



# INFORMATION TECHNOLOGY

Standard Twelve  
COMMERCE



# The Constitution of India

## Chapter IV A

### Fundamental Duties

#### ARTICLE 51A

**Fundamental Duties-** It shall be the duty of every citizen of India—

- (a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
- (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- (c) to uphold and protect the sovereignty, unity and integrity of India;
- (d) to defend the country and render national service when called upon to do so;
- (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities, to renounce practices derogatory to the dignity of women;
- (f) to value and preserve the rich heritage of our composite culture;
- (g) to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures;
- (h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
- (i) to safeguard public property and to abjure violence;
- (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;
- (k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.

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# INFORMATION TECHNOLOGY

## STANDARD - TWELVE (Commerce)



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relevant lesson.

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## **The Constitution of India**

### **Preamble**

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens :

JUSTICE, social, economic and political ;  
LIBERTY of thought, expression, belief, faith and worship ;  
EQUALITY of status and of opportunity ;  
and to promote among them all  
FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation ;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

## NATIONAL ANTHEM

Jana-gana-mana-adhināyaka jaya hē  
Bhārata-bhāgya-vidhātā,

Panjāba-Sindhu-Gujarāta-Marāthā  
Drāvida-Utkala-Banga

Vindhya-Himāchala-Yamunā-Gangā  
uchchala-jaladhi-taranga

Tava subha nāmē jāgē, tava subha āsisa māgē,  
gāhē tava jaya-gāthā,

Jana-gana-mangala-dāyaka jaya hē  
Bhārata-bhāgya-vidhātā,

Jaya hē, Jaya hē, Jaya hē,  
Jaya jaya jaya, jaya hē.

## PLEDGE

India is my country. All Indians  
are my brothers and sisters.

I love my country, and I am proud  
of its rich and varied heritage. I shall  
always strive to be worthy of it.

I shall give my parents, teachers  
and all elders respect, and treat  
everyone with courtesy.

To my country and my people,  
I pledge my devotion. In their  
well-being and prosperity alone lies  
my happiness.

## Foreword

**Dear Students,**

Congratulations to all of you for the successful completion of Std XI and welcome to the second year of Higher Secondary Education. The syllabus of Information Technology (**Commerce**) at Higher Secondary Level has been revised and implemented in view of the fact that computer is used currently as a tool for various applications, especially in the field of e-Banking, e-Commerce, e-Governance, etc. Higher studies and placements, at present, greatly demand human resources with adequate knowledge in computer applications and information technology.

The Information Technology aims to equip students the knowledge, skills and attitudes to become productive employees in the area of Computer science and technology. In this course, you all will gain a perspective to become a successful entrepreneur in Information Technology and allied sectors. Scope of this textbook also provides you all with the foundation for higher studies. Information technology is one of the most significant growth catalysts for the Indian economy. I am sure after completion of HSC with IT, you will acquire skills and competency to enter in the upcoming job market.

In Class XI, the syllabus focused on the fundamentals of computer, computer network, basics of website designing and some knowledge of database. Emphasis is also given to put a strong foundation to develop problem solving skills and create computer programs using JavaScript as a scripting language. You all are also familiar with web page designing and database concepts.

The syllabus of Class XII Information Technology (Commerce) is a continuation to that of Class XI. Hence the textbook designed in accordance with the syllabus, begins with some advanced features of HTML5. Since we are in the age of Internet and most of us are users of web applications, concept of digital marketing is being introduced to become Digital Marketing expert. The concept of database and facilities of information retrieval are included with Libre Office (Base). A chapter is dedicated to present a brief idea about Enterprise Resource Planning.

This book will surely meet all the requirements for stepping to levels of higher education and pave the way to the peak of success. Each unit comprises of simple activities and demonstrations which can be done by you on your own.



**(Vivek Gosavi)**  
**Director**

**Pune**

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Maharashtra State Bureau of Textbook  
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## For Teachers

**Dear Teacher,**

The subject Information Technology (**Commerce**) is an optional subject of the Higher Secondary Education. The content is developed in view of the fact that it should be useful to the students for their higher studies and they should be able to use computer as a tool in accounting and other commercial applications. Besides, if somebody wishes a shift towards the IT field in higher education, the syllabus can cater to their needs. Although the field of IT continues to expand rapidly, it is not feasible to expand the size of the curriculum proportionately. As a result, the syllabus has been designed in such a manner to inculcate the current technical knowledge among the students.

The textbook on Information Technology (**Commerce**) is developed as per the approaches and methods used in recent era of internet and web. As the curriculum is activity-based, process-oriented and based on constructivism, it demands higher level proficiency and dedication from the part of the teachers for effective teaching.

This textbook takes two aspects into consideration - **knowledge domain** and **process domain**. The knowledge area of the curriculum of Class XII is a continuation to that of Class XI. The programming aspects to solve complex problems and handle complex data are introduced. Since we are in an era of Internet, a wide coverage is given to the contents required for designing web pages and developing web applications. It also enhances the knowledge of web hosting. The knowledge domain also initiates brief idea about Enterprise Resource Planning with its various aspects. The new concept of digital marketing is presented in this textbook in the dialogue format. This type of format may make students to understand the concept quickly and permanently. The concepts such as E commerce and E Governance will make student aware about the digitalization process. The knowledge about the same is must for today's generation.

The process domain gives importance to gain the scientific and logical method and develop interest for deeper investigation. The accounting software package topic gives freedom to use any accounting software. We prefer FOSS policy. The conceptual idea behind this topic is that, the process of computerised accounting should be understood by the students. While transacting the concepts through activities, it should be ensured that the students are attaining the skills along with learning outcomes.

The Textbook IT (**Commerce**) is prepared by a team of practicing teachers under the guidance of a panel of subject experts. All possible efforts have been taken to make the book learner-friendly and interesting. There is no denying the fact that our teachers are resourceful and committed, and hence directions towards the right path can make the transaction of the curriculum most effective and productive.

Constructive criticism and creative suggestions for improvement of the book are most welcome.

**Information Technology**  
**Subject Committee and Study Group**  
Textbook Bureau, Pune



## Competency Statements For Information Technology Standard - XII (All Streams)

Competency
Theory
<ol style="list-style-type: none"> <li>1. To create awareness and acquire knowledge about new technology.</li> <li>2. To acquire in-depth knowledge about technologies related to AI, IOT, 3D Printing, 5G.</li> <li>3. To enable the student to think and create interest in emerging technology from career point of view.</li> <li>4. To make students aware about concept of E-commerce.</li> <li>5. To acquire knowledge about scope of E-commerce.</li> <li>6. To create awareness about different E-commerce websites and discuss its features.</li> <li>7. To develop higher order logical skills based on basic knowledge acquired in 11<sup>th</sup> standard.</li> <li>8. To make students aware about HTML5's advanced tags while developing web page.</li> <li>9. To make students competent in scripting language to create dynamic web page.</li> <li>10. To acquire knowledge about concept of object.</li> </ol>
Skill Oriented Practicals (SOP)
<ol style="list-style-type: none"> <li>1. To inculcate web designing skills using advance tags.</li> <li>2. To make students confident to create website.</li> <li>3. To develop skills for programming using DOM.</li> <li>4. To develop ability to create dynamic web pages using advance features.</li> <li>5. To develop ability to program for server side scripting.</li> <li>6. To develop skill to create simple PHP Program.</li> <li>7. To make student aware about connectivity with database.</li> <li>8. To develop skill in handling accounting package with advance feature.</li> <li>9. To make student competent to display and print different accounting report.</li> <li>10. To acquire skills in recording and manipulating audios.</li> <li>11. To make student skillful to mix audio.</li> <li>12. To acquire skills to record, create and manipulate video.</li> <li>13. To enhance the creative ability by mixing and fusion of the different media.</li> </ol>

# INFORMATION TECHNOLOGY

## STANDARD - TWELVE

### (Commerce)

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#### Skill Oriented Practicals (SOP)

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**Let us learn**

- Student can design the layout of web pages using CSS.
- Students can learn to design the website.
- Student can design the web form with validations.
- Students can learn concept of image map and Iframe (inline frame).
- The aim is to give the skills to create HTML WebPages, using HTML5 and CSS.

**1.1 Advanced Web Designing**

We have been introduced to basic terminologies related to creation of web pages. The Hypertext Mark-up Language (HTML) is an evolving language, with

different versions supporting different features. HTML5 is currently used because it supports mobile technology. The major browsers are Google Chrome, Mozilla Firefox, Microsoft Edge, Safari, Opera and Apple support the features of HTML5.

**1.2 Forms in HTML5**

In eleventh standard we have studied different controls related to form like text, radio, checkbox, submit, reset, select and textarea.

These controls are used to collect different kinds of user inputs, such as contact details like name, address, single or multiple options from group of options, as well as clearing and submitting data etc.

HTML5 has introduced additional form controls which can also be used for validation purpose.

**HTML5 advanced <input> elements**

HTML5 introduces a number of new input type values for the type attribute of <input> tag.

Input type	Description
<input type="color">	Defines a color picker
<input type="number">	Defines a field for entering a number
<input type="url">	Defines a field for entering a URL.
<input type="image">	Defines an image as a submit button.
<input type="date">	Defines a date picker with the year, month and day
<input type="email">	Defines a field for an e-mail address



Input type	Description
<input type="month">	Defines a month and year control in format is "YYYY-MM"
<input type="range">	Define a range control. Default range is 0 to 100.
<input type="datetime-local">	Defines a date picker that includes the year, month, day and time.
<input type="time">	Defines a control for entering a time.
<input type="week">	Defines a week and year control.
<input type="search">	Defines a text field for entering a search string like a site search or Google search.
<input type="file">	Defines a file-select field and a "Browse" button for file uploads.
<input type="tel">	Used to define input fields that should contain a telephone number.

## Input Restrictions

A list of some common input restrictions is given below, few of which can be used for validation purpose.

Attribute	Description
disabled	Specifies that an input field should be disabled.
max	Specifies the maximum value for an input field.
min	Specifies the minimum value for an input field.
pattern	Specifies a regular expression to check the input values.
read only	Specifies that an input field is read only (cannot be changed).
placeholder	This acts as a temporary label showing the purpose of a text field without requiring a label tag.
required	Specifies that an input field is required (must be filled out).
autocomplete	Specifies whether a form or input field should have autocomplete On or Off.
autofocus	Specifies that the input field should automatically get focus when the page loads.
height and width	Specifies the height and width of an <input type="image">
multiple	Specifies that the user is allowed to enter more than one value in the <input> element. This works with input types like email and file.

### Some other useful attributes used with <input> are-

1. **id** : This is used to identify the html element uniquely through the document object model.
2. **class**: It is used to apply CSS style to the individual input element.

### Examples :

```
<!DOCTYPE html> <html>
<head>
<title>Forms in html 5 </title></head>
<body>
<form> Name: <input type="text" autocomplete><br><br>
E-mail:<input type="email" name="email"><br><br>
Date of Inception: <input type="date" name="bday"><br><br>
Office time: <input type="time" name="usr_time"><br><br>
Number of years completed(between 1 and 100): <input type="number" min="1"
max="100"><br><br>
Office phone number: <input type="tel" name="phone" pattern="[0-9]{2}-[0-9]
{10}" required><br><br>
Add your homepage:
<input type="url" name="homepage"><br><br>
<input type="image" src="E:/submitbutton.png" alt="click here to submit" >
</form>
</body>
</html>
```

### The output is as follows

Name:	<input type="text"/>
E-mail:	<input type="email"/>
Date of Inception:	<input type="date"/>
Office time:	<input type="time"/>
Number of years completed(between 1 and 100):	<input type="number"/>
Office phone number:	<input type="tel"/>
Add your homepage:	<input type="url"/>
<input type="submit" value="SUBMIT"/>	



### Do it Yourself

1. Use multiple attribute in <input>
2. Use pattern attribute in <input> and see the Output.

### 1.3 <meta> tag

The meta tag is a tag in html that describes some aspects of contents of a webpage. The HTML <meta> tag is used by search engines to search information

that is provided with the webpage. This is empty tag (singular tag) which carries information within its attributes. The <meta> tag is placed between the <head> and </head> tags. Metadata will not be displayed on the webpage.

### Attribute of <meta> tag

Attribute	Values	Description
Name	The value of the name attribute can be related to any of the following- i) Author ii) Description iii) Keywords iv) copyright e.g. <meta name = "author" >	Specifies the Name of the meta-data like the author, keywords or description.
Content	It can have any textual matter related to the name as in eg. i. <meta name = "author" content = "Balbharti"> ii. <meta name = "description" content = "Advance web designing"> iii. <meta name = "keywords" content = "html5, learn html5, list in html 5">	Here content of author is balbharati. Here the value for content attribute specifies name of the topic advance web designing. Here the values for content attribute are given as keywords like html5 , learn html5 etc.
Charset	UTF-8, Big5 e.g <meta charset="UTF-8"> <meta charset="Big5">	Specifies the character encoding used by the document, This is called a character encoding declaration. UTF-8 For Indian characters Big5 – for Chinese characters
http-equiv	refresh , set-cookie, content-type, expires, e.g. <meta http-equiv="refresh" content="5"> <meta http-equiv="set-cookies"> <meta http-equiv="content-type" content="text/html" charset="Big5"> <meta http-equiv="expires" content="userid=pqr; expires=Wednesday, 8-feb-2018 23:59:59 GMT;">	Used for http response message headers. Here the page will get refresh after every 5 seconds. The browser sends the cookies back to the server. Specifies the character encoding for the document Here page session will get expire at specified date and time.

### Example:

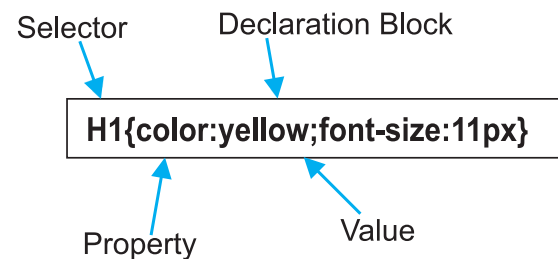
```
<!DOCTYPE html>
<html>
  <head>
    <title>meta tag
examples</title>
    <meta name = "authors"
content = "Balbharti">
    <meta name = "description" content =
"Advance web designing">
    <meta name = "keywords" content =
"html5, learn html5, list in html5">
    <meta name="copyright" content
= "copyright Balbharti All right
Reserve">
  </head>
  <body>
    <p> Welcome to HTML5
    </p>
  </body>
</html>
```

## 1.4 Cascading Style Sheets in HTML5

CSS stands for Cascading Style Sheets. CSS describes how HTML elements are to be displayed on screen, paper, or in other media. CSS saves a lot of work. It can control the layout of multiple web pages all at once. CSS allows you to control the look and feel of several pages by changing a single source.

### CSS Syntax

- A CSS rule set contains
  - a selector and
  - a declaration block.



**Selector :** Selector indicates the HTML element you want to style. It could be any tag like <h1>, <body> etc.

**Declaration Block :** The declaration block can contain one or more declarations separated by a semicolon. For the above example, there are two declarations:

1. color : yellow;
2. font-size :11 px;

Each declaration contains a property name and value, separated by a colon.

**Property :** A Property is a type of attribute of HTML element. It could be color, border etc.

**Value :** Values are assigned to CSS properties. In the above example, value "yellow" is assigned to color property.

Selector{Property1: value1; Property2: value2}

### Types of CSS

There are three methods of implementing styling information to an HTML document.

#### 1. Inline CSS

#### 2. Embedded stylesheet or Internal CSS

#### 3. External CSS

1. **Inline stylesheet :** It uses the style attribute in the HTML start tag.

Inline CSS is used to apply CSS on a single line or element.

**For example :**

```
<p style="color:blue">Hello CSS</p>
```

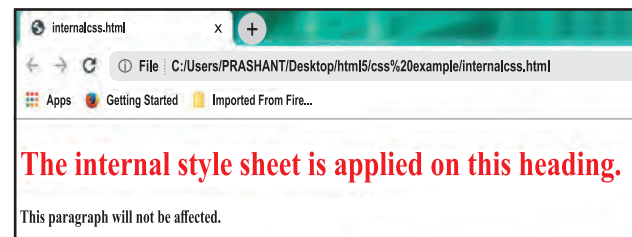
**2. Embedded stylesheet or internal CSS :** This is used to apply CSS on a single document or page. It can affect all the elements of the page. It is written inside the style tag within head section of html.

