASSIGNMENT:
a. What about spell checking?
b. Write a Different types of Latex Commands ?
c. Write a Section and Subsection?
d. Write a LaTex Template On section and Subsection?
e. Write a BibTeX?

POST LAB VIVA QUESTIONS:
a. What are different types of LaTex Softwares ?
b. What are the Features of Latex Portability?
c. State the difference between HTML and LaTex?
d. Define class, object, attribute andmethod in LaTex?
e. What is control and quality?

EXPERIMENT – 2
TECHNICAL PAPER PREPARATION IN LaTeX

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%
%23456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
%        1         2         3         4         5         6         7         8
\documentclass[letterpaper, 10 pt, conference]{ieeeconf}  % Comment this line out
                                  % if you need a4paper
%\documentclass[a4paper, 10pt, conference]{ieeeconf}      % Use this line for a4
                                  % paper
\IEEEoverridecommandlockouts                          % This command is only
                                  % needed if you want to
                                  % use the \thanks command
\overrideIEEEmargins
% See the \addtolength command later in the file to balance the column lengths
% on the last page of the document
% The following packages can be found on http:\\www.ctan.org
%\usepackage{graphics} % for pdf, bitmapped graphics files
%\usepackage{epsfig} % for postscript graphics files
%\usepackage{mathptmx} % assumes new font selection scheme installed
%\usepackage{times} % assumes new font selection scheme installed
%\usepackage{amsmath} % assumes amsmath package installed
%\usepackage{amssymb}  % assumes amsmath package installed


\title{\LARGE \bf
Preparation of Papers for IEEE Sponsored Conferences \& Symposia*
}
%\author{ \parbox{3 in}{\centering Huibert Kwakernaak*
%       \thanks{*Use the $\backslash$thanks command to put information here}\\
%       Faculty of Electrical Engineering, Mathematics and Computer Science\\
%       University of Twente\\
%       7500 AE Enschede, The Netherlands\\
%       {\tt\small h.kwakernaak@autsubmit.com}}
%       \hspace*{ 0.5 in}
%       \parbox{3 in}{ \centering Pradeep Misra**
%       \thanks{**The footnote marks may be inserted manually}\\
%      Department of Electrical Engineering \\
%       Wright State University\\
%       Dayton, OH 45435, USA\\
%       {\tt\small pmisra@cs.wright.edu}}
%}
\author{Huibert Kwakernaak$^{1}$ \Pradeep Misra$^{2}$\\assitant proffsor          assitant proffsor
% <-this % stops a space
\thanks{*This work was not supported by any organization}% <-this % stops a space
\thanks{$^{1}$H. Kwakernaak is with Faculty of Electrical Engineering, Mathematics and Computer Science,
    University of Twente, 7500 AE Enschede, The Netherlands
    {\tt\small h.kwakernaak at papercept.net}}%
\thanks{$^{2}$P. Misra is with the Department of Electrical Engineering, Wright State University,
    Dayton, OH 45435, USA
    {\tt\small p.misra at ieee.org}}%
}

\begin{document}
\maketitle
```

\thispagestyle{empty}
\pagestyle{empty}
%%%
\begin{abstract}

This electronic document is a ÒliveÓ template. The various components of your paper [title, text, heads, etc.] are already defined on the style sheet, as illustrated by the portions given in this document.
\end{abstract}
%%%
\section{INTRODUCTION}
This template, modified in MS Word 2003 and saved as ÒWord 97-2003 \& 6.0/95 Ð RTFÓ for the PC
provides authors with most of the formatting specifications needed for preparing electronic versions of their papers. All standard paper components have been specified for three reasons: (1) ease of use when formatting individual papers, (2) automatic compliance to electronic requirements that facilitate the concurrent or later production of electronic products, and (3) conformity of style throughout a conference proceedings. Margins, column widths, line spacing, and type styles are built-in; examples of the type styles are provided throughout this document and are identified in italic type, within parentheses, following the example. Some components, such as multi-leveled

equations, graphics, and tables are not prescribed, although the various table text styles are provided.
The formatter will need to create these components, incorporating the applicable criteria that follow.
\section{PROCEDURE FOR PAPER SUBMISSION}
\subsection{Selecting a Template (Heading 2)}
First, confirm that you have the correct template for your paper size. This template has been tailored for output on the US-letter paper size. Please do not use it for A4 paper since the margin requirements for A4 papers may be different from Letter paper size.
\subsection{Maintaining the Integrity of the Specifications}
The template is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin in this template measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, and not as an independent document. Please do not revise any of the current designations
\section{MATH}
Before you begin to format your paper, first write and save the content as a separate text file. Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any kind of pagination anywhere in the paper. Do not number text heads-the template will do that for you.
Finally, complete content and organizational editing before formatting. Please take note of the following items when proofreading spelling and grammar:
\subsection{Abbreviations and Acronyms} Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.
\subsection{Units}
\begin{itemize}
\item Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as Ò3.5-inch disk driveÓ.
\item Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity that you use in an equation.
\item Do not mix complete spellings and abbreviations of units: ÒWb/m2Ó or Òwebers per square meterÓ, not Òwebers/m2Ó. Spell out units when they appear in text: Ò. . . a few henriesÓ, not Ò. . . a few HÓ.
\item Use a zero before decimal points: Ò0.25Ó, not Ò.25Ó. Use Òcm3Ó, not ÒccÓ. (bullet list)
\end{itemize}

\subsection{Equations}

The equations are an exception to the prescribed specifications of this template. You will need to determine whether or not your equation should be typed using either the Times New Roman or the Symbol font (please no other font). To create multileveled equations, it may be necessary to treat the equation as a graphic and insert it into the text after your paper is styled. Number equations consecutively. Equation numbers, within parentheses, are to position flush right, as in (1), using a right tab stop. To make your equations more compact, you may use the solidus (/), the exp function, or appropriate exponents. Italicize Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than a hyphen for a minus sign. Punctuate equations with commas or periods when they are part of a sentence, as in

$$
\alpha + \beta = \chi \eqno{(1)}
$$

Note that the equation is centered using a center tab stop. Be sure that the symbols in your equation have been defined before or immediately following the equation. Use Ò(1)Ó, not ÒEq. (1)Ó or Òequation (1)Ó, except at the beginning of a sentence: ÒEquation (1) is . . .Ó

\subsection{Some Common Mistakes}
\begin{itemize}
\item The word ÒdataÓ is plural, not singular.
\item The subscript for the permeability of vacuum ?0, and other common scientific constants, is zero with subscript formatting, not a lowercase letter ÒoÓ.
\item In American English, commas, semi-/colons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
\item A graph within a graph is an ÒinsetÓ, not an ÒinsertÓ. The word alternatively is preferred to the word ÒalternatelyÓ (unless you really mean something that alternates).
\item Do not use the word ÒessentiallyÓ to mean ÒapproximatelyÓ or ÒeffectivelyÓ.
\item In your paper title, if the words Òthat usesÓ can accurately replace the word ÒusingÓ, capitalize the ÒuÓ; if not, keep using lower-cased.
\item Be aware of the different meanings of the homophones ÒaffectÓ and ÒeffectÓ, ÒcomplementÓ and ÒcomplimentÓ, ÒdiscreetÓ and ÒdiscreteÓ, ÒprincipalÓ and ÒprincipleÓ.
\item Do not confuse ÒimplyÓ and ÒinferÓ.
\item The prefix ÒnonÓ is not a word; it should be joined to the word it modifies, usually without a hyphen.
\item There is no period after the ÒetÓ in the Latin abbreviation Òet al.Ó.
\item The abbreviation Òi.e.Ó means Òthat isÓ, and the abbreviation Òe.g.Ó means Òfor exampleÓ.
\end{itemize}
\section{USING THE TEMPLATE}
Use this sample document as your LaTeX source file to create your document. Save this file as {\bf root.tex}. You have to make sure to use the cls file that came with this distribution. If you use a different style file, you cannot expect to get required margins. Note also that when you are creating your out PDF file, the source file is only part of the equation. {\it Your \TeX\ $\rightarrow$ PDF filter determines the output file size. Even if you make all the specifications to output a letter file in the source - if you filter is set to produce A4, you will only get A4 output. } It is impossible to account for all possible situation, one would encounter using \TeX. If you are using multiple \TeX\ files you must make sure that the ``MAIN`` source file is called root.tex - this is particularly important if your conference is using PaperPlaza's built in \TeX\ to PDF conversion tool.
\subsection{Headings, etc}
Text heads organize the topics on a relational, hierarchical basis. For example, the paper title is the primary text head because all subsequent material relates and elaborates on this one topic. If there are two or more sub-topics, the next level head (uppercase Roman numerals) should be used and, conversely, if there are not at least two sub-topics, then no subheads should be introduced. Styles named ÒHeading 1Ó, ÒHeading 2Ó, ÒHeading 3Ó, and ÒHeading 4Ó are prescribed.
\subsection{Figures and Tables}
Positioning Figures and Tables: Place figures and tables at the top and bottom of columns. Avoid placing them in the middle of columns. Large figures and tables may span across both columns. Figure captions should be below the figures; table heads should appear above the tables. Insert figures and tables after they are cited in the text. Use the

abbreviation ÒFig. 1Ó, even at the beginning of a sentence.
\begin{table}[h]
\caption{An Example of a Table}
\label{table_example}
\begin{center}
\begin{tabular}{|c||c|}
\hline
One & Two\\
\hline
Three & Four\\
\hline
\end{tabular}
\end{center}
\end{table}
  \begin{figure}[thpb]
    \centering
    \framebox{\parbox{3in}{We suggest that you use a text box to insert a graphic (which is ideally a 300
dpi TIFF or EPS file, with all fonts embedded) because, in an document, this method is somewhat more stable
 than directly inserting a picture.
}}
    %\includegraphics[scale=1.0]{figurefile}
    \caption{Inductance of oscillation winding on amorphous
     magnetic core versus DC bias magnetic field}
    \label{figurelabel}
  \end{figure}
  Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations
when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity ÒMagnetizationÓ,
 or ÒMagnetization, MÓ, not just ÒMÓ. If including units in the label, present them within parentheses.
Do not label axes only with units. In the example, write ÒMagnetization (A/m)Ó or ÒMagnetization {A[m(1)]}Ó,
 not just ÒA/mÓ. Do not label axes with a ratio of quantities and units. For example, write ÒTemperature (K)Ó, not
ÒTemperature/K.Ó
\section{CONCLUSIONS}
A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate
the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications
and extensions.
\addtolength{\textheight}{-12cm}   % This command serves to balance the column lengths
                  % on the last page of the document manually. It shortens
                  % the textheight of the last page by a suitable amount.
                  % This command does not take effect until the next page
                  % so it should come on the page before the last. Make
                  % sure that you do not shorten the textheight too much.

%%
%%%%%%%%%%%%%%%%%%%%%%%%%
%%%
%%%%%%%%%%%%%%%%%%%%%%%%%
%%%
%%%%%%%%%%%%%%%%%%%%%%%%
\section*{APPENDIX}
Appendixes should appear before the acknowledgment.
\section*{ACKNOWLEDGMENT}
The preferred spelling of the word ÒacknowledgmentÓ in America is without an ÒeÓ after the ÒgÓ. Avoid the stilted
expression, ÒOne of us (R. B. G.) thanks . . .Ó Instead, try ÒR. B. G. thanksÓ. Put sponsor acknowledgments in the
unnumbered footnote on the first page.

%%

References are important to the reader; therefore, each citation must be complete and correct. If at all possible, references should be commonly available publications.

\begin{thebibliography}{99}
\bibitem{c1} G. O. Young, ÒSynthetic structure of industrial plastics (Book style with paper title and editor),Ó in Plastics, 2nd ed. vol. 3, J. Peters, Ed. New York: McGraw-Hill, 1964, pp. 15Ð64.
\bibitem{c2} W.-K. Chen, Linear Networks and Systems (Book style). Belmont, CA: Wadsworth, 1993, pp. 123Ð135.
\bibitem{c3} H. Poor, An Introduction to Signal Detection and Estimation. New York: Springer-Verlag, 1985, ch. 4.
\bibitem{c4} B. Smith, ÒAn approach to graphs of linear forms (Unpublished work style),Ó unpublished.
\bibitem{c5} E. H. Miller, ÒA note on reflector arrays (Periodical styleÑAccepted for publication),Ó IEEE Trans. Antennas Propagat., to be publised.
\bibitem{c6} J. Wang, ÒFundamentals of erbium-doped fiber amplifiers arrays (Periodical styleÑSubmitted for publication),Ó IEEE J. Quantum Electron., submitted for publication.
\bibitem{c7} C. J. Kaufman, Rocky Mountain Research Lab., Boulder, CO, private communication, May 1995.
\bibitem{c8} Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, ÒElectron spectroscopy studies on magneto-optical media and plastic substrate interfaces(Translation Journals style),Ó IEEE Transl. J. Magn.Jpn., vol. 2, Aug. 1987, pp. 740Ð741 [Dig. 9th Annu. Conf. Magnetics Japan, 1982, p. 301].
\bibitem{c9} M. Young, The Techincal Writers Handbook. Mill Valley, CA: University Science, 1989.
\bibitem{c10} J. U. Duncombe, ÒInfrared navigationÑPart I: An assessment of feasibility (Periodical style),Ó IEEE Trans. Electron Devices, vol. ED-11, pp. 34Ð39, Jan. 1959.
\bibitem{c11} S. Chen, B. Mulgrew, and P. M. Grant, ÒA clustering technique for digital communications channel equalization using radial basis function networks,Ó IEEE Trans. Neural Networks, vol. 4, pp. 570Ð578, July 1993.
\bibitem{c12} R. W. Lucky, ÒAutomatic equalization for digital communication,Ó Bell Syst. Tech. J., vol. 44, no. 4, pp. 547Ð588, Apr. 1965.
\bibitem{c13} S. P. Bingulac, ÒOn the compatibility of adaptive controllers (Published Conference Proceedings style),Ó in Proc. 4th Annu. Allerton Conf. Circuits and Systems Theory, New York, 1994, pp. 8Ð16.
\bibitem{c14} G. R. Faulhaber, ÒDesign of service systems with priority reservation,Ó in Conf. Rec. 1995 IEEE Int. Conf. Communications, pp. 3Ð8.
\bibitem{c15} W. D. Doyle, ÒMagnetization reversal in films with biaxial anisotropy,Ó in 1987 Proc. INTERMAG Conf., pp. 2.2-1Ð2.2-6.
\bibitem{c16} G. W. Juette and L. E. Zeffanella, ÒRadio noise currents n short sections on bundle conductors (Presented Conference Paper style),Ó presented at the IEEE Summer power Meeting, Dallas, TX, June 22Ð27, 1990, Paper 90 SM 690-0 PWRS.
\bibitem{c17} J. G. Kreifeldt, ÒAn analysis of surface-detected EMG as an amplitude-modulated noise, Ó presented at the 1989 Int. Conf. Medicine and Biological Engineering, Chicago, IL.
\bibitem{c18} J. Williams, ÒNarrow-band analyzer (Thesis or Dissertation style),Ó Ph.D. dissertation, Dept. Elect. Eng., Harvard Univ., Cambridge, MA, 1993.
\bibitem{c19} N. Kawasaki, ÒParametric study of thermal and chemical nonequilibrium nozzle flow,Ó M.S. thesis, Dept. Electron. Eng., Osaka Univ., Osaka, Japan, 1993.
\bibitem{c20} J. P. Wilkinson, ÒNonlinear resonant circuit devices (Patent style),Ó U.S. Patent 3 624 12, July 16, 1990.
\end{thebibliography}
\end{document}

Output

Preparation of Papers for IEEE Sponsored Conferences & Symposia

PRE LAB VIVA QUESTIONS:
a. What is LaTex? What are the benefits of usingusepackage?
b. Write a to mathptmx?
c. State any five Features of make title?
d. What are the different between hline and includegraphics?
e. State Different Commands in documentclass?

LAB ASSIGNMENT
a. What about itemize?
b. Write a Different types of $\rightarrow$?
c. Write a Section and Subsection?
d. Write a LaTex Template On TeX\ to PDF?
e. Write a \begin{tabular}{|c||c|}

POST LAB VIVA QUESTIONS:
a. What are different types of Figures and Tables?
b. What are the Features of Latex Portabulity?
c. State the difference between HTML and LaTex?
d. Define class, object, attribute andmethod in LaTex?
e. What is \centering?

EXPERIMENT – 3
FORMATTING MATHEMATICAL EQUATIONS IN LaTeX

```
\documentclass[fleqn]{article}
\usepackage[left=1in, right=1in, top=1in, bottom=1in]{geometry}
\usepackage{mathexam}
\usepackage{amsmath}
\ExamClass{Sample Class}
\ExamName{Sample Exam}
\ExamHead{\today}
\let\ds\displaystyle
\begin{document}
\ExamInstrBox{
Please show \textbf{all} your work! Answers without supporting work will not be given credit.
Write answers in spaces provided. You have 1 hour and 50 minutes to complete this exam.}
\ExamNameLine
\begin{enumerate}
  \item Calculate the following limits.  If a limit is $\infty$ or $-\infty$,
    please say so.  Make sure you show all your work and justify all your
    answers.
    \begin{enumerate}
        \item $\ds{\lim_{x\rightarrow3}\frac{\sqrt{x+1} - 2}{x-3}}$\answer
        \item $\ds{\lim_{x\rightarrow0}\frac{\sin(4x)}{8x}}$\answer
    \end{enumerate}
  \item Use the $\varepsilon$-$\delta$ definition of limit to prove that
    \[\lim_{x\rightarrow 2} x^2 - 3x + 2 = 0\]\noanswer[2.5in]
    \newpage
  \item If $h(x) = \sqrt{x^2 + 2} - 1$, find a \textbf{non-trivial} decomposition of $h$ into $f$ and $g$
such that $h = f\circ g$.
    \answer*{$f(x)=$}\addanswer*{$g(x)=$}
  \item Find the first two derivatives of the function $f(x) = x^2\cos(x)$.  Simplify
    your answers as much as possible.  Show all your work.
    \answer*{$f'(x)=$}\answer*{$f''(x)=$}
    \newpage
  \item Find the derivative of the function $\ds{f(x) = \int_{x^2}^2
    \frac{\cos(t)}{t} \,dt}$.\answer[1in plus 1fill]
  \item Set up, but do not evaluate, the integral for the volume of the solid obtained by rotating the area between the
curves $y = x$ and $y = \sqrt{x}$ about the $x$-axis.\noanswer
\end{enumerate}
\end{document}
```

Out put

Please show **all** your work! Answers without supporting work will not be given credit. Write answers in spaces provided. You have 1 hour and 50 minutes to complete this exam.

Name:_____

1. Calculate the following limits. If a limit is ∞ or $-\infty$, please say so. Make sure you show all your work and justify all your answers.

   (a) $\displaystyle\lim_{x \to 3} \frac{\sqrt{x+1} - 2}{x - 3}$

   Answer:_____

   (b) $\displaystyle\lim_{x \to 0} \frac{\sin(4x)}{8x}$

   Answer:_____

2. Use the ε-δ definition of limit to prove that

   $$\lim_{x \to 2} x^2 - 3x + 2 = 0$$

PRE LAB VIVA QUESTIONS:
a. What is usepackage? What are the benefits of usingmathexam?
b. Write a to Exam Class{Sample Class}?
c. State any five Features of Sample Exam?
d. What are the different between enumerate and ∞?
e. State Different Commands in two derivatives of the function?

LAB ASSIGNMENT:
a. What about itemize?
b. Write a Different types of $\rightarrow$?
c. Write a Section and Subsection?
d. Write a LaTex Template On TeX\ to PDF?
e. Write a \begin{tabular}{|c||c|}?

POST LAB VIVA QUESTIONS:
a. What are different types of Figures and Tables?
b. What are the Features of usepackage{amsmath}?
c. Find the derivative of the function $\ds{f(x) = \int_{x^2}^2$?
d. Define \end{enumerate}?
e. What is \end{document}?

