

Business Computing

B.Com IV Semester

(Computer Science)

As Per Syllabus of Vijayanagara Sri Krishnadevaraya University, Bellary

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**A Complete Reference Material for
B.Com IV Semester, Computer Science**

SYLLABUS

PAPER 4.3 BUSINESS COMPUTING (B.Com IV Semester - Computer Science)

Unit I – Introduction to HTML :

What is HTML?, HTML documents, Basic structure of HTML documents, Creating an HTML document, Markup tags, Heading-Paragraphs, Line breaks, HTML tags.

Unit II – Elements of HTML :

Introduction to elements of HTML, working with text, working with lists, tabs and frames, Text formatting, List, Linking executing HTML programs.

Unit III – Web Design :

Basic principles involved in developing a web site., Planning process, Five golden rules of web designing, Designing navigation bar, Page design, Home page layout, Design concept.

Unit IV – MS Excel :

Introduction to spreadsheet and excel, Working in excel, Mathematical calculations.

Unit V – Data Manipulation in MS Excel :

Manipulating data, Changing the layout, Simple graphs, Database management manipulating sheets.

Recommended Books

1. HTML 5 in Simple Steps - Kogent Learning solutions Inc.
2. A Beginner's Guide to HTML- NCSA, 14 May 2003.
3. Creating a Web Page and Website - Murray Tom
4. Web Technologies - Kogent Learning.
5. MS- Office 2000 for Everyone - Sanjay Saxena

Practicals: Practical: 2Hrs/Week

I.A Max. Marks: 20

1. HTML and Web Design
2. MS-Excel: Creating Excel sheets, Working with functions and macros. Creating Graphs and Charts.

Note: The internal assessment marks (Maximum Marks 20) shall be awarded by the concerned course-teacher based on the two practical tests of 2 hours duration each conducted by him/her during the semester.

UNIT I – INTRODUCTION TO HTML

What is HTML ?

HTML is the standard markup language for creating web pages, websites & web applications. HTML stands for Hyper Text Markup Language. It describes the structure of Web pages using markup.

HTML has developed by Tim Berners-Lee in 1990. HTML is used to create electronic documents that are displayed on the World Wide Web. HTML language has evolved from the SGML (Standard Generalized Markup Language, 1980).

HTML stands for Hypertext Markup Language, and it is the most widely used language to write Web Pages.

- Hypertext refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a webpage is called Hypertext.
- As its name suggests, HTML is a Markup Language which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.

Originally, HTML was developed with the intent of defining the structure of documents like headings, paragraphs, lists, and so forth to facilitate the sharing of scientific information between researchers. Now, HTML is being widely used to format web pages with the help of different tags available in HTML language.

HTML VERSIONS :

HTML	-	1991
HTML 2.0	-	1995
HTML 3.2	-	1997
HTML 4.01	-	1999
XHTML	-	2000
HTML 5	-	2014

HTML DOCUMENTS :

An HTML document is a file containing Hyper Text Markup language, and its filename most often ends in the .htm or .html extension. An HTML document is a text document read in by a web browser and then rendered on the screen. These documents can be displayed using Web browsers.

The following features should be kept in mind while writing HTML documents:

- 1) You need to type the html tag in notepad
- 2) Always save the files with the extension of .html
- 3) Opening <html> tag will have the closing </html> tag
- 4) HTML is not case sensitive.
- 5) Opening html tag will be within the < > symbol
- 6) Closing html tags will be within </ > symbol

Basic Structure of HTML Document

```
<!DOCTYPE HTML>
```

```
<HTML>
```

```
<HEAD>
<TITLE> ... </TITLE>
</HEAD>
<BODY>
.....
</BODY>
```

} Header Section

} Body Section

```
</HTML>
```

EXAMPLE :

```
<!DOCTYPE HTML>
<HTML>
  <HEAD>
    <TITLE> Page Title </TITLE>
  </HEAD>
  <BODY>
    <H1> My First Heading </H1>
    <P> My First Paragraph </P>
  </BODY>
</HTML>
```

- The <!DOCTYPE HTML> declaration defines this document to be HTML5.
- The <HTML> element is the root element of an HTML Page.
- The <HEAD> element contains meta information about the document.
- The <TITLE> element specifies a title for the document.
- The <BODY> element contains the visible page contents.
- The <H1> element defines a large Heading.
- The <P> element defines a paragraph.

HTML TAGS :

HTML tags are element names surrounded by angle brackets. HTML is a markup language and makes use of various tags to format the content. These tags are enclosed within angle braces <Tag Name>. Except few tags, most of the tags have their corresponding closing tags. For example, <html> has its closing tag </html> and <body> tag has its closing tag </body> tag etc.

Syntax :

```
<tagname> ..... </tagname>
```

- HTML tags normally comes in pairs like <P> & </P>
- The first tag in a pair is the start tag, the second tag is the end tag.
- The end tag is written like the start tag, but with a forward slash inserted before the tag name.

HTML Attributes :

- ✓ All HTML elements can have **attributes**
- ✓ Attributes provide **additional information** about an element
- ✓ Attributes are always specified in **the start tag**
- ✓ Attributes usually come in name/value pairs like: **name="value"**

Syntax :

```
<tagname name="value"> ..... </tagname>
```

Example :

```
<p align="right"> Welcome to HTML </p>
```

Heading Tag :

There are 6 heading levels. You can use the heading tags 1 to 6. Headings are defined with the <h1> to <h6> tags. <h1> defines the most important heading. <h6> defines the least important heading.

Syntax :

```
<h1> your text </h1>
```

```
<h2> your text </h2>
```

```
<h3> your text </h3>
```

```
<h4> your text </h4>
```

```
<h5> your text </h5>
```

```
<h6> your text </h6>
```

Example :

```
<html>
<head> <title> heading tags</title></head>
<body>
<h1> Heading 1 </h1>
<h2> Heading 2 </h2>
<h3> Heading 3 </h3>
<h4> Heading 4 </h4>
<h5> Heading 5 </h5>
<h6> Heading 6 </h6>
</body>
</html>
```

Paragraph Tag :

The **<P>** tag is used to insert the text into paragraphs. **<P>** tag has an **attribute** called **Align**. This attribute can have the value **left, right, center or justify**.

Syntax :

```
<p align="value"> paragraph text </p>
```

Illustration :

```
<html>
<head>
<title>Paragraph Style</title>
</head>
<body>
<p align="left">This is the left align paragraph</p>
<p align="right">This is the right align paragraph</p>
</body>
</html>
```

HTML Line Breaks :

The HTML **
** element defines a **line break**. Use **
** if you want a line break (a new line) without starting a new paragraph. The **
** tag is an empty tag, which means that it has no end tag.

Example :

```
<p>This is<br>a paragraph<br>with line breaks.</p>
```

Illustration :

```
<!DOCTYPE html>
<html>
<head>
<title>Line Break Example</title>
</head>
<body>
<p>Hello<br />
You delivered your assignment ontime.<br />
Thanks<br />
Mahnaz</p>
</body>
</html>
```

Centering Content :

You can use <center> tag to put any content in the center of the page or any table cell.

Syntax :

```
<center> text </center>
```

Example :

```
<!DOCTYPE html>
<html>
<head>
<title> Centering Content Example </title>
</head>
<body>
<p>This text is not in the center.</p>
<center>
<p>This text is in the center.</p>
</center>
</body>
</html>
```

Horizontal Lines :

Horizontal lines are used to visually break-up sections of a document. The <hr> tag creates a line from the current position in the document to the right margin and breaks the line accordingly.

Syntax :

```
<hr width="value" size="value">
```

The attribute width specifies the length of the horizontal line in terms of percentage of screen and size attribute specifies the thickness of the horizontal line.

Example :

```
<html>
<head>
<title>Horizontal Line Example</title>
</head>
<body>
<p>This is paragraph one and should be on top</p>
<hr width="80%" size=6>
<p>This is paragraph two and should be at bottom</p>
</body>
</html>
```

The HTML <pre> Element :

The HTML <pre> element defines preformatted text. The text inside a <pre> element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks:

Syntax :

```
<pre>
  My Bonnie lies over the ocean.
  My Bonnie lies over the sea.
  My Bonnie lies over the ocean.
  Oh, bring back my Bonnie to me.
</pre>
```

Example :

```
<html>
<head>
<title>Preserve Formatting Example</title>
</head>
<body>
<pre>
    function testFunction(strText )
    {
        alert (strText)
    }
</pre>
</body>
</html>
```


UNIT II – ELEMENTS OF HTML

Formatting Font :

Fonts play a very important role in making a website more user friendly and increasing content readability. Font face and color depends entirely on the computer and browser that is being used to view your page but you can use HTML **** tag to add style, size, and color to the text on your website.

The font tag is having three attributes called **size**, **color**, and **face** to customize your fonts. To change any of the font attributes at any time within your webpage, simply use the **** tag. The text that follows will remain changed until you close with the **** tag. You can change one or the entire font attributes within one **** tag.

Syntax :

```
<font face="value" size="value" color="value">.....</font>
```

Attributes :

- 1] Face : This attribute is used to set the font name.
- 2] Size : This attribute is used to specify the size of the text. The range of accepted values is from 1(smallest) to 7(largest). The default size of a font is 3.
- 3] Color : This attribute is used to specify the color of text. You can specify the color that you want by either the color name or hexadecimal code for that color.

Example :

```
<html>
<head>
  <title>Setting Font Size, Face and Color</title>
</head>
<body>
<font size = "5">Font size = "5"</font><br>
<font face = "Comic sans MS" size =" 5">Comic Sans MS</font><br>
<font color = "#FF00FF">This text is in pink</font><br />
<font color = "red">This text is red</font><br>
<font face="Arial" size="4" color="green"> This text is having all
the attributes of font tag </font>
</body>
</html>
```

Bold Text :

Anything that appears within `...` element, is displayed in bold.

Italic Text :

Anything that appears within `<i>...</i>` element is displayed in italicized.

Underlined Text :

Anything that appears within `<u>...</u>` element, is displayed with underline.

Strike Text :

Anything that appears within `<strike>...</strike>` element is displayed with strikethrough, which is a thin line through the text

Example :

```
<html>
  <head>
    <title>Bold, Italic, Underline and Strike Through Text
    </title>
  </head>
  <body>
    <p>The following word uses a <b>bold</b> typeface.</p>
    <p>The following word uses an <i>italicized</i> typeface.</p>
    <p>The following word uses an <u>underlined</u> typeface.</p>
    <p>The following word uses a <strike>strikethrough</strike>
    typeface.</p>
  </body>
</html>
```

Monospaced Font :

The content of a `<tt>...</tt>` element is written in monospaced font. Most of the fonts are known as variable-width fonts because different letters are of different widths (for example, the letter 'm' is wider than the letter 'i'). In a monospaced font, however, each letter has the same width.

Superscript Text :

The content of a `^{...}` element is written in superscript; the font size used is the same size as the characters surrounding it but is displayed half a character's height above the other characters.

Subscript Text :

The content of a `_{...}` element is written in subscript; the font size used is the same as the characters surrounding it, but is displayed half a character's height beneath the other characters.

Example :

```
<html>
  <head>
    <title>Monospaced Font, Superscript and Subscript</title>
  </head>
  <body>
    <p>The following word uses a <tt>monospaced</tt> typeface.</p>
    <p>The following word uses a <sup>superscript</sup> typeface.</p>
    <p>The following word uses a <sub>subscript</sub> typeface.</p>
  </body>
</html>
```

Inserted Text :

Anything that appears within `<ins>...</ins>` element is displayed as inserted text.

Deleted Text :

Anything that appears within `...` element, is displayed as deleted text.