**For example :**

```
<!DOCTYPE html>
<html>
<head>
<style>
h1{color: Red;}
```

```
</style></head>
<body>
<h1>The internal style sheet is applied
on this heading.</h1>
<p>This paragraph will not be affected.
</p>
</body>
</html>
```

**The output of above program is as follows-**



## CSS Properties

Property	Use	Value	Example
Color	Changes the color of the text	Color name	h1 { color: maroon }
Background-color	To set the background color in your webpage	Color name	body { background-color: yellow }
Font-weight	Used to bold text	bold or 100, 200...900	p { font-weight: 300 }
Font-style	Used to italicize text	Italic, oblique or normal	p { font-style: italic }
Text-decoration	This property is used to add 1. strike-through marks 2. underline 3. overstrike 4. to remove underlines from links	1. line-through 2. underline 3. overline 4. none	p { text-decoration: underline } a { text-decoration: none }
Text-align	This property is use to control the horizontal alignment of any block-level text that are paragraphs, tables and other elements	left, right, center or justify	h1 { text-align: center }
Font-family	This is used to control the fonts	Font name	p { font-family: arial }

Property	Use	Value	Example
Font-size	This property allows you to control the size of the font	px, in, mm, cm, pt	p{font-size:10px}
Letter-spacing	This helps in controlling the horizontal spacing between characters of text	px, in, mm, cm, pt	h1{letter-spacing:5pt}
Padding	This property is used when you want to add padding (blank spaces) around the content of an element.	Pixel	h1{padding:30px}
Border	This property adds a border to a webpage element	Solid, double, groove, ridge, inset, outset, dotted or dashed	h1{border:double}
Background-image	To set an image as the background of your webpage	url("X") where X is the path of image file	body{background-image:url('background.jpg')}
Background-repeat	To set the background image to repeat or not	repeat no-repeat	background-repeat: repeat background-repeat: no-repeat
Margin-Left	Sets margin area on the left side of the element.	px,pt,cm etc.	h1{margin-left:10px}

**3. External stylesheet :** The external stylesheet is generally used when you want to make changes on multiple pages. It facilitates to change the look of the entire web site by changing just one file. It uses the <link> tag on every page and the <link> tag should be put inside the head section.

**For example :**

```
<!DOCTYPE html>
<html>
<head>
<link rel="stylesheet" type="text/css"
href="style.css">
</head>
<body>
<h1>This is a heading</h1>
</body></html>
```

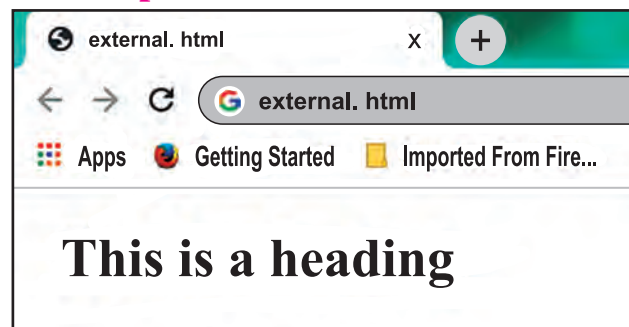
An external style sheet can be written in any text editor, and must be saved with a .css extension. The external css file should not contain any HTML tags.

Here is how the "style.css" file looks like:

**Style.css**

```
h1{color:navy;margin-left:20px}
```

**The output is as follows**

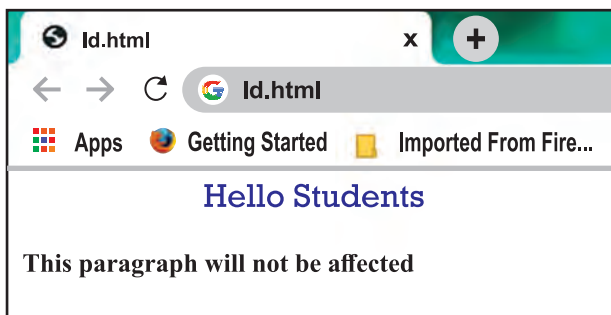


## CSS Id Selector

The Id selector selects the id attribute of an HTML element to select a specific element. An id is always unique within the page so it is unique element. It is written with the hash character(#), followed by the id name.

```
<!DOCTYPE html>
<html>
<head>
<style>
#para1 {text-align: center; color: blue}
</style>
</head>
<body>
<p id="para1">Hello Students</p>
<p>This paragraph will not be
affected.</p>
</body>
</html>
```

See the output as follows



## CSS Class Selector

The class selector selects HTML elements with a specific class attribute. It is used with a period character '.' (full stop symbol) followed by the class name. The Class selector is used when you want to change a group of elements within your HTML page.

The class name should not start with number.

Let's take an example with a class "intro".

```
<!DOCTYPE html>
<html>
<head>
<style>
.intro {text-align:center;color:blue}
</style></head>
<body>
<h1 class="intro">This heading is blue
and center-aligned.</h1>
<p class="intro">This paragraph is
blue and center-aligned.</p>
</body>
</html>
```

The above code results as

This heading is blue and center-aligned.

This paragraph is blue center-aligned.

## Class Selector for specific element

To specify only one specific HTML element should be affected then you should use the element name with class selector.

Let's see an example :

```
<!DOCTYPE html>
<html><head><style>
p.intro {text-align: center;color: blue}
</style></head>
<body>
<h1 class="intro">This heading is not
affected</h1>
<p class="intro">This paragraph is
blue and center-aligned.</p>
</body></html>
```



## The output is as follows

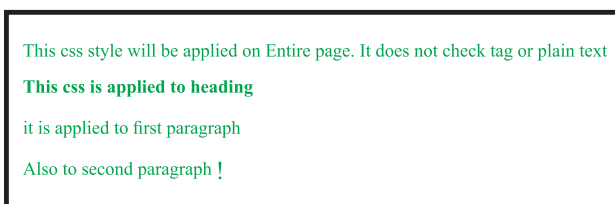


## Universal Selector

The universal selector is used as a wildcard character. It selects all the elements on the Webpages.

```
<!DOCTYPE html>
<html><head><style>
* { color: green; font-size: 20px;}
</style></head>
<body>
This css style will be applied on Entire
page.It does not check tag or plain
text<br>
<h2>This css is applied to heading
</h2>
<p id="para1">it is applied to first
paragagraph</p>
<p>Also to second paragraph !</p>
</body>
</html>
```

### Output :



## Group Selector

The grouping selector is used to select all the elements with the same style definitions. It is used to minimize the code. Commas are used to separate each selector in grouping.

Let's see the CSS code without group selector.

```
h1{ text-align:center;color:blue}
h2{ text-align:center;color:blue}
p {text-align:center;color:blue}
```

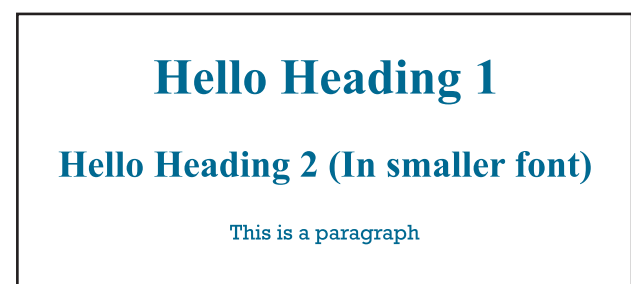
As you can see, you need to define CSS properties for all the elements. It can be grouped as-

```
h1,h2,p{ text-align:center;color:blue}
```

### Let`s see full code as follows :

```
<!DOCTYPE html>
<html>
<head>
<style>
h1,h2,p{text-align: center; color: blue}
</style>
</head>
<body>
<h1>Hello Heading 1</h1>
<h2>Hello Heading 2 (In smaller
font)</h2>
<p>This is a paragraph.</p>
</body>
</html>
```

### Output :



## Positioning in CSS

CSS helps to position the HTML elements. The position property is used to set position for an element. The element can be positioned using the top, bottom, left and right properties.

## Syntax :

*Selector{position:value;top:value;  
left:value;bottom:value;right:value}*

Where values in positions are fixed, absolute, relative and values of top, bottom, left, right are in pixels

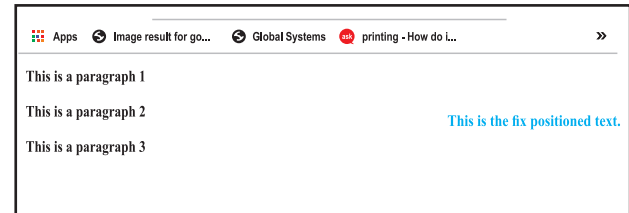
## There are four types of positioning in CSS

- 1. Static Positioning :** This is a by-default position for HTML elements. It is not affected by the top, bottom, left and right properties.
- 2. Fixed Positioning :** This property helps to put the text fixed on the browser. The FIXED property forces an element into a fixed position relative to the browser window. The fixed element will not move, even when the page is scrolled.

## Let's see the example :

```
<!DOCTYPE html>
<html><head><style>
p.fixed{position: fixed; top: 50px; right:
5px; color: blue}
</style></head>
<body>
<p>This is paragraph 1</p>
<p>This is paragraph 2</p>
<p>This is paragraph 3</p>
<p class="fixed">This is the fix
positioned text.</p>
</body>
</html>
```

## Output :



- 3. Relative Positioning :** The relative positioning property is used to set the element relative to its normal position.

- 4. Absolute Positioning :** This property sets an element in a specific location and it is not affected by the flow of the page. This property positions the element at the specified coordinates relative to your screen top-left corner.

## For example :

```
<!DOCTYPE html>
<html><head><style>
.first{position: relative;top: -10px;
right: -10px;}
h2{position: absolute;
left:100px;top:150px}
</style></head><body>
<h1 class="first">This is heading 1
</h1>
<h2>This is heading 2</h2>
</body></html>
```

## Output :

**This is heading 1**

**This is heading 2**

In above output the Level 1 headings with class="first" have a relative position 10 pixels above and 10 pixels to the right of its original position.

All level 2 headings will be positioned 100 pixels from the left of the browser window and 150 pixels from the top of the browser window.

## Float Property

Float is a CSS property written in CSS file or directly in the style of an element. The float property defines the flow of content.

Following are the types of floating properties :

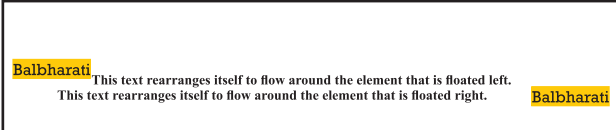
1. **float : left :** This keeps the element float on left side of the container
2. **float : right :** This keeps the element float on right side of container
3. **float : none :** This is default property i.e. this shows the element as it is.

### For example :

```
<!DOCTYPE html>
<html><head>
<title>Float Example</title>
<style>
.float-left{float:left;font-size:20px;background-color:gold}
.float-right{float:right;font-size:20px;background-color:gold}
</style></head><body>
<h2 class="float-left">Balbharati
</h2><p>This text rearranges itself to flow around the element that is floated left.
</p>
```

```
<h2 class="float-right">Balbharati
</h2>
<p>This text rearranges itself to flow around the element that is floated right. </p>
</body></html>
```

## Output



## Display property

The Display property in CSS defines how the components (div, hyperlink, heading, etc) are going to be placed on the web page. It specifies how the element is displayed. As the name suggests, this property is used to define the display of different parts of a web page.

### Syntax :

*Display : value;*

Where values are :

**Inline :** It is used to display an element as an inline element.

**Block :** It is used to display an element as a block element. It starts on a new line, and takes up the whole width of the browser window.

**Inline-Block :** This value is very similar to inline element but the difference is that you are able to set the width and height.

**None :** The element is completely removed.

## Let's see an example

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
display: inline;
}
</style>
</head>
<body>
<p>welcome to balbharti</p>
<p>Javascript</p>
<p>HTML5</p>
<p>CSS</p></body></html>
```

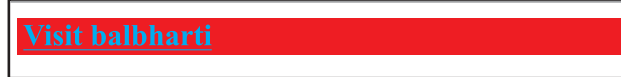
## Output :



## Example 2 :

```
<!DOCTYPE html>
<html lang="en">
<head>
<title>Example of CSS display</title>
<style type="text/css">
a {
display : block;
background-color:orange;
}
</style>
</head>
<body>
<p>
<a href="https://www.ebalbharti.in" >
Visit balbharti</a>
<br>
</p></body>
</html>
```

## Output :



Based on the CSS properties studied so far, the representation of semantic tags displayed in 11<sup>th</sup> standard textbook can be coded as follows.

## Example 1 :

Use of semantic tags and CSS.

```
<!DOCTYPE html>
<html>
<head>
<style>
header{ background-color:pink;width:100%;height:20% }
nav{ background-color:skyblue;width:100%;height:20% }
aside{ background-color:grey;width:40%;height:42%;float:right }
section{ background-color:lightyellow;width:60%;height:10%;float:left }
article{ background-color:violet;width:60%;height:40% }
footer{ background-color:orange;width:100%;height:10% }
</style>
</head>
<body>
<header>
<h1>HTML5 includes new semantics</h1>
<p>It includes semantic tags like header, footer, nav
<h1>Example of complete HTML5 Basics</h1>
<h2>The markup of the future under
```

## HTML5 includes new semantics

it includes semantic tags like header, footer, nav

### Example of complete HTML5 Basics

The markup of the future under development.

The nav element represents a section of navigation links. It is suitable for either site navigation or a table of contents.  
<http://www.w3school.com>  
[Balbharti website](http://www.ebalbharati.in)

#### Impressive Web Designing

The aside element is for content that is tangentially related to the content around it, and is typically for marking up sidebars.

Articles on: Article tag

The article element represents an independent section of a document, page or site. It is suitable for content like news or blog articles, forum posts or individual comments.

#### Other education based websites of state

[State Board website](http://mahahsscboard.ac.in)  
[Pune university website](http://unipune.ac.in)

© 2018 Balbharti.

```
development.</h2></p></header>
<nav>The nav element represents a section of
navigation links. It is suitable for either site
navigation or a table of contents.<br>
<a href="/">http://www.w3schools.com</a><br>
<a href="http://www.ebalbharati.in">Balbharti
website</a><br></nav>
<aside>
<h1>Other education based websites of State</h1>
<a href="http://mahahsscboard.ac.in">State
Board website</a><br>
<a href="http://unipune.ac.in">Pune university
website</a><br>
</aside>
<section>
<h1>Impressive Web Designing</h1>
<p>The aside element is for content
that is tangentially related to the content around
it, and is typically useful for marking up
sidebars.</p>
</section>
<section>
<h1>Articles on:Article tag</h1>
</section>
<article>
<p>The article element represents an
independent section of a document, page or site.
It is suitable for content like news or blog articles,
```

```
forum posts or individual comments.</p>
</article>
<footer>© 2018 Balbharti.</footer>
</body></html>
```

## 1.5 Ordered list or numbered list

The <ol> tag defines an ordered list. An ordered list can be numerical or alphabetical.

### Attributes of <ol> tag-

Attribute	Values	Description
Type	"1" /"a"/"I"/"i"	1 is default value and other values specify the numbering type for the used items.
Reversed	Reversed	This attribute specifies that the items of the list are specified in the reverse order.
Start	Number	Specifies the starting number of the first item in an ordered list.