```
\begin{tikzpicture}
\begin{axis}
\addplot[color=red]{exp(x)};
\end{axis}
\end{tikzpicture}
%Here ends the furst plot
\hskip 5pt
%Here begins the 3d plot
\begin{tikzpicture}
\begin{axis}
\addplot3[
   surf,
]
{exp(-x^2-y^2)*x};
\end{axis}
\end{tikzpicture}
```
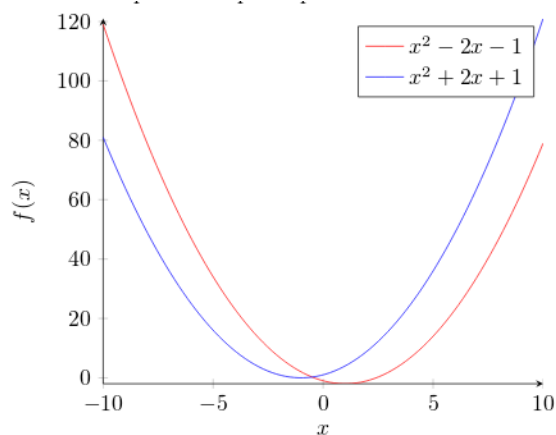
Output:
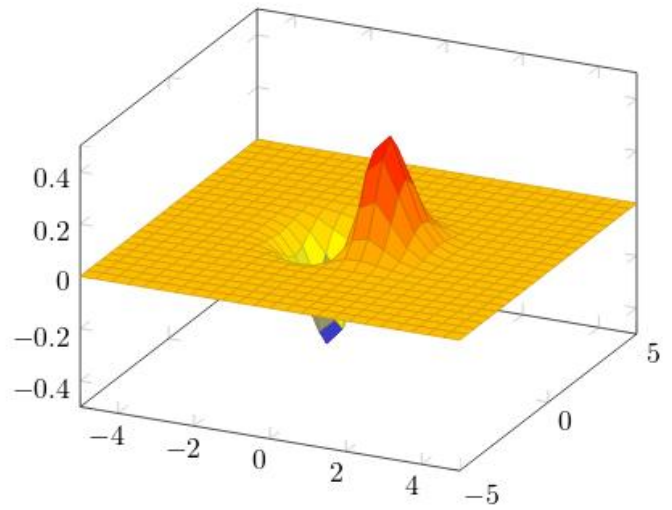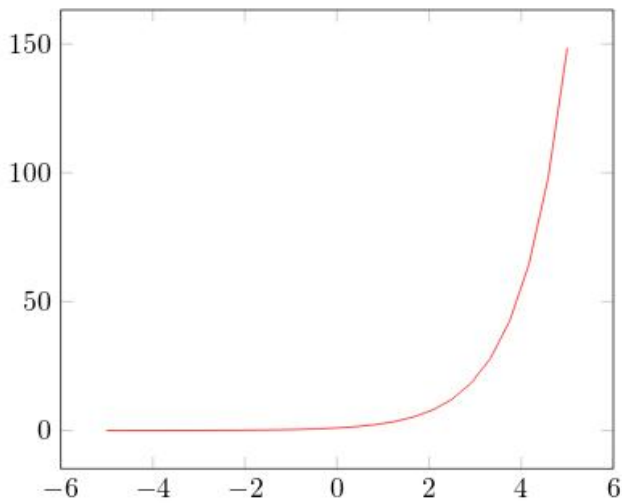
b) Plotting mathematical expressions

To plot mathematical expressions is really easy:

```
\begin{tikzpicture}
\begin{axis}[
    axis lines = left,
    xlabel = $x$,
    ylabel = {$f(x)$},
]
%Below the red parabola is defined
\addplot [
    domain=-10:10,
    samples=100,
    color=red,
]
{x^2 - 2*x - 1};
\addlegendentry{$x^2 - 2x - 1$}
%Here the blue parabloa is defined
\addplot [
    domain=-10:10,
    samples=100,
    color=blue,
    ]
    {x^2 + 2*x + 1};
\addlegendentry{$x^2 + 2x + 1$}

\end{axis}
\end{tikzpicture}
```
Output:

c)Plotting from data

Scientific research often yields data that has to be analysed. The next example shows how to plot data with *pgfplots*:

```
\begin{tikzpicture}
\begin{axis}[
    title={Temperature dependence of CuSO$_4\cdot$5H$_2$O solubility},
    xlabel={Temperature [\textcelsius]},
    ylabel={Solubility [g per 100 g water]},
    xmin=0, xmax=100,
    ymin=0, ymax=120,
    xtick={0,20,40,60,80,100},
    ytick={0,20,40,60,80,100,120},
    legend pos=north west,
    ymajorgrids=true,
    grid style=dashed,
]

\addplot[
    color=blue,
    mark=square,
    ]
    coordinates {
    (0,23.1)(10,27.5)(20,32)(30,37.8)(40,44.6)(60,61.8)(80,83.8)(100,114)
    };
    \legend{CuSO$_4\cdot$5H$_2$O}

\end{axis}
\end{tikzpicture}
```
Output:

Temperature dependence of CuSO$_4\cdot$5H$_2$O solubility
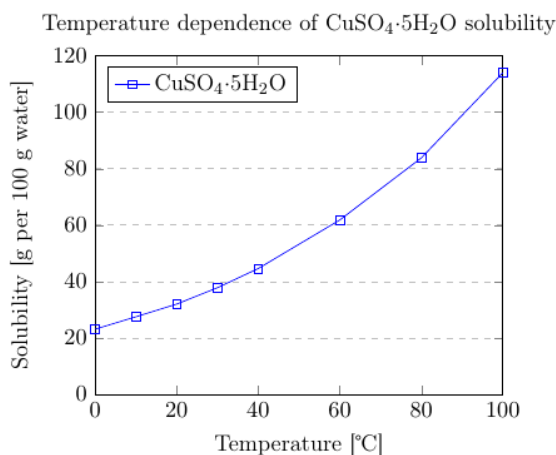
d) Scatter plots

Scatter plots are used to represent information by using some kind of marks, these are

common, for example, when computing statistical regression. Lets start with some data,

the sample below is to show the structure of the data file we are going to plot (see the end

of this section for a link to the LATEX source and the data file):

```
GPA ma ve co un

3.45 643 589 3.76 3.52

2.78 558 512 2.87 2.91

2.52 583 503 2.54 2.4

3.67 685 602 3.83 3.47

3.24 592 538 3.29 3.47

2.1 562 486 2.64 2.37
```
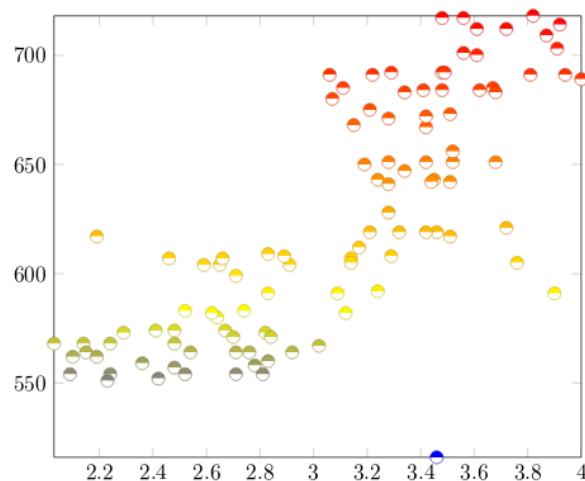
The next example is a scatter plot of the first two columns in this table:

```
\begin{tikzpicture}
\begin{axis}[
   enlargelimits=false,
]
\addplot+[
   only marks,
   scatter,
   mark=halfcircle*,
   mark size=2.9pt]
table[meta=ma]
{scattered_example.dat};
\end{axis}
\end{tikzpicture}
```
**Output:**

e) Bar graphs

Bar graphs (also known as bar charts and bar plots) are used to display gathered data, mainly statistical data about a population of some sort. Bar plots in **pgfplots** are highly customisable, but here we are going to show an example that 'just works':

```
\begin{tikzpicture}
\begin{axis}[
```

```
        x tick label style={
                /pgf/number format/1000 sep=},
        ylabel=Year,
        enlargelimits=0.05,
        legend style={at={(0.5,-0.1)},
        anchor=north,legend columns=-1},
        ybar interval=0.7,
]
\addplot
        coordinates {(2012,408184) (2011,408348)
                (2010,414870) (2009,412156)};
\addplot
        coordinates {(2012,388950) (2011,393007)
                (2010,398449) (2009,395972)};
\legend{Men,Women}
\end{axis}
\end{tikzpicture}
```
Output:
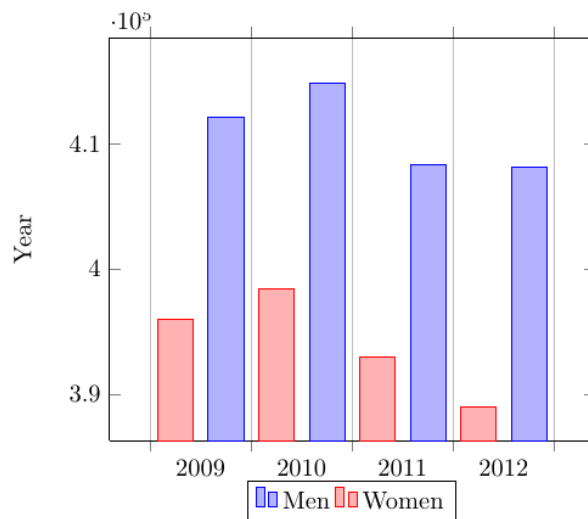
f) 3D Plots

pgfplots has the 3d Plotting capabilities that you may expect in a plotting software.

Plotting mathematical expressions

There's a simple example about this at the introduction, let's work on something slightly more complex:

```
\begin{tikzpicture}
\begin{axis}[
    title=Exmple using the mesh parameter,
    hide axis,
    colormap/cool,
]
\addplot3[
    mesh,
    samples=50,
    domain=-8:8,
]
{sin(deg(sqrt(x^2+y^2)))/sqrt(x^2+y^2)};
\addlegendentry{$\frac{sin(r)}{r}$}
\end{axis}
\end{tikzpicture}
```

Output:

Exmple using the mesh parameter
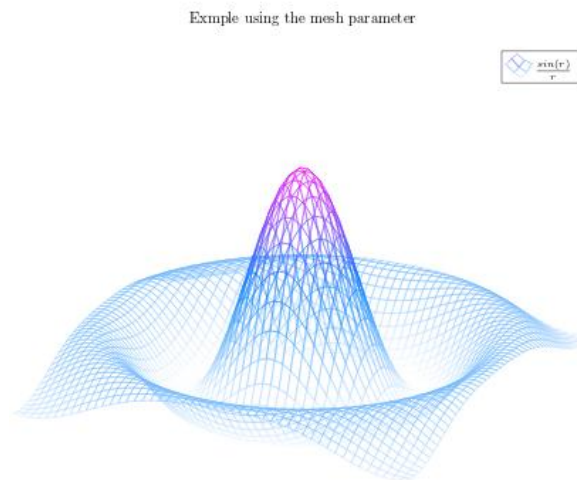
g) Lists of tables and figures

A list of the tables and figures keep the information organized and provide easy access to a specific element. This article explains how to create a list of figures, a list of tables and how to change the default title in both of them.

```
\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{graphicx}
\graphicspath{ {figures/} }
\usepackage{array}