Example :

```
<html>
  <head>
    <title>Inserted Text Example</title>
  </head>
  <body>
    <p>I want to drink <del>cola</del> <ins>wine</ins></p>
  </body>
</html>
```

Larger Text :

The content of the `<big>...</big>` element is displayed one font size larger than the rest of the text surrounding it

Small Text :

The content of the `<small>...</small>` element is displayed one font size smaller than the rest of the text surrounding it

Example :

```
<html>
  <head>
    <title>Larger and Smaller Text Example</title>
  </head>
  <body>
    <p>The following word uses a <big>big</big> typeface.</p>
    <p>The following word uses a <small>small</small>
    typeface.</p>
  </body>
</html>
```

Emphasized Text :

Anything that appears within **...** element is displayed as emphasized text.

Marked Text :

Anything that appears with-in **<mark>...</mark>** element, is displayed as marked with yellow ink.

Strong Text :

Anything that appears within **...** element is displayed as important text.

Text Abbreviation :

You can abbreviate a text by putting it inside opening **<abbr>** and closing **</abbr>** tags. If present, the title attribute must contain this full description and nothing else.

Example :

```
<html>
  <head><title> Emphasized, Marked, Strong and Abbreviation Text
  Example</title>
  </head>
  <body>
    <p>The following word uses an <em>emphasized</em>typeface.</p>
    <p>The following word has been <mark>marked</mark> with
    yellow</p>
    <p>The following word uses a <strong>strong</strong>
    typeface.</p>
    <p>My best friend's name is <abbr title ="Abhishek"> Abhy
    </abbr>.</p>
  </body>
</html>
```

Quoting Text :

When you want to quote a passage from another source, you should put it in between **<blockquote>...</blockquote>** tags.

Text inside a `<blockquote>` element is usually indented from the left and right edges of the surrounding text, and sometimes uses an italicized font.

Short Quotations :

The `<q>...</q>` element is used when you want to add a double quote within a sentence.

Text Citations :

If you are quoting a text, you can indicate the source placing it between an opening `<cite>` tag and closing `</cite>` tag. As you would expect in a print publication, the content of the `<cite>` element is rendered in italicized text by default.

Example :

```
<html>
<head>
  <title>Blockquote, Double quote, Citation Example</title>
</head>
<body>
  <p>The following description of XHTML is taken from the W3C
  Web site:</p>
  <blockquote>XHTML 1.0 is the W3C's first Recommendation for
  XHTML, following on from earlier work on HTML 4.01, HTML 4.0,
  HTML 3.2 and HTML 2.0.</blockquote>
  <p>Amit is in Spain, <q>I think I am wrong</q>.</p>
  <p>This HTML tutorial is derived from <cite>W3 Standard for
  HTML</cite>.</p>
</body>
</html>
```

Computer Code :

Any programming code to appear on a Web page should be placed inside **<code>...</code>** tags. Usually the content of the `<code>` element is presented in a monospaced font, just like the code in most programming books.

Keyboard Text :

When you are talking about computers, if you want to tell a reader to enter some text, you can use the **<kbd>...</kbd>** element to indicate what should be typed in..

Program Output :

The `<samp>...</samp>` element indicates sample output from a program, and script etc. Again, it is mainly used when documenting programming or coding concepts.

Address Text :

The `<address>...</address>` element is used to contain any address.

Special Terms :

The `<dfn>...</dfn>` element allows you to specify that you are introducing a special term. It's usage is similar to italic words in the middle of a paragraph.

Example :

```
<html>
<head>
  <title>Code, Keyboard Text, Program Output, Address</title>
</head>
<body>
<p>Regular text. <code>This is code.</code> Regular text.</p>
<p>Regular text. <kbd>This is inside kbd element</kbd> Regular
text.</p>
<p>Result produced by the program is <samp>Hello World!</samp></p>
<address>388A, Road No 22, Jubilee Hills - Hyderabad</address>
<p>This is a <dfn>special term</dfn> text.</p>
</body>
</html>
```

HTML Style :

Setting the style of an HTML element, can be done with the style attribute.

Syntax :

```
<tagname style="property : value;"> .... </tagname>
```

The property is a CSS property. The value is a CSS value.

Example :

```
<html>
<head>
<title>Style Tag</title>
</head>
<body style = "background-color:powerblue;">
<h1 style = "color:blue;"> This is a heading </h1>
</body>
</html>
```

HTML Comments :

Comment is a piece of code which is ignored by any web browser. It is a good practice to add comments into your HTML code, especially in complex documents, to indicate sections of a document, and any other notes to anyone looking at the code. Comments help you and others understand your code and increases code readability.

HTML comments are placed in between `<!-- ... -->` tags. So, any content placed with-in `<!-- ... -->` tags will be treated as comment and will be completely ignored by the browser.

Example :

```
<html>
  <head>  <!-- Document Header Starts -->
    <title>This is document title</title>
  </head> <!-- Document Header Ends -->
  <body>
    <p>Document content goes here.....</p>
  </body>
</html>
```

Changing the Background Color & Text Color :

The bgcolor attribute allows you to change the background color of your web page.

Syntax :

```
<body bgcolor="value" text="value">
```

Example :

```
<html>
<head>
<title>bg color</title>
</head>
<body bgcolor="pink" text="yellow">
<p>This is the sample color for default text</p>
</body>
</html>
```

Adding Background Picture :

The background attribute of `<body>` tag allows to add the background picture.

Syntax :

```
<Body background="file path">
```

Example :

```
<html>
<head>
<title>Background Picture</title>
</head>
<body background="c:\windows\forest.bmp">
<h1> This is an example for Background Picture</h1>
</body>
</html>
```

Insert Image :

Images are very important to beautify as well as to depict many complex concepts in simple way on your web page. This tutorial will take you through simple steps to use images in your web pages.

The tag allows you to add an image to your webpage.

Syntax :

```
... </img>
```

Attributes :

- 1) **src** : Use the HTML **src** attribute to define the URL of the image
- 2) **alt** : Use the HTML **alt** attribute to define an alternate text for an image, if it cannot be displayed.
- 3) **width** : Use the HTML **width** attribute to define the width size of the image.
- 4) **height** : Use the HTML **height** attribute to define the height size of the image.
- 5) **border**: Use the HTML **border** attribute to define surrounding border to the image.
- 6) **align** : Use the HTML **align** attribute to place the image text to left, right & center.

Example :

```
<html>
  <head>
    <title>Working with Image</title>
  </head>
  <body>
    <p>Setting image with Attributes</p>
     </img>
  </body>
</html>
```


HTML LISTS :

HTML offers web authors three ways for specifying lists of information. All lists must contain one or more list elements. Lists may contain –

- **** – An unordered list. This will list items using plain bullets.
- **** – An ordered list. This will use different schemes of numbers to list your items.

HTML Unordered Lists :

An unordered list is a collection of related items that have no special order or sequence. This list is created by using HTML **** tag. Each item in the list is marked with a bullet.

Syntax :

```
<ul type="value">
  <li> list text </li>
  <li> list text</li>
</ul>
```

The **type** attribute can take the following values : **square, disc, circle**

Example :

```
<html>
  <head>
    <title>HTML Unordered List</title>
  </head>
  <body>
    <ul type = "square">
      <li>Beetroot</li>
      <li>Ginger</li>
      <li>Potato</li>
      <li>Radish</li>
    </ul>
  </body>
</html>
```

HTML Ordered Lists :

If you are required to put your items in a numbered list instead of bulleted, then HTML ordered list will be used. This list is created by using **** tag. The numbering starts at one and is incremented by one for each successive ordered list element tagged with ****.

Syntax :

```
<ol start="value" type="value">
  <li> list text </li>
  <li> list text</li>
</ol>
```

Attributes :

- 1) **start** : This attribute specifies the beginning value of ordered list.
- 2) **type** : This attribute specifies the any one type of the following order list.

A=Big Caps

a=Small Caps

i=Small Roman No

I=Big Roman No

1=1,2,3... numbered list

Example :

```
<html>
  <head>
    <title>HTML Ordered List</title>
  </head>
  <body>
    <ol start=1 type = "1">
      <li>Beetroot</li>
      <li>Ginger</li>
      <li>Potato</li>
      <li>Radish</li>
    </ol>
  </body>
</html>
```

HTML LINKS :

A webpage can contain various links that take you directly to other pages and even specific parts of a given page. These links are known as hyperlinks.

Hyperlinks allow visitors to navigate between web sites by clicking on words, phrases, and images. Thus you can create hyperlinks using text or images available on a webpage.

Links allow users to click their way from page to page.

HTML Hyperlinks :

HTML links are hyperlinks. You can click on a link and jump to another document. When you move the mouse over a link, the mouse arrow will turn into a little hand. A link does not have to be text. It can be an image or any other HTML document.

A link is specified using HTML tag <a>. This tag is called **anchor tag** and anything between the opening <a> tag and the closing tag becomes part of the link and a user can click that part to reach to the linked document. Following is the simple syntax to use <a> tag.

Syntax :

```
<a href="document url"> Link Text </a>
```

The **href** attribute specifies the destination address or file path.

Example :

```
<html>
<title>Hyperlink Text</title>
<body>
<h1><a href="c:\sample.html">Click</a> Here open Webpage</h1>
</body>
</html>
```

HTML Link Colors :

By default, a link will appear like this (in all browsers):

- An unvisited link is underlined and blue
- A visited link is underlined and purple
- An active link is underlined and red

Example :

```
<html>
  <head>
    <title>Hyperlink Example</title>
    <base href = "https://www.tutorialspoint.com/">
  </head>
  <body alink = "#54A250" link = "#040404" vlink = "#F40633">
    <p>Click following link</p>
    <a href = "/html/index.htm" target = "_blank" >HTML
      Tutorial</a>
  </body>
</html>
```

The target Attribute :

target Attribute specifies where to open the linked document. This attribute can have one of the following values :

- **_blank** : new window
- **_self** : same window
- **_parent** : parent frame
- **_top** : full body of the window
- **framename** : named frame

Syntax :

```
<a href="url" target="value"> link text </a>
```

Example :

```
<html>
<head>
<title> Link target attribute </title>
</head>
<body>
<a href="https://www.w3schools.com/" target="_blank">Visit
W3Schools!</a>
</body>
</html>
```

Create a Bookmark :

HTML Bookmarks are used to allow records to jump to specific parts of a webpage. Bookmark can be useful, if your webpage is very long.

To make a bookmark, you must first create the bookmark and later add a link to it.

Syntax :

```
To Bookmark          :    <a name="value">
To link a bookmark   :    <a href="#bookmark">
```

Example :

```
<html>
<head>
<title>Bookmark Link</title>
</head>
<body>
<h1>SG College Courses :<br>
<a href="#first">BA</a><br>
<a href="#second">BCom</a><br>
<a href="#third">BSc</a><br></h1>
<br><br><br><br><br><br><br><br><br>
<p><a name="first">BA</a> is a three year duration course. It has
the combinations of HPEco, HPSoc, HPEng and HPKan. </p>
<br><br><br><br><br><br><br><br><br>
<p><a name="second">BCom</a> is also a three year duration course. It has
the combinations of Computer Science and Tax Procedure & practice.</p>
<br><br><br><br><br><br><br><br><br>
<p><a name="third">BSc</a> courses are three year duration course.
It has combinations of PCM and CBZ</p>
</body>
</html>
```

Working with the Tables :

A Table is a grid of rows and columns. It is used represent the data in fields and records. The HTML tables allow web authors to arrange data like text, images, links, other tables etc., into rows and columns of cells.

The HTML tables are created using the <table> tag in which <tr> tag is used to create table rows and <td> tag is used to create data cells.

Syntax :

```
<table border="value" width="value" height="value"
cellspacing="value" cellpadding="value" colspan="value"
rowspan="value" align="value" bgcolor="value">
<tr bgcolor="value">
    <th align="value">.....</th>
    .....
</tr>
<tr bgcolor="value">
    <td align="value" colspan="value" rowspan="value">.....</td>
    .....
</tr>
</table>
```

<th> Tag :

This tag is used to specify the headings for the first row of a table.