```

<!DOCTYPE html>
<html><body>
<h3>List of Topics</h3>
<ol>
<li>Basics of IT</li>
<li>HTML 5</li>
<li>PostgreSQL</li>
</ol>
<h3>List of Topics start with series
50</h3>
<ol start="50">
<li>Basics of IT</li>
<li>HTML 5</li>
<li>PostgreSQL</li>
</ol></body></html>

```

### Output :

#### List of Topics

1. Basics of IT
2. HTML 5
3. PostgreSQL

#### List of Topics start with series 50

50. Basics of IT
51. HTML 5
52. PostgreSQL

### Example 2 :

```

<!DOCTYPE html>
<html>
<body>
<h3>List of Topics in reverse
sequence</h3>
<ol reversed>
<li>Basics of IT</li>
<li>HTML 5</li>
<li>PostgreSQL</li>
</ol></body></html>

```

### Output :

#### List of Topics in reverse sequence

3. Basics of IT
2. HTML 5
1. PostgreSQL

### 1.6 Unordered list or bulleted list

An unordered list created using the <ul> tag, and each list item starts with the <li> tag. The list items in unordered lists are marked with bullets (small black circles), by default.

### Example : 1

```

<!DOCTYPE html>
<html>
<head>
<title>Example of HTML Unordered
List</title>
</head>
<body>
<h3>HTML Unordered List</h3>
<ul>
<li>Basics of IT</li>
<li>HTML 5</li>
<li>PostgreSQL</li>
</ul></body></html>

```

### Output :

#### HTML Unordered List

- Basics of IT
- HTML 5
- PostgreSQL

## Attributes of <ul> tag

Attribute	Values	Description
Type = disc/ circle/square (use style (css) instead of type attribute in HTML5. Type attribute is supported by previous versions of HTML)	style="list-style-type:disc" e.g <code>&lt;ul style="list-style-type:disc;"&gt;</code>	Sets the list item marker to a bullet (default)
	style="list-style-type:circle" e.g <code>&lt;ul style="list-style-type:circle"&gt;</code>	Sets the list item marker to a circle
	style="list-style-type:square" e.g <code>&lt;ul style="list-style-type:square"&gt;</code>	Sets the list item marker to a square
	style="list-style-type:none" e.g <code>&lt;ul style="list-style-type:none;"&gt;</code>	The list items will not be marked

**Note :** HTML5 does not support bullets, circle and square value of type attribute instead you use CSS style.

### 1.7 Definition list

To define a definition list <dl> tag is used. You can create items in definition list with the <dt> and <dd> tags. The <dt> tag is used to define the term whereas the <dd>tag is used to define the term's definition.

#### Type the following code

```
<!DOCTYPE html>
<html>
<head>
<title>definition List</title>
</head>
```

```
<body>
<h3>Example of HTML definition
List</h3>
<dl>
<dt><b>Web</b></dt>
<dd>The part of the Internet that
contains websites and web pages</dd>
<dt><b>HTML</b></dt>
<dd>A markup language for creating
web pages</dd>
<dt><b>CSS</b></dt>
<dd>A technology to make HTML look
better</dd>
</dl>
</body>
</html>
```



## Output :

### Example of HTML definition List

Web	The part of the Internet that contains websites and web pages
HTML	A markup language for creating web pages
CSS	A technology to make HTML look better

## Nested list

List within another list either order list or unordered list is called nested list.

### Examples : Single level nested list

```
<!DOCTYPE html>
<html >
<head>
<title>Example of HTML nested list</title>
</head>
<body>
<h3>HTML Nested List</h3>
<ol>
<li>Introduction to IT</li>
<li>Introduction to DBMS</li>
<ul style="list-style-type:circle">
<li>Definition of DBMS</li>
<li>applications of DBMS</li>
<li>Advantages of DBMS</li>
</ul>
<li>Postgresql</li>
</ol></body></html>
```

## Output :

### HTML Nested List

1. Introduction to IT
2. Introduction to DBMS
  - Definition of DBMS
  - applications of DBMS
  - Advantages of DBMS
3. Postgresql

## Multi level list :

```
<!DOCTYPE html>
<html >
<head>
<title>nested list</title>
</head>
<body>
<h3> Multi-level list Nested List</h3>
<ul>
<li>Daily computing</li>
<li>Web design</li>
<ol>
<li>html 5</li>
<li>hyperlink</li>
<li>Inserting Images</li>
</ol>
<li>Javascript</li>
<ul style="list-style-type:circle">
<li>conditional structure</li>
<ul style="list-style-type:square">
<li>If statment</li>
<li>If else statement</li>
<li>case statement</li>
</ul>
<li>loop statement</li>
</ul>
</ul>
</body>
</html>
```

## Output :

### Multi-level list Nested List

- Daily computing
- Web design
  1. html 5
  2. hyperlink
  3. Inserting Images
- Javascript
  - conditional structure
    - If statement
    - If else statement
    - case statement
  - loop statement

## 1.8 Inserting audio and video in HTML 5

HTML5 new specifications enables users to have a far more control over audio on webpages.

HTML5 features include native audio and video support without the need for Flash. HTML5 includes special elements (tags) allowing to include video and audio and to define controls.

### Common Audio Formats :

**mp3** : An audio format from MPEG(Moving / Motion Pictures Experts Group).

**aac** : Advanced Audio Coding, standard format on Iphone, YouTube etc.

**ogg** : An Open container and free audio format.

### <Audio >Tag

The <audio> element enables you to embed(or add) audio files on Webpages.

Declare the audio tag, and specify the source attribute with the Audio file location.

### Syntax :

```
<audio src="sample.mp3" type="audio/
mpeg" controls>
</audio>
```

**Note:** Autoplay, controls, muted are without any values. Browsers have their own policies. Autoplay attribute is supported by Microsoft Edge or Firfox, when the permission from 'Privacy & Security' panel is set as 'Allow Audio Autoplay'.

### Attributes of <audio> tag

Attribute	Values	Description
Autoplay	-	The audio will start playing as soon as it is ready
Controls	-	The audio controls should be displayed (i.e. play/pause button etc.)
loop	-	The audio will start over again, every time it is finished
muted	-	This Specifies that the audio output should be muted
src	URL	Specifies the URL of the audio file

### Example :

```
<!DOCTYPE html>
<html>
<body>
<p>Audio Sample</p>
<audio controls>
<source src="test.mp3" type="audio/
mp3">
</audio>
</body></html>
```

### Output :



## In previous code

The controls attribute is used to add audio controls such as play, pause, and volume.

The "source" element is used to specify the audio files which the browser may use.

## Adding audio with multiple sources :

Multiple sources of audios are specified so that if the browser is unable to play the first source then it will automatically jump to the second source.

## <source> tag

The <source> tag is used to specify multiple media resources for media elements. It is used with <audio> and <video> both.

## Example :

```
<!DOCTYPE html>
<html>
<body>
<p>Audio Sample</p>
  <audio controls autoplay>
    <source src="test.mp3"
type="audio/mp3">
    <source src="test.ogg"
type="audio/ogg">
    <source src="test.opus"
type="audio/ogg">
  </audio>
</body>
</html>
```

## Output :



## <video> Tag

The HTML <video> tag is used to embed video into your web page, it has several video sources.

There are three different formats that are commonly supported by web browsers – .mp4, .Ogg and .WebM.

## Syntax :

`<video src="URL" controls></video>`

## Attributes of <video> tag :

Attribute	Values	Description
Src	URL	Defines link to video file
autoplay	-	Specifies that the video will start playing as soon as it is ready
controls	-	Specifies that video controls should be displayed (such as a play/pause button etc).
height	Pixels	Sets the height of the video player
loop	Value	Specifies that the video will start over again, every time it is finished
muted	-	Specifies that the audio output of the video should be muted

Attribute	Values	Description
poster	URL	Specifies an image to be shown while the video is downloading, or until the user hits the play button
preload	1. auto 2. metadata 3. none	Specifies if and how the author thinks the video should be loaded when the webpage loads
width	Pixels	Sets the width of the video player

The <source> tag is used to specify multiple media resources for video as well as audio media elements.

### Example :

```
<!DOCTYPE html>
<html>
<body>
<video width="320" height="240"
controls>
<source src="movie.mp4"
type="video/mp4">
<source src="movie.ogg" type="video/
ogg">
Your browser does not support the
video tag.
</video></body></html>
```

### Output :



## 1.9 Image map in HTML 5

An image with multiple hyperlinks is called an image map.

Image map is used to connect links to different regions on the webpage. An Image map is created by marking certain regions on an image clickable. These clickable regions are called as **hotspots**.

Image Maps are of two types; Client Side and Server Side. We will confine only to Client Side image map. The tags used to define client side image map are

- <img>** : It is used to insert an image on a web page. To create a client side image map usemap attribute of <img> is used with value which is preceded with a # symbol. The **usemap** attribute acts as a pointer which indicates that the image is a client side image map.
- <map>** : It has only one attribute name. It specifies name of the image used for client side image map. The value of the name attribute is the value specified in usemap attribute of <img>.

- 3) **<area>** - It defines specific clickable regions. A given **<map>** element can contain multiple **<area>** element within it. **<area>** is singular tag and **<map>** is paired.

#### Attributes of **<area>**:

Attribute	Description
Href	Defines the URL to which the clickable region within the image-map navigates.
Shape	It can value rect, circle or poly.
coords	Specifies co-ordinates of the clickable regions on the image-map. Rect- specifies rectangular area with four co-ordinates. Circle-Defines a circular region. It requires three co-ordinates. Poly-Defines a polygon region with co-ordinates specifying each point on the polygon. It requires four co-ordinates. Default-Region covers the entire image. No co-ordinates are required
alt	Specifies extra information about clickable area. It is the alternative text to the clickable region.

**Example :** Image Map with element **<map>** and **<area>**

```
<!DOCTYPE HTML>
<html>
<head><title>image map</title>
</head>
<body>
<h1>An example of Image Map
</h1>

<map name="imagemap">
<area href="http://www.google.com"
shape="rect" coords="0,0,93,65"
alt="google site"/>
<area href=" great_wall_china.html"
shape="circle" coords="118,140 ,40"
alt=" great wall of china"/>
<area href="http://mahahsscboard.
in" shape="poly"coords
="145,187,198,215,245,280,305"
alt="maharashtra stateboard site"/>
</map>
</body></html>
(In the above program great_wall_
china.html is a local file created on the
machine.)
```

### 1.10 Inline Frame in HTML5

The **<iframe>** element creates an inline frame. Inline frames are often used in online advertising, where the contents of the **<iframe>** is an advertisement from an external party. HTML5 allows the incorporation to be seamless (no scrollbars, borders, margins etc).

### Attributes of <iframe> :

Attribute	Values	Description
Src	URL	Specifies the address of the document to embed in the <iframe>
Height	Pixel	Specifies the height of an <iframe>
Width	Pixels	Specifies the width of an <iframe>
Name	Text	Specifies name of an <iframe>
srcdoc	HTML_code	Specifies the HTML content of the page to show in the <iframe>

### For example :