\begin{document}
```

\thispagestyle{empty}

\listoffigures

\listoftables

\newpage

\pagenumbering{arabic}

Lorem ipsum dolor sit amet, consectetuer adipiscing
elit. Etiam lobortisfacilisis...
\end{document}
Output:

The commands `\listoffigures` and `\listoftables` are self explanatory, the first one generates the list of figures and the second one the list of tables. In this example there are two more relevant commands:

`\thispagestyle{empty}`
 Removes the page numbering.
`\pagenumbering{arabic}`
 Re-start the page numbering with arabic style.

or

The default titles, "List of Tables" and "List of Figures", can be changed to any other text

\documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{graphicx}
\usepackage{array}
\graphicspath{ {figures/} }

\renewcommand{\listfigurename}{List of plots}

\renewcommand{\listtablename}{Tables}

\begin{document}

\thispagestyle{empty}

\listoffigures

\listoftables

\clearpage

\pagenumbering{arabic}

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortisfacilisis...
\end{document}
Output:

The commands that re-write the titles are:

- `\renewcommand{\listfigurename}{List of plots}` will write "List of plots" instead of "List of Figures".
- `\renewcommand{\listtablename}{Tables}` will write "Tables" instead of "List of Tables".

If you use the **babel** package in your document and you need to use any of the previous commands, put it inside the braces of `\addto\captionsenglish{ }`. Instead of *english* in `\captionenglish` write the

name of the language you set in babel.

PRE LAB VIVA QUESTIONS:
a.   What is tikzpicture? What are the benefits of usingaddplot?
b.   Write is the Plotting mathematical expressions?
c.   State any five Features of   ylabel = {$f(x)$}?
d.   What are the Plotting from data?
e.   State Different Commands in two grid style=dashed?

LAB ASSIGNMENT:
a.   What about   enlargelimits=false,?
b.   Write are the Different types of Bar graphs?
c.   Write are the 3D Plots?
d.   Write a mesh parameter?
e.   Write are \thispagestyle{empty}?

POST LAB VIVA QUESTIONS:
a.   What are different types of Re-start the page numbering with arabic style?
b.   What are the Features of parabloa is defined?
c.   Find the derivative of the function $\ds{f(x) = \int_{x^2}^2}$?

d. Define \end{axis}?
e. \end{tikzpicture}?
f. What is \end{tikzpicture}?

EXPERIMENT – 5
VARIOUS FORMATTING STYLES IN LaTeX

\documentclass[a4paper,12pt,twoside]{book}
\usepackage[english]{babel}
\usepackage[utf8]{inputenc}
\pagestyle{headings}
\begin{document}
\chapter{Sample Chapter}
\section{New section}
Hello, here is some text without a meaning. This text should
show what a printed text will look like at this place. If you
read this text, you will
\textit{get no information.} Really? Is there
no information? Is there a difference between this text and some
nonsense like ``Huardest gefburn? Kjift '' not at all!...

\section{New section}
Hello, here is some text without a meaning. This text should
show what a printed text will look like at this place. If you
read this text, you will get no information. Really? Is there
no information? Is there a difference between this text and some
nonsense like ``Huardest gefburn? Kjift '' not at all!...
\section{New section}
Hello, here is some text without a meaning. This text should
show what a printed text will look like at this place. If you
read this text, you will get no information. Really? Is there
no information? Is there a difference between this text and some
nonsense like ``Huardest gefburn? Kjift '' not at all!...

\section{New section}
Hello, here is some text without a meaning. This text should
show what a printed text will look like at this place. If you
read this text, you will get no information. Really? Is there
no information? Is there a difference between this text and some
nonsense like ``Huardest gefburn? Kjift '' not at all!...

\begin{document}
\chapter{Sample Chapter}
\section{New section}
Hello, here is some text without a meaning. This text should
show what a printed text will look like at this place. If you
read this text, you will
\textit{get no information.} Really? Is there
no information? Is there a difference between this text and some
nonsense like ``Huardest gefburn? Kjift '' not at all!...
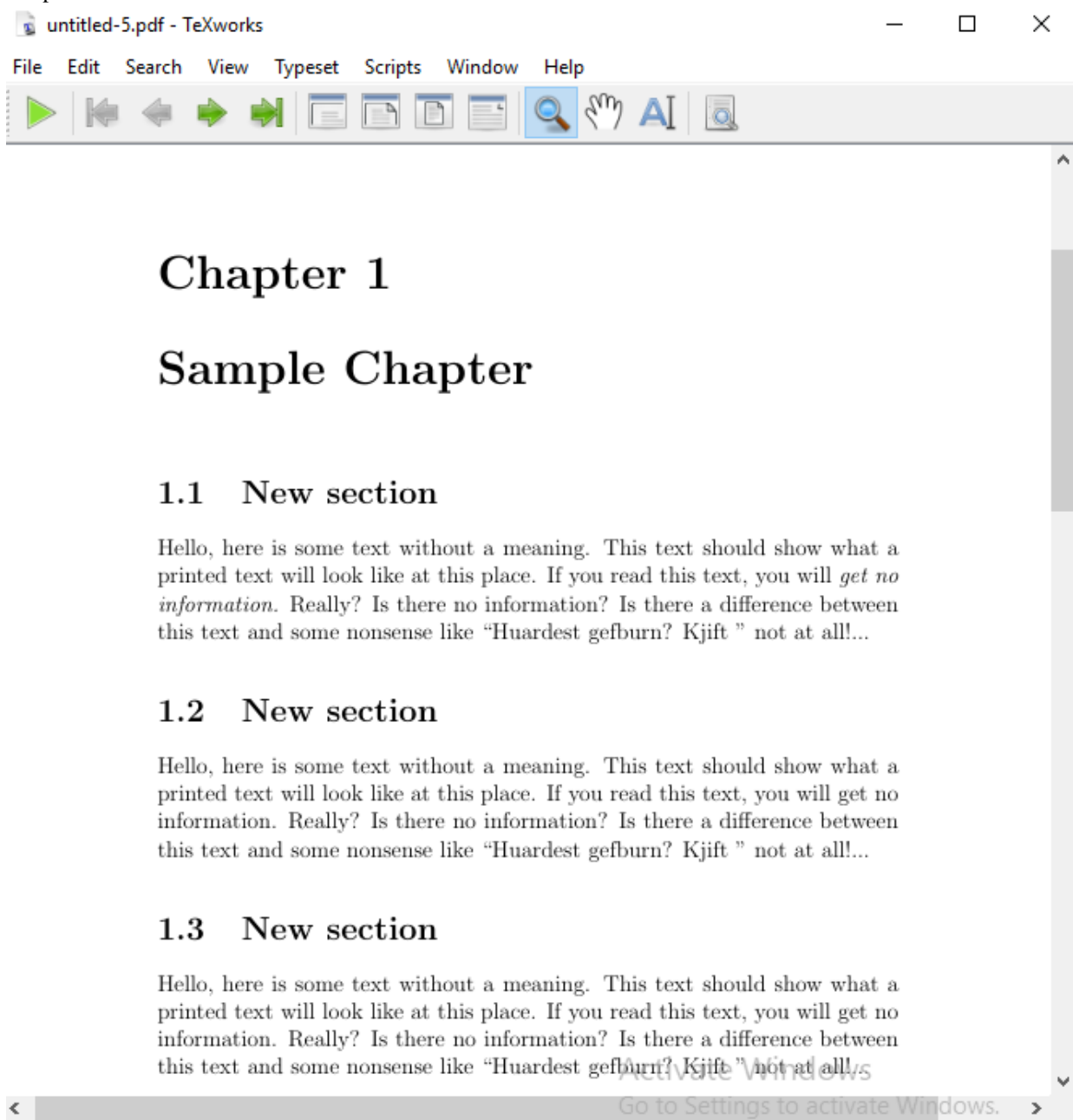\begin{document}
\chapter{Sample Chapter}
\section{New section}

Hello, here is some text without a meaning. This text should
show what a printed text will look like at this place. If you
read this text, you will
\textit{get no information.} Really? Is there
no information? Is there a difference between this text and some
nonsense like ``Huardest gefburn? Kjift '' not at all!...
\begin{document}
\chapter{Sample Chapter}
\section{New section}
Hello, here is some text without a meaning. This text should
show what a printed text will look like at this place. If you
read this text, you will
\textit{get no information.} Really? Is there
no information? Is there a difference between this text and some
nonsense like ``Huardest gefburn? Kjift '' not at all!...
\end{document}

Out put

Chapter 1

Sample Chapter

1.1 New section

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will *get no information.* Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn? Kjift " not at all!...

1.2 New section

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn? Kjift " not at all!...

1.3 New section

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn? Kjift " not at all!...

PRE LAB VIVA QUESTIONS:
a. What is pagestyle? What are the benefits of usingSample Chapter?
b. Write a to Plotting mathematical expressions?
c. State any five Features of   textit{get no information.}?
d. Write text with LaTeX markup code in text editor?
e. What is the best LaTeX for Windows?

LAB ASSIGNMENT:
a. What is MiKTeX and LaTeX,?
b. What is LaTeX software used for?
c. What is the point of LaTeX?
d. What is made of LaTeX?

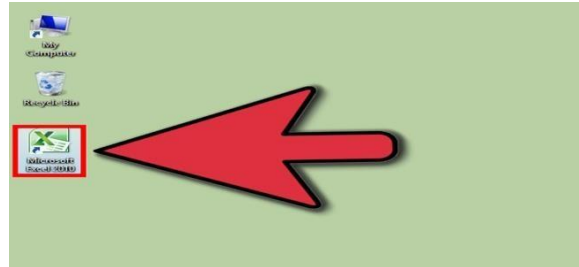 e. Does polyester have latex in it?
  ``

POST LAB VIVA QUESTIONS:
  a. What material is polyester stretchy?
  b. How do you make polyester?
  c. What products are made from polyester?
  d. Define TeXstudio?
  e. Define Overleaf.?
  f. What is a4paper,12pt,twoside?

EXPERIMENT – 6
# EXCEL SPREADSHEETS

Spreadsheet basics:

Step:1: Go to

Step2:

Notice there is rows and columns.
- Each column has a capital letter on the top to show what column itis.
- Each row has a number to the immediate left of the first column, to show what row itis.
- Each cell is identified by a unique address consisting of the column letter followedby
- the row number. For example, the address of the cell in the first column, first row isA1.
- The address of the cell in the second column, third row isB3.
- If you click a cell, the cell address appears just above columnA.
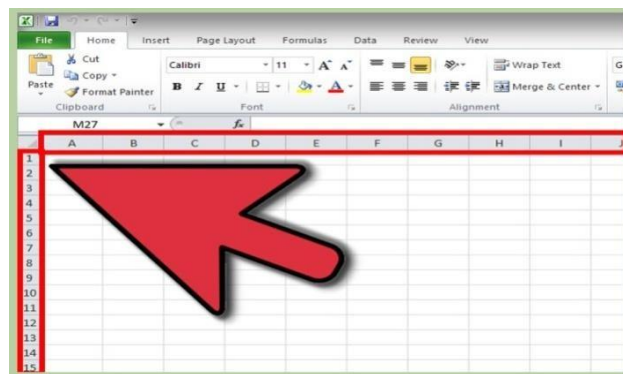
Step 3:
Click cell A1 and type: Item.
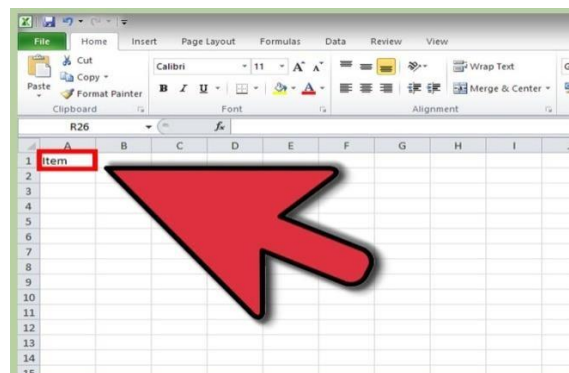
Step 4:
Click cell B1 andtype: Cost.
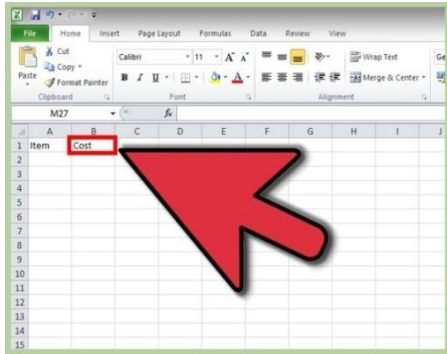
Step 5:
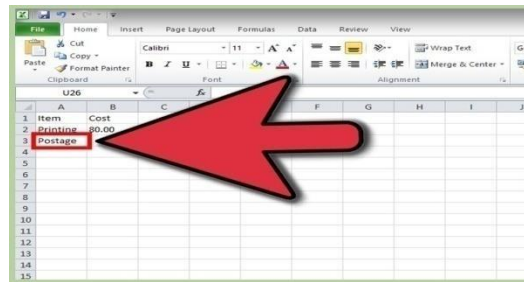**Click cell A2 and type:**Printing.
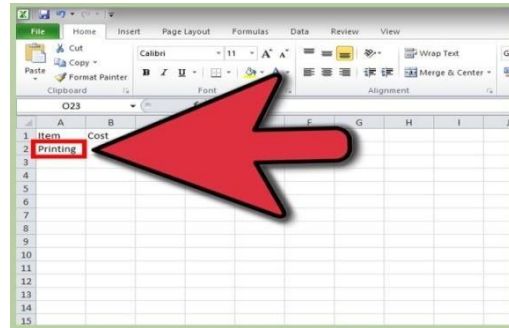
Step:6

Click in cell B2 andtype80.00.

- After you click outside of cell B2,
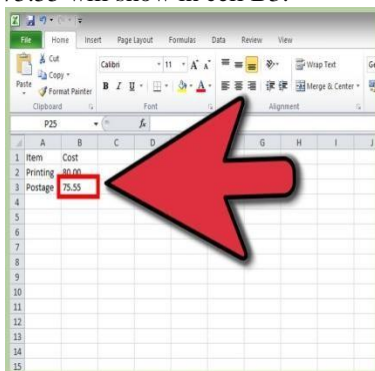 80 will show in cellB2.
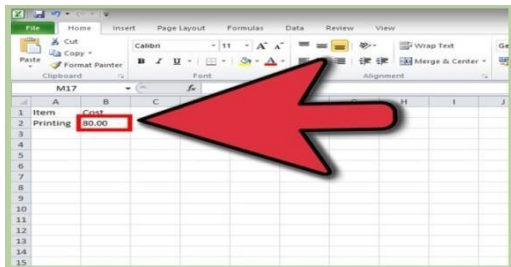
STEP: 7
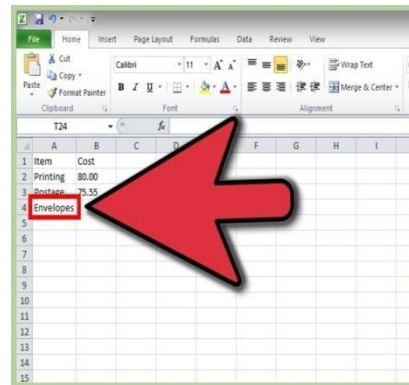**Click cell A3 and type:**Postage.

STEP:8

Click cell B3 andtype:75.55.

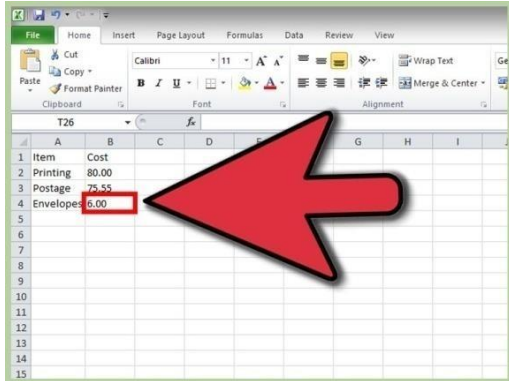- After you click outside of cellB3,
  75.55 will show in cell B3.
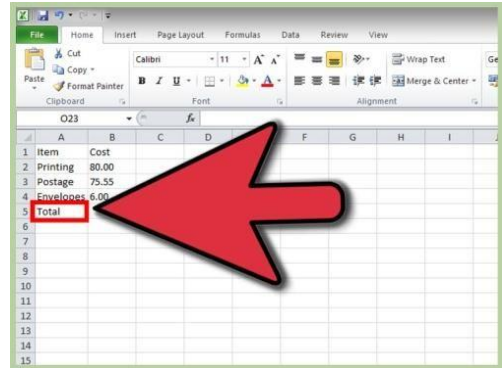
STEP:9
Click cell A4 and type: Envelopes.

10 Click cell B4 andtype: 6.00.

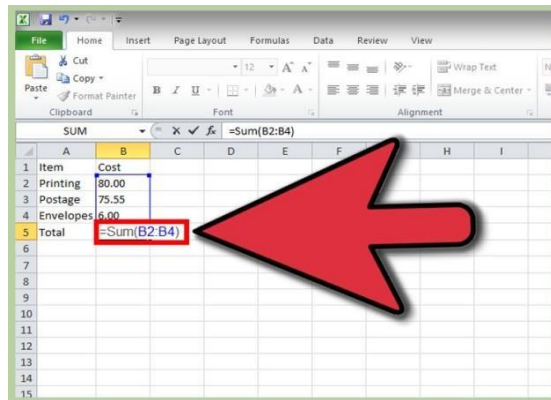- After you click outside of thecell B4,
  6 will show in cellB4.

Click cell A5 and type: Total.

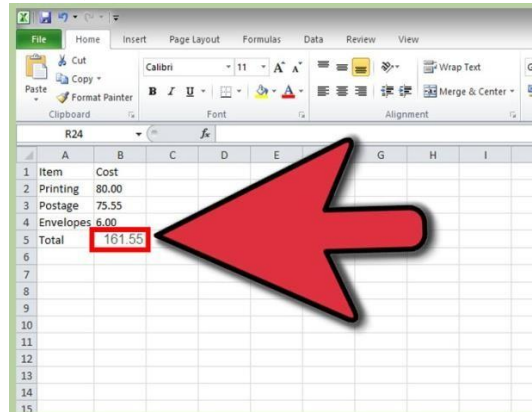
STEP: 12

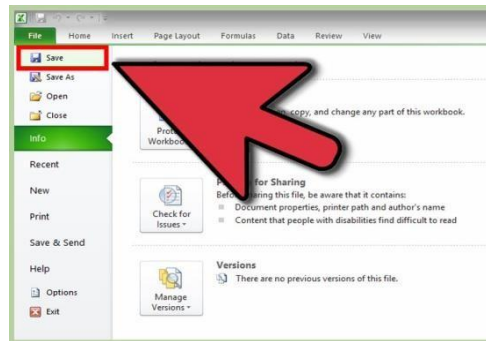   **Click cell B5 and type:** =SUM(B2:B4).

STEP: 13

    Click in another cell. A total of 161.55 will show in cell B5.

- SUM(B2:B4) is a formula. Formulas are used to perform math functions in Excel. It is essential to put equals sign (=) just before a formula, so that Excel knows that it is aformula.

STEP: 14
   **Click Save.**

Modifying worksheets:
Creating New Worksheet

Three new, blank sheets always open when you start Microsoft Excel. But suppose that you want start another new worksheet while you are working on another worksheet, or you closed already opened worksheet and want to start a new worksheet. Here are the steps to create a new worksheet:
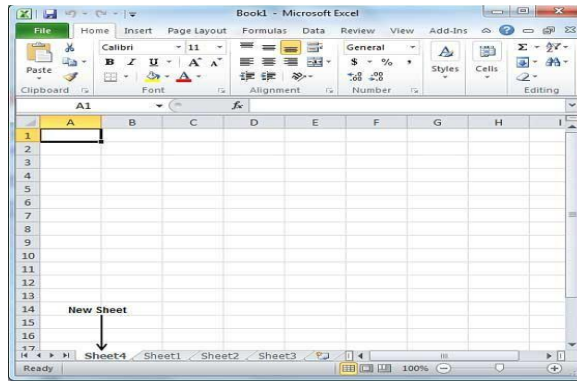
Step (1) : Right Click the **Sheet Name** and select **Insert** option.
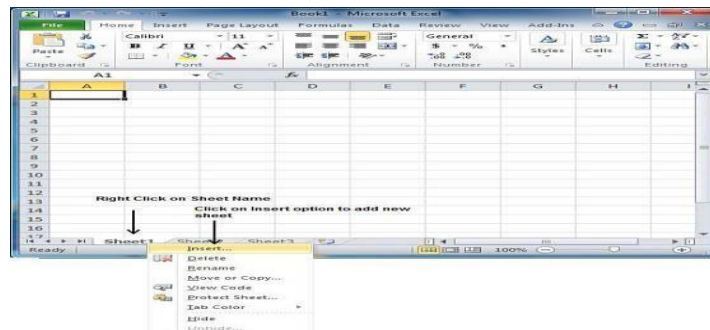
Step (2) : Now you'll see the Insert dialog with select **Worksheet** option as selected from the general tab. Click **Ok**button
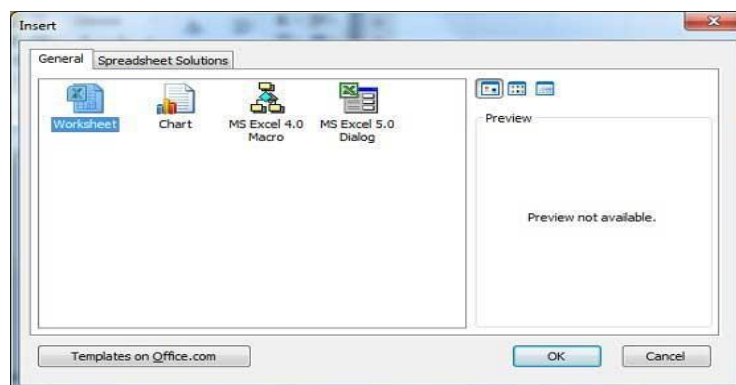
Now you should have your blank sheet as shown below ready to start typing your text.

You can use a short cut to create a blank sheet anytime. Try using **Shift+F11**keys and you will see a new blank sheet similar to above sheet is opened.

Formatting cells:

Knowing how to format your spreadsheet in Excel, the cells in particular, can really help you improve not just the aesthetic perspective of your document, but also its effectiveness in providing relevant information to the viewers of the files. Each cell in Microsoft Excel can be modified and formatted to follow your specificpreferences.

STEP 1:

Open your Microsoft Excel. Click the "Start" button on the lower-left corner of your screen and select "All Programs" from the menu. Inside, you'll find the "Microsoft Office" folder where Excel is listed. Click on Excel.

STEP 2:

Select the specific cell or group of cells that you want to format. Highlight it using your mouse cursor.
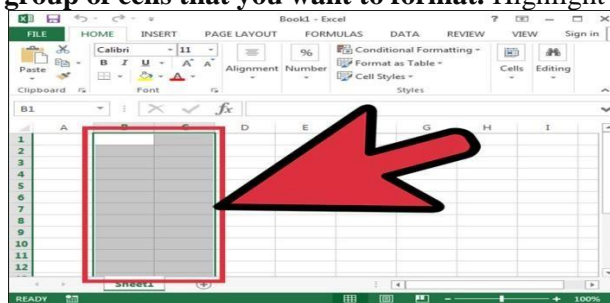
SETP 3:

Open the Format Cells window. Right-click on the cells you've selected and select "Format Cells" from the popup menu to access the "Format Cells" window.

STEP 4:

Set the desired formatting options you want for the cell. There are six formatting options that you can use to customize a cell or group of cells:

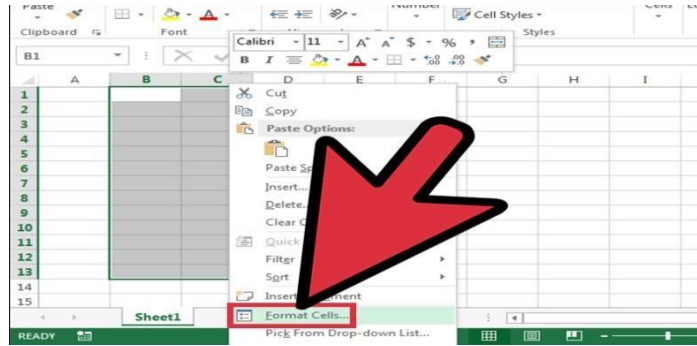- Number – Defines the format of numerical data entered on the cells such as dates, currency, time, percentage, fraction andmore.
- Alignment – Sets how the data will be visually aligned inside each cells (left, right orcentered).
- Font – Sets all the options related to text fonts such as styles, sizes andcolors.
- Border – Improves the visual appearance of each cell by adding definite lines (borders) around a cell or group ofcells.
- Fill – Sets the background color and pattern formats of each cell on thespreadsheet.
- Protection – Adds security to cells and data contained inside it by hiding or locking the selected cells or group ofcells.
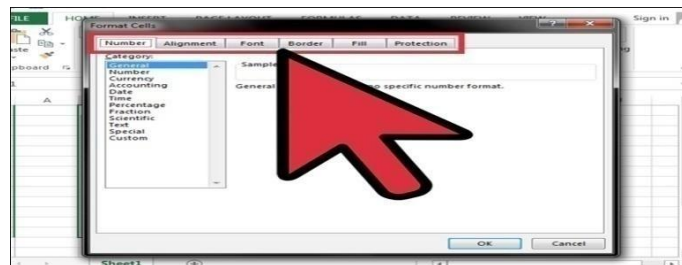
STEP 5:

Save. Click on the "OK" button at the lower right corner of the "Format Cells" window to save any changes you've made and apply the formats you've set to the selected cells.
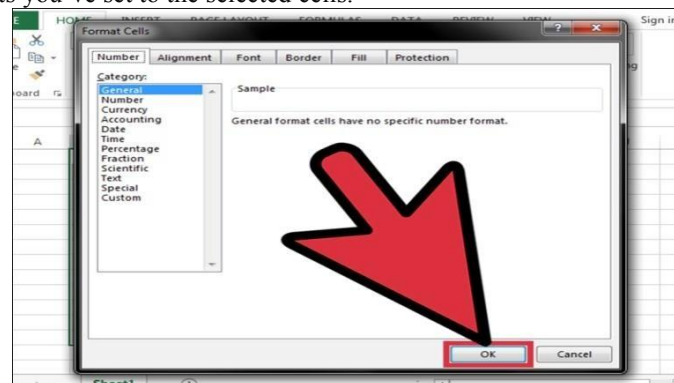
Formulas andFunctions:

A formula is an expression which calculates the value of a cell. Functions are predefined formulas and are already available inExcel.

For example, cell A3 below contains a formula which adds the value of cell A2 to the value of cell A1.

A3	▾	f_x	=A1+A2		
	A	B	C	D	E
1	2				
2	3				
3	5				
4					
5					

For example, cell A3 below contains the SUM function which calculates the sum of the range A1:A2.

A3	▾	f_x	=SUM(A1:A2)		
	A	B	C	D	E
1	2				
2	3				
3	5				
4					
5					

Enter a Formula

To enter a formula, execute the following steps.

1. Select acell.

2. To let Excel know that you want to enter a formula, type an equal sign(=).

3. For example, type the formulaA1+A2.

A3	▾	f_x	=A1+A2		
	A	B	C	D	E
1	2				
2	3				
3	5				
4					
5					

Tip: instead of typing A1 and A2, simply select cell A1 and cell A2.

4. Change the value of cell A1 to3.

A1	▾	f_x	3		
	A	B	C	D	E
1	3				
2	3				
3	6				
4					
5					

Excel automatically recalculates the value of cell A3. This is one of Excel's most powerful features!

Edit a Formula

When you select a cell, Excel showsthevalue formula of the cell in theformulabar.

1. To edit a formula, click in the formula bar and or change the formula.

A3	fx =A1+A2				
	A	B	C	D	E
1	2				
2	3				
3	5				
4					
5					

SUMIF X ✓ fx =A1-A2					
	A	B	C	D	E
1	2				
2	3				
3	=A1-A2				
4					
5					

2. Press Enter.

A4	fx				
	A	B	C	D	E
1	2				
2	3				
3	-1				
4					
5					

Operator Precedence

Excel uses a default order in which calculations occur. If a part of the formula is in parentheses, that part will be calculated first. It then performs multiplication or division calculations. Once this is complete, Excel will add and subtract the remainder of your formula. See the example below.

A4	fx =A1*A2+A3				
	A	B	C	D	E
1	2				
2	2				
3	1				
4	5				
5					

First, Excel performs multiplication (A1 * A2). Next, Excel adds the value of cell A3 to this result. Another example,

| A4	fx =A1*(A2+A3)				
	A	B	C	D	E
1	2				
2	2				
3	1				
4	6				
5					

First, Excel calculates the part in parentheses (A2+A3). Next, it multiplies this result by the value of cell A1.
Copy/Paste a Formula

When you copy a formula, Excel automatically adjusts the cell references for each new cell the formula is copied to. To understand this, execute the following steps.
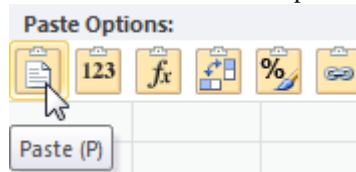
1. Enter the formula shown below intocellA4.   2a. Select cell A4, right click, and then clickCopy (or press CTRL + c)...

A4		f_x	=A1*(A2+A3)		
	A	B	C	D	E
1	2	5			
2	2	6			
3	1	4			
4	6				
5					

- ✂ Cut
- 📋 Copy
- 📋 Paste Options:
- 📄
- Paste Special...
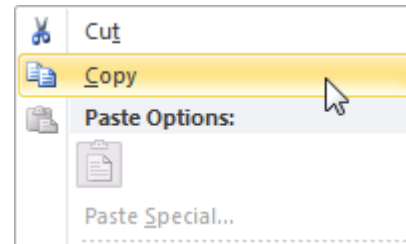
...next, select cell B4, right click, and then click Paste under 'Paste Options:' (or press CTRL + v).

Paste Options:

📋 123 f_x 🔳 %, 🔗

Paste (P)

2b. You can also drag the formula to cell B4. Select cell A4, click on the lower right corner of cell A4 and drag it across to cell B4. This is much easier and gives the exact same result!

A4		f_x	=A1*(A2+A3)		
	A	B	C	D	E
1	2	5			
2	2	6			
3	1	4			
4	6				
5					

Result. The formula in cell B4 references the values in column B.
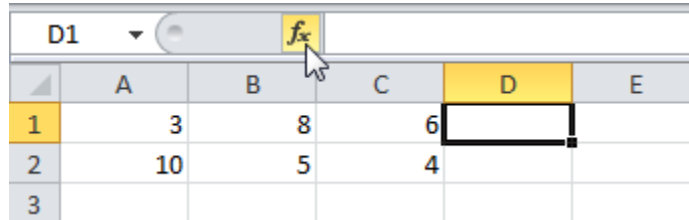
B4		f_x	=B1*(B2+B3)		
	A	B	C	D	E
1	2	5			
2	2	6			
3	1	4			
4	6	50			
5					

Insert a Function

Every function has the same structure. For example, SUM(A1:A4). The name of this function is SUM. The part between the brackets (arguments) means we give Excel the range A1:A4 as input. This function adds the values in cells A1, A2, A3 and A4. It's not easy to remember which function and which arguments to use for each task. Fortunately, the Insert Function feature in Excel helps you with this.

To insert a function, execute the following steps.
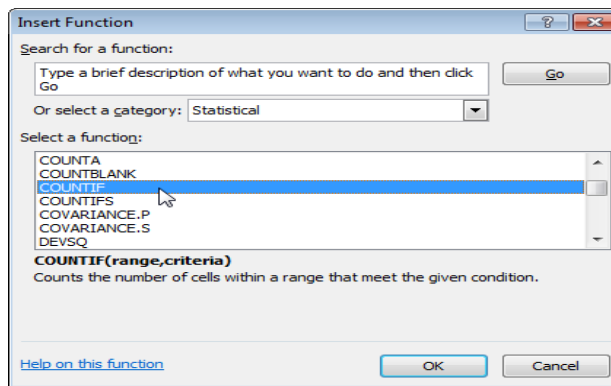
1. Select acell.
2. Click the Insert Functionbutton.
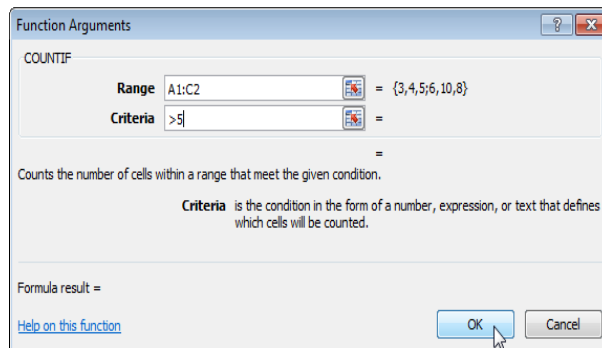

The 'Insert Function' dialog box appears.

3. Search for a function or select a function from a category. For example, choose COUNTIF from the Statisticalcategory.

4. ClickOK.

The 'Function Arguments' dialog box appears.

5. Click in the Range box and select the rangeA1:C2.
6. Click in the Criteria box and type>5.
7. ClickOK.

Result. Excel counts the number of cells that are higher than 5.

D1			f_x	=COUNTIF(A1:C2,">5")	
	A	B	C	D	E
1	3	8	6	3	
2	10	5	4		
3					

Note: instead of using the Insert Function feature, simply type =COUNTIF(A1:C2,">5"). When you arrive at: =COUNTIF(instead of typing A1:C2, simply select the rangeA1:C2.

Percent Change

The percent change formula is used very often in Excel. For example, to calculate the Monthly Change and Total Change.

1a. Select cell C3 and entertheformula shown below.

1b. Select cell C3 and apply a Percentage format.

We don't need to repeat step 1a and step 1b ten more times.

1c. Select cell C3, click on thelowerright corner of cell C3 and drag it down to cellC13.

1d. Check if everything wentalright.

1d. Check if everything went alright.

2a. In a similar way, we can calculate the Total Change. This time we fix the reference to cell B2. Select cell D3 and enter the formula shown below.

2b. Select cell D3 and apply a Percentage format.

2c. Select cell D3, click on the lower right corner of cell D3 and drag it down to cellD13. 2d.

Check if everything wentalright.

Explanation: when we drag the formula down, the absolute reference (B2) stays the same, while the relative reference (B3) changes to B4, B5, B6, etc. Maybe this is one step too far for you at this stage, but it shows you one of the many other powerful features Excel has to offer.

Names in Formulas

Create a named range or a named constant and use these names in your formulas. This way you can make your formulas easier to understand.

Named Range

To create a named range, execute the following steps.

1. Select the rangeA1:A4.

2. On the Formulas tab, click DefineName.
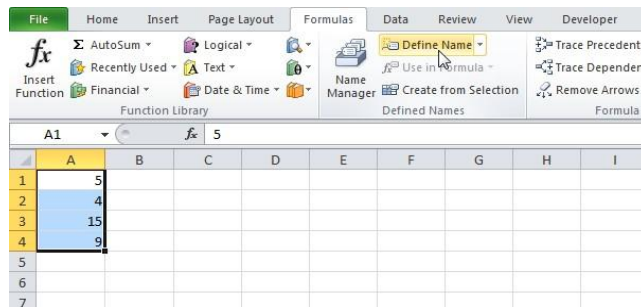
3. Enter a name andclickOK.
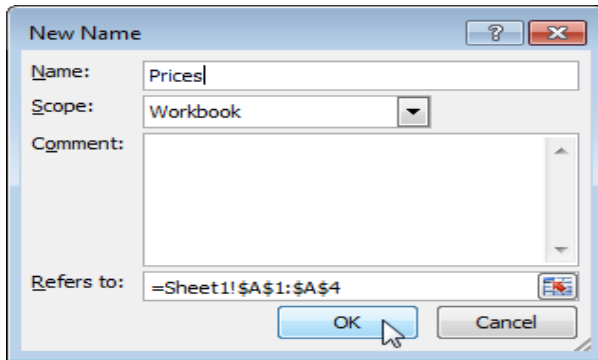
4. Select the range, type the name in the Name box and pressEnter.
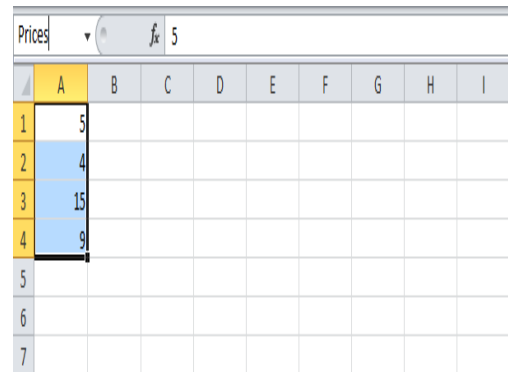
There's an even quicker way of doing this.

4. Select the range, type the name in the Name box and pressEnter.
5. Now you can use this named range in your formulas. For example, sumPrices.
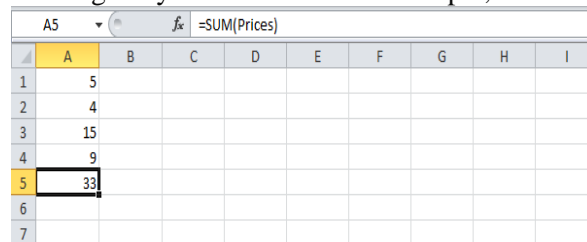
Named Constant

To create a named constant, execute the following steps.
1. On the Formulas tab, click DefineName.
2. Enter a name, type a value, and clickOK.
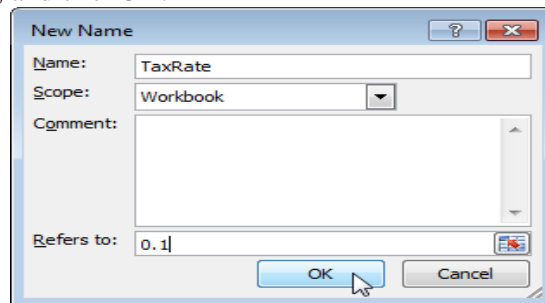
3. Now you can use this named constant in yourformulas.
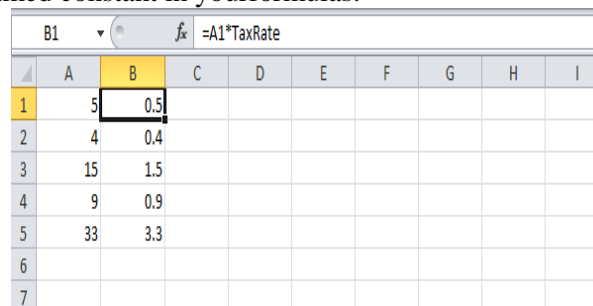
Note: if the tax rate changes, use the Name Manager to edit the name and Excel automatically updates all the formulas that use TaxRate.

Name Manager

To edit and delete defined names, execute the following steps.

1. On the Formulas tab, clickNameManager.   2. For example, select TaxRate and clickEdit.
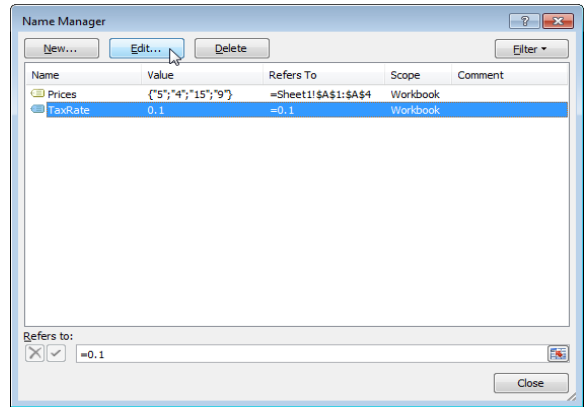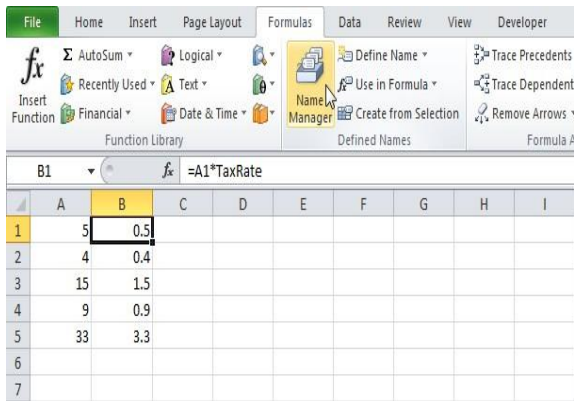
A **dynamic named range** expands automatically when you add a value to the range.

1. For example, select the range A1:A4 and name itPrices.

2. Calculatethesum.   3. When you add a value to the range, **Excel** does not update the sum.
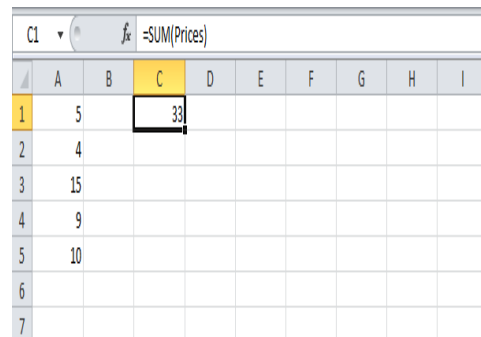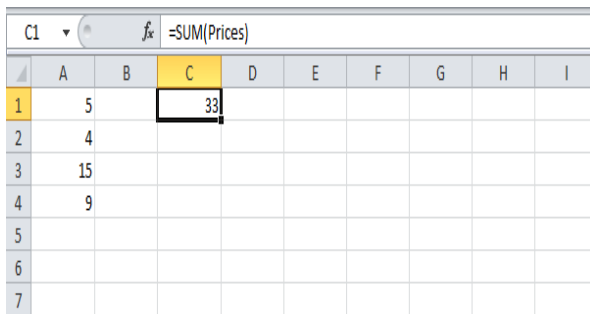
To expand the named range automatically when you add a value to the range, execute the following the following steps.

4. On the Formulas tab, clickNameManager.   5. ClickEdit.
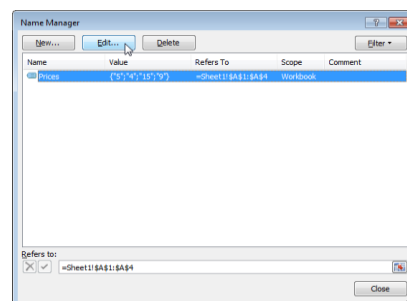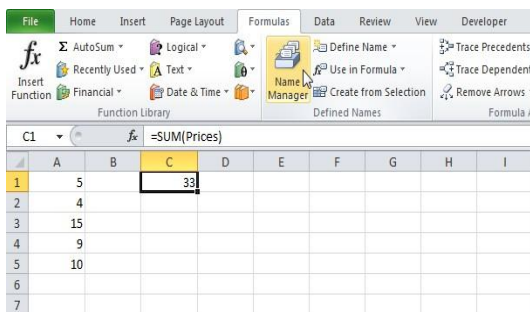
6. Click in the "Refers to" box and enter the formula=OFFSET(A1,0,0,COUNTA($A:$A),1)
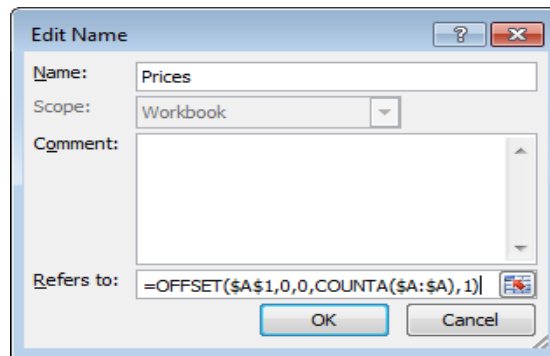
Explanation: The <u>Offset</u>function takes 5 arguments. Reference: A1, rows to offset: 0, columns to offset: 0, height: COUNTA($A:$A), width: 1. COUNTA($A:$A) counts the number of values in column A that are not empty. When you add a value to the range, COUNTA($A:$A) increases. As a result, the named range expands.

7. Click OK andClose.
8. Now, when you add a value to the range, Excel updates the sumautomatically.

Paste Options

This example illustrates the various paste options in Excel. Cell B5 below contains the SUM function which calculates the sum of the range B2:B4. Furthermore, we changed the background color of this cell to yellow and added borders.

Paste

The Paste option pastes everything.
1. Select cell B5, right click, and then click Copy (or press CTRL +c).
2. Next, select cell F5, right click, and then click Paste under 'Paste Options:' (or press CTRL +v).
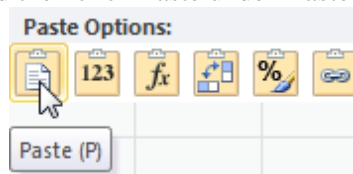
Result.

Values

The Values option pastes the result of the formula.

1. Select cell B5, right click, and then click Copy (or press CTRL +c).
2. Next, select cell D5, right click, and then click Values under 'PasteOptions:'
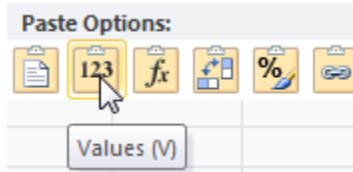
Result.

Note: to quickly replace the formula in cell B5 with its own result, select cell B5, press F2 (to edit the formula) and

press F9.

Formulas

The Formulas option only pastes the formula.

1. Select cell B5, right click, and then click Copy (or press CTRL +c).
2. Next, select cell F5, right click, and then click Formulas under 'PasteOptions:'
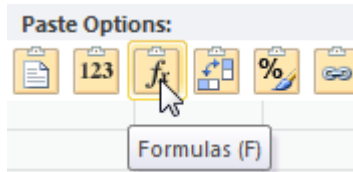
Result.

Formatting

The Formatting option only pastes the formatting.
1. Select cell B5, right click, and then click Copy (or press CTRL +c).
2. Next, select cell D5, right click, and then click Formatting under 'PasteOptions:'
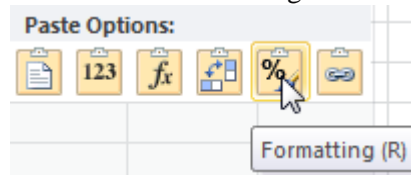
Result.

Note: the Format Painter copy/pastes formatting even quicker.

Paste Special

The Paste Special dialog box offers many more paste options. To launch the Paste Special dialog box, execute the following steps.
1. Select cell B5, right click, and then click Copy (or press CTRL +c).
2. Next, select cell D5, right click, and then click PasteSpecial.
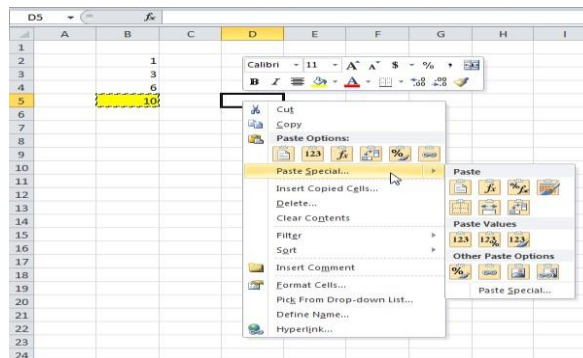
The Paste Special dialog box appears.
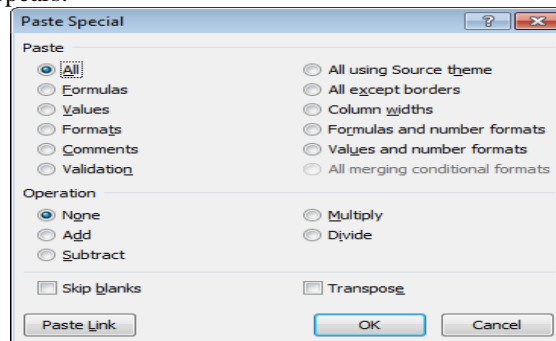
Note: here you can also find the paste options described above. You can also paste comments only, validation criteria only, use the source theme, all except borders, column widths, formulas and number formats, values and number formats. You can also use the Paste Special dialog box to perform quick operations, skip blanks and transpose data.

Status Bar

The quickest way to see the average, count, numerical count, minimum, maximum or sum of selected cells is by taking a look at the statusbar.

1. Select a rangeofcells.

2. Look at the status bar at the bottom ofyour window to see the sum of thesecells.
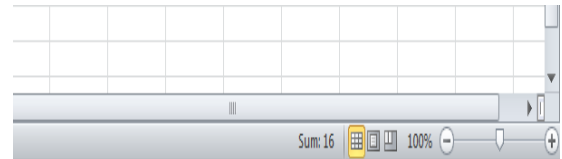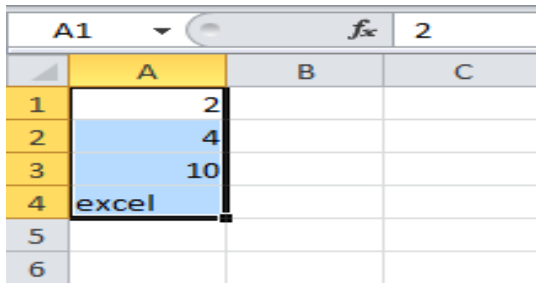
3. Right click the status bar toaddthe average, count, numerical count, minimum or maximum.
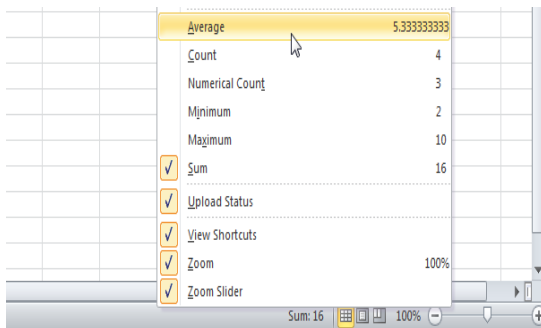
Result:
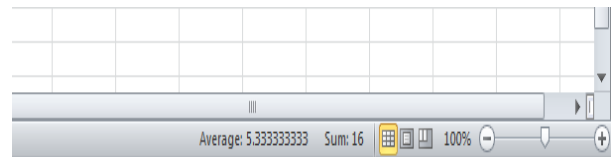
Quick Operations

Use the 'Paste Special Operations' to quickly perform operations on a range of cells in Excel.

1. Select cellD3.

2. Right click, and then clickCopy.
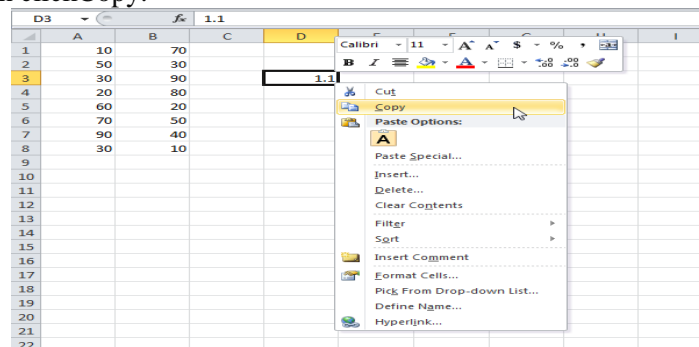
3. Select the rangeA1:B8.

4. Right click, and then click PasteSpecial...

5. ClickMultiply.   6. ClickOK.
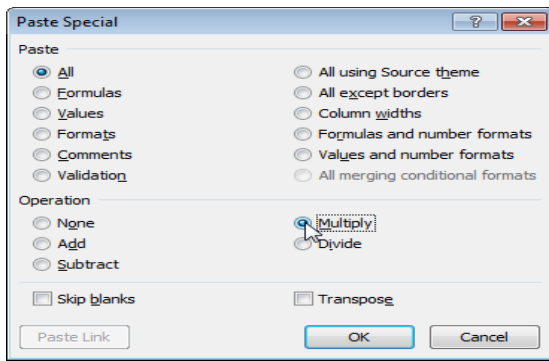
Note: you can also Divide, Add or Subtract a value.

Note: all values are increased by 10 percent. Without this feature, you would have to create a temporary range (with formulas that multiply the values in the range A1:B8 by 1.1) and then replace the range A1:B8 by copy and pasting the temporary range asvalues.

PRE LAB VIVA QUESTIONS:
a.   What is Microsoft Excel?
b.   Explain Spreadsheet and its Basics?
c.   How many data formats are available in Excel? Name some of them.?
d.   Write Specify the order of operations used for evaluating formulas in Excel?
e.   What is Explain Macro in MS-Excel?

LAB ASSIGNMENT:
a.   Which are the two macro languages in MS-Excel?
b.   s it possible to prevent someone from copying the cell from your worksheet?
c.   What are charts in MS-Excel?
d.   Explain few useful functions in Excel?
e.   What does a red triangle at the top right of a cell indicate?

POST LAB VIVA QUESTIONS:
a.   What is the use of NameBox in MS-Excel?
b.   How can you resize the column?
c.   Explain pivot tables and its uses.?
d.   What are three report formats that are available in Excel?
e.   How would you provide a Dynamic range in "Data Source" of Pivot Tables?
f.   What is Freeze Panes in MS-Excel?

EXPERIMENT – 7
PREPARATION OF POWERPOINT PRESENTATION IN LaTex