<tr> Tag :

This tag is used to specify the table row.

<td> Tag :

This tag is used to specify the table data.

Attributes :

- 1) **cellspacing** : The space between inner edge and text is called cellspacing. It takes values in pixels.
- 2) **cellpadding** : The space between two cells is called Cellpadding. It also takes the values in pixels
- 3) **colspan** : It is used to merge the column cells
- 4) **rowspan** : It is used to merge the row cells
- 5) **bgcolor** : You can set the background color for the whole table or a particular rows.

Table Caption :

The **caption** tag will serve as a title or explanation for the table and it shows up at the top of the table. This tag is deprecated in newer version of HTML/XHTML

Example :

```
<html>
<head>
<title>Tables</title>
</head>
<body>
<table border="2" width="400" height="300" cellspacing="6"
cellpadding="6" align="center">
<caption> SG College, Koppal </caption>
<tr bgcolor="pink">
<th align="center">COURSE</th>
<th align="center">COMBINATION</th>
</tr>
<tr bgcolor="yellow">
<td align="center">BA</td>
<td align="center">HPECO, HPSOC, HPENG, HPKAN</td>
</tr>
<tr bgcolor="skyblue">
<td align="center">BCOM</td>
<td align="center">CS, TPP</td>
</tr>
<tr bgcolor="lightgreen">
<td align="center">BSC</td>
<td align="center">PCM, CBZ</td>
</tr>
</table>
</body>
</html>
```

Colspan & Rowspan Attributes :

Example :

```
<html>
  <head>
    <title>HTML Table Colspan/Rowspan</title>
  </head>
  <body>
    <table border = "1">
      <tr>
        <th>Column 1</th>
        <th>Column 2</th>
        <th>Column 3</th>
      </tr>
```

```

        <tr>
            <td rowspan = "2">Row 1 Cell 1</td>
            <td>Row 1 Cell 2</td>
            <td>Row 1 Cell 3</td>
        </tr>

        <tr>
            <td>Row 2 Cell 2</td>
            <td>Row 2 Cell 3</td>
        </tr>
        <tr>
            <td colspan = "3">Row 3 Cell 1</td>
        </tr>
    </table>
</body>
</html>

```

HTML Marquees :

An HTML marquee is a scrolling piece of text displayed either horizontally across or vertically down your webpage depending on the settings. This is created by using HTML `<marquees>` tag.

Syntax :

```

<marquee      width="value"      height="value"      behavior="value"
direction="value"      scrollamount="value"      scrolldelay="value"
loop="value" bgcolor="value"> Marquee Text </marquee>

```

Attributes :

- 1) **width** : This specifies the width of the marquee.
- 2) **height** : This specifies the height of the marquee.
- 3) **behaviour** : This attribute allows you to specify the way of scrolling. It can have 3 values such as scroll, slide and alternate.
- 4) **direction** : This specifies the direction in which the marquee should scroll. This can be a value like up, down, left or right.
- 5) **scrolldelay** : This specifies how long to delay between each jump.
- 6) **Scrollamount** : This specifies the speed of marquee text.
- 7) **loop** : This specifies how many times to loop. The default value is INFINITE.
- 8) **bgcolor** : This specifies the background color in terms of color name or color value.

Example1 :

```
<html>
  <head>
    <title>HTML marquee Tag</title>
  </head>
  <body>
    <marquee>This is basic example of marquee</marquee>
  </body>
</html>
```

Example2 :

```
<html>
  <head>
    <title>HTML marquee Tag</title>
  </head>
  <body>
    <marquee width = "50%">This example will take only 50%
width</marquee>
  </body>
</html>
```

Example3 :

```
<html>
  <head>
    <title>HTML marquee Tag</title>
  </head>
  <body>
    <marquee direction = "right">This text will scroll from left
to right</marquee>
  </body>
</html>
```

Example4 :

```
<html>
  <head>
    <title>HTML marquee Tag</title>
  </head>
  <body>
    <marquee direction = "up">This text will scroll from bottom
to up</marquee>
  </body>
</html>
```


HTML Frames :

HTML frames are used to divide your browser window into multiple sections where each section can load a separate HTML document. A collection of frames in the browser window is known as a frameset. The window is divided into frames in a similar way the tables are organized: into rows and columns.

Disadvantages of Frames

There are few drawbacks with using frames, so it's never recommended to use frames in your webpages –

- Some smaller devices cannot cope with frames often because their screen is not big enough to be divided up.
- Sometimes your page will be displayed differently on different computers due to different screen resolution.
- The browser's *back* button might not work as the user hopes.
- There are still few browsers that do not support frame technology.

Creating Frames :

To use frames on a page we use <frameset> tag instead of <body> tag. The <frameset> tag defines, how to divide the window into frames. The **rows** attribute of <frameset> tag defines horizontal frames and **cols** attribute defines vertical frames. Each frame is indicated by <frame> tag and it defines which HTML document shall open into the frame.

Syntax :

```
<frameset rows/cols="value">  
    <frame src="value" name="value">  
    .....  
</frameset>
```

The <frameset> Tag Attributes :

Sr.No	Attribute & Description
1	<p>Cols : Specifies how many columns are contained in the frameset and the size of each column. You can specify the width of each column in one of the four ways –</p> <ol style="list-style-type: none">1) Absolute values in pixels. For example, to create three vertical frames, use <i>cols = "100, 500, 100"</i>.2) A percentage of the browser window. For example, to create three vertical frames, use <i>cols = "10%, 80%, 10%"</i>.3) Using a wildcard symbol. For example, to create three vertical frames, use <i>cols = "10%, *, 10%"</i>. In this case wildcard takes remainder of the window.

2	Rows : This attribute works just like the cols attribute and takes the same values, but it is used to specify the rows in the frameset. For example, to create two horizontal frames, use <code>rows = "10%, 90%"</code> . You can specify the height of each row in the same way as explained above for columns.
3	Border : This attribute specifies the width of the border of each frame in pixels. For example, <code>border = "5"</code> . A value of zero means no border.
4	Frameborder : This attribute specifies whether a three-dimensional border should be displayed between frames. This attribute takes value either 1 (yes) or 0 (no). For example <code>frameborder = "0"</code> specifies no border.
5	Framespacing : This attribute specifies the amount of space between frames in a frameset. This can take any integer value. For example <code>framespacing = "10"</code> means there should be 10 pixels spacing between each frames.

The <frame> Tag Attributes :

Sr.No	Attribute & Description
1	src : This attribute is used to give the file name that should be loaded in the frame. Its value can be any URL. For example, <code>src = "/html/top_frame.htm"</code> will load an HTML file available in html directory.
2	name : This attribute allows you to give a name to a frame. It is used to indicate which frame a document should be loaded into. This is especially important when you want to create links in one frame that load pages into an another frame, in which case the second frame needs a name to identify itself as the target of the link.
3	frameborder : This attribute specifies whether or not the borders of that frame are shown; it overrides the value given in the frameborder attribute on the <frameset> tag if one is given, and this can take values either 1 (yes) or 0 (no).
4	marginwidth : This attribute allows you to specify the width of the space between the left and right of the frame's borders and the frame's content. The value is given in pixels. For example <code>marginwidth = "10"</code> .
5	marginheight : This attribute allows you to specify the height of the space between the top and bottom of the frame's borders and its contents. The value is given in pixels. For example <code>marginheight = "10"</code> .

6	<p>noresize : By default, you can resize any frame by clicking and dragging on the borders of a frame. The noresize attribute prevents a user from being able to resize the frame. For example noresize = "noresize".</p>
7	<p>scrolling : This attribute controls the appearance of the scrollbars that appear on the frame. This takes values either "yes", "no" or "auto". For example scrolling = "no" means it should not have scroll bars.</p>

Example 1 :

```
<html>
  <head>
    <title>HTML Frames</title>
  </head>
  <frameset rows = "10%,80%,10%">
    <frame name = "top" src = "/html/top_frame.htm" />
    <frame name = "main" src = "/html/main_frame.htm" />
    <frame name = "bottom" src = "/html/bottom_frame.htm" />
  </frameset>
</html>
```

Example 2 :

```
<html>
<head>
<title>Working with Frames</title>
</head>
<frameset cols="30%,50%, 20%">
  <frame name="left" src="c:\one.html" >
  <frame name="middle" src="c:\two.html" >
  <frame name="right" src="c:\three.html" >
</frameset>
</html>
```

Nested Frames :

The frame within another frame is called nested frame.

Example :

```
<html>
<head><title>Nested Frames</title></head>
<frameset cols="30%,70%">
  <frame src="c:\one.html" name="one">
<frameset rows="20%,80%">
  <frame src="c:\two.html" name="two">
  <frame src="c:\three.html" name="three">
</frameset>
</html>
```

Frame's name and target attributes :

One of the most popular uses of frames is to place navigation bars in one frame and then load main pages into a separate frame.

The attribute *target* is used with the anchor tag to specify the frame path to display the WebPages.

Syntax :

```
<a href="file url" target="framename">
```

Example : test.html

```
<html>
  <head>
    <title>HTML Target Frames</title>
  </head>
  <frameset cols = "200, *">
    <frame src = "/html/menu.htm" name = "menu_page" />
    <frame src = "/html/main.htm" name = "main_page" />
  </frameset>
</html>
```

Example : menu.html

```
<html>
  <body bgcolor = "#4a7d49">
    <a href = "http://www.google.com" target="main_page">
      Google</a> <br /> <br />
    <a href = "http://www.microsoft.com" target="main_page">
      Microsoft</a> <br /> <br />
    <a href = "http://news.bbc.co.uk" target = "main_page">
      BBC News</a>
  </body>
</html>
```

WORKING WITH FORMS :

HTML Forms are required, when you want to collect some data from the site visitor. For example, during user registration you would like to collect information such as name, email address, credit card, etc.

A form will take input from the site visitor and then will post it to a back-end application such as CGI, ASP Script or PHP script etc. The back-end application will perform required processing on the passed data based on defined business logic inside the application.

There are various form elements available like text fields, textarea fields, drop-down menus, radio buttons, checkboxes, etc.

The HTML **<form>** tag is used to create an HTML form and it has following syntax –

```
<form action = "Script URL" method = "GET|POST">  
    form elements like input, textarea etc.  
</form>
```

HTML Form Controls

There are different types of form controls that you can use to collect data using HTML form –

- 1] Text Input Control
- 2] Radio Buttons
- 3] Check Boxes
- 4] Password Box
- 5] Text Area
- 6] Selection Box
- 7] Submit Button and Reset Button

Text Input Controls

There are three types of text input used on forms –

- **Single-line text input controls** – This control is used for items that require only one line of user input, such as search boxes or names. They are created using HTML **<input>** tag.
- **Password input controls** – This is also a single-line text input but it masks the character as soon as a user enters it. They are also created using HTML **<input>** tag.
- **Multi-line text input controls** – This is used when the user is required to give details that may be longer than a single sentence. Multi-line input controls are created using HTML **<textarea>** tag.

Single-line text input controls

This control is used for items that require only one line of user input, such as search boxes or names. They are created using HTML **<input>** tag.

Syntax :

```
<form name="value">  
    <input type="text" name="value" maxlength="value" size="value"  
    value="default_text">  
</form>
```

Attributes :

- 1) **type** : This indicates the type of input control and for text input control, it will be set to **text**.
- 2) **name** : Used to give a name to the control.
- 3) **maxlength** : Allows to specify the maximum number of characters user can enter into the text box.
- 4) **size** : Allows you to specify the width of the text-input control in terms of characters.
- 5) **value** : This can be used to provide initial value inside the control.

Example :

```
<html>
  <head> <title>Text Input Control</title> </head>
  <body>
    <form name="application">
      First name: <input type = "text" name = "first_name"
        value="firstname" maxlength=20 size=25 > <br>
      Last name: <input type = "text" name = "last_name"
        value="lastname" maxlength=20 size=25>
    </form>
  </body>
</html>
```

Password input controls

This is also a single-line text input but it masks the character as soon as a user enters it. They are also created using HTML `<input>` tag but type attribute is set to **password**.