```
<!DOCTYPE html>
<html>
<body>
<h2>HTML Iframes</h2>
<p>This is the example of iframes.</p>
<iframe src="abc.html" height="200"
width="300"></iframe>
</body>
</html>
```

### Output :

#### HTML Iframes

This is the example of iframes.

**This page is  
displayed in an  
iframe**

## 1.11 Website Hosting

In this chapter we have seen how to create a website. But just creating of a website is not sufficient. One has to make the website available on the Internet. These web pages are to be stored in the web servers that are connected to the Internet, to be made available to others.

### What is web hosting?

Web hosting is the service of providing storage space. The website is made available on the Internet with the help of web hosting.

### What is Web Host?

The companies that provides web hosting services are called web hosts. Web hosts own and manage web servers. These web servers offer uninterrupted Internet connectivity.

### Types of Web hosting :

Types of web hosting are

- 1. Shared hosting :** It is cost effective. It gives domain name to your website.
- 2. Free hosting :** There are some hosting websites which provide you free hosting of the website for limited period of time.
- 3. Dedicated hosting :** These are paid hosting servers for large websites.

**Note :** You can buy your own web server space, but it is the most expensive way to publish your website. Though it is very expensive, but it gives you a lot of control over your website.



### For information purpose only

#### Prerequisites for Free Web Hosting :

1. Three to Four pages website having first or Home Page named as index.html.
2. Computer with internet connection.
3. Gmail id with password.
4. Need to toggle between two websites <https://www.000webhost.com/> and <http://my.freenom.com>
5. Have to acquire free web space from web server named 000webhost.com.
6. Have to acquire domain name for your website from my.freenom.com.
7. Park the website domain address with free server website i.e. with 000webhost.com.

Redirect the domain free server name to the domain website i.e. with my.freenom.com.

#### Steps to Acquire free webspace :

1. Open the website <https://www.000webhost.com/>
2. Click on free signup Login with your email id and password
3. verification email will be send to your email
4. open your email and click on "verify email"
5. Click on "Get Started"
6. From My Website page click on "+Create New site" button
7. Type your website name and any password
8. e.g. website name as :- it-xi-textbook
9. From File Manager box select "Upload" option to upload your web pages. Home page of the website must be named as "index.html" (Select all

webpages including image, audio files etc) and click on "Logout"

10. Your website is ready with the sub domain as 000webhostapp.com  
e.g. it-xi-textbook.000webhostapp.com

#### Acquire Domain Name :

1. Open the website <https://my.freenom.com>
2. From Use social sign in Click on "sign in" Login with your gmail id and give password
3. Click on "Services" --> Register a New Domain
4. Type your website name and click on "check availability" button
5. Choose any domain(e.g. .tk,.ml.cg etc) and click on "Get it now" if available click on "CheckOut" button
6. Set the free period to host the website, click on "Continue" button
7. From Review &Checkout page if the Total Due is \$0.00 then only select terms and conditions
8. Click on "Complete Order" button e.g. it-xi-textbook.tk
9. From Order Confirmation Screen click on "Click here to go to Client Area" button

#### Park the website domain :

Go to <http://www.000webhost.com> website perform the following steps first

1. Select "MyWebsite"--> "Manage Website" -->dashboard-->Tools--> Set Web Address
2. Click on "+Add domain" button then select radio button Park domain and then click on "Next" button



3. Type the site URL acquired by you from Freenom.com e.g. it-xi-textbook.tk. (Remember don't give http or / or any special character)
  4. Then click on "Park domain" button.
  5. You may see domain status as "pending" for sometime. Once it is through from the 000webhost side you can see the domain status as "parked".
  6. Configure your domain's DNS provider to point to the ns01.000webhost.com and ns02.000webhost.com as your nameservers.
  2. "My Domains"-->"Manage Domain"
  3. From Domain details screen click on "Management Tools" --> "Nameservers"
  4. Change the radio button to "Use custom nameservers (enter below)" and type the NameServer1 as "NS01.000WEBHOST.COM" and NameServer2 as "NS02.000WEBHOST.COM"
  5. Click on "Change Nameservers" button
  6. Logout from the my.freenom.com
  7. Type the website address in the browser's address bar to view your website
  8. The website can also be seen from your mobile. Hosting is done.
- Redirect the domain to free server :**
- Now follow the final steps given below through my.freenom.com website
1. Sign in to my.freenom.com click on "Services"-->

### Summary

- Html5 has introduced new types in <Input> like number, date, Tel, email, search, URL, range, month, week, color.
- Few attributes of <Input> can be used for validation purpose.
- <meta> is used by search engines to search information that is provided with the webpage. It is inserted in the <head>
- CSS- Cascading Style Sheet describes how HTML elements are to be displayed on screen, paper, or in other media.
- CSS syntax Selector{Property1: value1; Property2: value2}
- The <ol> tag defines an ordered list. An ordered list can be numerical or alphabetical.
- An unordered list created using the <ul> tag, and each list item starts with the <li> tag. The list items in unordered lists are marked with bullets (small black circles), by default.
- To insert Audio and Video in a web page, <audio> and <video> are used which specifies the source with the file location.
- An image with multiple hyperlinks is called an image map. The usemap attribute acts as a pointer which indicates that the image is a client side image map.
- The <iframe> element creates an inline frame.

## Exercise

### Q 1. Fill in the blanks.

1. The.....element is a starting element in an HTML, it indicates that document type definition being used by the document.
2. The..... is a tag in html that describe some aspects of contents of a webpage.
3. The `<ol>` tag defines an.....
4. An unordered list is created using the..... tag.
5. The.....element creates an inline frame.
6. ....tag is used to specify video on an HTML document.
7. If a web developer wants to add the description to an image he must use ..... attribute of `<img>` tag.
8. The..... property is used to set position for an element.
9. The float property defines the.....of content.
10. ....is used with elements that overlap with each other.

### Q2. State whether the following statement is True or False.

1. HTML is an Object Oriented Programming Language.
2. Charset is used for character encoding declaration.
3. An unordered list can be numerical or alphabetical.
4. Multilevel list can be created in HTML 5.
5. Srccode specifies the HTML content of the page to show in the `<iframe>`
6. The 'controls' attribute is not used to add play, pause, and volume.
7. .cs is the extension of CSS file

### Q.3. Choose Single correct answer from the given options.

1. ....element used to create a linking image.  
a) `<img>`      b) `<td>`  
c) `<map>`      d) `<usemap>`
2. The ....tag is used to embed audio files on Webpages.  
a) `<sound>`      b) `<audio>`  
c) `<video>`      d) `<embedded>`

3. A programmer wants to define range for age between 18 to 50, he will use a form with following appropriate control.

- a) number                      b) compare
- c) range                        d) Textboxes

4. ....character is used to create id in CSS.

- a) %                              b) \$
- c) @                              d) #

**Q 4. Choose Two correct answers from the given options.**

1. List within another list either.....list or.....list is called nested list.

- a) multilevel                      b) order
- c) unordered                      d) general
- e) cascading

2. Image maps are of two types .....and .....

- a) Network side
- b) Client Side
- c) Computer side
- d) Server Side
- e) n-computing

3. A CSS rule set contains..... and.....

- a) Set                              b) selector
- c) post
- d) declaration block    e) < >

4. Client-side image map can be created using two elements ..... and.....

- a) <area>                      b) <image>
- c) <usemap>                      d) <map>
- e) <server>

**Q.5. Choose Three correct answers from the given options.**

1. Attributes of <area> tag is.....

- a) href                              b) src
- c) coords                              d) data
- e) alt                              f) usemap

2. Attributes used with iframe are.....

- a) srcdoc                              b) name
- c) att                              d) src
- e) href                              f) loop

3. Following are the Form controls.....

- a) email                              b) search
- c) label                              d) video
- e) tel                              f) audio

4. Attributes used with <audio> tag.....

- a) autoplay                              b) href
- c) controls                              d) cntrl
- e) loop                              f) bgsound

5. CSS types are .....,  
..... and.....

- a) internal                      b) external
- c) control                      d) inline
- e) loop                          f) style

6. Positioning types in CSS  
are.....

- a) Static                      b) fixed
- c) absolute                      d) position
- e) dynamic                      f) nested

7. Types of floating properties  
are.....,.....,.....

- a) left                          b) zero
- c) right                          d) all
- e) none                          f) dock

### Q. 6. Match the pair

**A**

- 1) <ul>
- 2) usemap
- 3) color
- 4) <Img>

**B**

- a) Client side image map
- b) CSS Property
- c) bulleted list
- d) Image as a submit button
- e) inserts an image

### Q.7. Programs.

- 1) Write a program using html with following CSS specification-

- 1. The background colour of the company name should be in green.
- 2. The text colour of the company name should be red.
- 3. The heading should be large with font "comic sans ms"
- 4. The description of the company should be displayed in blue color in a paragraph.

2) Write Html5 code with CSS as follows-

- 1. To create form to accept name, age, email address, from the user.
- 2. Create a submit button to send the data.
- 3. The heading of the form should have a background colour and a different font style.

3) Write Html5 code with CSS as follows-

- 1. Create ordered list with names of tourist Cities.
- 2. Create unordered list with tourist places of those cities.
- 3. Divide the list into two sections left and right by using CSS.



## Let us learn

- Meaning of Marketing.
- Concept of Digital Marketing.
- Channels in Digital marketing.
- Concept of Search Engine.
- Organic and paid search.
- Categories of SEO Black Hat SEO and White Hat SEO.
- Different SEO strategies.
- Long tail and short tail keywords.
- Actual working with SEO.
- Concept of Google Analytics.

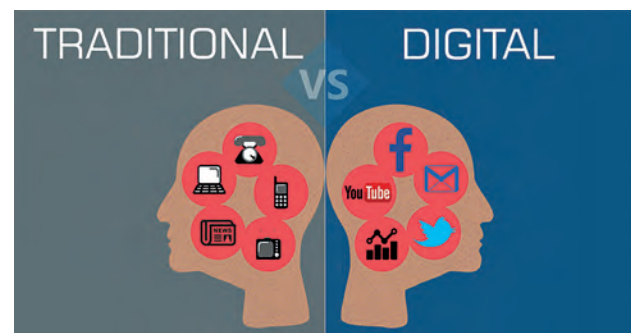
Dr. Ajay is Senior Vice President marketing at "Click and Boost India Private Ltd". He is a digital marketing expert and social media specialist. He has over 10 years experience in the digital marketing.

Mr. Suhas has floated a small company which manufactures springs and bearings required for machines . He is facing a problem to market his product through website. He appointed Dr. Ajay as consultant for Digital marketing.

Given below is the conversation between Dr. Ajay and Suhas. The idea behind this dialogue lesson is to make students understand the different aspects of digital marketing.

**Mr. Suhas :** "Good morning sir !" I want to understand new method of marketing in the web technology and how it defers from traditional marketing?

**Dr Ajay :** Marketing has always been about connecting with your audience in the right place and at the right time. In today's era of technology it simply means you need to meet them where they are spending more time and that is on the internet.



**Fig. 2.1 : Traditional Marketing Vs Digital Marketing**

Traditional Marketing examples might include tangible items such as business cards, print ads in newspapers or magazines. It can also include posters, commercials on TV and radio, billboards and brochures.

The world of digital marketing continues to evolve as long as technology continues to advance. Examples of digital marketing include things like websites, social media mentions, YouTube videos, and banner ads. Specifically, digital

marketing is similar to traditional advertising, but using digital devices.

**Mr. Suhas :** Sir, You mean to say that online advertising means digital marketing?

**Dr Ajay :** Well, you are partially correct but not fully, let me explain. Digital marketing is not new. It's been around since the Internet started. Now digital marketing is becoming popular due to the increase in internet users, mobile phone users and digital content consumption.

Think about the last important purchase you made on Internet. Before buying, you probably would have searched the internet to learn about the

product you wanted and your ultimate buying decision would have been based on the customer reviews, features, and pricing you researched.

Purchasing decisions begin online today. Hence, an online presence is absolutely necessary regardless of what you sell.