```
\documentclass[aspectratio=43]{beamer}
\usepackage[english]{babel}
\input{chapters/preamble}
\title{My Presentation} %->->->->-> Check hyperref title <-<-<-<-<-
\subtitle{And Some Things About It}
\author[b krishna]{sai ram}
\institute[IFUSP]{
    Institute of Physics%
    \\%
    University of São Paulo%
} %You can change the Institution if you are from somewhere else
\date{February 31, 2019}
%\logo{\includegraphics[width= 0.2\textwidth]{images/a-logo.png}}

\begin{document}

  \frame{\titlepage}

  \begin{frame}{Summary}
    \tableofcontents
  \end{frame}

  \input{chapters/a-silly-idea.tex} %You can put the frames directly into the presentation, but using the input command
and writing them in separate .tex files might be more organized

  \input{chapters/playing-around.tex}

  \input{chapters/fourier-playground.tex}

  \section*{Acknowledgments} %You can remove this if you do not want to use it
    \begin{frame}{Acknowledgments}
       The author is extremely thankful to Prof. Antônio F. R. T. Piza for the short, yet wonderful, conversations about
this seminar.
    \end{frame}

  \section*{References} %You can remove this if you do not want to use it
    \nocite{Djairo} \nocite{PhilPanof} \nocite{Fleming} \nocite{Shankar}
    \begin{frame}{References}
       \printbibliography
    \end{frame}

  \section{}
  \begin{frame}{}
    \centering
       \Huge\bfseries
    \textcolor{orange}{The End}
  \end{frame}
\end{document}
```

Out put

PRE LAB VIVA QUESTIONS:
a. What is pagestyle? What are the benefits of usingSample Chapter?
b. Write a to Plotting mathematical expressions?
c. State any five Features of   textit{get no information.}?
d. Write text with LaTeX markup code in text editor?
e. What is the best LaTeX for Windows

LAB ASSIGNMENT:
a.   What is MiKTeX and LaTeX,?
b.   What is LaTeX software used for?
c.   What is the point of LaTeX?
d.   What is made of LaTeX?
e.   Does polyester have latex in it?

POST LAB VIVA QUESTIONS:
a.   What material is polyester stretchy?
b.   How do you make polyester?
c.   What products are made from polyester?
d.   Define TeXstudio?
e.   Define Overleaf.?
f.   What is a4paper,12pt,twoside?

EXPERIMENT – 8
WEBPAGES CREATION AND DESIGNING

Creating HTML page:

Step -1: we need to start the HTML page with HTML tags like
<html>….<html>….<html>.
Here we can create the title of the page and headers using following tags .
< title>……….< title>
Headers: <h1>, <h2>, <h3>, <h4>, <h5>, <h6>, <h7>.
Step-2: To create the paragraph we use the tag <P>…</p>
Step-3: To create the table we use the tag <table>…</table>
Table tag has the properties like BROADER , ALIGN ,BGCOLOR, Etc..
<tr>..</tr> tag for creating the table row .
<td>..</td> tag for creating the table data.
Step -4: To create the ordered list in the html we use the following tags.
…. tag for unordered list.
…. tag for ordered list.
…. tag for list value.

HTML code:

```
<html>
<body>
<image src="IARE.gif" width="100px" height="150px" >
<table border="12" >
<tr>
<th>NAME</th><td>IARE</td>
</tr>
<tr>
<th>Roll No</th><td>13951A----</td>
</tr>
<tr>
<th>BRANCH</th><td>CSE</td>
</tr>
<tr>
<th>COURSE YEAR</th><td>First Year</td>
</tr>
<tr>
<th>ADDRESS</th><td>IARE, Dundigal(v),Quthbullapur(m),R.R.Dist500043</td>
</tr>
<tr>
<th>KNOWN LANGUAGES</th><td>Telugu, English & Hindi</td>
</tr>
<tr>
<th>Phone No </th><td>08418-257181</td>
</tr>
<tr>
<th>E-Mail</th><td>info@iare.ac.in</td>
</tr></table>
</body></html>
```

1. Create the HTML file.
 2. Create Paragraph tag in the body section.
 3. Create list tag in the body section.
 4. Add list items in the list.
 5. Apply color attribute to the tags.
6. Close paragraph tag, list tag and body section.
7. Close the HTML file.

Create links on the words
1. Create the HTML file.

2. Create links by using anchor tag.
3. Create link on the words WIFI and LAN in the body section.
4. Close the anchor tag and body section.
5. Close the HTML file.
Insert an image and create a link
1. Create the HTML file.
2. Create links by using anchor tag.
3. Create image tag in the anchor tag.
4. Close the anchor tag and body section.
5. Close the HTML file.
Change the background color
1. Create the HTML file.
2. In the body tag add bgcolor attribute.
3. Include two image tags in the body
4. Close the body section.
5. Close the HTML file

INPUT/OUTPUT:

Describing department Describing department using Paragraph and list tags.

WHAT IS COMPUTER SCIENCE ENGINEERING ?

Computer science engineering (CSE) is one of the popular courses among engineering aspirants which focuses on the basic elements of computer programming and networking. Students pursuing computer science courses will gain knowledge of design, implementation and management of information system of both hardware and software. Going by the name, CSE course deals primarily with the theory of computation and design of computational systems. The course is offered across the globe in technical institutions at undergraduate as well as postgraduate levels awarding B.Tech and M.tech degrees, respectively.

ELIGIBILITY CRITERIA

- For UG: The candidate should have passed 10+2 examination from CBSE or any other equivalent examination board with Physics, Chemistry and Mathematics as core subjects. The candidates should also fulfil minimum qualifying marks in aggregate of the subjects.
- For PG: The candidate should have a B.Tech degree with a minimum passing percentage in aggregate of the subjects studied at the degree level.

SCOPE OF COMPUTER SCIENCE ENGINEERING

- The present and future world can't live without technology and the boom in the technology sector will lead to lucrative opportunities.
- Increasing number of software companies and IT hubs like 'Silicon Valley' indicate an increasing demand for CSE experts.
- Concepts like 'cloud computing' upon which future technologies will be based need specialists in this domain.

Applying Various colours

CSE

The fast changing technological scenario poses to the Institute a challenge of continuously updating
its curriculum and faculty to be able to provide state-of-the-art education to the students.
Changes, both major and subtle, have been made by the department of *Computer Science and Engineering (CSE)*, to be better prepared for tomorrow.

- **For UG:** The candidate should have passed 10+2 examination from **CBSE** or any other equivalent examination board with Physics, Chemistry and Mathematics as core subjects. The candidates should also fulfil minimum qualifying marks in aggregate of the subjects.
- **For PG:** The candidate should have a B.Tech degree with a minimum passing percentage in aggregate of the subjects studied at the degree level.

Create links on the words:

WI-FI

LAN
Insert an image and create a link

PRE LAB VIVA QUESTIONS:
a. Create the HTML file**?**
b. Create links by using anchor tag?
c. Create link on the words WIFI and LAN in the body section**?**
d. tag for creating the table data?
e. tag for unordered list?
f. tag for list value**.**?

LAB ASSIGNMENT:
a. Apply color attribute to the tags.?
b. Create image tag in the anchor tag**?**
c. Close the anchor tag and body section?

POST LAB VIVA QUESTIONS:
a. What is the use of tr in th??
b. How can header h1,h2,h3,h4,h5?
c. What are three report formats that are BROADER
d. How would you provide ALIGN ,?
e. What is BGCOLOR?

WEB DESIGN FOR SAMPLE PROJECT

PROGRAM:

index.html
```
<html>
<head>
<title>IARE COLLEGE OF ENGINEERING</title>
</head>
<frameset cols="150,*" rows="92,40,*">
<frame name="logo" scrolling="no" noresize src="logo.html"/>
<frame name="header" scrolling="no" src="header.html"/>
<frame name="home" scrolling="no" noresize src="home.html"/>
<frame name="tmenu" scrolling="no" src="tmenu.html"/>
<frame name="left" scrolling="no" src="left.html"/>
<frame name="body" src="body.html"/>
</frameset>
</html>
```

header.html
```
<centere><marquee><h1><b>IARE COLLEGE OF ENGINEERING</b></h1></marquee>
</centere>
```
home.html
```
<h4 align="center"><a href="body.html" style="text-decoration:none;"
target="body">Home</a></h4>
```

logo.html

```
<h3 align="center"><img src="images/logo.gif"></h3>
```

left.html
```
<center>
<a href="CSE.html" style="text-decoration:none;"
target="body"><b>CSE</b></a><br><br><br><br>
<a href="ECE.html" style="text-decoration:none;"
target="body"><b>ECE</b></a><br><br><br><br>
<a href="EEE.html" style="text-decoration:none;"
target="body"><b>EEE</b></a><br><br><br><br>
<a href="civil.html" style="text-decoration:none;"
target="body"><b>CIVIL</b></a><br><br><br>
</center>
```

tmenu.html

```html
<table align="center">
<td width="150" align="left"><a style="text-decoration:none;" href="login.html"
target="body"><b>Login</b></a></td>
<td width="150" align="center"><a style="text-decoration:none;" href="Registration.html"
target="body"><b>Registration</b></a></td>
<td width="150" align="center"><a style="text-decoration:none;" href="catalogue.html"
target="body"><b>Catalogue</b></a></td>
<td width="150" align="right"><a style="text-decoration:none;" href="cart.html"
target="body"><b>Cart</b></a></td><td>
</table>
```

body.html
```html
<h3 align="center">Welcome to IARECE</h3>
```


CSE.html

```html
<h3 align="center">COMPUTER SCIENCE ENGINEERING</h3>
```

ECE.html
```html
<h3 align="center">Electrical Communication Engineering</h3>
```

EEE.html

```html
<h3 align="center">Electrical and Electronics Engineering</h3>
```


CIVIL.html

```html
<h3 align="center">CIVIL Engineering</h3>
```

login.html

```html
<html>
<head><title>LOGIN</title>
<script type="text/javascript">
function validate()
{
if(document.getElementById('id').value.length==0)
{
 window.alert("ID is required!");
```

```javascript
}else
if(document.getElementById('pass').value.length==0)
{
 window.alert("Password is required!");
}else
{
var name=document.getElementById('id');
window.alert("Welcome "+name.value);
}
}
</script>
</head>
<body>
<h4 align="center">LOGIN</h4>
<table align="center">
<form method="post">

tr>
<td>User ID:</td>
<td><input type="text" name="id" id="id" /></td>
</tr>
<tr>
<td>Password:</td>
<td><input type="password" name="pass" id="pass" /></td>
</tr>
<tr><td colspan="2" align="center"><input value="Login" type="submit"
onclick="validate();" /></td>
</tr>
</table></body></html>
```

Registration.html

```html
<html>
<head><title>Registration</title>
<script type="text/javascript">
function validate()
{
window.alert("Registration Success!");
}
</script>
</head>
<body>
<h4 align="center">Registration</h4>
<form method="post" action="login.html">
```

```html
<table align="center" height="450">
<tr>
<td>Name:</td>
<td><input type="text" name="name" /></td>
</tr>
<tr>
<td>Password:</td>
<td><input type="password" name="pass" /></td>
</tr><tr>
<td>E-mail ID:</td>
<td><input type="text" name="email" /></td>
</tr>

<tr>
<td>Phone number:</td>
<td><input type="text" name="ph_no" /></td>
</tr>
<tr>
<td>Sex:</td>
<td><input type="radio" name="sex" value="male" /> Male
<input type="radio" name="sex" value="female" /> Female</td>
</tr>
<tr>
<td>Date of Birth (D M Y):</td>
<td>
<select>
<option value="1" name="d">1</option><option value="2" name="d">2</option>
<option value="3" name="d">3</option><option value="4" name="d">4</option>
<option value="5" name="d">5</option><option value="6" name="d">6</option>
<option value="7" name="d">7</option><option value="8" name="d">8</option>
<option value="9" name="d">9</option><option value="10" name="d">10</option>
<option value="12" name="d">12</option><option value="13" name="d">13</option>
<option value="14" name="d">14</option><option value="15" name="d">15</option>
<option value="16" name="d">16</option><option value="17" name="d">17</option>
<option value="18" name="d">18</option><option value="19" name="d">19</option>
<option value="20" name="d">20</option><option value="21" name="d">21</option>
<option value="22" name="d">22</option><option value="23" name="d">23</option>
<option value="24" name="d">24</option><option value="25" name="d">25</option>
<option value="26" name="d">26</option><option value="27" name="d">27</option>
<option value="28" name="d">28</option><option value="29" name="d">29</option>



<option value="30" name="d">30</option><option value="31"name="d">31</option>
```

```html
</select>
<select>
<option value="1" name="m">1</option><option value="2" name="m">2</option>
<option value="3" name="m">3</option><option value="4" name="m">4</option>
<option value="5" name="m">5</option><option value="6" name="m">6</option>
<option value="7" name="m">7</option><option value="8" name="m">8</option>
<option value="9" name="m">9</option><option value="10" name="m">10</option>
<option value="11" name="m">11</option><option value="12" name="m">12</option>
</select>
<select>
<option value="1988" name="y">1988</option><option value="1989"
name="y">1989</option>
<option value="1990" name="y">1990</option><option value="1991"
name="y">1991</option>
<option value="1992" name="y">1992</option><option value="1993"
name="y">1993</option>
</select>
</td>
</tr>
<tr>
<td>Languages Known:</td>
<td>
<input type="checkbox" name="english" value="english" /> English
<input type="checkbox" name="telugu" value="telugu" /> Telugu
<input type="checkbox" name="hindi" value="telugu" />  Hindi
<input type="checkbox" name="tamil" value="tamil" /> Tamil
</td>
</tr>
<tr>
<td>Address:</td>
<td><textarea rows="4" cols="30" name="address"></textarea></td>
</tr>

<tr><td colspan="2" align="center"><input value="Register" type="submit"

onclick="validate();" /></td>
</tr>
</table></body></html>
```

catalogue.html

```javascript
<script type="text/javascript">
function validate()
{
```

```
window.alert("Book added to cart!");
}
</script>
<h3 align="center">Books</h3>
<form action="cart.html" method="post">
<table align="center" border="1" width="650">
<tr>
<th width="150">Name</th>
<th>Logo</th>
<th>Author</th>
<th>Publication</th>
<th>Price</th>
<th>Cart</th>
</tr>
<tr align="center">
<td>XML Bible</td>
<td><img src="images/xmlbiblecover.jpg" width="75" height="90" /></td>
<td>Elliotte Rusty Harold</td>
<td>Hungry Minds</td>
<td> $21.99</td>
<td><input type="submit" onClick="validate();" value="Add to cart"></td>
</tr>
<tr align="center">
<td>Artificial Intelligence: A Modern Approach </td>
<td><img src="images/AI.jpg" width="80" height="90" /></td>
<td>Stuart J. Russell</td>
<td>Princeton Hall</td>
<td> $36.09</td>
<td><input type="submit" onClick="validate();" value="Add to cart"></td>
</tr>

<tr align="center">
<td>Beginning Java 2</td>
<td><img src="images/java.jpg" width="75" height="90" /></td>
<td>Ivor Horton</td>
<td>wrox</td>
<td> $8.95</td>
<td><input type="submit" onClick="validate();" value="Add to cart"></td>
</tr>
<tr align="center">
<td>HTML5: Up and Running</td>
<td><img src="images/HTML5-Up-And-Running.jpg" width="75" height="90" /></td>
<td>Mark Pilgrim</td>
<td>O'REILLY</td>
```

```html
<td> $17.99</td>
<td><input type="submit" onClick="validate();" value="Add to cart"></td>
</tr>
</table>
</form>
```

cart.html

```html
<h4 align="center">Shopping Cart</h4>
<table align="center" border="1" width="400">
<tr>
<th>Book Name</th>
<th>Price</th>
<th>Quantity</th>
<th>Amount</th>
</tr>
<tr align="center">
<td>XML Bible</td>
<td> $21.99</td>
<td>2</td>
<td> $43.98</td>
</tr>
<tr align="center">
<td>HTML5: Up and Running</td>
<td> $17.99</td>
<td>1</td>