Syntax :

```
<form name="value">
  <input type="password" name="value" maxlength="value"
    size="value" value="default_text">
</form>
```

Example :

```
<html>
  <head> <title>Password Input Control</title> </head>
  <body>
    <form >
      User ID : <input type = "text" name = "user_id" />
      <br>
      Password: <input type = "password" name = "password" />
    </form>
  </body>
</html>
```

Multiple-Line Text Input Controls

This is used when the user is required to give details that may be longer than a single sentence. Multi-line input controls are created using HTML `<textarea>` tag.

Syntax :

```
<form name="value">
  <textarea rows="value" cols="value" name="value">
    Types your text here
  </textarea>
</form>
```

Sr.No	Attribute & Description
1	name : Used to give a name to the control which is sent to the server to be recognized and get the value.
2	rows : Indicates the number of rows of text area box.
3	cols : Indicates the number of columns of text area box

Example :

```
<html>
  <head><title>Multiple-Line Input Control</title></head>
  <body>
    <form>Description : <br />
      <textarea rows = "5" cols = "50" name = "description">
        Enter description here...
      </textarea>
    </form>
  </body>
</html>
```

Checkbox Control

Checkboxes are used when more than one option is required to be selected. They are also created using HTML `<input>` tag but type attribute is set to **checkbox**.

Syntax :

```
<form name="value">
  <input type="checkbox" name="value" value="value" checked>
</form>
```

Sr.No	Attribute & Description
1	type : Indicates the type of input control and for checkbox input control it will be set to radio.
2	name : Used to give a name to the control which is sent to the server to be recognized and get the value.
3	value : The value that will be used if the radio box is selected.
4	checked : Set to <i>checked</i> if you want to select it by default.

Example :

```
<html>
  <head>
    <title>Checkbox Control</title>
  </head>
  <body>
    <form>
      <input type = "checkbox" name = "maths" value = "on"> Maths
      <input type = "checkbox" name = "physics" value = "on"> Physics
    </form>
  </body>
</html>
```

Radio Button Control

Radio buttons are used when out of many options, just one option is required to be selected. They are also created using HTML <input> tag but type attribute is set to **radio**.

Syntax :

```
<form name="value">
  <input type="radio" name="value" value="value" checked>
</form>
```

Sr.No	Attribute & Description
1	type : Indicates the type of input control and for checkbox input control it will be set to radio.
2	name : Used to give a name to the control which is sent to the server to be recognized and get the value.
3	value : The value that will be used if the radio box is selected.
4	checked : Set to <i>checked</i> if you want to select it by default.

Example :

```

<html>
  <head>
    <title>Radio Box Control</title>
  </head>
  <body>
    <form>
      <input type = "radio" name = "subject" value = "maths"> Maths
      <input type = "radio" name = "subject" value = "physics">
        Physics
    </form>
  </body>
</html>

```

Select Box Control

A select box, also called drop down box which provides option to list down various options in the form of drop down list, from where a user can select one or more options.

Syntax :

```

<form name="value">
  <select name="dropdown" multiple>
    <option value="value" selected> Text </option>
    <option value="value"> Text </option>
  </select>
</form>

```

Sr.No	Attribute & Description
1	name : Used to give a name to the control which is sent to the server to be recognized and get the value.
2	size : This can be used to present a scrolling list box.
3	multiple : If set to "multiple" then allows a user to select multiple items from the menu.
4	selected : Specifies that this option should be the initially selected value when the page loads.

Example :

```

<html>
  <head> <title>Select Box Control</title> </head>
  <body> <form>
    <select name = "dropdown">
      <option value = "Maths" selected>Maths</option>
      <option value = "Physics">Physics</option>
    </select>
  </form> </body> </html>

```

File Upload Box

If you want to allow a user to upload a file to your web site, you will need to use a file upload box, also known as a file select box. This is also created using the `<input>` element but type attribute is set to **file**.

Syntax :

```
<form name="value">  
<input type="file" name="value" accept="value">  
</form>
```

Sr.No	Attribute & Description
1	name : Used to give a name to the control which is sent to the server to be recognized and get the value.
2	accept : Specifies the types of files that the server accepts.

Example :

```
<html>  
  <head>  
    <title>File Upload Box</title>  
  </head>  
  <body>  
    <form>  
      <input type = "file" name = "fileupload" accept = "image/*" />  
    </form>  
  </body>  
</html>
```

Button Controls

There are various ways in HTML to create clickable buttons. You can also create a clickable button using `<input>` tag by setting its type attribute to **button**. The type attribute can take the following values –

Sr.No	Type & Description
1	submit : This creates a button that automatically submits a form.
2	reset : This creates a button that automatically resets form controls to their initial values.
3	button : This creates a button that is used to trigger a client-side script when the user clicks that button.
4	image : This creates a clickable button but we can use an image as background of the button.

Syntax :

```
<form name="value">
  <input type="submit" name="value" value="value">
</form>
```

Example :

```
<html>
  <head>
    <title>File Upload Box</title>
  </head>
  <body>
    <form>
      <input type = "submit" name = "submit" value = "Submit" />
      <input type = "reset" name = "reset" value = "Reset" />
      <input type = "button" name = "ok" value = "OK" />
      <input type = "image" name = "imagebutton" src = "logo.png"/>
    </form>
  </body>
</html>
```

UNIT III – WEB DESIGN

Basic Principles of Effective Web Design :

Like the phrase ‘beauty is in the eye of the beholder’, effective web design is judged by the users of the website and not the website owners. There are many factors that affect the usability of a website, and it is not just about form (how good it looks), but also function (how easy is it to use).

1. Purpose :

Good web design always caters to the needs of the user. Are your web visitors looking for information, entertainment, some type of interaction, or to transact with your business? Each page of your website needs to have a clear purpose, and to fulfill a specific need for your website users in the most effective way possible.

2. Communication :

People on the web tend to want information quickly, so it is important to communicate clearly, and make your information easy to read and digest. Some effective tactics to include in your web design include: organizing information using headlines and sub headlines, using bullet points instead of long windy sentences, and cutting the waffle.

3. Typefaces :

In general, Sans Serif fonts such as Arial and Verdana are easier to read online (Sans Serif fonts are contemporary looking fonts without decorative finishes). The ideal font size for reading easily online is 16px and stick to a maximum of 3 typefaces in a maximum of 3 point sizes to keep your design streamlined.

4. Colours :

A well thought out colour palette can go a long way to enhance the user experience. Complementary colours create balance and harmony. Using contrasting colours for the text and background will make reading easier on the eye. Vibrant colours create emotion and should be used sparingly (e.g. for buttons and call to actions). Last but not least, white space/ negative space is very effective at giving your website a modern and uncluttered look.

5. Images :

A picture can speak a thousand words, and choosing the right images for your website can help with brand positioning and connecting with your target audience. If you don't have high quality professional photos on hand, consider purchasing stock photos to lift the look of your website. Also consider using infographics, videos and graphics as these can be much more effective at communicating than even the most well written piece of text.

6. Navigation :

Navigation is about how easy it is for people to take action and move around your website. Some tactics for effective navigation include a logical page hierarchy, using bread crumbs, designing clickable buttons, and following the ‘three click rule’ which means users will be able to find the information they are looking for within three clicks.

7. Grid based layouts :

Placing content randomly on your web page can end up with a haphazard appearance that is messy. Grid based layouts arrange content into sections, columns and boxes that line up and feel balanced, which leads to a better looking website design.

8. “F” Pattern design :

Eye tracking studies have identified that people scan computer screens in an “F” pattern. Most of what people see is in the top and left of the screen and the right side of the screen is rarely seen. Rather than trying to force the viewer’s visual flow, effectively designed websites will work with a reader’s natural behaviour and display information in order of importance (left to right, and top to bottom).

9. Load time :

Everybody hates a website that takes ages to load. Tips to make page load times more effective include optimising image sizes (size and scale), combining code into a central CSS or JavaScript file (this reduces HTTP requests) and minify HTML, CSS, JavaScript (compressed to speed up their load time).

10: Mobile friendly :

It is now commonplace to access websites from multiple devices with multiple screen sizes, so it is important to consider if your website is mobile friendly. If your website is not mobile friendly, you can either rebuild it in a responsive layout (this means your website will adjust to different screen widths) or you can build a dedicated mobile site (a separate website optimised specifically for mobile users).

It is easy to create a beautiful and functional website, simply by keeping these design elements in mind. These principles of effective web design can help your website be more engaging, useful, and memorable for visitors.

Web Design Planning Process :

Web designers often think about the web design process with a focus on technical matters such as wireframes, code, and content management. But great design isn't about how you integrate the social media buttons or even slick visuals. Great design is actually about creating a website that aligns with an overarching strategy.

Well-designed websites offer much more than just aesthetics. They attract visitors and help people understand the product, company, and branding through a variety of indicators, encompassing visuals, text, and interactions. That means every element of your site needs to work towards a defined goal.

But how do you achieve that harmonious synthesis of elements? Through a holistic web design process that takes both form and function into account. The web design process requires 7 stages:

1. **Goal identification:** Where I work with the client to determine what goals the site needs to fulfill. i.e., what its purpose is.

In this initial stage, the designer needs to identify the website's end goal, usually in close collaboration with the client or other stakeholders. Questions to explore and answer in this stage of the process include:

- Who is the site for?
- What do they expect to find or do there?
- Is this website's primary aim to inform, to sell, or to amuse?
- Does the website need to clearly convey a brand's core message, or is it part of a wider branding strategy with its own unique focus?
- What competitor sites, if any, exist, and how should this site be inspired by/different than, those competitors?

This is the most important part of any web design process. If these questions aren't all clearly answered in the brief, the whole project can set off in the wrong direction.

It may be useful to write out one or more clearly identified goals, or a one-paragraph summary of the expected aims. This will help to put the design on the right path. Make sure you understand the website's target audience, and develop a working knowledge of the competition.

Tools for website goal identification stage

- Audience personas
- Creative brief
- Competitor analyses
- Brand attributes

2. **Scope definition:** Once we know the site's goals, we can define the scope of the project. I.e., what pages and features the site requires fulfilling the goal, and the timeline for building those out.

One of the most common and difficult problems plaguing web design projects is scope creep. The client sets out with one goal in mind, but this gradually expands, evolves, or changes altogether during the design process — and the next thing you know, you're not only designing and building a website, but also a web app, emails, and push notifications.

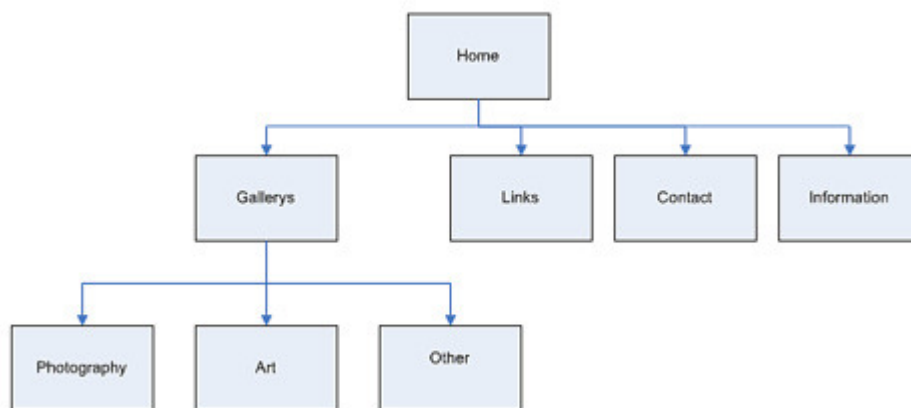
This isn't *necessarily* a problem for designers, as it can often lead to more work. But if the increased expectations aren't matched by an increase in budget or timeline, the project can rapidly become utterly unrealistic.