**Mr. Suhas :** Ok Sir, How digital marketing will help me to promote my business online? Is there any tactic or method or channel to sell my product online?

**Dr. Ajay :** Yes Sir! Understand some Channels in Digital Marketing.



**Fig. 2.2 : Channels in Digital Marketing.**



- 1. Search Engine Optimization :** SEO is the process of boosting content and technical set-up of the website so that it appear at the top of a search engine result for specific keywords. SEO is to attract visitors to your website when they search for products or services related to your business.
- 2. Mobile Marketing :** From SMS and MMS to in-app marketing, there are many ways to go through with mobile marketing.
- 3. Email Marketing :** Companies communicate with their audience through email marketing. Emails are used to promote content, events, and discounts, and also to direct people toward the business's website.
- 4. Paid Search :** Paid search or pay-per-click (PPC) advertising refers to the "sponsored result" on the search engine results pages (SERP). PPC ads are visible, flexible, and effective for many different types of organizations. With paid search, you only pay when your ad is clicked. You can tailor your ads to appear when specific search phrases are entered, targeting them to a particular audience.
- 5. Content Marketing :** Have you heard the saying, "Content is king?" Quality content is the fuel that drives your Digital Marketing strategies. Content Marketing denotes the creation and promotion of content assets in order to generate brand awareness, lead generation, traffic growth, and

customers. The channels that play a part in your content marketing include video, blogs, e-books etc.

- 6. Social Media Marketing :** Social media marketing is the use of social media platforms and websites to promote a product or service. Social media marketing is the use of social media platforms to connect with your audience to build your brand, increase sales, and drive website traffic. The major social media platforms are Facebook, InstaGram, Twitter, LinkedIn, Pinterest, YouTube, and Snapchat.

**Mr. Suhas :** Ok sir. So I need to use any one of the above channel to increase sale of my product over the internet? But what is Search Engine? And how shall my website rank high on search engine?

**Dr. Ajay :** Ok! We will see the terms one by one

**Search Engine :** A web search engine or Internet search engine is a software system that is designed to carry out web search (Internet search), which means to search the World Wide Web in a systematic way for particular information specified in a textual web search query.

The search results are generally presented in a line of results often referred to as Search Engine Results Pages (SERPs).

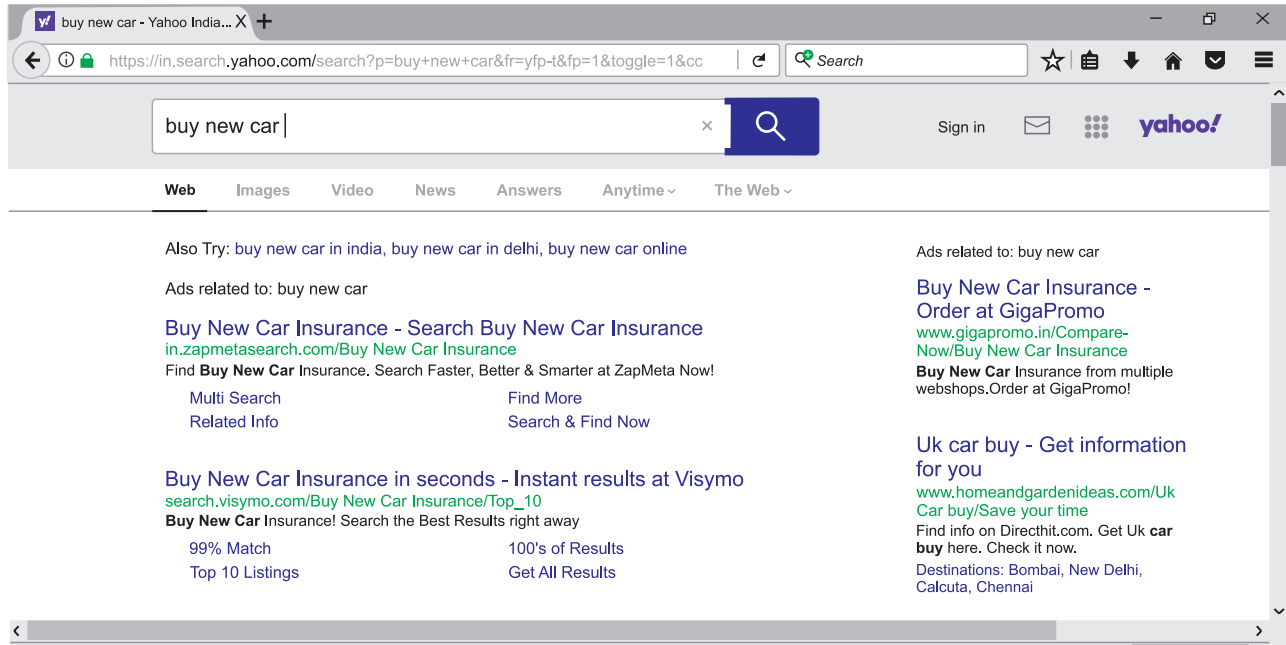
The information may be a mix of links to web pages, images, videos, info graphics, articles, research papers, and other types of files.



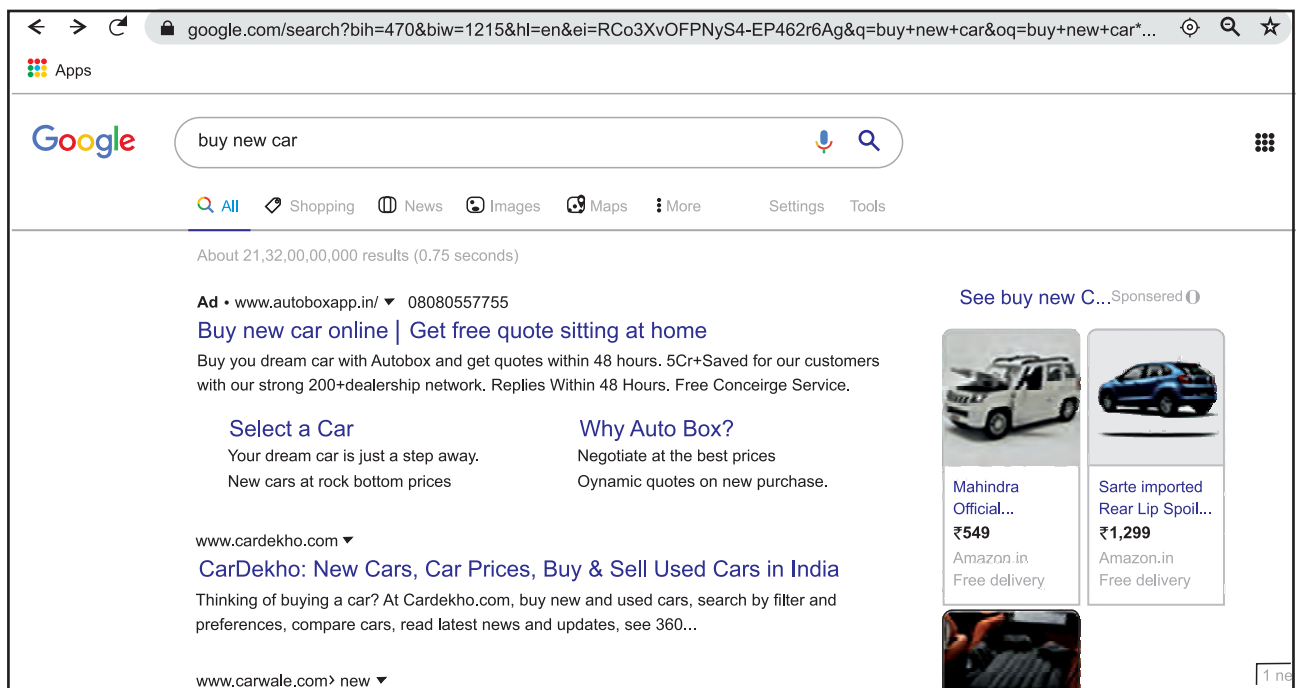
## Do it yourself

Make a list of Search Engines, Browsers you know.

**Dr. Ajay :** To understand this see the comparison of Search Result of Yahoo and Google for same product. (Fig. 2.3 and 2.4)



**Fig. 2.3 : Result of Yahoo Search Engine to buy a new car.**



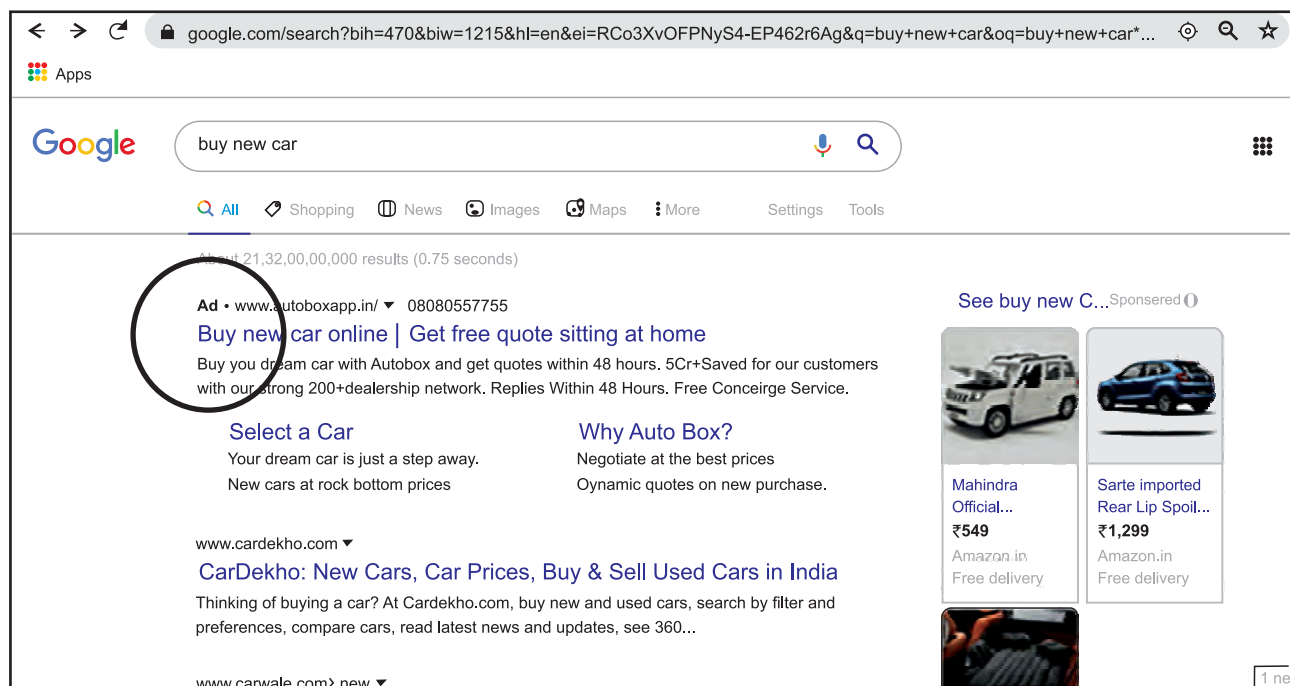
**Fig. 2.4 : Result of Google Search Engine to buy a new car.**

Now you can easily differentiate the result shown by two search engines i.e. Yahoo and Google. It is showing different websites having information for buying new car. The entire SEO works on keywords. If those keywords are being used in the content of the website then that website may rank in top ten or twenty search results.

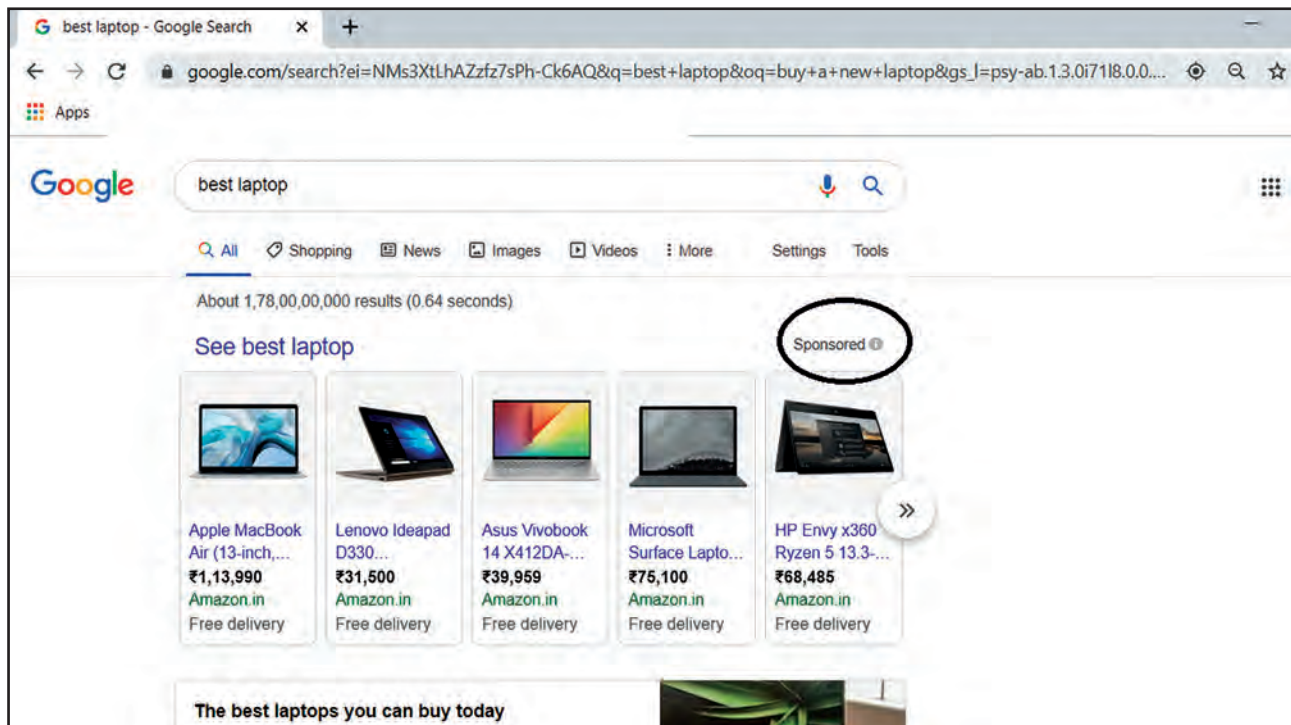
**Mr. Suhas :** oh yes! It is crystal clear now how search engine plays important role in ranking the website. Please tell me shall I pay and rank my website or is there any other way which is economical which I can use to rank without paying.

**Dr. Ajay :** There are two ways to rank website one can **pay and rank** and other is without payment one can rank website doing **SEO process. i.e. Organic Search.**

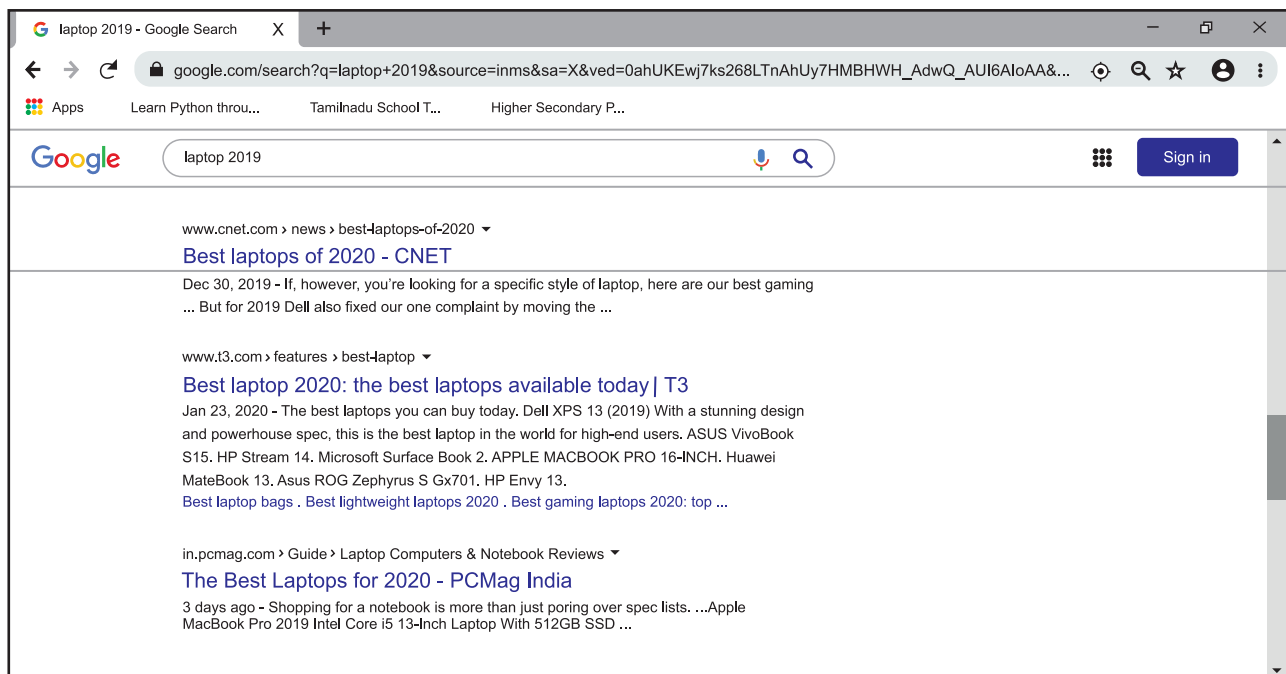
Now I will tell you the difference between **Organic Search and Paid search.** Look at these two figures fig. 2.5(a)(b) and you will understand that you can pay Google or any Search Engine and rank your website on top of search. The keyword **Ad** marked here fig 2.5(a) shows that this site has paid Google search engine to rank him at top. Fig.2.5(b) shows the keyword **Sponsored** which is also paid site to rank the images and information at top. In fig 2.6 the searched web site is so popular that many users must have visited it. Therefore it has become popular and it is ranked by search engine on its first page . Why we must opt for first five pages because as we go on higher number customer does not search those pages or there are very less visitors as page number grows.



**Fig. 2.5 (a) : Links with advertisements are called as "Paid Search"**



**Fig. 2.5 (b) : Links with advertisements are called as "Paid Search"**



**Fig. 2.6 : Links with Organic Search**

**Dr. Ajay :** Let me explain you how we can rank our website with the help of SEO. Techniques and strategies used to get higher search rankings, and breaking search engine rules are

1. Black Hat SEO
2. White Hat SEO

**Mr. Suhas :** What do You Mean by Black Hat and White Hat SEO?

**Dr. Ajay :**

- i) White hat SEO involves looking for ways to improve user experience ethically and genuinely. It ensures that web page content should have been created for the users and not just for the search engines.
- ii) Black hat SEO relies on manipulating Google's algorithm to improve rankings. By creating a copy of a popular website which shows contents similar to the original web site. The Google crawler reads the content and thinks the website is original one and it ranks the page. Crawler is a program used by search engines to collect data from the website.

**Note :** REMEMBER - Always follow a White Hat SEO tactic and don't try to fool your site visitors. Be honest and definitely you will get proper rank. Now Google's search algorithm has become intelligent as it finds you are fooling to rank your website, It ranks you down and black list you and your business go down in open market.



### Do it yourself

Distinguish between Black Hat SEO and White Hat SEO.

**Mr. Suhas :** I heard something about On Page SEO and Off Page SEO; can you please tell me something about it?

**Dr. Ajay :** Search engines don't look at a page the way a person looks at it. They can only read the source code of the page. If you right-click on any webpage, you'll likely to see an option for viewing that page's source code (HTML code). If you're not familiar with HTML code it will look like a jumbled mess. There are number of ways to approach SEO to generate traffic to your website. Those are **On-page SEO, Off-page SEO and Technical SEO.**

**1. On-Page SEO :** Anything within `< >` is HTML code. Anything between two sets of tags is something that could get put on the page for a person to read. The text inside the `< >` tells browsers and search engines how to render the information between the tags. The reason it is called on-page SEO is that these changes are visible to readers. It is a balance between giving the right information to search engines without compromising the information that your customers are reading on the page.

**2. Off-Page SEO :** Off-page SEO is about everything that doesn't happen directly on your website. Off-page SEO is about, among other things,



link building, social media, and local SEO. It allows generating traffic to your site.

**3. Technical SEO :** Technical SEO is a very important step in the whole SEO process. If there are problems with your technical SEO then it is likely that your SEO efforts will not generate the expected results. A simple example of technical SEO is site speed. People do not like to wait for slow websites. If your pages load slowly, you will be ranked lower than a comparable site that has faster pages. Another example is mobile friendliness. If your site looks bad on a mobile device, search engines can detect that and lower its rankings on mobile-specific search engines.

**Mr. Suhas :** Oh yes sir! Now I understand I must put relevant content on my website. But then how do I decide whether my content is relevant or not?

**Dr. Ajay :** Your company is manufacturer of springs and bearings. While developing the website a website designer must take care to add keywords such as Compression Springs, Extension Springs, Drawbar Springs etc. If such keywords are used in the <meta> tag while creating a website that means topic or aim of the website is same and its contents are relevant. The content must be designed using HTML5 or HTML tags i.e. use <b> <i> <u> <h1> <h2> etc Tags. Even the alt attribute of images must be used with keywords so crawlers cannot read image but they read description and classify the content.

**Mr. Suhas :** Sir, What are keywords?

**Dr Ajay :** To rank your website you must follow the tactic of Long Tail and Short Tail keyword concept.

**Dr. Ajay :** A long tail is a long keyword and short tail is a short keyword. You can use your intelligence to rank your website using small keywords or long keywords, let me give you an example. If I want to search shoes and I type keyword 'shoes' on search engine. It is a small keyword used by millions of people. Here your search result shows only popular websites on the first few pages. Someone with new born website about 'shoes' can't expect his website to be shown on top. But now if he uses a keyword in the <meta> "Brown Soft Comfortable Running shoes" then such a long keyword may be used by less websites. This may result in ranking the website at higher position.

**Mr. Suhas :** Now suggest me a tool which can work and tell me what is short fall in my website so I can successfully evaluate my website optimization.

**Dr Ajay :** Now I will tell you very important things about SEO Audit and how SEO optimises the website. An SEO Audit helps to find out what could be done to improve ranking on search engines, so that consumers could find the website with greater ease. SEOptimer is a free SEO Audit Tool that will perform a detailed SEO Analysis.

**Note :** There are many SEO Audit tools available on internet such as woorank.com, varvy.com, seositecheckup.com, etc.



It provides clear and actionable recommendations that can be taken to improve your online presence. Some of the ways to optimize the webpage for SEO are:-

### 1) HTML Header :

- i) **<!doctype html>** : Webpages having HTML code should start with `<!doctype html>`.
- ii) **<Title> tag** : A title tag is an HTML element that specifies the title of a web page. Title tags are displayed on search engine results pages (SERPs) as the clickable headline for a given result therefor it is recommended to use `<title>` tag.
- iii) **<Meta>tag** : Meta tags are snippets of code that tell search engines important information about your web page, is also essential to boost your On-Page SEO.

### 2) Body Content :

- i) **Heading Tags** : Heading tags are necessary for both usability, and SEO of your web page. Search engines primarily take keywords from content, heading tags, and titles to develop the context of a web page. Therefore the webpage should include proper heading tags from `<h1>` to `<h6>` wherever required.
- ii) **<img>tag with alt attribute** : By adding an alt text, you provide users of screen readers and search engines with a textual description of what's on that image. This improves accessibility and your chance of ranking high in image search.
- iii) **Keyword Consistency** - Keyword consistency means having the

keywords or sets of keywords those will rank your site in search engine.

### 3) Links :

- i) **Number of Backlinks** : Backlinks are links that are directed towards your website. Backlinks are important for SEO because some search engines, especially Google, will give more credit to websites that have a good number of quality backlinks, and consider those websites more relevant than others in their results pages for a search query.
- ii) **Broken Links** : Broken links are links that send a message to its visitors that the webpage no longer exists, triggering a 404 error page.
- iii) **Friendly URLs** : SEO friendly URLs are URLs that are designed to meet the needs of users and searchers. Specifically, URLs optimized for SEO tend to be short and keyword-rich. You give links to Big Banner Website and they give you link back to your website. This will create friendly website support to your website.

**4) Indexing** : Indexing is the process of adding web pages into Google search. It is very important in SEO to increase the ranking of the webpages.

**5) Googlebot** : Googlebot is the Google's spider . i.e. the robot that pass over the Web and indexes pages for inclusion in Google's database. Googlebot collects documents from the web to build Google's search index.

### 6) Others Factors :

- i) **Robot.txt** : Robots.txt file is what tells the search engines which pages

to access and index on your website and which not. For example, if you specify in your Robots.txt file that you don't want the search engines to be able to access your thank you page, that page won't be able to show up in the search results and web users won't be able to find it. Your Robots.txt file instructs these programs not to search your thank you page on your site which you designate using a "disallow" command as follows :