<td> $17.99</td>
</tr>
<tr align="center">
<td colspan="3">Total Amount:</td>
<td> $61.97</td>
</tr>
</table>
```

Out Put

PRE LAB VIVA QUESTIONS:
a. What is <center>? How it text-decoration:none?
b. Write a <td> and </table>?
c. State network **Pop-up blocker**?
d. What are the function validate?
e. State types of Shopping Cart?

LAB ASSIGNMENT:
a. What are different types of input type?
b. Write a different types of </table>?
c. What is XML?
d. Write a the features of **<tr align="center">**?
e. Write is Shopping Cart?
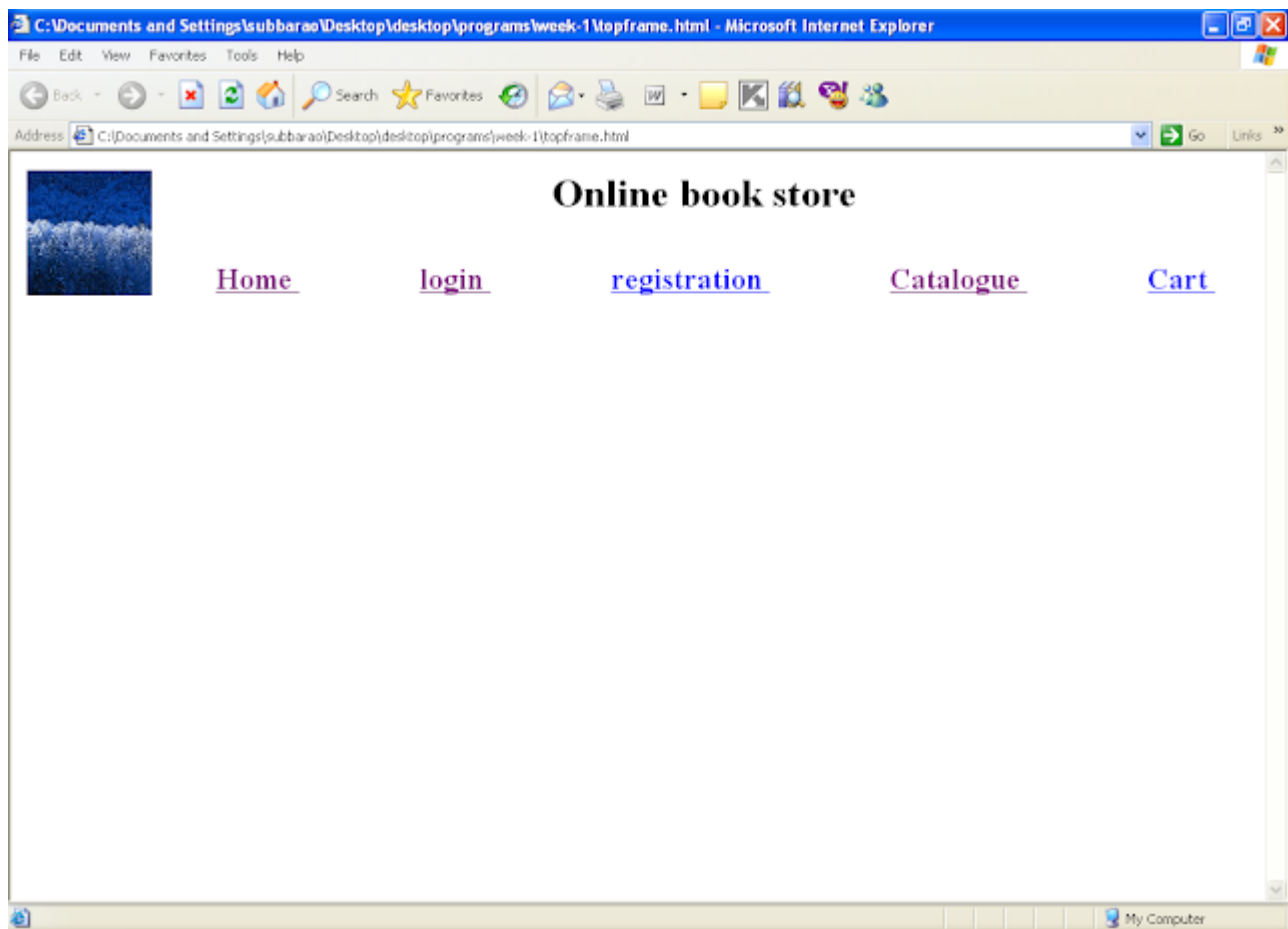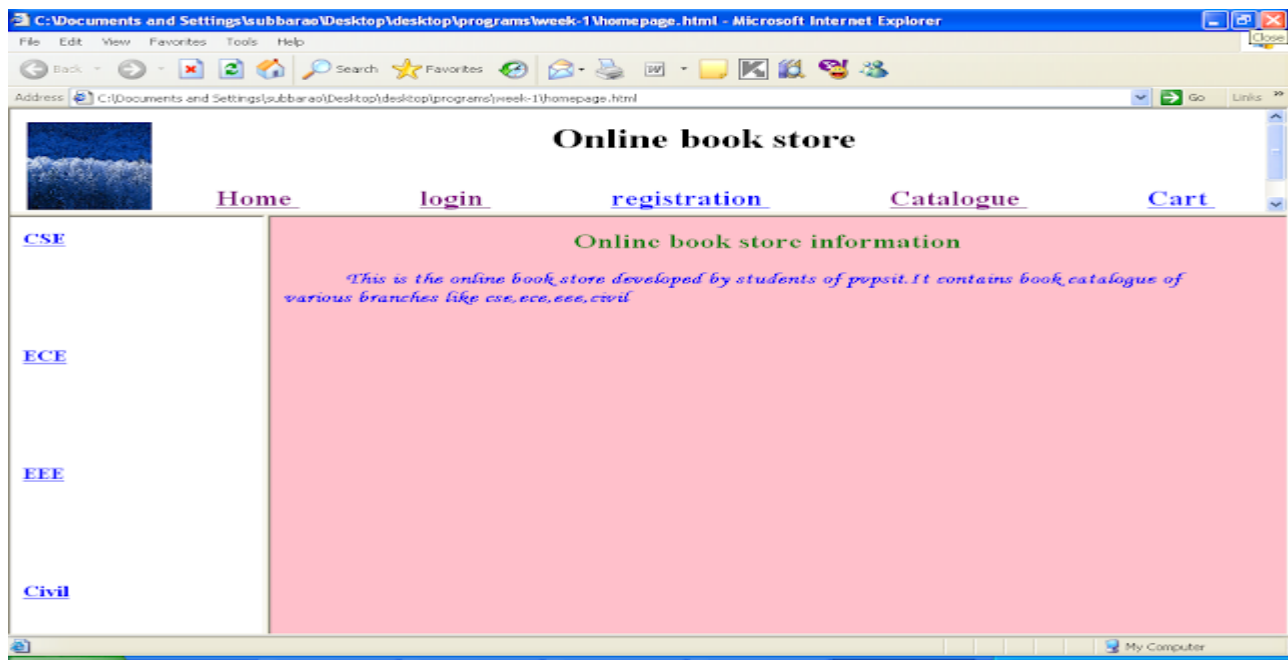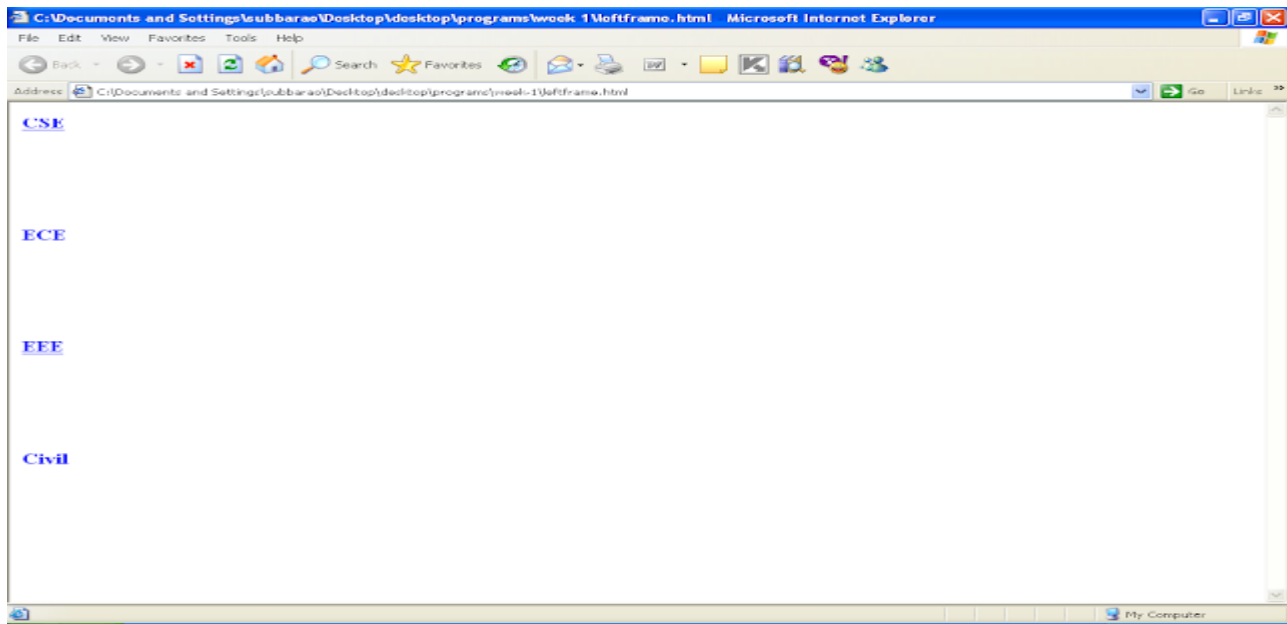
POST LAB VIVA QUESTIONS:
a. What are different types of Quantity?
b. What are the option value,?
c. State the difference between crossover, and straight over?
d. Define Port text/javascript?

EXPERIMENT – 10
NETWORK CONNECTIVITY

Network: A network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications.

Common types of networksare:

LAN (Local Area Network)

WAN (Wide AreaNetwork)

MAN (Metropolitan Area Network)

Local Area Network:

A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building.

Wide Area Network:

Wide Area Networks (WANs) connect networks in larger geographic areas.

Metropolitan Area Network:

Metropolitan Area Network connects town or a city.

Types of Network Topologies:

Network Topology is the schematic description of a network arrangement, connecting various nodes(sender and receiver) through lines of connection.

Bus topology:

Bus topology is a network type in which every computer and network device is connected to single cable. When it has exactly two endpoints, then it is called **Linear Bus topology**.
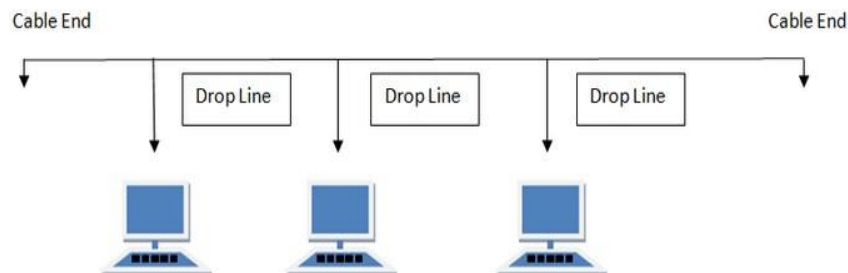
Ring Topology:

It is called ring topology because it forms a ring as each computer is connected to another computer, with the last one connected to the first. Exactly two neighbors' for each device.
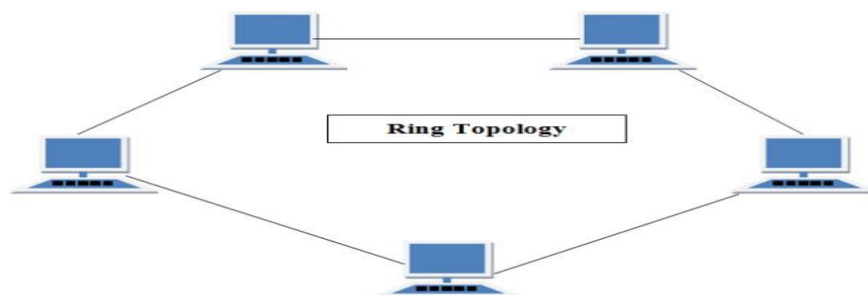
Star Topology:

In this type of topology all the computers are connected to a single hub through a cable. This hub is the central node and all others nodes are connected to the central node.
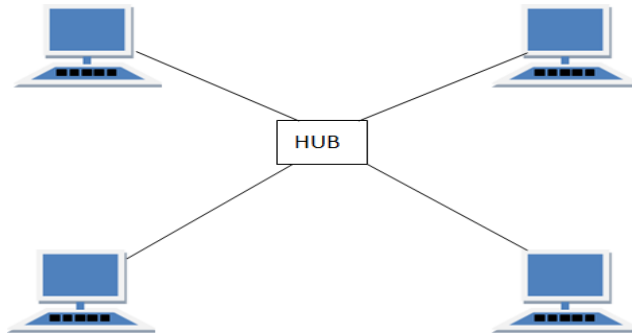
Mesh Topology:

It is a point-to-point connection to other nodes or devices. All the network nodes are connected to each other.
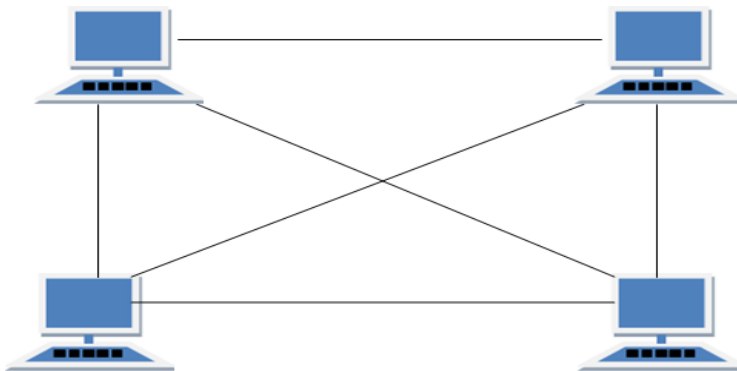
Tree Topology:

It has a root node and all other nodes are connected to it forming a hierarchy. It is also called hierarchical topology. It should at least have three levels to the hierarchy.
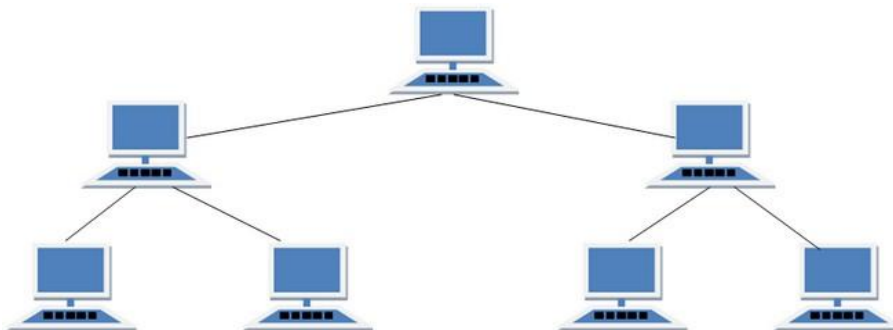
Network Protocol is a set of rules that governs the communications between computers on a network.

What is a Network Protocol?

Rules of Network Protocol include guidelines that regulate the following characteristics of a network: access method, allowed physical topologies, types of cabling, and speed of data transfer.

Types of Network Protocols:

The most common network protocols are:

- Ethernet
- LocalTalk
- Token Ring
- FDDI
- ATM

The followings are some commonly used network symbols to draw different kinds of network protocols.

Ethernet | Ring network | Straight bus | FDDI ring

Token ring | Communic... link | Star network | Flexi Node Link

Internet Connection Settings:

★ Open NetworkConnections.

★ Under Network Tasks, click Create a new connection, and then clicknext.

★ Click Connect to the Internet, and then clicknext.

★ Choose one of thefollowing:

★ If you already have an account with an Internet service provider (ISP), click Set up my

If you have a CD from an ISP, click Use the CD I got from an ISP and then clickNext.

★ If you do not have an Internet account, click Choose from a list of Internet service

Providers (ISPs) and then clicknext.

★ From your choice above, click one of thefollowing:

To Configure Tcp/Ip Settings:

1. Open NetworkConnections.
2. Click the connection you want to configure, and then, under Network Tasks, click Change settings of thisconnection.
3. Do one of thefollowing:
   - o If the connection is a local area connection, on the General tab, under This connection uses the following items, click Internet Protocol (TCP/IP), and then clickProperties.
   - o If this is a dial-up, VPN, or incoming connection, click the Networking tab. In This connection uses the following items, click Internet Protocol (TCP/IP), and then click Properties.
4. Do one of thefollowing:

   - o If you want IP settings to be assigned automatically, click Obtain an IP address automatically, and then clickOK.
   - o If you want to specify an IP address or a DNS server address, do thefollowing:
     - ▪ Click Use the following IP address, and in IP address, type the IPaddress.
     - ▪ Click Use the following DNS server addresses, and in Preferred DNS server and Alternate DNS server, type the addresses of the primary and secondary DNS

servers.
5. To configure DNS, WINS, and IP Settings, clickAdvanced.

Bridge: A bridge is a device that connects between two or more networks.

A network with a bridge

There are different types of bridges.

Transparent Bridge: As the name signifies, it appears to be transparent for the other devices on the network. The other devices are ignorant of its existence.

Source Route Bridge: It derives its name from the fact that the path which packet takes through the network is implanted within the packet. It is mainly used in token ring networks.

Translational Bridge: The process of conversion takes place via Translational Bridge. It converts the data format of one networking to another. For instance Token ring to Ethernet and vice versa.

HUB

Hub is one of the networking devices used to connect devices. They are used to transmit the data from source and destination.

Hub falls in two categories:

1. **Active Hub(repeaters):** They are smarter than the passive hubs. They not only provide the path for the data signals they regenerate, concentrate and strengthen the signals before sending them to theirdestinations.
2. **Passive Hub:** They are more like point contact for the wires to built in the physical network. They do not modify thesignals.

Switches:

Switch is also one of the connecting device but the difference between hub and switch is working that hub works by sending the data to all the ports on the device whereas a switch transfers it only to that port which is connected to the destination device. Switches operate in full-duplex mode where devices can send and receive data from theswitch.

Wireless Technology: WiFi, LiFi, Bluetooth

Wifi:

Wi-Fi or WiFi is a local area wireless computer networking technology that allows electronic devices to connect to the network, mainly using the 2.4 gigahertz (12 cm) UHF and 5 gigahertz (6 cm) SHF ISM radio bands.

Wi-Fi is simply a trademarked term meaning IEEE 802.11x. The false notion that the brand name "Wi-Fi" is short for "wireless fidelity" has spread to such an extent that even industry leaders have included the phrase wireless fidelity in a press release.

In 1991, NCR Corporation with AT&T Corporation invented the precursor to 802.11, intended for use in cashier systems. The first wireless products were under the name Wave LAN.

If you have a friend or a neighbor who has broadband internet within line of sight from your home, then you may be able to get free WiFi Internet access. You will need to ask permission to use their internet before proceeding. If all is ok, then your task will be to make a WiFi connection to their router.

Lifi:

LiFi is a wireless optical networking technology that uses light-emitting diodes (LEDs) for data transmission. LiFi is designed to use LED light bulbs similar to those currently in use in many energy-conscious homes and offices.
Li-Fi (Light Fidelity) is a bidirectional, high speed and fully networked wireless communication technology similar to Wi-Fi.

Harald Haas, who teaches at the University of Edinburgh in the UK, coined the term "Li-Fi" at his TED Global Talk where he introduced the idea of "Wireless data from every light". He is Chair of Mobile Communications at the University of Edinburgh and co-founder of pureLiFi.

A 224Gbps speed would technically allow for 18 movies of 1.5GB each to be downloaded in a single second CC.Researchers at the University of Oxford have reached a new milestone in networking by using light fidelity (Li-Fi) to achieve bi-directional speeds of 224 gigabits per second(Gbps).

How it works!

Li-Fi and Wi-Fi are quite similar as both transmit data electromagnetically. However, Wi-Fi uses radio waves while Li-Fi runs on visible light.
As we now know, Li-Fi is a Visible Light Communications (VLC) system. This means that it accommodates a photo-detector to receive light signals and a signal processing element to convert the data into 'stream-able'content.

An LED light bulb is a semi-conductor light source meaning that the constant current of electricity supplied to an LED light bulb can be dipped and dimmed, up and down at extremely high speeds, without being visible to the human eye.For example, data is fed into an LED light bulb (with signal processing technology), it then sends data (embedded in its beam) at rapid speeds to the photo-detector (photodiode).

The tiny changes in the rapid dimming of LED bulbs is then converted by the 'receiver' into electrical signal.

The signal is then converted back into a binary data stream that we would recognise as web, video and audio applications that run on internet enables devices

Feature	LiFi	WiFi
Full form	Light Fidelity	Wireless Fidelity
Operation	LiFi transmits data using light with the help of LED bulbs.	WiFi transmits data using radio waves with the help of WiFi router.
Interference	Do not have any intereference issues similar to radio frequency waves.	Will have intereference issues from nearby access points(routers)
Technology	Present IrDA compliant devices	WLAN 802.11a/b/g/n/ac/ad standard compliantdevices
Applications	Used in airlines, undersea explorations, operation theaters in the hospitals, office and home premises for data transfer and internet browsing	Used for internet browsing with the help of wifi kiosks or wifi hotspots
Merits(advantages)	Interference is less, can pass through salty sea water, works in densyregion	Interference is more, can not pass through sea water, works in less densy region
Privacy	In LiFi, light is blocked by the walls and hence will provide more secure datatransfer	In WiFi, RF signal can not be blocked by the walls and hence need to employ techniques to achieve secure data transfer.
Data transfer speed	About 1 Gbps	WLAN-11n offers 150Mbps, About 1-2 Gbps can beachievedusing WiGig/Giga-IR
Frequency of operation	10 thousand times frequency spectrum of theradio	2.4GHz, 4.9GHz and 5GHz
Data density	Works in high dense environment	Works in less dense environment due to interference related issues
Coverage distance	About 10 meters	About 32 meters (WLAN 802.11b/11g), vary based on transmit power and antenna type
System components	Lamp driver, LED bulb(lamp) and photo detector will make up complete LiFi system.	requires routers to be installed, subscriber devices(laptops, PDAs, desktops) are referred as stations

Bluetooth:

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices, and building personal area networks(PANs).

In 1994 a group of engineers at Ericsson, a Swedish company, **invented** a wireless communication technology, later called **Bluetooth**. In 1998, the original group of Promoter companies—Ericsson, Intel, Nokia, Toshiba and IBM—came together to form the **Bluetooth** Special Interest Group (SIG).

Most Mac computers come with **Bluetooth** technology built-in. To determine whether your computer supports **Bluetooth do** one of the following: Look for the **Bluetooth** Icon in the menu bar. If the **Bluetooth** icon is present, your computer **hasBluetooth**.
Before you can use a **Bluetooth** keyboard, mouse, track pad, or audio device, you need to "**pair**" your **Mac** with the device. You need to **pair** your **Mac** with the device only once. The device remains paired until you un pairit.

Crimping, crossover, straight over:

A **crimping tool** is a device used to conjoin two pieces of metal by deforming one or both of them in a way that causes them to hold each other. The result of the tool's work is called a **crimp**. A good example of crimping is the process of affixing a connector to the end of a cable. For instance, network cables and phone cables are created using a crimping tool (shown below) to join the RJ-45and RJ-11connectors to the both ends of either phone or CAT5cable.

RJ-11 (6-Pin) and RJ-45 (8-Pin) Crimping Tool

http://www.computerhope.com

How does it work?

To use this crimping tool, each wire is first placed into the connector. Once all the wires are in the jack, the connectors with wires are placed into the crimping tool, and the handles are squeezed together. Crimping punctures the plastic connector and holds each of the wires, allowing for data to be transmitted through the connector.

Straight Cable:

You usually use straight cable to connect different type of devices. This type of cable will be used most of the time and can be used to:
1) Connect a computer to a switch/hub's normalport.
2) Connect a computer to a cable/DSL modem's LANport.
3) Connect a router's WAN port to a cable/DSL modem's LANport.
4) Connect a router's LAN port to a switch/hub's uplink port. (normally used for expandingnetwork)
5) Connect 2 switches/hubs with one of the switch/hub using an uplink port and the other oneusing normal port.

Crossover Cable:

Sometimes you will use crossover cable, it's usually used to connect same type of devices. A crossover cable can be used to:

1) Connect two computersdirectly.
2) Connect a router's LAN port to a switch/hub's normal port. (normally used for expandingnetwork)
3) Connect two switches/hubs by using normal port in bothswitches/hubs.

PRE LAB VIVA QUESTIONS:
a. What is LAN? How it works?
b. Write a WAN and MAN ?
c. State network topologies?
d. What are the open network connection ?
e. State types of IPS?

LAB ASSIGNMENT:
a. What Are Different Types Of Bridges?
b. Write A Different Types Of Hub ?
c. What Is Wire Less Technology?
d. Write A The Features Of Lifi?
e. Write Is Wire Less Fidelity?

POST LAB VIVA QUESTIONS:
a. What are different types of Open NetworkConnections ?
b. What are the Features of Crimping,?State the difference between crossover, and straight over?
c. Define Transparent Bridge?

EXPERIMENT – 11
SURFING THE WEB

Web browser:

A web browser (commonly referred to as a browser) is a software application for accessing information on the World Wide Web. Each individual web page, image, and video is identified by a distinct Uniform Resource Locator (URL), enabling browsers to retrieve these resources from a web server and display them on a user's device.

A web browser is not the same thing as a search engine, though the two are often confused.[1][2] For a user, a search engine is just a website, such as google.com, that stores searchable data about other websites. But to connect to a website's server and display its web pages, a user must have a web browser installed on their device.[3]

As of March 2019, more than 4.3 billion people use a browser, which is about 55% of the world's population.[4] The most popular browsers are Chrome, Firefox, Safari, Internet Explorer, and Edge.

Function:

The purpose of a web browser is to fetch information resources from the Web and display them on a user's device. This process begins when the user inputs a URL, such as *https://en.wikipedia.org/* , into the browser. Virtually all URLs on the Web start with either *http:* or *https:* which means the browser will retrieve them with the Hypertext Transfer Protocol. In the case of *https:* , the communication between the browser and the web server is encrypted for the purposes of security and privacy. Another URL prefix is *file:* which is used to display local files already stored on the user's device. Once a web page has been retrieved, the browser's rendering engine displays it on the user's device. This includes image and video formats supported by the browser. Web pages usually contain hyperlinks to other pages and resources. Each link contains a URL, and when it is clicked, the browser navigates to the new resource. Thus the process of bringing content to the user begins again.

Features:

The most popular browsers have a number of features in common. They allow users to set bookmarks and browse in a private mode. They also can be customized with extensions, and some of them provide a sync service.

Most browsers have these user interface features:

- Allow the user to open multiple pages at the same time, either in different browser windows or in different tabs of the same window.
- Back and forward buttons to go back to the previous page visited or forward to the next one.
- A refresh or reload button to reload the current page.
- A stop button to cancel loading the page. (In some browsers, the stop button is merged with the reload button.)
- A home button to return to the user's home page.
- An address bar to input the URL of a page and display it.
- A search bar to input terms into a search engine. (In some browsers, the search bar is merged with the address bar.)

There are also niche browsers with distinct features. One example is text-only browsers that can benefit people with slow Internet connections or those with visual impairments.

Security:

Web browsers are popular targets for hackers, who exploit security holes to steal information, destroy files, and other malicious activity. Browser vendors regularly patch these security holes, so users are strongly encouraged to keep their browser software updated. Other protection measures are antivirus software and avoiding known-malicious websites.

Year	Web browsers
1991	Worldwide Web (Nexus)
1992	ViolaWWW, Erwise, MidasWWW, MacWWW (*Samba*)
1993	Mosaic, Cello,[2]Lynx 2.0, Arena, AMosaic 1.0
1994	IBM Web Explorer, Netscape Navigator, SlipKnot 1.0, MacWeb, IBrowse, Agora (*Argo*), Minuet
1995	Internet Explorer 1, Internet Explorer 2, Netscape Navigator 2.0, OmniWeb, UdiWWW,[3], Grail
1996	Arachne 1.0, Internet Explorer 3.0, Netscape Navigator 3.0, Opera 2.0, PowerBrowser 1.5,[4]Cyberdog, Amaya 0.9,[5]AWeb, Voyager
1997	Internet Explorer 4.0, Netscape Navigator 4.0, Netscape Communicator 4.0, Opera 3.0[6], Amaya 1.0[5]
1998	iCab, Mozilla
1999	Amaya 2.0,[5] Mozilla M3, Internet Explorer 5.0