A Gantt chart, which details a realistic timeline for the project, including any major landmarks, can help to set boundaries and achievable deadlines. This provides an invaluable reference for both designers and clients and helps keep everyone focused on the task and goals at hand.

Tools for scope definition

- A contract
- Gantt chart (or other timeline visualization)

3. **Sitemap and wireframe creation:** With the scope well-defined, we can start digging into the sitemap, defining how the content and features we defined in scope definition will interrelate.



A sitemap for a simple website. Note how it captures page hierarchy.

The sitemap provides the foundation for any well-designed website. It helps give designers a clear idea of the website's information architecture and explains the relationships between the various pages and content elements.

Building a site *without* a sitemap is like building a house without a blueprint. And that rarely turns out well.

The next step is to build the wireframe. Wireframes provide a framework for storing the site's visual design and content elements, and can help identify potential challenges and gaps with the sitemap.

Although a wireframe doesn't contain any final design elements, it does act as a guide for how the site will ultimately look. Some designers use slick tools like Balsamiq or Webflow to create their wireframes. I personally like to go back to basics and use the trusty ole paper and pencil.

Tools for sitemapping and wireframing

- Pen/pencil and paper
 - Balsamiq
 - Moqups
 - Sketch
 - Axure
 - Webflow
 - Slickplan
 - Writemaps
 - Mindnode
4. **Content creation:** Now that we have a bigger picture of the site in mind, we can start creating content for the individual pages, always keeping search engine optimization in mind to help keep pages focused on a single topic. It's vital that you have real content to work with for our next stage:

Once your website's framework is in place, you can start with the most important aspect of the site: the written content.

Content serves two essential purposes:

Purpose 1. Content drives engagement and action

First, content engages readers and drives them to take the actions necessary to fulfill a site's goals. This is affected by both the content itself (the writing), and how it's presented (the typography and structural elements).

Dull, lifeless, and overlong prose rarely keeps visitors' attention for long. Short, snappy, and intriguing content grabs them and gets them to click through to other pages. Even if your pages need a lot of content — and often, they do — properly “chunking” that content by breaking it up into short paragraphs supplemented by visuals can help it keep a light, engaging feel.

Purpose 2: SEO

Content also boosts a site's visibility for search engines. The practice of creation and improving content to rank well in search is known as search engine optimization, or SEO.

Getting your keywords and key-phrases right is essential for the success of any website. I always use Google Keyword Planner. This tool shows the search volume for potential target keywords and phrases, so you can hone in on what actual human beings are searching on the web. While search engines are becoming more and more clever, so should your content strategies. Google Trends is also handy for identifying terms people actually use when they search.

My design process focuses on designing websites around SEO. Keywords you want to rank for need to be placed in the title tag — the closer to the beginning, the better. Keywords should also appear in the H1 tag, meta description, and body content.

Content that's well-written, informative, and keyword-rich is more easily picked up by search engines, all of which helps to make the site easier to find.

Typically, your client will produce the bulk of the content, but it's vital that you supply them with guidance on what keywords and phrases they should include in the text.

Awesome content creation tools

- Google Docs
- Dropbox Paper
- Quip
- Gather Content

Handy SEO tools

- Google Keyword Planner
- Google Trends
- Screaming Frog's SEO Spider

5. **Visual elements:** With the site architecture and some content in place, we can start working on the visual brand. Depending on the client, this may already be well-defined, but you might also be defining the visual style from the ground up. Tools like style tiles, moodboards, and element collages can help with this process.

Finally, it's time to create the visual style for the site. This part of the design process will often be shaped by existing branding elements, colour choices, and logos, as stipulated by the client. But it's also the stage of the web design process where a good web designer can really shine.

Images are taking on a more significant role in web design now than ever before. Not only do high-quality images give a website a professional look and feel, but they also communicate a message, are mobile-friendly, and help build trust.

Visual content is known to increase clicks, engagement, and revenue. But more than that, people *want* to see images on a website. Not only do images make a page feel less cumbersome and easier to digest, but they also enhance the message in the text, and can even convey vital messages without people even needing to read.

I recommend using a professional photographer to get the images right. Just keep in mind that massive, beautiful images can seriously slow down a site. I use Optimizilla to compress images without losing quality, saving on page-load times. You'll also want to make sure your images are as responsive as your site.

The visual design is a way to communicate and appeal to the site's users. Get it right, and it can determine the site's success. Get it wrong, and you're just another web address.

Tools for visual elements

- The usual suspects (Sketch, Illustrator, Photoshop, etc.)
 - Moodboards, style tiles, element collages
 - Visual style guides
6. **Testing:** By now, you've got all your pages and defined how they display to the site visitor, so it's time to make sure it all works. Combine manual browsing of the site on a variety of devices with automated site crawlers to identify everything from user experience issues to simple broken links.

Once the site has all its visuals and content, you're ready for testing.

Thoroughly test each page to make sure all links are working and that the website loads properly on all devices and browsers. Errors may be the result of small coding mistakes, and while it is often a pain to find and fix them, it's better to do it now than present a broken site to the public.

Editor's note: I highly recommend Screaming Frog's SEO Spider for this stage. It lets you do many of the standard auditing tasks all in one tool, and it's free for up to 500 URLs.

Have one last look at the page meta titles and descriptions too. Even the order of the words in the meta title can affect the performance of the page on a search engine.

Web flow has an excellent article on the pre-launch process.

Website testing tools

- W3C Link Checker
- SEO Spider

7. **Launch!** Once everything's working beautifully, it's time to plan and execute your site launch! This should include planning both launch timing and communication strategies — i.e., when will you launch and how will you let the world know? After that, it's time to break out the bubbly.

Now it's time for everyone's favorite part of the web design process: When everything has been thoroughly tested, and you're happy with the site, it's time to launch.

Don't expect this to go perfectly. There may be still some elements that need fixing. Web design is a fluid and ongoing process that requires constant maintenance.

Web design — and really, design in general — is all about finding the right balance between form and function. You need to use the right fonts, colours, and design motifs. But the way people navigate and experience your site is just as important.

Skilled designers should be well versed in this concept and able to create a site that walks the delicate tightrope between the two.

A key thing to remember about the launch stage is that it's nowhere near the end of the job. The beauty of the web is that it's never finished. Once the site goes live, you can continually run user testing on new content and features, monitor analytics, and refine your messaging.

Five Golden Rules of Web Designing for a Great Website

Designing a great website isn't only about combining the components to create an attractive and user friendly interface. Website designing, in fact, requires a well-researched strategy. Only investing handsomely on *web designing agencies* isn't going to help your business much, no matter how proficient resources you hire and how much time you allot. If you are planning to launch a website for your business, you got to do extensive research based on your needs and working style, to have one that drives your business towards success. The same also goes for the website designers who need to have a clear idea about how to fuse all the elements in an effective manner so that each one of them contributes towards a common goal. Web designing combines a lot of components including layout, topography, aesthetics and many more that ensure a website's objective oriented and smooth functioning. Here are five golden rules of web designing that you must follow to create a great website:

1. *Define website goal*

Define the purpose of your website and design an interface that serves the purpose efficiently. Focus on what you are trying to achieve for your organization through your website, like whether you want to entertain people or deliver information or sell products. It's important to combine the web designing elements in a fashion that helps you achieve your goal.

2. Highlight your brand image

Focus on your brand image and choose elements that best defines you. The look and feel of a website matters a lot. It should mirror the character of your brand and impress the visitors by eliciting the right emotions. Don't get driven by the latest trend and carefully analyse what color schemes and images would give the desired “*feel*” to the visitors.

3. Identify target audience

Analyse your customers and prospective clients on the basis of their gender, age, profession, behaviour and technical competency. Identifying the target audience helps to decide upon the aesthetics and functionalities of websites. Determine whether your target audience are tech savvy or kids or women and choose a user-centric design.

4. Analyse competitor websites

Analyzing the competitor websites is important to get your website noticed among so many, offering similar services. Scrutinize what competitors are doing and incorporate something unique in your website to make a better emotional connection with your audience. Also, optimize your web design to get a good search engine ranking. Using relevant keywords in your content boosts your ranking and maintains the web visits.

5. Evaluate and improve

After designing and deploying your website, measure the results and find out if your website is actually working towards the specified goal in the specified manner. Ensure that your strategic planning and implementation has coincided and the website is efficient in fulfilling your goals. Continuous improvement is important for every website to increase visits and win clients. By measuring results and through feedback you can find out errors, areas that need improvements and elements that are required to be updated.

Web designing requires consistent focus on your goals to create a website that fulfils a specific purpose. But often the latest trends and alluring components divert the attention and people end up having a beautiful website that doesn't actually work towards the objective. Avoid falling in such traps and design a website that maintains a perfect balance between its aesthetics and functionality.

How to Design the Best Navigation Bar for Your Website

The navigation bar is the most important design element on a website. Not only does it guide your users to pages beyond the homepage, but it's also the singular tool to give users a sense of orientation. With this in mind, it's important to adhere to time-tested design and usability conventions. Doing so will give your users a comfortable and easy reference point to fully engage with your content.

Despite the necessity of an accessible navigation bar, usability studies on navigation across the web aren't positive. One study by User Interface Engineering shows that people cannot find the information they seek on a website about 60% of the time. While this failure rate might be acceptable for your average blog, a business website simply cannot afford these stats. Even worse, many users often find navigation usability extremely frustrating, citing annoying hover errors and inconsistencies. Another study by Forrester found that 40% of users do not return to a site when their first visit is negative.

So how do you ensure that your users are able to quickly and easily find the information they need?

Employ these basic concepts to help users move more efficiently through your website.

- 1. Start with content.** Believe it or not, most websites start backward, meaning a designer will suggest navigation items before determining all the content possibilities. This isn't entirely unusual — often the content isn't ready before the design process begins. Jeffrey Zeldman, a usability guru, suggests, "Content precedes design. Design in the absence of content is not design, it's decoration." It's important to properly analyze and organize all your content into a logical and highly usable structure before even considering design choices. Once you accomplish this, only add complexity if absolutely necessary for your users.
- 2. Don't overwhelm.** The main role of a navigation bar is to provide your user with a choice. Overwhelming a site visitor with too many options impedes his ability to quickly make a choice. A navigation bar with five to seven channel items is sufficient organization for most websites. Plus, it fits nicely in the width of most website designs. Once you reach eight navigation options, you severely limit readability and usability due to width constraints.
- 3. Keep it simple.** Use precise and recognizable words in the navigation bar. Refrain from long phrases that consume screen real estate by limiting each navigation item to 12 characters or less. Also, don't use words that an average user wouldn't completely understand. People are used to conventions; therefore, err on the side of familiarity. For example, use "Contact Us," not "Get in Touch" or "Let's Talk." Finally, leave out unnecessary words that don't add anything to the navigation item. Instead of "In the News," consider simply "News."
- 4. Actions on the right.** Because people read from left to right, they naturally expect action links on the right-hand side of the navigation bar because moving right suggests moving forward. Use the left side for more informational links. The exception is the "Home" link, which as a backward action, should be furthest left.
- 5. Avoid Flash, for the most part.** While Flash is generally frowned upon by usability experts, it presents aesthetic possibility. Flash's biggest problem is that it typically is not implemented in a way accessible to screen readers and mobile devices. And while you don't want to implement the actual navigation with Flash, you can get away with embellishing an HTML/CSS Navigation Bar with Flash to add visual interest and retain usability. One great example of this is the Atlanta Botanical Garden website (above).

One-Level Navigation Bars :

Now that you know a few basic principles about creating a highly effective navigation, let's learn from already existing navigation bars, including one-level bars, drop-down multi-level bars and mega drop-down bars. While you'll ultimately decide which type of navigation works best for your website, we can show you what to do and what not to do depending on the type of navigation bar you eventually choose.