```
User-agent: *  
Disallow: /thankyou.html
```

- ii) **Device Rendering** : This check visually demonstrates how your page renders on different devices. It is important that your page is optimized for mobile and tablet devices as today the majority of web traffic comes from these sources.
- iii) **Flash** : Flash is an interactive media technology that makes sites more interesting. At the same time, Flash can kill your search rankings because search engines can't index Flash content directly.
- iv) **iFrames** : Similarly to Flash, frames are a burden in terms of SEO. When you use frames on a page, you confuses search engines which may rank down your website.
- v) **Favicon** : Means favourite icon also known as a shortcut icon, website icon,



**Fig 2.7 Favicons of popular websites**

tab icon URL icon, or bookmark icon. A favicon is a visual representation of your website and business, so users will identify with your brand based on the favicon you use.

- vi) **Legible Font Sizes** : It means that a font size declared as bigger, smaller, or the same size as should be easily readable (legible) when a user is viewing the page on mobile or smaller screens.

- vii) **Tap Target Sizing** : A tap target is any element on a web page that a user interacts with. These include action buttons, links, ads, etc. that a user taps on when accessing a web page using a touchscreen. Therefore the size of such taps/touch elements should be relevant neither too small nor too big.

## 7) Performance Results :

- i) **Number of Resources** : This check displays the total number of files that need to be retrieved from web servers to load your page. As a general rule, having more files to retrieve increases the number of server requests and can subsequently increase page load time. It is a good to remove unnecessary files or consolidate files like styles and scripts which are less required.
- ii) **Page Speed Info** : Page speed does affect SEO as it is a direct ranking factor. While creating a website, attention is given on the design, content and as many visuals as possible. This can slow down the website and obstruct usability.

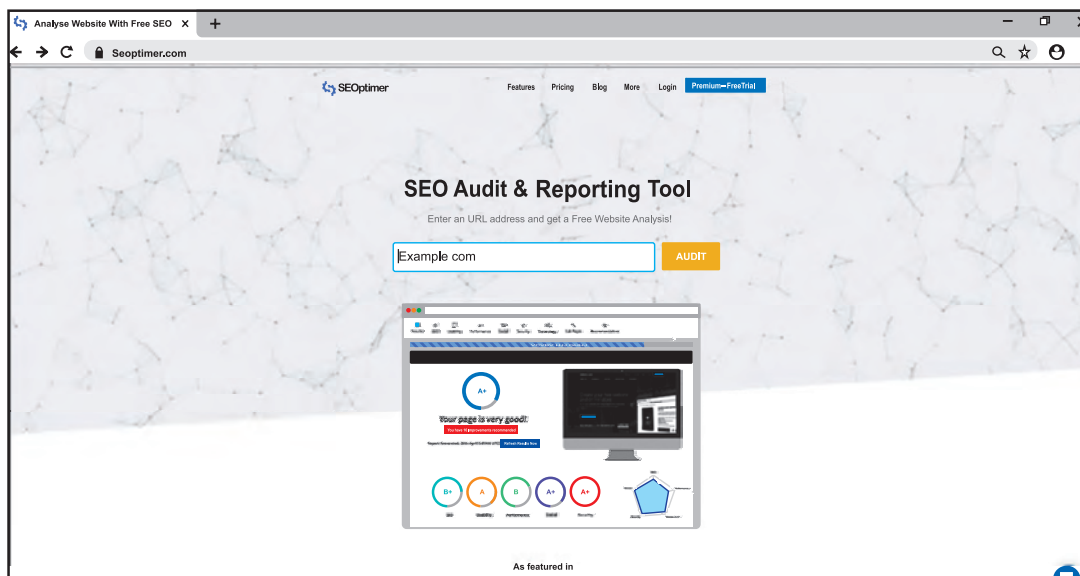
iii) **Page Size Info** : The term page size in the SEO world refers to the downloaded file size of a given web page.

### 8) **SEO Social Media Optimisation** :

It deals with enhancing the website's ranking, using Interactive Communities like Facebook, twitter, blogs, forums etc. When these communities have links to

the created website it builds familiarity and trust about the website.

9) **SEO Security Checks** : Security is important to ensure your website protects user data, doesn't become compromised or experience downtime or data loss. It includes SSL Enabled yes or no whether it follows HTTPS, Malware Check, Email Privacy.



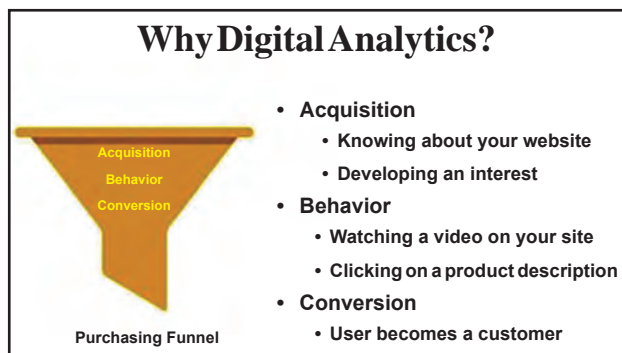
**Fig. 2.8 : SEO Audit & Reporting Tool Screen**

Being a free Website Audit Tool SEOptimer will not allow you to audit more than one or two websites per day. In that case you can try with the other Audit Tool mentioned on page number 34.

**Mr. Suhas** : Sir, I am also facing this problem. Many people visit my website but they do not purchase or place order to buy my product. This is very depressing. Sir please tell me what to do?

**Dr Ajay** : Yes! I will tell you why this is happening please don't be depressed. Take a look at funnel drawn below.

You must try to understand that many users may come to your website but conversion will be little because the customer is having more choice and the market has become consumer oriented. Understand that market behaves in 3 stages Acquisition, behavior and conversion



**Fig. 2.9 : Purchasing Funnel**

**Note** : SEO for sample website refer appendix - I.

- **Acquisition :** Means creating interest in the mind of customer about your product. He must know that this product is essential for him without this product he cannot satisfy his need.
- **Behavior :** Once he knows about the product . He may feel of buying or may not feel to buy the product. You must put such information on your website he must feel he should buy.
- **Conversion :** When he is convinced and no other competitor gives him better offer then he buys the product clicking on 'Buy' option so now he becomes your ultimate customer this process is called filtration of funnel.

**Mr. Suhas :** Sir I heard that Google Analytics helps in ranking your website at top. How?

**Dr. Ajay :** Google Analytics is a web analytics service offered by Google that tracks and reports website traffic, number of visitors, time spent on the website by the visitors etc. The Google Analytics was not the product developed by Google it was acquired by Google from a company Urchin in 2005.

**Mr. Suhas :** Thank you sir, now my complex is somewhat reduce. But tell me how I can use this tool with my website?

**Dr. Ajay :** For performing Google Analytics, one has to be ready with the hosted website.

**Note :** Steps for analytics refer appendix - II.

### The Google Analytics Report contains:

- **Users :** how many visitors came to your website (in the past 7 days)
- **Sessions :** how many interactions a visitor makes with your website in a time frame (usually 30 minutes) like viewing a page, clicking a link, or purchasing a product
- **Bounce Rate :** how many visitors hit the back button or closed your website without performing a single interaction (it's calculated through a formula)
- **Session Duration :** how much average time a visitor spends on the website
- **Active Users right now :** how many active users are currently active on your website.

All these metrics are really useful to learn about the users and improve the marketing strategies, SEO, and to boost the growth and development.

**Mr. Suhas :** Thank you sir you have given me a positive thought now I will work on the strategy explained by you in this above explanation and improve my digital marketing even I will work on content and social media marketing too.

**Dr Ajay :** Thank you I wish you success in your task. Bye! Have a nice day.

## Summary

- Marketing has always been about connecting with your audience in the right place and at the right time.
- Digital marketing is the use of the internet, mobile devices, social media, search engines, and other channels to reach consumers.
- Digital marketing is similar to traditional advertising, but using digital devices.
- Important Key factors of digital marketing include: Search engine optimization (SEO) , Marketing Analytics, Pay-per-click advertising (PPC) , Web design, Content marketing, Social media marketing, Email marketing.
- SEO stands for Search Engine Optimization, which is the practice of increasing the quantity and quality of traffic to your website through organic search engine results
- Organic search, also known as natural search, refers to unpaid search results
- Crawler is a program used by search engines to collect data from the website.
- Techniques and strategies used to get higher search rankings, and breaking search engine rules are White Hat SEO and Black Hat SEO.
- SEO strategies to generate traffic: on-page SEO, off-page SEO and Technical SEO.
- A long tail is long keyword and short tail is short keyword used by the user while searching any information.
- SEO can be perform with the free website <https://www.seoptimer.com/>.
- Google Analytics was acquired by Google from a company Urchin in 2005.
- Google analytics is used to track website activity such as session duration, pages per session, bounce rate etc. of individuals visiting the website



## Exercise

### Q. 1 Fill in the blanks.

1. Unpaid search is nothing but \_\_\_\_\_ search.
2. Program used by search engines to collect data from the website is called as \_\_\_\_\_
3. Manipulating Google's algorithm to improve website rankings is \_\_\_\_\_ hat SEO.
4. Web analytics service offered by Google to tracks and reports website traffic is \_\_\_\_\_

### Q. 2 State true or false.

1. Digital Marketing requires physical market.
2. E commerce deals are carried out in physical market.
3. Digital marketing is carried out with the help of Portal.
4. In Digital marketing SEO means Special Executive Operations.
5. The paid advertisement on Google can be identified with 'paid' keyword.
6. To make the Traffic analysis SEO Technique is used.

### Q. 3 Multiple Choice Questions one Correct Answer.

1. \_\_\_\_\_ SEO relies on manipulating Google's algorithm to improve rankings.

- a) Red Hat
- b) White Hat
- c) Green Hat
- d) Black Hat

2. To analyze the traffic coming to the Website \_\_\_\_\_ tool is used.

- a) SEO optimizer
- b) Google analytics
- c) Go daddy
- d. Amazon

3. If the speed of displaying the website is slow then \_\_\_\_\_ ranking method is used

- a) technical
- b) on page
- c) off page
- d) load page

### Q.4 Multiple Choice Question 2 correct answer.

1. \_\_\_\_\_ and \_\_\_\_\_ techniques and strategies used to get higher search rankings on search engine.

- a) White Hat
- b) Red Hat
- c) Black Hat
- d) Green Hat
- e) Blue Hat



2. The product of Google analytics was originally developed by \_\_\_\_ company in year \_\_\_\_
- a) Urchin
  - b) 2005
  - c) Google
  - d) 2008
  - e) Microsoft
3. Valid two types of keywords are \_\_\_\_ and \_\_\_\_
- a) long tail
  - b) short tail
  - c) small tail
  - d) big tail
  - e) lengthy tail

**Q.5 Multiple Choice Question 3 correct answer.**

1. Marketing Channels in Digital Marketing are
- a) Email marketing
  - b) Content marketing
  - c) Valid marketing
  - d) Mobile marketing
  - e) on page marketing
  - f) off page marketing
2. Valid approaches SEO to generate traffic to your website are \_\_\_\_, \_\_\_\_ and \_\_\_\_.
- a) on-page SEO
  - b) all-page SEO
  - c) off-page SEO
  - d) technical SEO
  - e) with-page SEO
  - f) online-page SEO



# 3

## Computerised Accounting with GST

### Let us learn

- Introduction.
- Process of Accounting Software.
- Different Accounting Packages.
- Practical application of Accounting Software.
- Important Concepts under GST.
- GST calculation using different accounting packages.
- GST on Goods with example and GST on Services with example.

### 3.1 Introduction

Now a days it is often seen that even small shops or business entities use Computer Software to maintain their Books of Accounts. A Computerised Accounting System is an Accounting Information System that processes the financial transactions and events as per Generally Accepted Accounting Principles (GAAP) to produce reports as per user requirements. Modern

Computerised Accounting Systems are based on the concept of database. A database is implemented using a database management system, which is define by a set of computer programs (or software) that manage and organise data effectively and provide access to the stored data by the application programs. The Computerised Accounting the transaction data is stored in well-organised database. The user operates on such database using the required and desired interface and also takes the desired reports by suitable transformations of stored data into information.