2000	Konqueror, Netscape 6, Opera 4,[7] Opera 5,[8]K-Meleon 0.2, Amaya 3.0[5], Amaya 4.0[5]
2001	Internet Explorer 6, Galeon 1.0, Opera 6[9], Amaya 5.0[5]
2002	Netscape 7, Mozilla 1.0, Phoenix 0.1, Links 2.0, Amaya 6.0,[5]Amaya 7.0[5]
1992	ViolaWWW, Erwise, MidasWWW, MacWWW (*Samba*)
1993	Mosaic, Cello,[2]Lynx 2.0, Arena, AMosaic 1.0
1994	IBM WebExplorer, Netscape Navigator, SlipKnot 1.0, MacWeb, IBrowse, Agora (*Argo*), Minuet
1995	Internet Explorer 1, Internet Explorer 2, Netscape Navigator 2.0, OmniWeb, UdiWWW,[3], Grail
1996	Arachne 1.0, Internet Explorer 3.0, Netscape Navigator 3.0, Opera 2.0, PowerBrowser 1.5,[4]Cyberdog, Amaya 0.9,[5]AWeb, Voyager
1997	Internet Explorer 4.0, Netscape Navigator 4.0, Netscape Communicator 4.0, Opera 3.0[6], Amaya 1.0[5]
1998	iCab, Mozilla
1999	Amaya 2.0,[5] Mozilla M3, Internet Explorer 5.0
2000	Konqueror, Netscape 6, Opera 4,[7] Opera 5,[8]K-Meleon 0.2, Amaya 3.0[5], Amaya 4.0[5]
2001	Internet Explorer 6, Galeon 1.0, Opera 6[9], Amaya 5.0[5]
2002	Netscape 7, Mozilla 1.0, Phoenix 0.1, Links 2.0, Amaya 6.0,[5]Amaya 7.0[5]
2003	Opera 7,[10]Apple Safari 1.0, Epiphany 1.0, Amaya 8.0[5]
2004	Firefox 1.0, Netscape Browser, OmniWeb 5.0
2005	Opera 8,[11]Apple Safari 2.0, Netscape Browser 8.0, Epiphany 1.8, Amaya 9.0[5], AOL Explorer 1.0, Maxthon 1.0, Shiira 1.0
2006	Mozilla Firefox 2.0, Internet Explorer 7, Opera 9,[12], SeaMonkey 1.0, K-Meleon 1.0, Galeon 2.0, Camino 1.0, Avant 11, iCab 3
2007	Apple Safari 3.0, Maxthon 2.0, Netscape Navigator 9, NetSurf 1.0, Flock 1.0, Conkeror
2008	Google Chrome 1, Mozilla Firefox 3, Opera 9.5,[13], Apple Safari 3.1, Konqueror 4, Amaya 10.0[5], Flock 2, Amaya 11.0[5]
2009	Google Chrome 2–3, Mozilla Firefox 3.5, Internet Explorer 8, Opera 10,[14], Apple Safari 4, SeaMonkey 2, Camino 2, surf, Pale Moon 3.0[15]
2010	Google Chrome 4–8, Mozilla Firefox 3.6, Opera 10.50,[16], Opera 11, Apple Safari 5, K-Meleon 1.5.4, xxxterm
2011	Google Chrome 9–16, Mozilla Firefox 4-9, Internet Explorer 9, Opera 11.50, Apple Safari 5.1, Maxthon 3.0, SeaMonkey 2.1–2.6
2012	Google Chrome 17–23, Mozilla Firefox 10–17, Internet Explorer 10, Opera 12, Apple Safari 6, Maxthon 4.0, SeaMonkey 2.7-2.14
2013	Google Chrome 24–31, Mozilla Firefox 18–26, Internet Explorer 11, Opera 15–18, Pale Moon 15.4-24.2.2[17], Apple Safari 7, SeaMonkey 2.15-2.23
2014	Google Chrome 32–39, Mozilla Firefox 27–34, Opera 19–26, Pale Moon 24.3.0-25.1.0[17], Apple Safari 8, SeaMonkey 2.24-2.30
2015	Google Chrome 40–47, Microsoft Edge, Mozilla Firefox 35–43, Opera 27–34, Pale Moon 25.2.0-25.8.1[17], Vivaldi
2016	Google Chrome 48–55, Mozilla Firefox 44–50, Microsoft Edge 14, Opera 35–42, Pale Moon 26.0.0-27.0.3[17], Apple Safari 10, SeaMonkey 2.24–2.30
2017	Google Chrome 56–60, Microsoft Edge 15, Mozilla Firefox 51–55.0.2, Opera 43–45, Opera Neon, Pale Moon 27.1.0-27.6.2[17], Basilisk
2018	Pale Moon 27.7.0-28.2.2[17][18]

Surfing the Web:

On the World Wide Web, surfing means to move from one Web page to another, usually in an undirected manner. When surfing, the user typically visits pages based on what interests him/her at the moment.

Proxy server:

A **proxy server** is a computer that acts as an intermediary between the user's computer and the Internet. It allows client computers to make indirect network connections to other network services.

Students customize their web browsers with the LAN proxy settings:

Manually Configure Explicit Proxy Settings in the Browser
1. Open Internet Explorer.
2. Select Tools >Internet Options > Connections >LAN settings. ...
3. Under Proxy server, select the option to use a proxy server.
4. In the Address field, enter the ProxySG IP address/hostname.
5. (If applicable) In the Port field, enter the port (for example, 8080).
6. Click OK > OK**.**
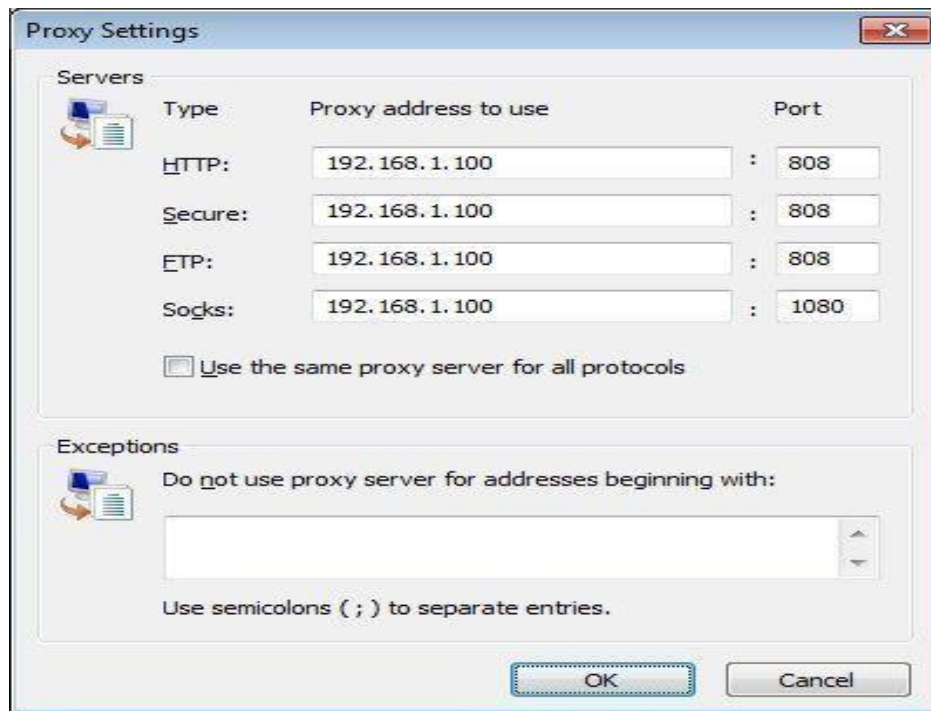
How proxy servers work

When a proxy server receives a request for an Internet resource (such as a Web page), it looks in its local cache of previously page. If it finds the page, it returns it to the user without needing to forward the request to the Internet. If the page is not in the cache, the proxy server, acting as a client on behalf of the user, uses one of its own IP addresses to request the page from the server out on the Internet. When the page is returned, the proxy server relates it to the original request and forwards it on to the user.

Bookmarks:

All modern web browsers include bookmark features. Bookmarks are called favorites or Internet shortcuts in Internet Explorer, and by virtue of that browser's large market share, these terms have been synonymous with bookmark since the first browser war.

wiki How to Access Bookmarks on Web Browsers

Search toolbars and pop up blockers:
Browser toolbar:

A browser toolbar is a toolbar that resides within a browser's window. All major web browsers provide support to browser toolbar development as a way to extend the browser's GUI and functionality. Browser toolbars are considered to be a particular kind of browser extensions that present a toolbar. Browser toolbars are specific to each browser, which means that a toolbar working on a browser does not work on another one. All browser toolbars must be installed in the corresponding browser before they can be used, and require updates when new versions are released.

Many high-profile browser toolbars released over the years have been fraught with problems, either intentionally as malware or injected with computer viruses or due to poor or conflicting programming when considering multiple toolbars being included on the single browser.

Pop-up blocker:

A pop-up blocker is software that prevents pop-up windows from appearing on a website. Some pop-up blockers work by immediately closing the pop-up window, while others disable the command that calls the pop-up window. Most browser software allows the user to turn the blocker on or off.

Pop-ups are usually used by advertisers as a way to deliver ads, but they distract Web users from their experience and most consider them a nuisance. This is why pop-up blockers were developed and have become a part of most Web browsers. Including a pop-up blocker in browser software helps it to work more effectively, because the browser knows when a website is attempting to open a new pop-up window and just ignores that request.

Block or see pop-ups
- On your Toolbar, click Options.
- Click Tools. To block pop-ups, check the box next to "Pop-up blocker." To see pop-ups, uncheck the box next to "Pop-up blocker."
- Click Save.
  - OR

Block or see pop-ups

- On your Toolbar, click Options 🔧.

- Click Tools.

- To block pop-ups, check the box next to "Pop-up blocker."

- To see pop-ups, uncheck the box next to "Pop-up blocker."

- Click Save.

What is a Network Protocol?

Rules of Network Protocol include guidelines that transfer.regulate the following characteristics of a network:
access method, allowed physical topologies, types of cabling, and speed of data

Types of Network Protocols:

The most common network protocols are:
- Ethernet
- LocalTalk
- Token Ring
- FDDI
- ATM

The followings are some commonly used network symbols to draw different kinds of network protocols.

Internet Connection Settings:

★ Open NetworkConnections.
★ Under Network Tasks, click Create a new connection, and then clicknext.
★ Click Connect to the Internet, and then clicknext.
★ Choose one of thefollowing:
★ If you already have an account with an Internet service provider (ISP), click Set up my

   If you have a CD from an ISP, click Use the CD I got from an ISP and then clickNext.

★ If you do not have an Internet account, click Choose from a list of Internet service

   Providers (ISPs) and then clicknext.

★ From your choice above, click one of thefollowing:

To Configure Tcp/Ip Settings:

6. Open NetworkConnections.
7. Click the connection you want to configure, and then, under Network Tasks, click Change settings of thisconnection.
8. Do one of thefollowing:
   o If the connection is a local area connection, on the General tab, under This connection uses

the following items, click Internet Protocol (TCP/IP), and then clickProperties.

- o If this is a dial-up, VPN, or incoming connection, click the Networking tab. In This connection uses the following items, click Internet Protocol (TCP/IP), and then click Properties.

9. Do one of thefollowing:
- o If you want IP settings to be assigned automatically, click Obtain an IP address automatically, and then clickOK.
- o If you want to specify an IP address or a DNS server address, do thefollowing:
  - ▪ Click Use the following IP address, and in IP address, type the IPaddress.

  - ▪ Click Use the following DNS server addresses, and in Preferred DNS server and Alternate DNS server, type the addresses of the primary and secondary DNS servers.

10. To configure DNS, WINS, and IP Settings, clickAdvanced.

Bridge: A bridge is a device that connects between two or more networks.

A network with a bridge

There are different types of bridges.

Transparent Bridge: As the name signifies, it appears to be transparent for the other devices on the network. The other devices are ignorant of its existence.

Source Route Bridge: It derives its name from the fact that the path which packet takes through the network is implanted within the packet. It is mainly used in token ring networks.

Translational Bridge: The process of conversion takes place via Translational Bridge. It converts the data format of one networking to another. For instance Token ring to Ethernet and vice versa.

HUB

Hub is one of the networking devices used to connect devices. They are used to transmit the data from source and destination.

Hub falls in two categories:

3. **Active Hub(repeaters):** They are smarter than the passive hubs. They not only provide the path for the data signals they regenerate, concentrate and strengthen the signals before sending them to theirdestinations.

4. **Passive Hub:** They are more like point contact for the wires to built in the physical network. They do not modify thesignals.

31Switches:

Switch is also one of the connecting device but the difference between hub and switch is working that hub works by sending the data to all the ports on the device whereas a switch transfers it only to that port which is connected to the destination device. Switches operate in full-duplex mode where devices can send and receive data from theswitch.

Wireless Technology: WiFi, LiFi, Bluetooth

Wifi:

Wi-Fi or WiFi is a local area wireless computer networking technology that allows electronic devices to connect to the network, mainly using the 2.4 gigahertz (12 cm) UHF and 5 gigahertz (6 cm) SHF ISM radio bands.

Wi-Fi is simply a trademarked term meaning IEEE 802.11x. The false notion that the brand name "Wi-Fi" is short for "wireless fidelity" has spread to such an extent that even industry leaders have included the phrase wireless fidelity in a press release.

In 1991, NCR Corporation with AT&T Corporation invented the precursor to 802.11, intended for use in cashier systems. The first wireless products were under the name Wave LAN.

If you have a friend or a neighbor who has broadband internet within line of sight from your home, then you may be able to get free WiFi Internet access. You will need to ask permission to use their internet before proceeding. If all is ok, then your task will be to make a WiFi connection to their router.

Lifi:

LiFi is a wireless optical networking technology that uses light-emitting diodes (LEDs) for data transmission. LiFi is designed to use LED light bulbs similar to those currently in use in many energy- conscious homes and offices.
Li-Fi (Light Fidelity) is a bidirectional, high speed and fully networked wireless communication technology similar to Wi-Fi.

Harald Haas, who teaches at the University of Edinburgh in the UK, coined the term "Li-Fi" at his TED Global Talk where he introduced the idea of "Wireless data from every light". He is Chair of Mobile Communications at the University of Edinburgh and co-founder of pureLiFi.

A 224Gbps speed would technically allow for 18 movies of 1.5GB each to be downloaded in a single second CC.Researchers at the University of Oxford have reached a new milestone in networking by using light fidelity (Li-Fi) to achieve bi-directional speeds of 224 gigabits per second(Gbps).

How it works!

Li-Fi and Wi-Fi are quite similar as both transmit data electromagnetically. However, Wi-Fi uses radio waves while Li-Fi runs on visible light.

As we now know, Li-Fi is a Visible Light Communications (VLC) system. This means that it accommodates a photo-detector to receive light signals and a signal processing element to convert the data into 'stream-able'content.

An LED light bulb is a semi-conductor light source meaning that the constant current of electricity supplied to an LED light bulb can be dipped and dimmed, up and down at extremely high speeds, without being visible to the human eye.For example, data is fed into an LED light bulb (with signal processing technology), it then sends data (embedded in its beam) at rapid speeds to the photo-detector (photodiode).

The tiny changes in the rapid dimming of LED bulbs is then converted by the 'receiver' into electrical signal.

The signal is then converted back into a binary data stream that we would recognise as web, video and audio applications that run on internet enables devices

Feature	LiFi	WiFi
Full form	Light Fidelity	Wireless Fidelity
Operation	LiFi transmits data using light with the help of LED bulbs.	WiFi transmits data using radio waves with the help of WiFi router.
Interference	Do not have any intereference issues similar to radio frequency waves.	Will have intereference issues from nearby access points(routers)
Technology	Present IrDA compliant devices	WLAN 802.11a/b/g/n/ac/ad standard compliantdevices
Applications	Used in airlines, undersea explorations, operation theaters in the hospitals, office and home premises for data transfer and internet browsing	Used for internet browsing with the help of wifi kiosks or wifi hotspots
Merits(advantages)	Interference is less, can pass through salty sea water, works in densyregion	Interference is more, can not pass through sea water, works in less densy region
Privacy	In LiFi, light is blocked by the walls and hence will provide more secure datatransfer	In WiFi, RF signal can not be blocked by the walls and hence need to employ techniques to achieve secure data transfer.
Data transfer speed	About 1 Gbps	WLAN-11n offers 150Mbps, About 1-2 Gbps can beachievedusing WiGig/Giga-IR
Frequency of operation	10 thousand times frequency spectrum of theradio	2.4GHz, 4.9GHz and 5GHz
Data density	Works in high dense environment	Works in less dense environment due to interference related issues
Coverage distance	About 10 meters	About 32 meters (WLAN 802.11b/11g), vary based on transmit power and antenna type
System components	Lamp driver, LED bulb(lamp) and photo detector will make up complete	requires routers to be installed, subscriber devices(laptops, PDAs,

	LiFi system.	desktops) are referred as stations

Bluetooth:

Bluetooth is a wireless technology standard for exchanging data over short distances (using short- wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices, and building personal area networks(PANs).

In 1994 a group of engineers at Ericsson, a Swedish company, **invented** a wireless communication technology, later called **Bluetooth**. In 1998, the original group of Promoter companies—Ericsson, Intel, Nokia, Toshiba and IBM—came together to form the **Bluetooth** Special Interest Group (SIG).

Most Mac computers come with **Bluetooth** technology built-in. To determine whether your computer supports **Bluetooth do** one of the following: Look for the **Bluetooth** Icon in the menu bar. If the **Bluetooth** icon is present, your computer **hasBluetooth**.

Before you can use a **Bluetooth** keyboard, mouse, track pad, or audio device, you need to "**pair**" your **Mac** with the device. You need to **pair** your **Mac** with the device only once. The device remains paired until you un pairit.

Crimping, crossover, straight over:

A **crimping tool** is a device used to conjoin two pieces of metal by deforming one or both of them in a way that causes them to hold each other. The result of the tool's work is called a **crimp**. A good example of crimping is the process of affixing a connector to the end of a cable. For instance, network cables and phone cables are created using a crimping tool (shown below) to join the RJ-45and RJ-11connectors to the both ends of either phone or CAT5cable.

How does it work?

To use this crimping tool, each wire is first placed into the connector. Once all the wires are in the jack, the connectors with wires are placed into the crimping tool, and the handles are squeezed together. Crimping punctures the plastic connector and holds each of the wires, allowing for data to be transmitted through the connector.

Straight Cable:

You usually use straight cable to connect different type of devices. This type of cable will be used most of the time and can be use to

6) Connect a computer to a switch/hub's normalport.
7) Connect a computer to a cable/DSL modem's LANport.
8) Connect a router's WAN port to a cable/DSL modem's LANport.
9) Connect a router's LAN port to a switch/hub's uplink port. (normally used for expandingnetwork)
10)   Connect 2 switches/hubs with one of the switch/hub using an uplink port and the other oneusing normal port.

Crossover Cable:

Sometimes you will use crossover cable, it's usually used to connect same type of devices. A crossover cable can be used to:

4) Connect two computersdirectly.
5) Connect a router's LAN port to a switch/hub's normal port. (normally used for expandingnetwork)
6) Connect two switches/hubs by using normal port in bothswitches/hubs.

Pre lab viva questions:
a.   What is url? How it works?
b.   Write a http and fttp?
c.   State network camino?
d.   What are the pop-up blocker?
e.   State types oftoken ring?

Lab assignment:
a.   What are different types of open networkconnections?
b.   Write a different types of dns ?
c.   What is vlc?
d.   Write a the features of wlan ?

e. Write is **bluetooth**?

Post lab viva questions:
a. What are different types of open networkconnections?
b. What are the connect a router's lan port to a switch/hub's normal port,?
c. State the difference between crossover, and straight over?
d. Define switches/hubs by using normal port in bothswitches/hubs?

EXPERIMENT – 12