Experts have often heralded Apple as the gold standard in web design. The company has managed to distill everything it does into seven links, not including the logo and a search bar. It's the epitome of simplicity and straightforwardness — from one of the largest companies in the world.

To its credit, CNN has to cover an entire planet of news, which makes it somewhat understandable that its site features a whopping 16 navigation bar links. While this navigation structure might work for CNN, it's highly unreasonable for your average personal or business website. Cramming this many links in the full width of the website hinders readability by forcing a small font size and very little negative space on either side of a link. On a practical level, it's a huge chore to read through every single link to decide where you need to go.

Drop-Down Multi-Level Navigation Bars :

Drop-down menus became very popular at the end of the '90s during the dot-com boom because they allowed a user to get to any page on a website with one click. While that may seem like a huge advantage at first, the option presents several usability problems if done incorrectly. Many users find these types of navigation bars frustrating because they require precise cursor movements in order to successfully move through deeper levels. With this in mind, it's best to reserve ample vertical and horizontal space for each link so that users can navigate without clicking on the wrong page.

Earlier this year, Denny's new website design that was met with mixed reviews. On one hand, the website featured an innovative and technically complex browsing experience, but for many critics, it was overdone. The navigation bar features gimmicky JavaScript "enhancements" that actually slow the user down. For example, when you hover over a link with the cursor, it takes a fraction of a second for the animation to fully reveal its contents. Even that fraction of a second is slower than our mind's ability to move forward.

Sony, sticking true to its understated style, provides a no-nonsense drop-down menu that gets the job done efficiently. Sony's helper icons next to links specify parent and action links. Overall, Sony's navigation bar responds instantly and manages to stay out of the user's way with its subtle yet effective design.

Mega Drop-Down Navigation Bars

Mega menus are the newest design craze for large sites with a lot of depth and categories, such as Zappos and The White House. These menus are usually only two levels deep, but the second level features a large panel complete with images or multiple columns of links. The benefit to these menus is that a site not only provides more links for the user, but also includes context and hierarchy within those links.

A mega menu's blessing can also be its curse. Sure, these navigation bars give you more room to include links, but without proper hierarchy and context, mega menus can quickly turn into a sea of unnavigable options. Perhaps the best example of this is Target.com. It doesn't take long to see that the company has crammed way too many links in its mega menu, without the proper hierarchy or context.

While it might seem convenient that a user can get to Target's "Spice Storage" department directly from the second level of its menu, is that really necessary? Including links like this creates too much noise and doesn't let the user focus on the important higher-level category items. Another big no-no is the sheer size of Target's menu. Some of the mega menu panels exceed the height of a standard 13-inch laptop screen size. The last thing you want is to force someone to scroll down to use your navigation menu.

Target could learn a few things from Lowe's website. Lowe's has managed to provide a wealth of links with plenty of hierarchy and context. For every panel of links, the company has made the most popular and timely links stand out by elevating them to large blocks of thumbnail images.

By distinguishing the most popular items, Lowe's makes it easy for users to access the links they're most likely to click anyway. The thumbnail images also contribute greatly to context. By providing recognizable images for their most popular categories, the user doesn't even have to read to understand which part of the menu he's in. It's akin to walking by Lowe's brick and mortar store, and scanning the contents of each aisle to zero-in on your desired product.

Conclusion

When choosing a navigation bar type, start simple. Evaluate your content thoroughly and ask yourself what your users need to access quickly. More often than not, a complex navigation system is an indicator you need better content planning and organization. If you absolutely need to give your users so many options directly inside the navigation bar menu, follow the principles mentioned above to create an efficient and enjoyable experience for your users.

What is to design?

Designing is a process of creating a plan and originating the development of a specific product. Once the product is designed, its design is used to start the production. Design often refers to the creation of a product prototype. In most cases the meaning of “product design” refers only to the product's appearance rather than to its construction, architecture and technical specifications.

Web Page Design

Web design itself refers to the process of creating a web page's appearance and to the choice of a right color scheme, page layout, fonts and more. Every single web page in a website has different content, but all the pages are using a similar graphic design. Often sites will use website templates, which contain all the basic elements of web design - the website's CSS style, buttons, backgrounds, borders and various graphic elements like hover images, bullets and header banners. When the website template is applied to the website, all the pages assume its appearance, using the same styles, background and other graphical elements.

But most of the pages in a website have their own design elements. This is needed because every page has to present a different content, and the basic website style is not fully applicable for all the web pages. For example, designing a contact form will sometimes require a custom layout and design elements with which to handle the form's fields, buttons, drop-down menus, etc. All these styles, layouts, images, etc. are often not applicable for the other website pages. So, the contact page uses the basic website template for the menus, backgrounds, header images, etc. but also has its own web page design, including the contact form's design itself and all the other elements specific for that page.

How to design a web page ?

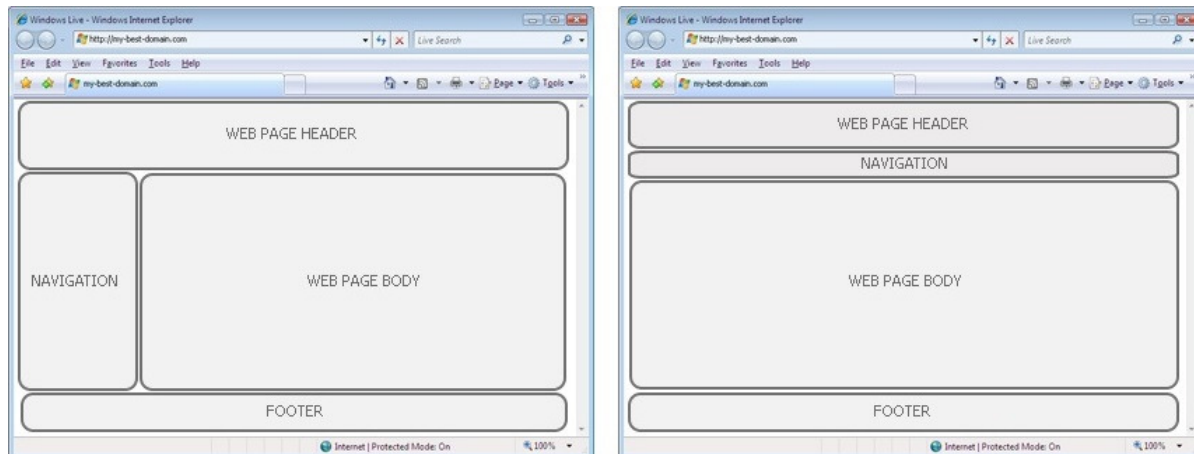
Before you start designing your web page, you have to figure out what sort of a web page it's going to be and what contents it should have. All this information is needed in order to successfully design a web page.

You need to know the type of the page, because there are different methods of approach when you design a static or a dynamic web page.

You also need to know the contents of the web page, because you need to arrange them within the page's layout. There are different types of content - text, images, videos, animations and other dynamic elements. In order to create a successful web page you need to put the right content in the right place.

It is very important to consider what the page's purpose will be when you start sketching it. Creating the basic layout, color scheme and arranging the content, is the second important step. Now, when you come up with some basic design idea you may discuss it with your client. If the client has some notes about the design it's good to consider them, but remember - you are the web designer. You have the knowledge and you are the one who has to tell the client how the web page should look.

Once you have an approved design conception you can proceed with revising the current basic layout, designing the page's specific elements and putting some final touches to your web page design.



Designing the layout for a website is a lot like painting a masterpiece. The information is like the paint, and the Web is your canvas.

Just as painters like to make sure that their works will capture the attention of their audience more than any other painting before it is revealed to the public, web designers want to grab the attention of their audience as well. Here are a few tips that will keep viewers returning to your soon to be spectacular website.

1. Be intriguing from the very start

The top of your homepage is where your site reputation begins. Most of your visitors will rest their eyes here first. Make sure all of your essential information is dynamically displayed from the very start. Naturally you'll want to include your logo. Logos solidify a brand name and make the company easily recognisable. You could also include links to other websites and commercials. If the site will contain a sign up and sign in area then the top of the homepage is an excellent place to start. What's the number one value proposition of your product or service? Get it front and centre.

2. A logo is crucial

As mentioned above, you need a logo to kick off the brand theme, narrative and personality of your site. You can't include a logo in your web design layout if the company doesn't have one. If you discover that the business doesn't have a set brand, then develop a unique logo that captures the nature of the business, and incorporate it into the design.

3. Keep the fancy stuff to a minimum

This tip may be against your natural instinct, but keep images, flash, and java scripts to a minimum. While it is an excellent idea to add visual appeal to your website, you don't want slow down the viewing process with unnecessary bells and whistles. If a visitor has a slow connection, or if your heavy graphic website design is taking too long to load, then you'll risk losing your audience.

4. Don't be long winded

Instead of using long paragraphs try shorter paragraphs that have links to a full article. You don't want to lose your viewer's attention span due to monotonous type. Expertly concise content and web copy is crucial when it comes to website layout design and keeping your visitors from jumping ship before getting the point you're trying to put across.

5. Fancy fonts should also be functional

Although expressive fonts can add to the theme of your layout, don't go overboard. Choose a font type that will be easily legible for any necessarily longer pieces of writing. Also make sure that any changes in font size logically reflect the importance of calls to action, titles and other more elements.

6. Keep the navigation logical

Visitors should be able to navigate through your web pages effortlessly. Keep the layout logical, and leave a trail for your viewers by incorporating subtle clues to guide them where they want to go. Clear menus, a site map, and intuitive navigation will greatly increase the conversions from your website. Make it as easy as possible for people to get the necessary information to make a considered purchase... and they will.

7. Keep your theme consistent

There may be a plethora of exciting themes you could use for a website, but that doesn't mean you should confuse things by throwing in multiple themes for one site. When you keep it to a single unified theme throughout, you can maintain consistency and give your website a clean professional look.

8. Don't forget about screen resolution

A professional website design should be completely responsive and able to fit any screen resolution. Keep the various vantage points of your future viewers in mind as you design.

9. Colour is always important

Colour is an important aspect of most artistic projects. If you truly want your website to be spectacular, then avoid using colours that don't blend well with each other. Using a reasonably limited palette of colours on your website's functional areas will prevent your design clouding the purpose of your site. Of course, if you want to include images, then you can be more relaxed with the colour restrictions.

Web designers everywhere want to grab the attention of their audience and keep it. When you follow these simple tips for web layout design, you'll encourage your visitors to stay, read, interact, and buy from your site. Making it as informative, fun, interactive, simple, refreshing and intuitive as possible will increase your conversions, and improve your business.

CHAPTER-IV : MS-EXCEL

A electronic spreadsheet is a table consisting of rows and columns. In spreadsheet the columns are labeled with alphabets and rows are labeled with numbers. Each intersection of the rows and columns are called as cells.

The Spread sheet software helps in entering the data into each cell. The intersection of row and column is called cell. Each cell is referred with row title and column heading called Cell Address. For Example the first cell address is A1 and last cell address is IV65536. Therefore each spread sheet consists of 65536 rows and 256 columns. It has total 1,67,77,216 cells.

The spreadsheet helps in easy calculations and accurate results as compared to manual calculating.

Characteristics of Spreadsheet :

Spreadsheet software is one of the most popular application package. These software applications are mainly developed to use in problem-solving and decision making. The important characteristics of spreadsheet are :

- 1) Table Format
- 2) Data Forms
- 3) Recalculation
- 4) Storage and Retrieval
- 5) Presentation
- 6) Standard Formats

1] Table Format : A Table is make up of rows and columns. The intersection of row and column is called a cell. The address of the cell is identified by the rows and columns that intersect to form a cell. For Example : A1 is the first cell address.