Accounting Software describes a type of application software that records and processes accounting transactions within functional modules such as accounts payable, accounts receivable, Journal, General Ledger, Payroll, and Trial Balance. It functions as an Accounting Information System.

### Working of Accounting Software :

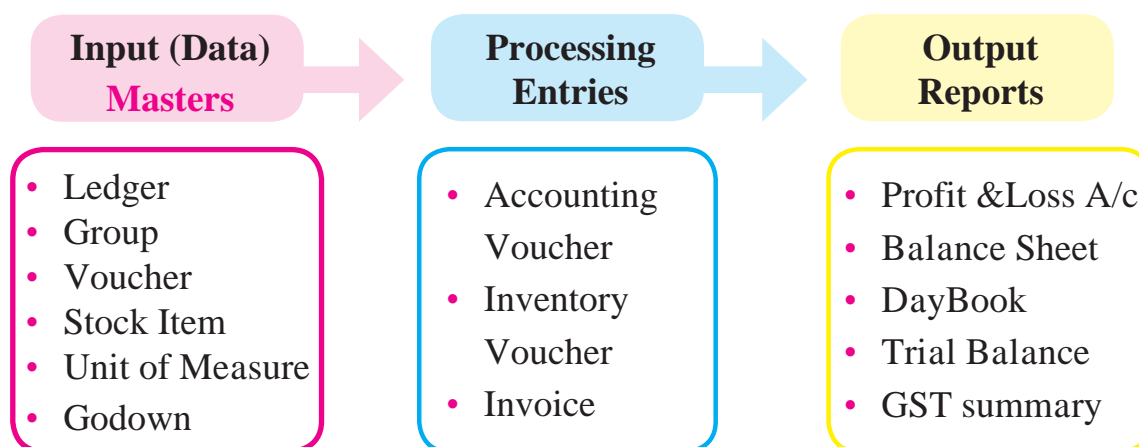
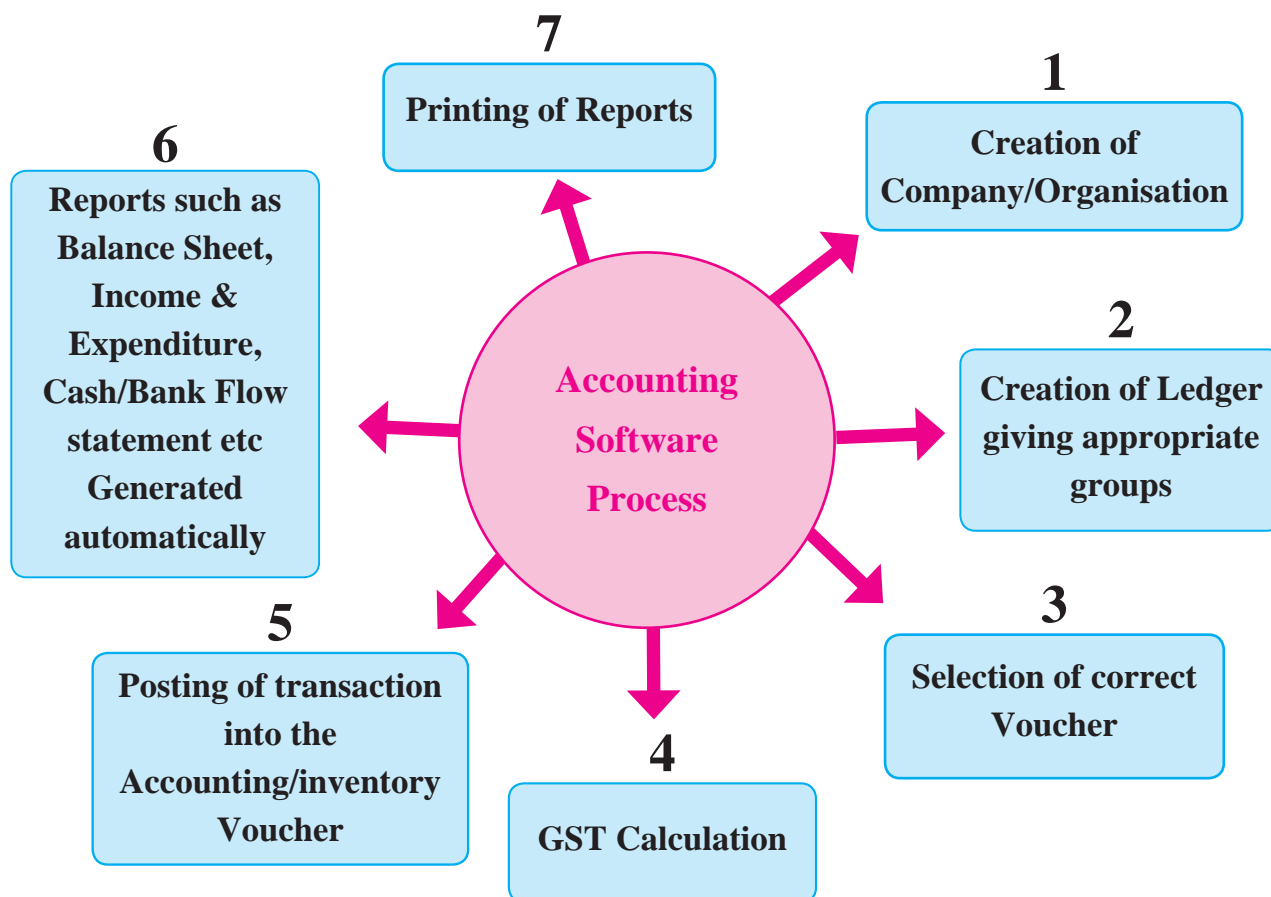


Fig. 3.1 : Working of accounting software

## 3.2 Process of Accounting Software



**Fig. 3.2 : Process of Accounting Software**

### 3.2.1 Creation Company/ Organisation

Creating a Company/organisation involves providing basic information about the company whose books of accounts are to be maintained. While creating a company fields like name of the company, Email id, Address of the company, financial year begins from, Books Beginning from etc with admin password has to be entered. In some accounting packages password security measures can be applied to keep the data safe and secure.

### 3.2.2 Creation of Ledgers :

The modern way of managing accounts called 'Single Ledger' concept of accounting is being followed. All

financial entries are made using Ledgers or account heads. Ledger accounts are created to identify transactions. Groups in Accounting Software classify and identify account heads according to their nature. This helps in presenting summarised information.

We have seen the concept of Group, Sub Group followed by their respective Ledger accounts in Std. XI.



#### Do it yourself

Make a table of the Ledger accounts alphabetically and write their respective groups and subgroups. Refer Std XI IT textbook.

### 3.2.3 Selection of Correct Voucher :

A voucher is a pre-numbered accounting document used for recording daily transactions. Every voucher maintains its debit and credit record. There are pre-defined voucher types for every type of transaction. Care must be taken to select appropriate Voucher Type otherwise there might be an error in Gross/Net Profit/Loss.

List of pre-defined Accounting voucher types is as below

Voucher Type	Used for Recording
Receipt	Amounts received by way of cash.
Payment	Payments made by cash.
Sales	Cash and Credit sale of goods and services.
Purchase	Cash and credit purchase of raw materials, semi-finished goods and finished goods and services.
Contra	Deposits or withdrawals of cash from bank or transfer of funds from one bank to another transfer of cash to Petty Cash.
Journal	Rectifying entries or transfer or adjustment entries purchase of fixed assets on credit.
Sales Return / Credit Note	Return of goods by a customer. It is issued when there is reduction in the price charged to a customer.
Purchase Return / Debit Note	Return of goods to a supplier. It is issued when there is reduction in the price given by a supplier

**The above table of voucher types can be understood more clearly with the help of following transactions.**

Transaction	Voucher Entry	Ledger with group	Voucher type
1) Paid salary to staff in cash	Salary A/c....Dr To Cash A/c	Salary – Indirect Exp Cash – Cash in hand	Payment
2) Received cash from Mr. Raj	Cash A/c....Dr To Mr.Raj A/c	Cash – Cash in hand Mr.Raj – Sundry Debtor	Receipt
3) i) Sold goods for cash ii) Sold goods to Mr. Ram on credit	Cash A/c...Dr To Sales A/c  Mr.Ram A/c...Dr To Sales A/c	Cash – Cash in hand Sales – Sales  Mr.Ram – Sundry Debtor Sales – Sales	Sales  Sales
4) i) Purchased goods for cash ii) Purchased goods from Mr. Sham on credit	Purchase A/c...Dr To Cash A/c  Purchase A/c...Dr To Mr. Sham	Purchase - Purchase Cash – Cash in hand  Purchase - Purchase Mr.Sham– Sundry Creditor	Purchase  Purchase

Transaction	Voucher Entry	Ledger with group	Voucher type
5) Cash deposited in Bank of India. OR Cash withdrawn from Bank of India	Bank of India A/c...Dr To Cash A/c  Cash A/c.....Dr To Bank of India A/c	Bank of India A/c – Bank Cash – Cash in Hand	Contra
6) Depreciation on machinery.	Depreciation A/c.. Dr To Machinery A/c	Depreciation A/c – Indirect Expenses Machinery A/c – Fixed Asset	Journal

### 3.2.4 GST Calculation :

GST stands for Goods and Service Tax. GST is an Indirect Tax which has replaced many Indirect Taxes in India. The Act came into effect on 1st July 2017. GST is one nation, one tax. We will study about GST calculation in this chapter.

### 3.2.5 Posting of transaction into Voucher :

Posting a transaction through voucher is called voucher entry. While recording a transaction through the voucher, the account to be debited and credited along with the amount. We can type narration which is optional. We can add any number of debits and credits in a voucher entry depending upon the transaction.

#### Steps (procedure for voucher entry) :

1. Creation of Ledger with appropriate group or sub group.
2. Select the appropriate voucher type from voucher menu.
3. Enter voucher date.

4. Select the debit account name from the list (which you have created) and enter the amount.
5. Select the credit account name from the list (which you have created) and enter the amount.
6. Enter narration and save.(optional)

#### Points to be remembered while recording the voucher entry -

1. While recording transaction in voucher entry mode, correct Ledger Account can be selected from the list of Ledger accounts.
2. Appropriate voucher type should be selected according to the transaction.
3. Once the recording is done, it is possible to alter the contents in the voucher or even to delete the voucher.

### 3.2.6 Displaying various Reports :

Display of information is designed to allow a user get the maximum benefit of the data that is entered. A user gets a holistic picture of the data and is also able to present information using different options. In Computerised Accounting various financial, inventory reports can be generated after finishing the recording of transactions or even at timely intervals. Reports such as :

- 1) **Trial Balance** : provides you a report with debit and credit balance of all Ledger Accounts.
- 2) **Profit and Loss Account** : This report gives the final working result of the business with Net profit/Net Loss.
- 3) **Balance Sheet** : It is a statement showing Assets and Liabilities of the business concern.
- 4) **The Day Book** : contains all vouchers for the day, including inventory vouchers. Its purpose is to show you a day's transactions, though you can display a report for any period using Change period option.
- 5) **GST Reports** : The GST report prints a summary of the GST received and paid by you, broken down by the various tax codes, and is used to calculate your GST payment or refund.

### 3.2.7 Printing various Reports :

Printing of the financial and inventory reports is advisable for future reference. It is also useful for accounting audit. Reports and documents generated through Accounting Software can also be printed.

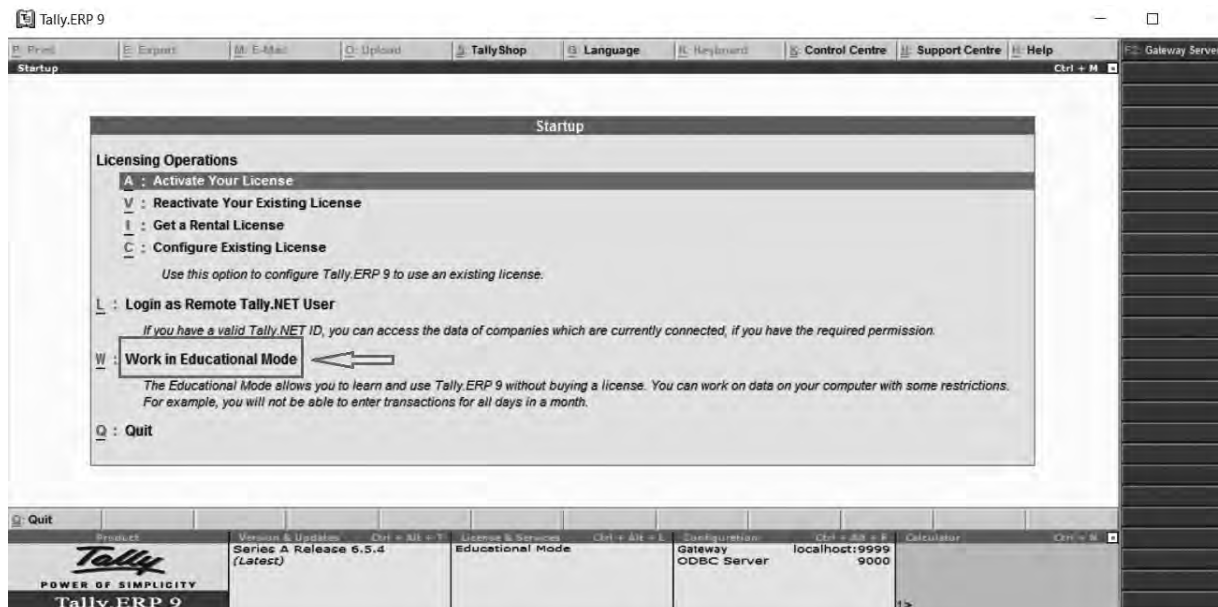
## 3.3 Different Accounting Packages :

### 1) Tally with GST package

Tally is one of the most widely used financial accounting software. Various types of trade and industries use it. It is a comprehensive business accounting and inventory management software that provides various facilities like multi-lingual operations, online functions, legally supported reports, etc.

In 2009, Tally Solutions introduced the software Tally.ERP 9. The software offers comprehensive business management solution. It maintains all books of accounts. Different types of vouchers such as vouchers for receipt, payment, sales, purchases, etc., can be used for recording transactions. In Tally for deleting any ledger, group, voucher or even company alt+d key combination is used. It follows the principle of double entry system of book keeping. In 2017, it was updated to comply with the Indian Goods and Services Tax (GST) requirements.



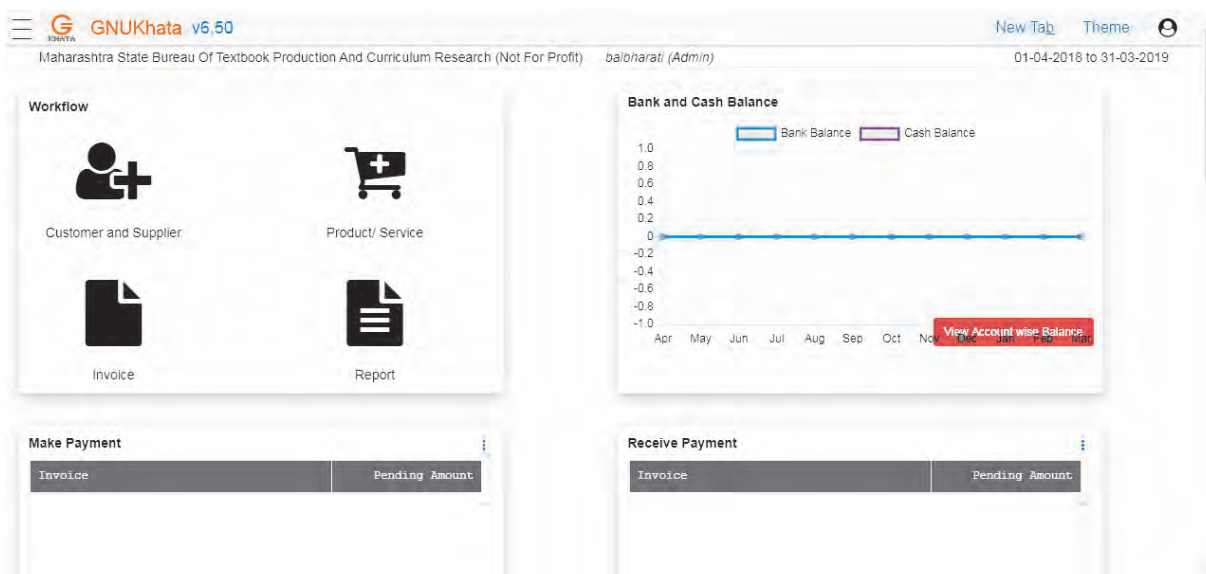


**Fig. 3.3 : Tally Flash Screen**

When Tally started, choose the mode of operation as per the options listed on the screen. If license is available, choose 'Activate Your License'. Otherwise, choose 'Work in Education Mode'.

## 2) GNU Khata :

In Std XI textbook we have seen how to create an organisation and ledger accounts using GNUKhata software. GNUKhata is one of the tools developed by KK's foundation. Like some other fairly innovative Indian FOSS products, GNUKhata probably hasn't been sufficiently noticed in the land it was born in. But it is making impressive progress now. From cash flow statements to profit and loss and balance sheets, GNUKhata can do it all. This software helps you keep track of your inventory.



**Fig. 3.4 GNUKhata Flash Screen**

### 3) LedgerSMB :

A powerful yet simple open source accounting solution. It has been tailored to small and medium sized businesses. Starting from managing invoices to inventory – you also get the ability to translate (up to 45 languages supported).

The screenshot displays the LedgerSMB 1.5.0 web interface. The left sidebar contains a navigation menu with categories like Contacts, AR, AP, Cash, Transaction Approval, Budgets, HR, Order Entry, Shipping, Quotations, General Journal, Goods and Services, Timecards, Reports, Recurring Transactions, Transaction Templates, Tax Forms, Fixed Assets, System, Preferences, New Window, and Logout. The main content area is titled 'Add Sales Invoice' and includes fields for Customer (123), Credit Limit (0), Remaining (0), Record in (1200-Comptes recevables), Currency (USD), Description, Shipping Point, and Ship via. There are buttons for Update, Save, Ship to, and Schedule. A table lists items with columns for Item, Number, Description, Qty, Unit, Price, Tax, Extended, Project, and Tax Form. The first item is 'web' with a quantity of 0 and a price of 0.00. Below the table, there are fields for Deliv (web-02-Web hosting + domain name registration, annual contract) and Group (webx-email-5-yr--5-pack pop3 email addresses). A Serial No. field is also present. The bottom section includes Notes, Internal Notes, and a summary table with columns for Date, Source, Memo, Amount, and Account. The summary table shows a subtotal of 0.00 and a total of 0.00. The interface is in English and uses a Flash-based layout.

Fig. 3.5 LedgerSMB Flash Screen

#### 4) GnuCash :

GnuCash is personal and small-business financial-accounting software, freely licensed under the GNU GPL and available for GNU/Linux, BSD, Solaris, Mac OS X and Microsoft Windows. It is designed to be easy to use, yet powerful and flexible. GnuCash allows you to track bank accounts, stocks, income and expenses. As quick and instinctive to use as a checkbook register, it is based on professional accounting principles to ensure balanced books and accurate reports.

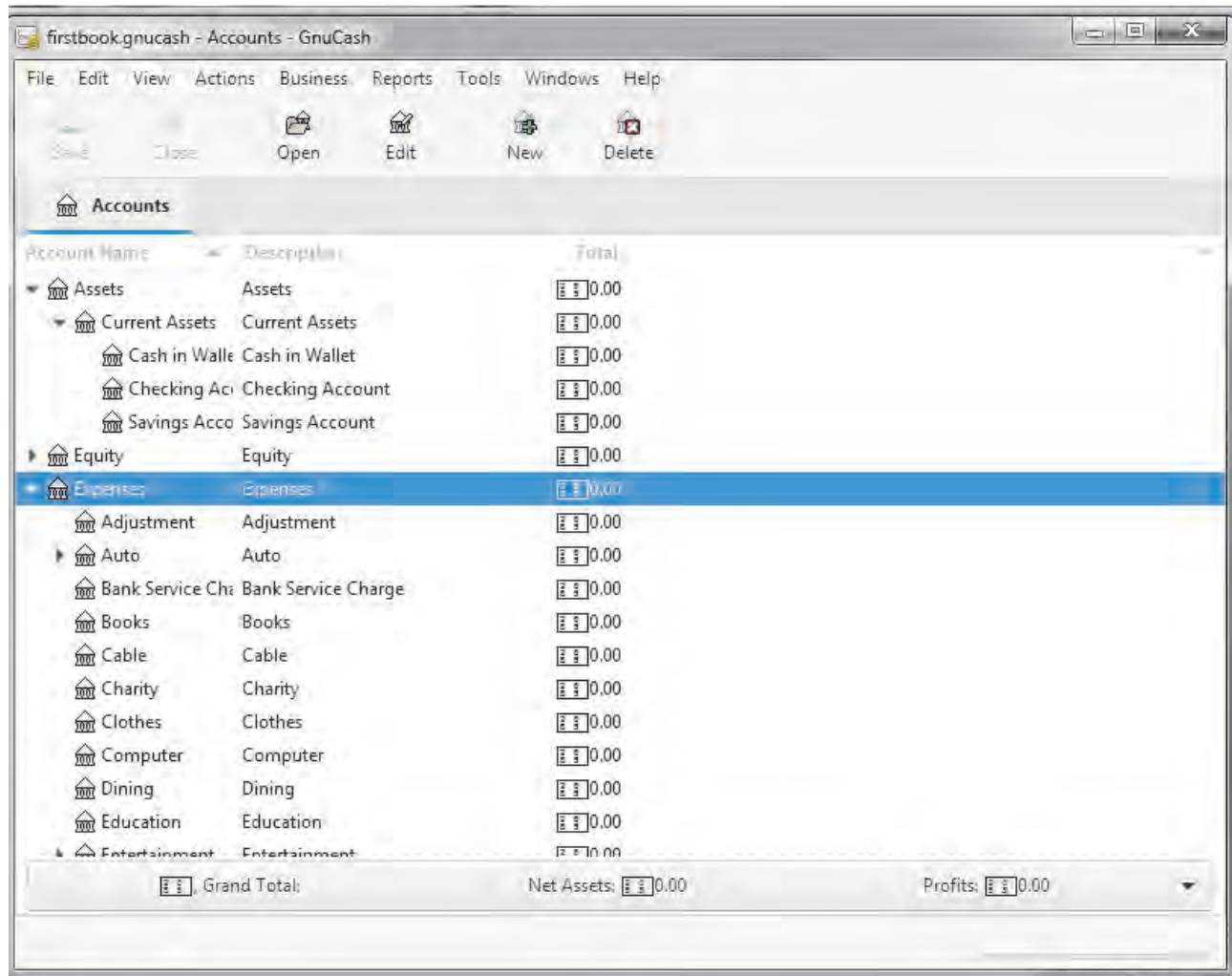
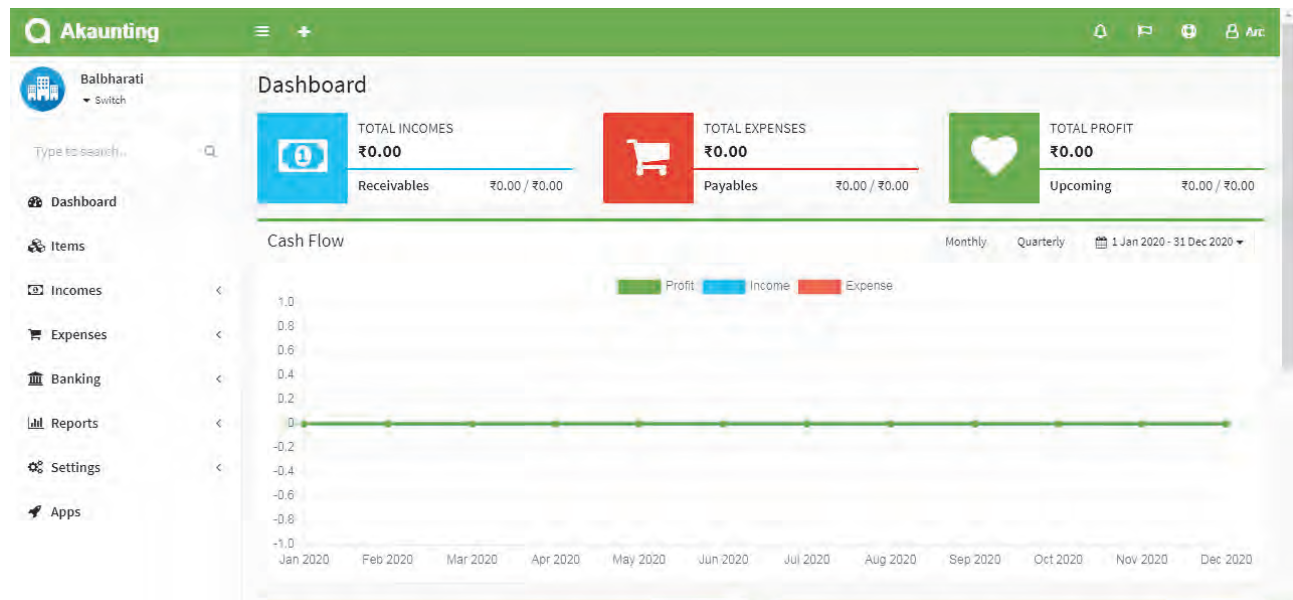


Fig. 3.6 GnuCash Flash Screen

## 5) Akaunting :

Akaunting is an interesting online accounting software that's available for free. Ranging from invoicing to managing deposits and transfers it has a whole lot of features. It's fit for both personal and enterprise needs.



**Fig. 3.7 Akaunting Flash Screen**



### Do it Yourself

There are many other free accounting software available on Internet. Try to search, install and explore.

Let us understand the above concepts with the help of example / case study