ROUTERCONFIGURATION

Web browser:

I am sure that you already know that computers have operating systems. The operating system allows the computer to function and also allows us to input and receive output. The operating system is the intermediary between us and the computer's internal components. Similarly, the router also has an operating system.

CISCO uses the IOS (internetwork operating system) to allow us to use the various capabilities in the routers.

The CISCO IOS allows us to perform functions such as:

- Routing
- Security for the network
- Expand the network based on requirements among others.

Unlike other operating systems that you may be accustomed to however, the CISCO IOS is accessed using a CLI (Command Line Interface). If you have used programs such as DOS™ then you are familiar with the CLI prompt.

Access methods

The CLI on routers may be accessed using one of the following ways:

- Console port
- Auxiliary port
- Virtual terminal lines.

There are several programs that we can use to access the CLI on routers.

1. The console port is the main port that is used to configure a router. When the router is new and out of the box, this is the interface that is used to configure the router. After the initial configuration, we can use other configuration methods. The console port is also used for disaster recovery in case the router is unusable or as a way to troubleshoot the router when other connectivity means are unavailable.
2. The second way we can configure a router is using an auxiliary port. The auxiliary port is used to configure the router through the use of a modem. This port is rarely used and as such we will not discuss its use further.
3. The third way we can configure a router is by using the virtual terminal lines. As the name suggests, the virtual terminal lines are configured as a way to access the router remotely.

The administrator can configure the router to be accessed from a remote location using these lines.

In this course, we will learn how to configure the two types of VTY lines, either through telnet or the more secure SSL.

NOTE: the operation of the router depends on the commands that we issue during configuration as well as the IOS functioning.

Configuration files on the router

As mentioned earlier, the router is a computer and it the configuration we do determines its operation. The router has two types of memory; volatile and non-volatile memory. The configuration we make is stored in one of these two types of memory depending on the commands we issue.

There are two types of configuration files on the router.

The startup configuration file (startup-config) – this is the file that is used during the startup of the router. It is stored in the non-volatile memory which is called the NVRAM. The startup configuration consists of all the commands we have issued and saved in the router. Once the router boots up, this file is loaded from the NVRAM to the RAM where it is used as the running configuration file.

The running configuration the operation of the router is determined by the running configuration. Any command that we issue on a router is immediately executed and stored in the running- configuration. This file is stored in the RAM or the volatile memory. This means that if the router loses power, any unsaved changes in this file will be lost. When the running- configuration is saved, it is stored in the NVRAM and becomes the startup-config.

CISCO IOS modes

The CISCO CLI is structured hierarchically. The modes are executed from the top to bottom. Each mode gives access to certain commands that can be issued. The list below shows the CISCO IOS modes from the top to bottom.

- User exec mode
- Privileged exec mode
- Global config mode
- Other specific configuration modes

Basic and Challenge Router Configuration

Router>

In this mode, we can view basic information using the "**show**" command.

1. Privileged executive mode

This is the second mode in the IOS CLI. In this mode, we can view various troubleshooting and verification commands such as "**show and debug**". By default, this mode is also not secured, as best practice we will also secure this mode using a password. This mode is denoted by the HASH (#) symbol preceded by the name of the router. To enter this mode, we issue the command

"**enable**" from the user exec mode.

Router#

NOTE: To move from the user exec mode to the privileged mode the command – "enable" should be entered from the user exec mode.

The "disable" command is used to exit the privileged exec mode and return to the user exec mode.

    1.   Global configuration mode

The main configuration on a router is executed in this mode. Parameters such as the router's name, ip domain lookup, banners among others can be configured. In this mode, we can also gain access to other specific configuration parameters such as interface configuration.

The global configuration mode is shown by the prompt: (config)# as shown below:

Router(config)#

NOTE: To enter this mode from the privileged exec mode we enter the command: *"Configure terminal"*

To exit we to the privileged mode we enter the command: *"exit"*

    1.   Specific configuration mode.

There are other specific configuration modes on the router. These are entered in the global configuration mode and are used to configure various functions and options on the router such as the interfaces, routing options, console lines among others. The specific configuration mode commands will be discussed progressively throughout the course.

commands format

When configuring the router, we need to understand the format used in configuration. The image below shows the IOS command structure.

All modern web browsers include bookmark features. Bookmarks are called favorites or Internet shortcuts in Internet Explorer, and by virtue of that browser's large market share, these terms have been synonymous with bookmark since the first browser war.

Search toolbars and pop up blockers:

Browser toolbar:

A browser toolbar is a toolbar that resides within a browser's window. All major web browsers provide support to browser toolbar development as a way to extend the browser's GUI and functionality. Browser toolbars are considered to be a particular kind of browser extensions that present a toolbar. Browser toolbars are specific to each browser, which means that a toolbar working on a browser does not work on another one. All browser toolbars must be installed in the corresponding browser before they can be used, and require updates when new versions are released.

Many high-profile browser toolbars released over the years have been fraught with problems, either intentionally as malware or injected with computer viruses or due to poor or conflicting programming when considering multiple toolbars being included on the single browser.

Pop-up blocker:

A pop-up blocker is software that prevents pop-up windows from appearing on a website. Some pop-up blockers work by immediately closing the pop-up window, while others disable the command that calls the pop-up window. Most browser software allows the user to turn the blocker on or off.

Pop-ups are usually used by advertisers as a way to deliver ads, but they distract Web users from their experience and most consider them a nuisance. This is why pop-up blockers were developed and have become a part of most Web browsers. Including a pop-up blocker in browser software helps it to work more effectively, because the browser know when a website is attempting to open a new pop-up window and just ignores that request.

Block or see pop-ups

- On your Toolbar, click Options.
- Click Tools. To block pop-ups, check the box next to "Pop-up blocker." To see pop-ups, uncheck the box next to "Pop-up blocker."
- Click Save.

        OR

Block or see pop-ups

- On your Toolbar, click Options .

- Click Tools.
- To block pop-ups, check the box next to "Pop-up blocker."
- To see pop-ups, uncheck the box next to "Pop-up blocker."
- Click Save.

Subnetting

In the picture above we have one huge network: 10.0.0.0/24. All hosts on the network are in the same subnet, which has following disadvantages:
- a single broadcast domain – all hosts are in the same broadcast domain. A broadcast sent by any device on the network will be processed by all hosts, creating lots of unnecessary traffic.
- network security – each device can reach any other device on the network, which can present
- security problems. For example, a server containing sensitive information shouldn't be in the same network as an user workstation.
- organizational problems – in a large networks, different departments are usually grouped into
- different subnets. For example, you can group all devices from the Accounting department in the same subnet and then give access to sensitive financial data only to hosts from that subnet.
- Now, two subnets were created for different departments: **10.0.0.0/24** for Accounting and **10.1.0.0/24** for Marketing. Devices in each subnet are now in a different broadcast domain.
- This will reduce the amount of traffic flowing on the network and allow us to implement packet filtering on the router.

Accounting

10.0.0.0/24

10.1.0.0/24

Marketing
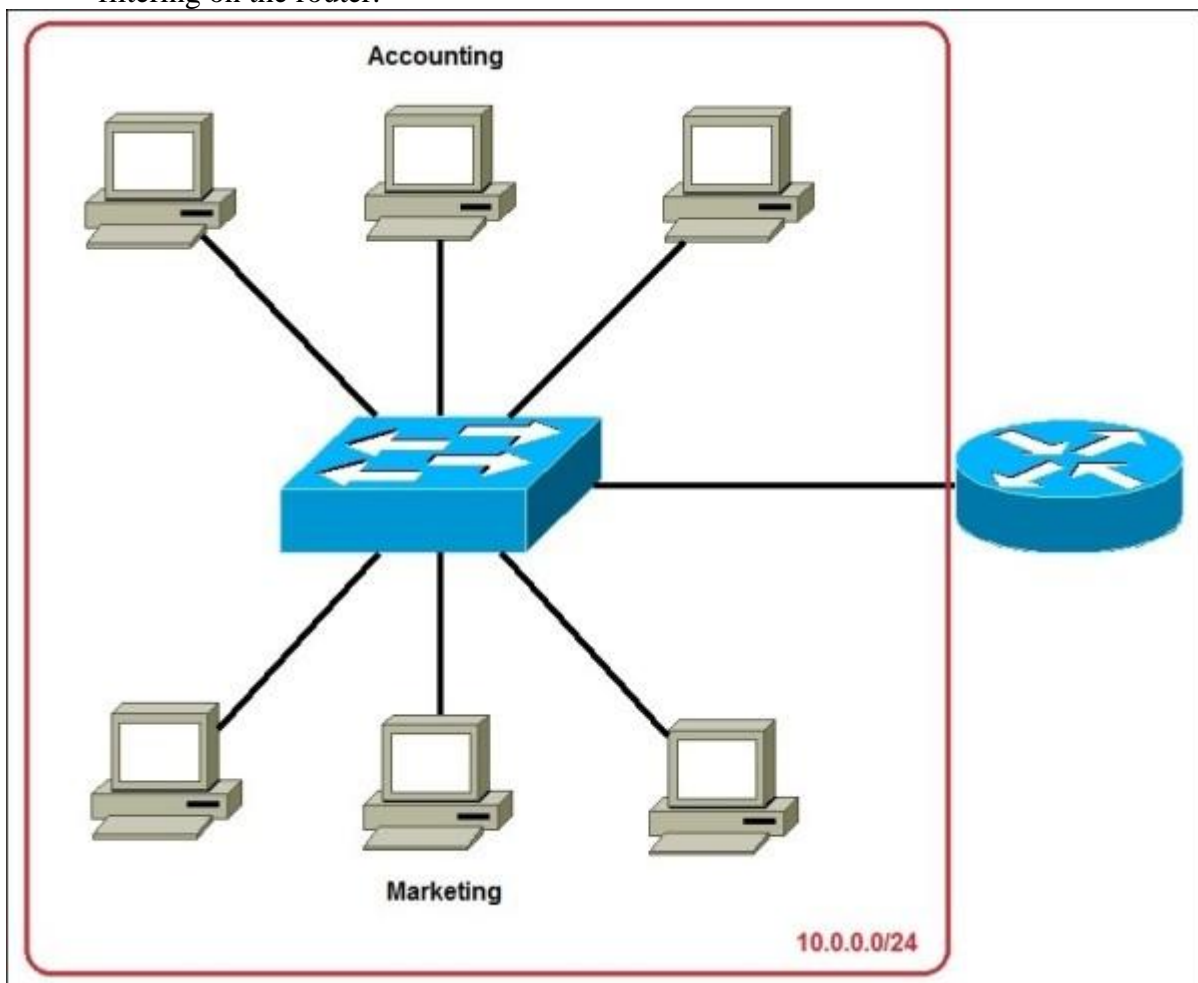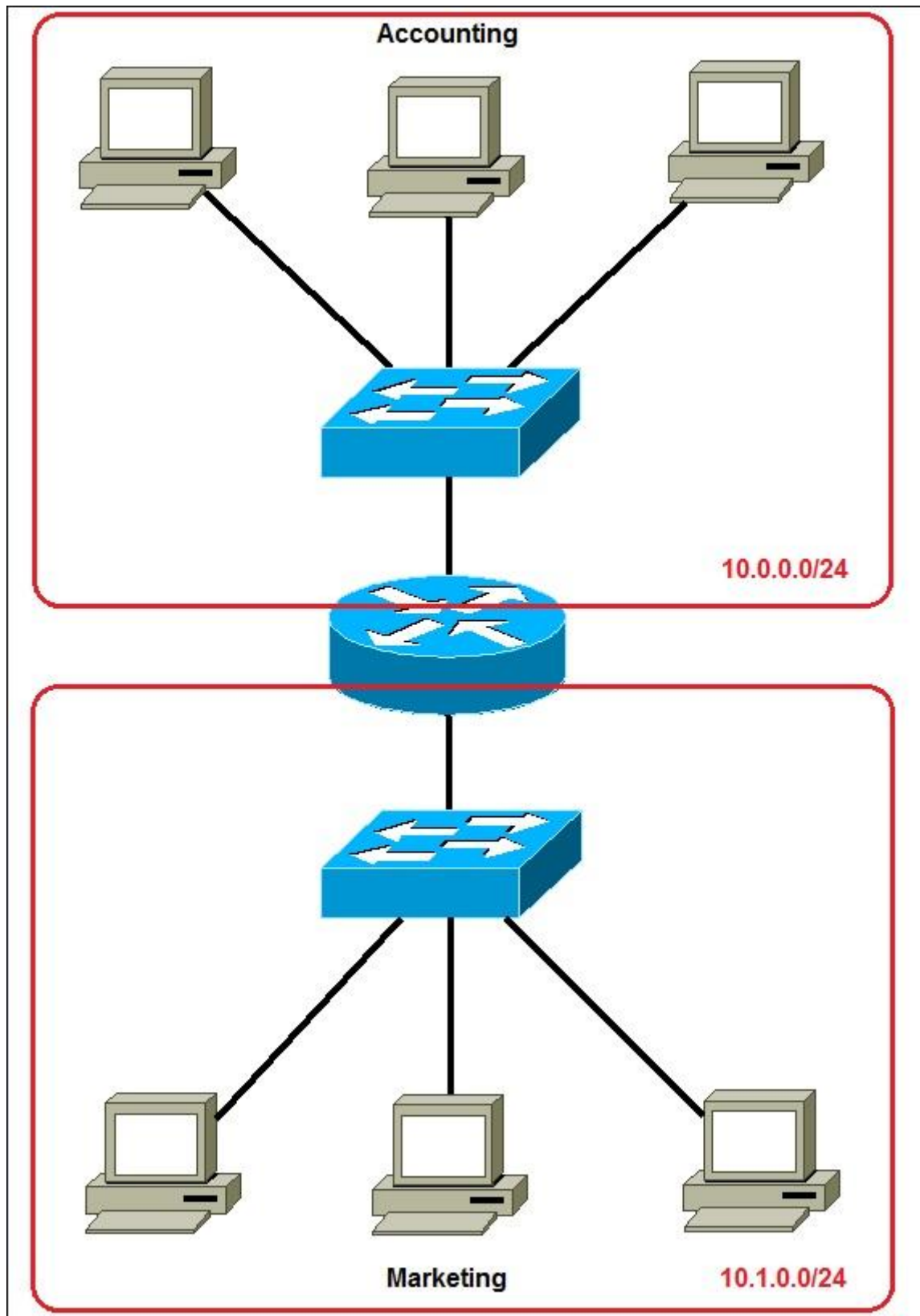
The network above could be submitted like this

Practical Test Router Connections and Settings

Your home router connects your home network to the Internet.
Most home routers also function as **Wireless Access points** and are commonly called **wireless routers**.

Home routers are usually supplied by an ISP (Internet Service Provider) as part of your Internet package.

Router Interfaces and Physical Connections

All routers have two interfaces:

- Local – This is the local,home,office network
- External – The Internet

On the Internet side the router will may have a single connection labelled **DSL** which uses a **RJ12**telephone connection. This connects to the telephone network via a broadband filter.

You may also have a **broadband/WAN** connector. This is used for connecting to a cable modem or fibre modem as shown below:

Connects using telephone connector to broadband filter and then to telephone socket

Used with Fibre broadband or cable
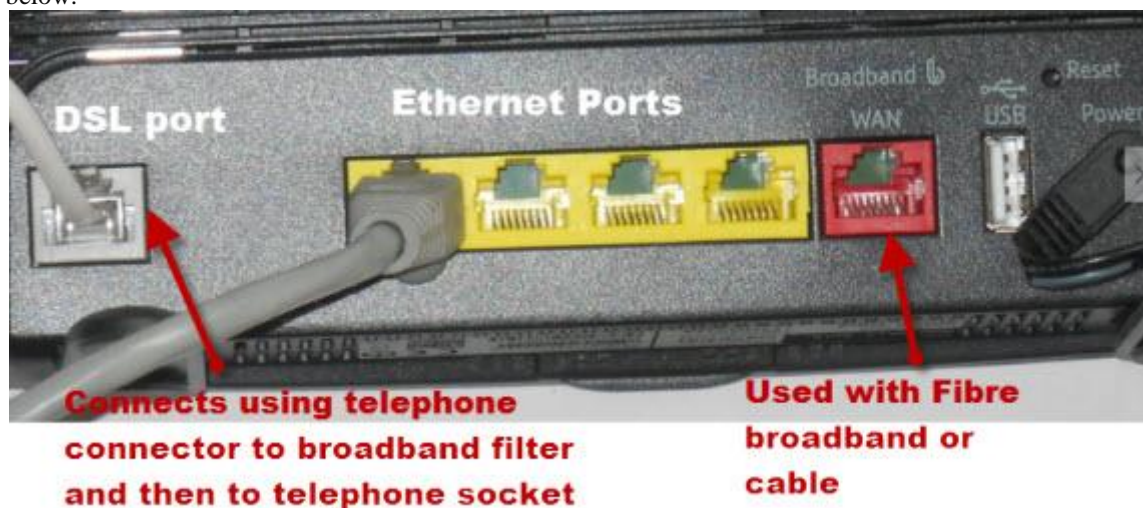
On the Local side the router will have a **Wi-Fi interface** and Ethernet ports.

The router shown above is my home router which has 4 Ethernet ports for wired clients, as well as supporting WI-Fi access.

In addition most also have a **USB socket** for connecting the router to a computer for initial set up.

Wireless Router Setup and Configuration

Physical Setup

The router will have a port labelled **DSL** this connects using a **RJ12** connector to a **microfilter** and then to your phone line. (ADSL)

Always remember to use the microfilter as without it it may not work or may only work intermittently.

For fibre and cable use the **WAN port** on the Router to connect to your cable or fibre modem using an Ethernet cable.

Router Configuration

To change the configuration settings of the router you will need to login to the router.

There are several ways you can do this,they are:

- Using a computer connected with a USB cable.
- Using a computer connected with an Ethernet cable and a web interface.
- Using a computer connected using **Wi-Fi** and a web interface.- **Most common**

Using Wi-Fi and The Web Interface

Almost all home routers can be setup and managed using a **Web interface.** i.e a **web browser.**

To use this you will need to connect to the router using the **Ethernet port or Wi-Fi** .

To connect using Wi-Fi you will need to know:

- The **SSID of the router**, which should come with the documentation. (you can change the SSID later).
- The Wi-Fi password.

The **BT Home Hub** That I use comes with an handy pull out card with the details printed on it, as shown below

BT Connect to your Hub wirelessly

1 Select your
wireless network/SSID: → 2 Enter your
wireless password/key:

BTHub5-MQC8 be97dc9cd4

Need help?
Visit bt.com/help

Admin Password for Hub Manager
E4MMR3AA

Step 1- Setting up Wi-fi
The **first step** is to setup Wi-Fi access on your Laptop/PC using the Wi-Fi details (SSID and password).
Now you should be able to connect to the router, and the router should assign you an IP address.
You can check your IP address and find the IP address of the router by using the **ipconfig command**.
Open a command prompt an enter **Ipconfig/all.** Look for the **default gateway**. This is the address of your router.

Step 2 Connecting to the Router
To connect to the router you need to know:
- The router IP address
- The router default admin username and password
Common default addresses are: **192.168.1.254** , **192.168.1.1** and **192.168.0.1.**
Common default admin user account name and password are **admin** and **administrator** and password is **password**
This site has a comprehensive list of admin account names and passwords
To login open a web browser and enter the **IP address** of the router e.g. **192.168.1.254.**
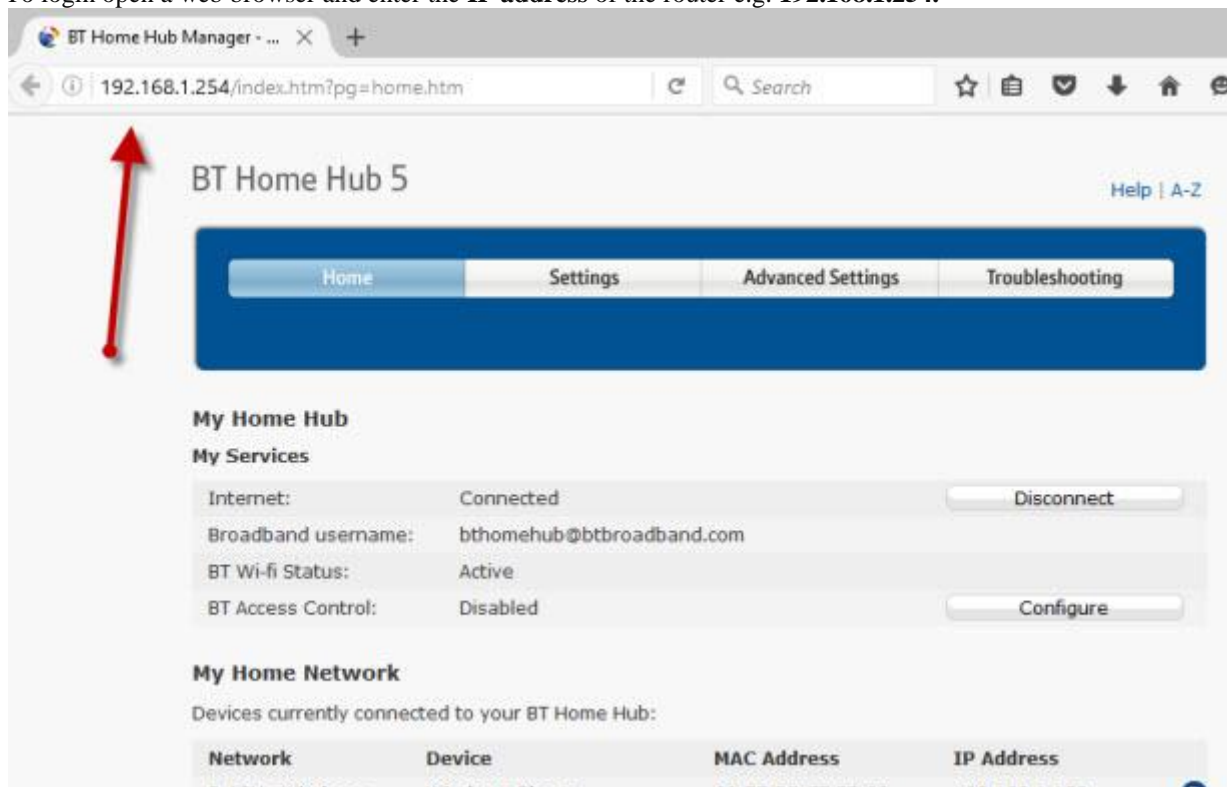
You should get a welcome screen or an overview screen as shown above.
If you try to make changes you will be prompted to login.

This can be set in the 'Admin Password' section.

Username:	admin
Password:		Show characters
	Hint
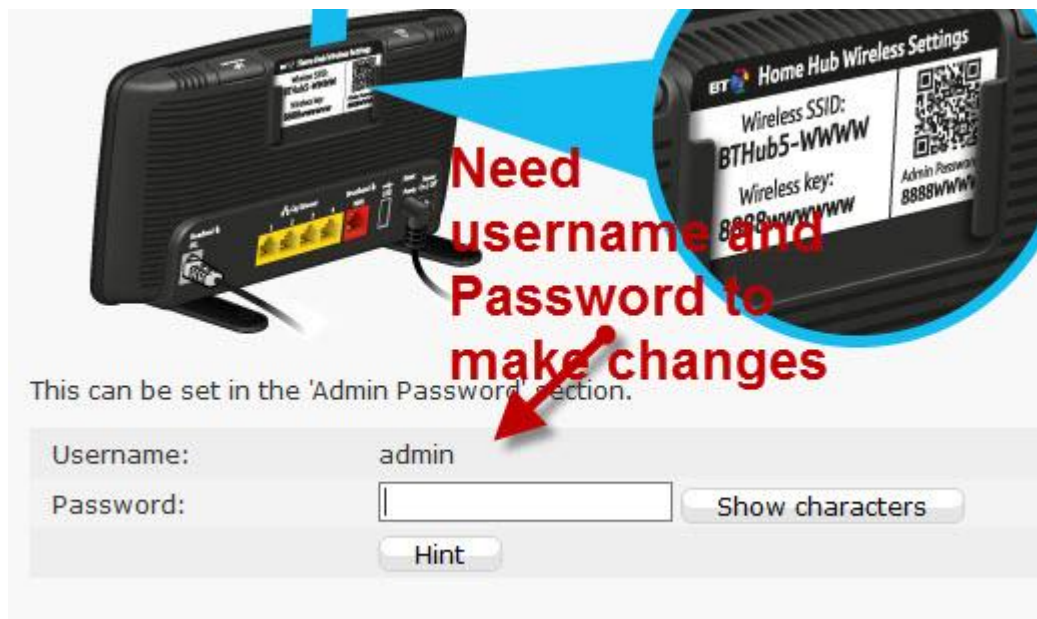
Once you are logged in you can change the router configuration.

There are several things that you usually need to configure.

- A **Network SSID** for the wireless clients. (**wireless router only**)
- Wireless channels (**wireless router only**)
- **Admin password** for router management
- Password for the **DSL link**.
- **Internal IP** address ranges.

Note 1: I would recommend that you change the **WiFi SSID** and **password** and also the **router admin password.**

Note 2: Changing some of the settings will cause you to lose the connection to the router, and so you may need to reconnect and login again using the new settings.

Changing the Network SSID and Password

It is a good idea to change this to a name and password that are easy to remember for you, but not easy to guess.

In restaurant,hotels etc you often see the restaurant or hotel name as the SSID.

Important! -When you change it you will lose the connection and you will need to change your laptop **Wi-Fi settings** to match the new settings.

On the **BT home Hub** you will find the Wi-Fi settings in the Advanced section.

Changing the Admin Password for Router Management

It is important that you change this from the default value as if you don't you leave your network open for security hacks.

Using A Third Party Router

If you use a router that was not provided by the ISP then you will also need to configure the settings for the **DSL connection to the ISP.**

Most of the time the Router can detect the connections type and will configure itself.

All of the home network connections I have come across use **PPPoe** (PPP over Ethernet).

There is no need to worry about what it means, but the result is that you will need to provide a **user name and**

password in order for the router to connect to the ISP.

This user name and password is supplied in you ISP setup details.

To find the information you may need to go online. Try a search using the search query:

Provider (e.g. BT,talktalk) dsl password third party router.

Here is an example from talktalk

I**Note:** A common problem is that people confuse the two username/password combinations:

One allows you to connect to the router (**supplied by the router manufacturer**) and the other allows the router to connect to the ISP (**supplied by the ISP**).

Wireless Setup

Wireless networks are insecure, and if you live in a densely populated area you may find that you can see and access the wireless networks of your neighbours and vice versa.

Because of this you should **always encrypt your wireless connections**.

However if you have setup problems then setup the router to use **unencrypted** connections to start, and once you are happy

that your network is functioning OK then change the router and clients to use encrypted connections. see How to Setup A Secure Wireless Network

Channel Selection

Wi-fi (2.4GHz band has 14 available channels however the standard channels used are channels 1,6 and 11.

When choosing a channel for your Router/access point you need to take into account what channels are already being used in your location.

If you live in a densely populated areas you will have many other access points with various signal strengths and may encounter interference.

There are a number of test tools that you can use for viewing the Wi-Fi activity in your location.

The one I prefer is the **InSSIDer tool** that runs on Android and Windows.

You can download the free tool here for Windows and Mac and here for Android.

The general idea is to choose a channel that has the least interference from other channels.

Most wireless routers today will auto detect and choose the best channel.

DHCP Setup

This is usually enable by default and if it isn't enabled then you should enable it unless you are providing A DHCP service from another router.

Generally you should stay with the default configuration. The settings on mine are shown below and they are the default ones:

See Understanding DHCP on Home Networks

Port Forwarding Setup

This is a very common setting if you have someone playing computer Games of if you need to provide **external access** to your home network.

This setting can be potentially dangerous as it opens your home network to the Internet and it is covered in more detail the understanding port forwarding tutorial.

However you should have an appreciation of IP addresses and the different types and so I recommend you read the Internal and External IP addresses tutorial first.

PRE LAB VIVA QUESTIONS:
a.   What is CLI? How it works?
b.   Write a IOS and CISCO?
c.   State network **Pop-up blocker**?
d.   What are the pop-up blocker?
e.   State types of Block or see pop-ups?

LAB ASSIGNMENT:
a.   What are different types of huge network: 10.0.0.0/24?
b.   Write a different types of **Wireless Access points** ?
c.   What is WAN port?
d.   Write a the features of **Web Interface** n ?
e.   Write is **WiFi SSID** ?

POST LAB VIVA QUESTIONS:
a.   What are different types of open networkconnections ?
b.   What are the InSSIDer tool ,?
c.   State the difference between crossover, and straight over?
d.   Define Port Forwarding Setup?