2] Data Forms : Three different kinds of data are entered in the spreadsheet. They are :

- a) Labels or Titles
- b) Numbers
- c) Calculated Entries

a) Labels or Titles :

Label is a name or a description of a particular thing, place or name. For example : a student data can have the labels as Name of Student, Subjects : English, Kannada, Maths, Social Studies, Sciences and Total.

b) Numbers :

Numbers are the data that are directly entered into the cells of the spreadsheet.

c) Calculated Entries :

Calculated entries are received using a formula. Calculated entries are the figures that they got from the existing entries. The formula is entered into the cell and the spreadsheet software calculates the value and puts the calculated entries in the cells. For Example : =A2+B2+C2+D2+E2

3] Recalculation :

After entering the tables, numbers and formulas, the spreadsheet software automatically calculates the results. If any numbers are revised or changed then again it can be recalculated. If the data has changed in one cell the corresponding formula recalculates to show new result.

4] Storage and Retrieval :

The Spreadsheet software has the ability to store and retrieve the data as many times as required. It can store the data in the hard disk or in floppy disk. Two or three values can be retrieved every time. This is one of the most important features of spreadsheet software.

5] Presentation :

Today most of the spreadsheet packages have the capacity to convert the figures into graph and charts. Graphs and charts help in easy understanding and in comparison of the results. Thus communicating the results has become more effective through graphical presentation.

6] Standard Formats :

Here the data is downloaded from other computers and data sources are used as standard formats. The data stored is downloaded into the spreadsheet that can be analysed, manipulated, used for presentation purpose etc.,

SPREAD SHEET PACKAGES

Bricklin, Frankstron and Fylstra first introduced the visicalc spreadsheet application for apple computers in 1970. This software was sold to Lotus development corporation, that late in 1983 developed Lotus 1-2-3 spreadsheet. This spreadsheet program was a combination of three functions namely graphics, spreadsheet applications and data management.

There are number of spreadsheet packages available in the market like Lotus 1-2-3, vp planner, Excel etc., Thus it is easy and flexible to be used.

Thus Electronic Spreadsheet are useful in calculating taxes, quality control, financial account and statement, statistical analysis and budgeting, sales analysis, sales invoicing, production scheduling etc.,

MS EXCEL

MS Excel is the most powerful and user-friendly spreadsheet package. Excel software is very helpful in organizing, analyzing, managing and storing data in numerical form.

MS Excel has a grid of rows and columns. The rows are numerically numbered as 1,2,3,4,..... So on and the columns are alphabetically names as A,B,C,D,.....,Z and after Z next column is continued naming as AA,AB,AC,AD,..... then BA,BB,BC,BD,..... so on. The intersection of row and column are called as cell.

The Workbook :

A workbook is an Excel file where the user stores his data. Each workbook consists of several worksheets i.e., a workbook can be thought of as a File folder, and a worksheet as every page in the file folder. The workbook saved with the extension .xls

The Worksheet :

Excel organizes data in a single worksheet by location. The worksheet is displayed as a grid of 65536 and 256 columns. The intersection of a row and a column is called as a Cell. There are approximately over one crore cells in a single worksheet and each can hold upto 255 characters. Each cell is surrounded by light gray lines known as Gridlines.

Each cell is identified by a Cell Address which is made up of a row and a column number. The address of the first cell in a worksheet is A1 and that of the last cell is IV65536.

The Active Cell is the cell in which one starts typing data. Only one cell can active at a time and is shown by a heavy border.

Navigating Worksheet :

To move around the worksheet you can use the mouse or keyboard.

- 1) Left, Right, Down and Up keys are used to move one cell to the left, right, down and up cells.
- 2) PgDn and PgUp are used to move one screen down and one screen up.
- 3) Alt+PgDn and Alt+PgUp are used to move one screen to the right and one screen to the left.
- 4) Ctrl+Left and Ctrl+Right are used to move to the beginning and end of contiguously occupied cells.
- 5) Ctrl+Up and Ctrl+Down are used to move to the top and bottom of contiguously occupied cells.
- 6) Ctrl+Home and Ctrl+End are used to move to the first and last cell in the active sheet.
- 7) Ctrl+PgDn and Ctrl+PgUp are used to move one sheet to the right and left

STARTING MS EXCEL

- 1] Click on **Start** Menu
- 2] Click on **All Programs** option
- 3] Click on **Microsoft Office**
- 4] Click on **Microsoft Office Excel 2007** option

ENTERING TEXT

To enter text, the cell where data is to be entered is selected first and then the text is typed. The text is then terminated by press **Enter** key. The typed text appears in the active cell as well as the formula bar. If cell contains any text, then it replaces old text with new text in the cell. Use F2 key to edit the text in the cell.

ENTERING DATA IN A SERIES

Although, Excel can perform several tasks, the user has to enter numbers and text manually. However, Excel provides a solution to this time-consuming process. Whenever, the user wants to fill a cell range with data that forms a series (for e.g., 1,2,3 ... Mon, Tue, Wed ... or Jan, Feb, Mar ...) the data input can be automated. This can be done by using Fill Handle. The Fill Handle is a black square located on the lower right corner of the selected cells. This called as the Autofill feature.

Copying or Moving Cell Contents :

- 1] Select the Cells you want to copy
- 2] Click on **Home** Tab, in the **Clipboard** group, Click on **Copy** button
- 3] Select the destination Cell
- 4] Click on **Home** Tab, in the **Clipboard** group, Click on **Paste** button

Saving a Workbook

Excel allows to save the files in terms of workbook. It also provide two options to save the document i.e., Save and Save As. Save As is used for the first time to save the workbook with a new filename and Save is used to update the modified information to the existing workbook.

- 1] Select **Office** button
- 2] Select **Save As** option
- 3] Select the **folder** where you want to save workbook
- 4] Type the **workbook name**
- 5] Click on **Save** button

Note : Use Ctrl+S shortcut to save the workbook.

Formulas in Excel

The user can create formulae to perform calculations as simple as adding values in two cells. Formula can be of three types :

1] Text Formulae :

It uses text and hence it is called text formulae. It may contain a text operator & (ampersand).

For Example : =A1&B1
 ="Computer"&"Application"

2] Numeric Formulae :

They contain arithmetic operators like +, -, *, /, ^ or %.

For Example : =A2+B2
 =A2-B2
 =A2*B2
 =A2/B2

3] Logical Formulae :

They contain comparison operators like <, >, <=, >=, <>. It gives result in terms of true or false.

For Example : =A2>=18
 =A2>=35

The following points to be remembered while entering formulas.

- 1] A formula must always begin with an Equal to(=) sign. It can also begin with a '+' or '-' sign.
- 2] A formula can be upto 255 characters long.
- 3] It cannot contains spaces, except between a set of letters, numbers or symbols enclosed in quotation marks i.e., strings.

Functions in Excel

Functions are special pre-written formulae that take a value or values, perform an operation, and return a value or values in the cell in which they are entered. Function help to perform complex computations quickly. Functions are the powerful feature of Excel.

Function consists of two parts. Those are :

- 1] Function Name
- 2] Argument Name.

Function Name :

Within the function one value may be optional and other may be mandatory.

Argument Name :

Arguments are nothing but values. These values are mandatory in some case and optional in some other cases.

Entering Functions

The sequence of characters used to enter a valid function is called the syntax. All functions have the basic syntax. The syntax for entering functions is as follows :

=function(value,.....)

- 1] All functions begin with a '=' sign.
- 2] Parentheses are used to enclose all arguments whereas commas are used to separate individual arguments within arguments. Example : =sum(2,13,50,67)
- 3] Spaces cannot occur anywhere within a function, except within a string enclosed in quotation.
- 4] Two or more arguments within a function are separated by commas.

Different Functions used in Excel are :

1] Round() Function :

Round() function helps in rounding up of the specified numbers of decimal places.

Syntax :

=round(number, num_digits)

Example : Assume A2 cell contains value 4.974, then

=round(A2,2)

The result will be **4.97**

2] Sqrt() Function :

Sqrt() function helps in calculating the square root of specified numbers.

Syntax :

=sqrt(number)

Example : Assume A3 cell contains value 16, then

=sqrt(A3)

The result will be **4**

3] Average() Function :

Average() function helps in calculating the average of series of specified numbers.

Syntax :

=average(number1, number2, ...) or
=average(range)

Example : Assume A2 to G2 cells contain values 45, 50, 65, 85, 90, 75, then

=average(45, 50, 65, 85, 90, 75) or
=average(A2:G2)

The result will be **68.33333**

4] Max() Function :

Max() function helps to find the maximum or highest value from a series of specified numbers.

Syntax :

=max(number1,number2,...)
=max(range)

Example : Assume A2 to G2 cells contain values 45, 50, 65, 85, 90, 75, then

=max(45, 50, 65, 85, 90, 75) or
=max(A2:G2)

The result will be **90**

5] Min() Function :

Min() function helps to find the minimum or lowest value from a series of specified numbers.

Syntax :

=min(number1,number2,...)
=min(range)

Example : Assume A2 to G2 cells contain values 45, 50, 65, 85, 90, 75, then

=min(45, 50, 65, 85, 90, 75) or
=min(A2:G2)

The result will be **45**

6] Count() Function :

Count() function helps to find the number of entries in a specified range.

Syntax :

=max(number1,number2,...)
=max(range)

Example : Assume A2 to G2 cells contain values 45, 50, 65, 85, 90, 75, then

=count(45, 50, 65, 85, 90, 75) **or**
=count(A2:G2)

The result will be **6**

7] Sum() Function :

Sum() function helps to calculate the total of the entries made in a specified range.

Syntax :

=sum(number1,number2,...)
=sum(range)

Example : Assume A2 to G2 cells contain values 45, 50, 65, 85, 90, 75, then

=sum(45, 50, 65, 85, 90, 75) **or**
=sum(A2:G2)

The result will be **410**

8] Abs() Function :

Abs() function helps to get the absolute value of a number. The absolute value of a number here stands for the number without plus (+) or minus (-) sign.

Syntax :

=abs(number)

Example : Assume A3 cell contains value - 45 , then

=abs(A3)

The result will be **45**

9] Roman() Function :

Roman() function is used to convert an numeral into Roman digits.

Syntax :

=roman(number)

Example : Assume A3 cell contains value 50 , then

=abs(A3)

The result will be **L**

10] Upper() Function :

Upper() function helps to convert lower or small letters into upper or capital letters.

Syntax :

=upper(string)

Example : Assume A3 cell contains value “computer” , then

=upper(A3)

The result will be **COMPUTER**

11] Lower() Function :

Lower() function is used to convert an upper letter or alphabets into smaller letters.

Syntax :

=lower(string)

Example : Assume A3 cell contains value “COMPUTER” , then

=lower(A3)

The result will be **computer**

12] Today() Function :

Today() function is used to display the current system date. It does not require any user arguments.

Syntax :

=today()

Example :

=today()

The result will be **9/16/2007**

13] Now() Function :

Now() function is used to display the current system date and time. It also does not require any user arguments.

Syntax :

=now()

Example :

=now()

The result will be **9/16/2007 23:25**

14] If() Function :

If() function helps in conducting conditional test on values and formulas and execute operation based on the result of that test. If the special condition or criteria is satisfied If() returns a value “T” for true otherwise “F” for false. Two different specified actions i.e., one for true outcome and other for false outcome can be performed.

Syntax :

=if(condition,true,false)

Example : Assume I2 contains the value as 65, then

=if(I2>=35,"PASS","FAIL")

The result will be **PASS**

15] And() with If() Function :

And() logical function is used with If() function. It is used to compare more than one condition. If all the given conditions are true, then it gives true result otherwise it gives false result.

Syntax :

=If(And(Condition1,Condition2,...),true,false)

Example : Assume I2 contains the value as 45, then

=If(And(I2>35,I2<50),"PASS","FAIL")

The result will be **PASS**

The Complete Results Can find using the following formula :

=If(And(I2>=35,I2<50),"PASS",If(And(I2>=50,I2<60),"SECOND",If(And(I2>=60,I2<80),"FIRST",If(And(I2>=80,I2<=100),"DIST","FAIL")))))

UNIT V – DATA MANIPULATION IN MS EXCEL

Inserting Rows and Columns :

Some times, it may happen that after the spreadsheet is created the user may want to insert some extra rows and columns for some purpose like entering a row and column of data which was forgotten to be entered when the spreadsheet was initially created.

To Insert a New Rows

- 1] Place the Cell Pointer where you want to place the row
- 2] Select **Insert** button from **Home** tab
- 3] Select **Insert Sheet Rows** option

To Insert a New Column

- 1] Place the Cell Pointer where you want to place the column
- 2] Select **Insert** button from **Home** tab
- 3] Select **Insert Sheet Columns** option

Insert Cells

Sometimes, instead of inserting entire rows or columns, the user may want to insert a few cells.

- 1] Place the Cell Pointer where you want to place the cell
- 2] Select **Insert** button from **Home** tab
- 3] Select **Insert Cells** option
- 4] Choose **Shift Cells Right** or **Shift Cells Down** option
- 5] Click on **Ok** button

Deleting Rows and Columns

Excel also provides the facility of deleting entire rows or columns. When rows are deleted, all subsequent rows are shifted to upwards and when columns are deleted all subsequent columns are shifted to the left.

- 1] Place the Cell Pointer
- 2] Select **Delete** button from **Home** tab
- 3] Select **Delete** option
- 3] Choose **Entire Row** or **Entire Column** option
- 4] Click on **Ok** button

Formatting Text with Fonts :

Font characteristics of cells can be formatted to change the appearance of data that is entered into the cells. The data can be formatted with a different font, size, style and color.

- 1] Select the Cells
- 2] Click on **Home** tab
- 3] Select **Font Name** from **Font** group
- 4] Select the **Font Size**
- 5] Select **Font Style**
- 6] Select the **Font Color**

Adding Borders, Patterns and Colors

Excel offers a wide range of border types, width, patterns and colors which can makes the worksheet look more attractive.

- 1] Select the Cells
- 2] Click on **Home** tab
- 3] Click on **Borders** button from **Font** group
- 4] Select the desired **Line Style & Color**
- 5] Click on **All Borders** button

Aligning Workbook Data

Besides formatting the numbers present in the worksheet, it is equally important to format the text. Whenever text is entered into a worksheet, it is automatically left aligned and numbers are automatically right aligned. However it may be necessary that text has to be right or center aligned. Excel provides two types of text alignment i.e., Horizontal and Vertical. Horizontal align contains the values as Left, Right, Center, Justify etc., and Vertical align contains the values as Top, Bottom, Centered etc.,

- 1] Select the Cells
- 2] Click on **Home** tab
- 3] Click on the desired **Horizontal Alignment** buttons (Left, Center, Right)
- 4] Click on the desired **Vertical Alignment** buttons (Top, Middle, Bottom)

Printing a Workbook

To print worksheet data on to the paper we should inform to the excel, what to be printed. We should set some settings before the actual printing is done. The step by step procedure to print the worksheet as follows :

1] Identifying the Print Area :

By default Excel selects everything that is entered on the current sheet. In cases where only a portion of the worksheet is to be printed, the user has to highlight/mark the print range.

Highlighting/Marking the Print Area

- 1] Select the Cells
- 2] Select **Page Layout** tab
- 3] Click on **Print Area** button
- 4] Select **Set Print Area** option

Removing the Print Area

- 1] Select the highlighted Cells
- 2] Select **Page Layout** tab
- 3] Click on **Print Area** button
- 4] Select **Clear Print Area** option

2] Setting Up the Printed Page

Before printing the data we should set the margins, orientation, paper size, header & footer, page order etc.,

- 1] Select **Page Layout** tab
- 2] Click on **Margins** button
- 3] Select **Custom Margins** option
- 4] Set the **Top, Bottom, Left, Right, Header and Footer** margins
- 5] Click on **Page** tab
- 6] Select the desired **Orientation** (Portrait or Landscape)
- 7] Select the desired **Paper Size** (A4, A3, Letter, Legal etc.,)
- 8] Click on **Sheet** Tab
- 9] Select the **Page Order** (Down, then over & Over, then down)
- 10] Click on **Print Preview** button
- 11] Click on **Close** button

3] Printing the Worksheet

After setting all the options to print, then it is ready to start actual printing.

- 1] Select **Office** button
- 2] Select **Print** option (Ctrl + P)
- 3] Select the **Printer Name** from the list
- 4] Select the **Print Range** (All or Page(s) From & To options)
- 5] Select the **Print What** (Selection, Entire Workbook, Active Sheet)
- 6] Type the **Number of Copies**
- 7] Click on **Ok** button

Sorting Data :

You can sort data by text (A to Z or Z to A), numbers (smallest to largest or largest to smallest), and dates and times (oldest to newest and newest to oldest) in one or more columns.

- 1] Select the range of cells
- 2] Click on **Home** Tab, in **Editing** group, Click on **Sort & Filter** button
- 3] Click on **Sort A to Z** or **Sort Z to A** option

Filters :

Filtered data displays only the rows that meet criteria (criteria: Conditions you specify to limit which records are included in the result set of a query or filter.) that you specify and hides rows that you do not want displayed. After you filter data, you can copy, find, edit, format, chart, and print the subset of filtered data without rearranging or moving it.

You can also filter by more than one column. Filters are additive, which means that each additional filter is based on the current filter and further reduces the subset of data.

- 1] Select the range of cells
- 2] Click on **Home** Tab, in **Editing** group, Click on **Sort & Filter** button
- 3] Click on **Filter** option
- 4] Click on **Arrow** button in the header
- 5] Select the desired **Text Filter**

Macros :

Macro is a shortcut for executing a set of Excel commands i.e., macros are a set of instructions that orders the Excel to perform an action. Macro helps the user to execute command in few steps.

There are two kinds of Macros in Excel

- 1] **Command Macro** : It is a series of Excel Commands.
Example of command macro is a macro written to save the worksheet.
- 2] **Function Macro** : It is a user defined function that returns a value.
Example : It would be the calculation of Local Sales Tax.

Recording or Documentation of Macros :

As the user is creating number of macros, it becomes difficult to remember the operation of each macro. Therefore it is essential to create a documenting macro that helps to brief the operations quickly. Excel offers 3 options as to where the macro is to be recorded. Those are :

1] This workbook :

The macro can be recorded in the current workbook in a separate sheet.

2] New Workbook :

A separate workbook is created for the macro. The workbook contains only a sheet for recording the macro. The macro will be available when this workbook is loaded.

3] Personal Macro Workbook :

The personal macro workbook is automatically hidden by Excel. It is stored in the “xlstart” directory when it is saved and hence it is automatically opened whenever Excel is started.

Recording or Creating a Macro

- 1] Select **Tools** menu
- 2] Select **Macro** option
- 3] Select **Record New Macro**
- 4] Type the **Macro Name & Shortcut Key**
- 5] Select any one option from **Store Macro in** list
- 6] Click on **Ok** button
- 7] Perform the actions (Excel Commands) which are required to store
- 8] Select **Tools** menu
- 9] Select **Macro** option & Select **Stop Recording** option

Running the Macros

Once the macro is recorded systematically and correctly, the user can “Play Back” or go back to the steps from the beginning and repeat it one by one as to whatever has been recorded. This replaying is called as “Running the Macro”. We can run the macro using menu option or shortcut key.

- 1] Select **Tools** menu
- 2] Select **Macro** option & Select **Macros**
- 3] Select the Macro Name from the list
- 4] Click on **Run** button

Deleting the Macros

Macros can be deleted by erasing the range of Macros. Once the range is erased the commands and the macro get permanently deleted.

- 1] Select **Tools** menu
- 2] Select **Macro** option & Select **Macros**
- 3] Select the Macro Name from the list
- 4] Click on **Delete** button
- 5] Click on **Yes** to confirm deletion

Graphs and Charts in Excel

A chart is a graphical representation of spreadsheet data. Chart gives a clear picture about the data, which makes it easy to understand. Chart helps to analyze data and make comparison between different worksheet values.

Charts can be embedded in the current spreadsheet or it can be stored separately on chart sheet that can be either viewed, edited or printed. Excel charts can be of two types :

- 1] 2 Dimensional Chart [2-D]
- 2] 3 Dimensional Chart [3-D]

Elements of 2-D Charts :

- 1] **Chart Title** : The title can be selected from a cell on the worksheet or it can be directly added to the chart.
- 2] **Data Marker** : It is used to differentiate series of one data from that of another.
- 3] **Data Labels** : Labels are displayed to show the value of data point.
- 4] **X-axis** : It shows the categories of the data points that are plotted. Therefore it is also known as “Category axis”.
- 5] **Y-axis** : It shows the data points values that are plotted. It is also called as “Series” or “Rank axis”.
- 6] **Gridlines** : Gridlines are displayed for both X-axis and Y-axis that helps to read the values of individual data points.

Elements of 3-D Charts :

- 1] **Z-axis** : Z-axis shows the value of the data therefore it is also called as “Value” axis.
- 2] **Corners** : To give different views to the user, the corners can be easily rotated.
- 3] **Wall** : Wall is a background of the plotted area.

Types of Charts :

1] Column Chart :

A column chart illustrates the comparison among the data. The categories column chart consists of a series of vertical columns. Each column is a single data point or number on the sheet.

2] Bar Chart :

A Bar Chart consists of a series of horizontal bars that help in the comparison of two or more items at a time. Bar chart are of three types.

- a) **The Stacked Bar Chart** : The data is stacked in a series one after the other in a single bar i.e., the data is displayed in multiple segments within a single bar.
- b) **The 100% stacked Bar Chart** : The 100% stacked bar chart are of same height representing 100% heights. Instead of numerical numbers the segments are converted into percentage of the total.
- c) **3-D Bar Chart** : A 3-D bar chart adds depth to the standard bar chart. It does not have any 3D dimension.

3] Line Chart :

A line chart used to show the trends over a period of time. Here each of the data series is used to produce a line in the chart, where each number in the range produce a data point on the line. There are two variations in Line Chart.

- a) 3-D Line Chart : 3-D line charts represents depth in the line
- b) High-Low-Close Chart : It is a three data series line chart. It is usually to display a stocks high, low and closing prices or a particular time period. It is also used in currency exchange rates, pressure management, commodity process etc.,

4] Pie Chart :

Pie Chart is used in comparing the percentages of a sum represented by several numbers.

5] XY Chart or Scatter Chart :

This type of chart is used to represent the relationship between two numbers. From two numbers, one number is plotted on X-axis and other on Y-axis. A symbol is placed on the chart where both meet.

6] Area Chart :

An area chart emphasizes the magnitude of change over time. Area chart helps the user to get a clear picture about the change in the individual components and the total. It is stacked line chart, with the area between the lines that are filled with colours and shadings. It is usually useful when several components are changing and the user is only interested in the sum of the components.

7] Doughnut Chart :

Like a pie chart, a doughnut chart shows the relationship of part to a whole, but it can contain more than one data series. Each ring of the doughnut chart represents a data series.

8] Radar Chart :

Radar Chart shows that each category has its own value axis radiating from the centre point. Lines connect to plot several interrelated series. By Radar charts one can make a visual comparison very easily.

Creating a Chart

- 1] Place the cell pointer in the data area
- 2] Select **Insert** menu
- 3] Select **Chart** option
- 4] Select the **Chart Type & Chart Sub Type**
- 5] Click on **Press and hold to view sample** button
- 6] Click on **Next** button
- 7] Select the range of cells in **Data Range** box
- 8] Select the **Series In** (Rows or Columns)
- 9] Click on **Next** button
- 10] Type the **Chart Title, X-axis & Y-axis title**
- 11] Click on **Legend** tab & Select **Placement** of legend
- 12] Click on **Next** button
- 13] Select the **Place Chart** (As New Sheet or As Object in)
- 14] Click on **Finish** button