### Note

- i) With the help of above mentioned list of software use any Accounting Software (open source/ free version or proper license version).
- ii) Every software will have different navigational menus.
- iii) Practical Examination should be conducted on the software which is used for regular teaching session.

### 3.4 Case Study/ PROBLEM :

#### 1. Practical application of Accounting Software

Use following details to create a M/s Saraswati Trading Company for the year 2020

COMPANY DETAILS	
Company Name:	M/s Saraswati Trading Company
Address:	512,Shaniwar Peth, Navkar Building, Pune30
State:	Maharashtra
Website:	www.saraswatitrading.com
E-mail Id:	info@saraswati.com
Maintain:	Accounts Only
Financial Year From:	01-04-2019
Books Begin From :	01-04-2019

With the help of Any Accounting Software pass the following transactions in appropriate vouchers to print reports such as Trial Balance, Profit & Loss A/c, Balance Sheet, Day Book.

Jan 2020	Particulars	Amount (Rs)
1	Mrs. Saroj started business with cash	1,57,000
1	Cash deposited into Canara Bank	50,000
1	Paid office rent by cheque	15,000
2	Purchased goods from Sumit Steel works on credit	10,000
2	Sold goods to Ritu on cash	12,500
2	Purchased Furniture for office use with cash	25,000
2	Depreciation on Furniture	2,500

### **Solution :**

Company Info > Create Company

- i) Create a new company in the name of M/s Saraswati Trading Company with the given details, financial year begins on 1/04/2019.
- ii) After creation of a company, it is necessary to set up features. The features are set of capabilities, provided as options, that enable maintenance of financial records as per the requirements of the users. Go to Features -> Company Features -> Accounting Features-> Maintain Accounts only >> Type Yes

### **STEP II : Creation Of Ledger**

To record any transaction, the transaction has to be identified with the related Ledger Accounts. The user has to create various other ledgers based on their requirements.

To create given Ledgers –

**Masters --> Account Info ---> Ledgers-->Single Ledger --> Create**

**While creating a ledger, name of the ledger along with appropriate group should be selected from the list of groups.**

<b>Ledger</b>	<b>Under Group</b>
Capital A/c	Capital Account
Canara Bank A/c	Bank Account
Office Rent A/c	Indirect Expenses
Purchase A/c	Purchase Accounts
Sumit Steel Works A/c	Sundry Creditors
Sales A/c	Sales Accounts
Furniture A/c	Fixed Asset
Depreciation A/c	Indirect Expenses

**Table 3.1 : Ledger and its appropriate group**

#### **Do you Know**

In some accounting software it is not necessary to create all the Ledger Accounts at the beginning. From Voucher Entry screen it allows you to create new Ledger Account.

**To view the list of created ledger : Accounts Info> Ledger>Single Ledger> Display**



### Step III : Voucher Entries

All Accounting Software has a set of predefined vouchers such as Purchase, Sales, Payment, Receipt and Contra. To view the list of voucher types: **Masters > Accounts Info > Voucher Types > Display.**

To enter transactions through vouchers **Transactions > Accounting Vouchers.**

**Note:** In Accounting Voucher Entry, there is “Single Entry Mode” for Contra, Receipt and Payment voucher and sets default To/By during voucher entry.

To convert it into double entry, one has to change the configuration as follows –

- 1) “Use single entry mode for payment/receipt/contra vouchers” to No.
- 2) “Use Cr/Dr instead of To/By during entry” to Yes.

### Analysis of Transactions :

Date 2020	Voucher Type	Particular	Debit Amt.	Credit Amt.
1 Jan	Receipt	Dr. Cash Cr. Capital A/c	1,57,000	1,57,000
1 Jan	Contra	Dr. Canara Bank A/c Cr. Cash A/c	50,000	50,000
1 Jan	Payment	Dr. Office Rent A/c Cr. Canara Bank A/c	15,000	15,000
2 Jan	Purchases	Dr. Purchases A/c Cr. Sumit Steel Works A/c	10,000	10,000
2 Jan	Sales	Dr. Cash A/c Cr. Sales A/c	12,500	12,500
2 Jan	Payment	Dr. Furniture A/c Cr. Cash A/c	25,000	25,000
2 Jan	Journal	Dr. Depreciation A/c Cr. Furniture A/c	2,500	2,500

#### Step IV: To view various Reports :

- (i) To view Trial Balance → Display > Trial Balance > Detailed Trial Balance
- (ii) To view Profit and Loss A/c → Reports > Profit & Loss A/c
- (iii) To view Balance Sheet → Reports > Balance Sheet > Detailed
- (v) To view Day Book → Display > Day Book > Detailed (Alt + F1)

### 3.5 Important Concepts under GST :

**3.5.1 GST :** GST stands for Goods and Services Tax. France was the first country to implement the GST in 1954, and since then an estimated 160 countries have adopted this tax system. GST is an **Indirect Tax** which has replaced many Indirect Taxes in India. In India the GST Act came into effect on 1st July 2017. The GST replaced existing multiple taxes levied by the central and state governments. **GST is one nation, one tax, one market.**

- **Goods:** Means every kind of movable property other than money and securities.
- **Services:** These are the activities provided by other people, who include doctors, lawn care workers, dentists, barbers, waiters, online servers, consultants, chartered accountants.
- **Tax:** A compulsory contribution to state revenue, levied by the government.



#### Do it Yourself

Find the names of the countries where Goods and Services Tax is applicable.

### 3.5.2 GSTIN :

Goods and Services Tax Identification Number (GSTIN) is the registration number allotted to every registered dealer under GST Act. The GSTIN is a 15 digit PAN based registration number. You may register multiple businesses under the same PAN registration, provided they are all within the same state. Structure of GSTIN is as under-

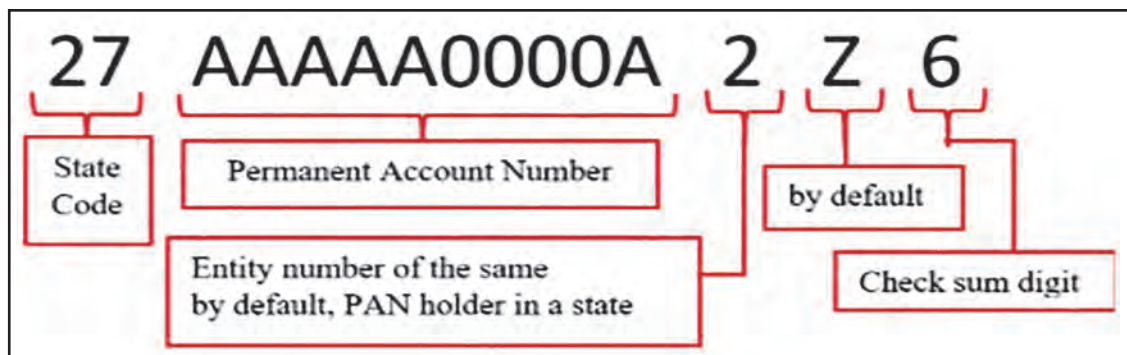


Fig. 3.8 Structure of GSTIN



### Do it Yourself

Find out the State code of GST for different states of India. Make a list of it.

### 3.5.3 HSN Code :

HSN stands for **Harmonized System of Nomenclature**, is an internationally accepted coding system developed by World Customs Organisation (WCO) with the vision of **classifying goods** all over the world in a systematic and logical manner.

### 3.5.4 SAC :

SAC stands for **Services Accounting Code**, which is issued by CBEC(Central Board of Excise and Customs) to uniformly **classify each service** under GST. Each service has a unique SAC.

### 3.5.5 Taxes Under GST

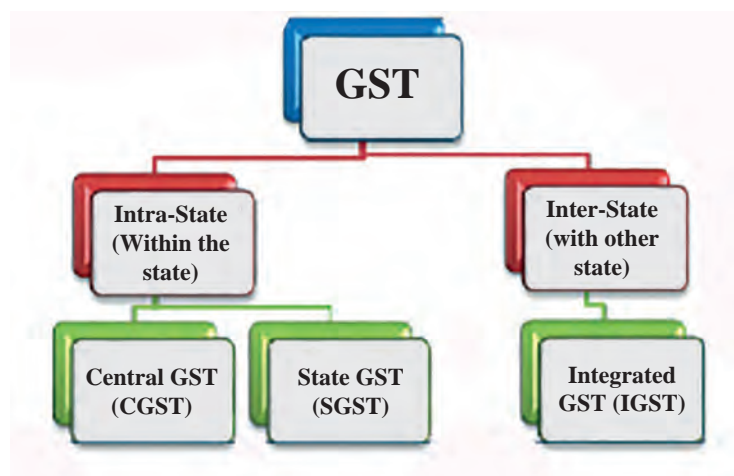


Fig. 3.9 Taxes under GST

To understand more on GST let us see the following table :

Tax name	Imposed on	Collected by	Example
CGST(Central Goods and Services Tax)	Intra-state supply of goods or services	Central Government	Mumbai to Pune i.e. Maharashtra to Maharashtra
SGST (State Goods and Services Tax)	Intra-state supply of goods or services	State Government	Satara to Nasik i.e. Maharashtra to Maharashtra
IGST(Integrated Goods and Service Tax)	Interstate supply or import of goods or services	Central Government	Solapur to Humpy i.e. Maharashtra to Karnataka (Between two States)

### 3.5.6 GST Rates :

The government has proposed a 4-tier tax structure for all goods and services under the slabs- 5%, 12%, 18% and 28%. There is zero % tax imposed on items such as, milk, sugar, salt, eggs, bread butter milk, curd, natural honey, fresh fruits and vegetables, jute, fresh meat, fish, chicken, stamps, judicial papers, printed books, newspapers, bangles, handloom. etc.



#### Do it Yourself

Find out the GST rates prescribed by government for different types of goods and services. Make a list of it. Refer GST Council decision for latest GST rates.

### 3.5.7 Input Tax and Output Tax :

- GST on Inward Supply of goods and services is known as Input Tax. Input tax shall be specifically named as Input IGST or Input CGST or Input SGST.
- GST on Outward Supply of goods and services is known as Output Tax. The output tax may be specifically named as Output IGST/Output CGST/Output SGST



#### Do it Yourself

Try to collect a bill having GST applied on cost, observe the GSTIN and rate of GST. Also observe which types of GST are applied on that bill.

### 3.5.8 Ledgers pertaining to GST for Supply of Goods - The Ledgers that are affected GST are :

- **Sales Ledger** - Separate sales Ledgers can be created for Local, Interstate and Non-taxable sales
- **Purchases Ledger** - Separate purchases Ledgers can be created for Local Purchases, Interstate purchases and Non- taxable purchases
- **Party Ledger**      ➤ **SGST Ledger**
- **CGST Ledger**      ➤ **IGST Ledger**

### 3.5.9 Ledgers pertaining to GST for Supply of Services - The Ledgers that are affected GST are:

- **Sales of Service Ledger or Income Ledger** - Give the name of the Service  
(If the dealer is only a service provider, Service rendered is treated as sale of service e.g. Advertisement Charges received, consulting charges received, Commission received etc.)
- **Purchase of Service Ledger or Expense Ledger** - Give the name of the Service.  
(If the dealer deals only a service provider, Service received is treated as Purchase of service e.g. website development/IT service charges paid, advertisement charges paid, Consulting charges paid, Courier Charges paid, etc. )
- **Party Ledger**      ➤ **SGST Ledger**
- **CGST Ledger**      ➤ **IGST Ledger**

### Points to be remembered for GST calculation while using Accounting Software

1. Use GST compliant Accounting Software.
2. Make sure that company will be in accounts with inventory mode for GST calculation of goods and accounts only mode for GST calculations of services.
3. Creation of stock item with GST rates and units of measure with UQC is a must for GST accounting.
4. Service Ledgers must be created with the GST rates separately for local and interstate supply.
5. Input tax and output tax Ledgers at different rates are not required.
6. CGST, SGST and IGST Ledgers are common for goods and services.
7. CGST, SGST and IGST Ledgers will be created under sub group Duties and Taxes and main group Current Liabilities.
8. Voucher entry for supply of goods should be in item invoice mode and for supply of services should be in accounting mode.

### 3.6 Let us see different examples of GST calculation using different accounting packages.

#### I) GST on Goods :

##### Example 1 :

With the help of any open source or free education version Accounting Software create a company named Shree Ganesha Trading Company, Shahupuri Estate, Kolhapur, Maharashtra Pin Code 416004, with GSTIN 27ABCDE2345F1Z4. Enter the following transactions in appropriate vouchers by applying GST. Prepare Sales/ Tax Invoice and GST Reports.

- 1) On 01/04/2019 Purchased 50 Units CCTV @ Rs.10000 per Unit, GST 28% from Shiva Enterprises, Kolhapur, Maharashtra, Pin code 416001.
- 2) On 02/04/2019 Sold 30 Units of CCTV @Rs.12000 per unit, GST 28%, to Angels Public School, Satara, Maharashtra, Pin code 415001.

##### Solution :

The above transactions clearly indicate that the purchase and sale both are within Maharashtra State.

Therefore 28% GST is applicable as 14% SGST and 14% CGST

## Step 1 : Create new company -

- i) Create a new company in the name of Shree Ganesha Trading Company with the given address and pin code, financial year begins on 1/04/2019.
- ii) Enable GST features by selecting → Features → Statutory and Taxation → Enable Goods and Service Tax(GST) → yes  
Set/alter GST details → Yes.  
Type State → Maharashtra, GSTIN 27 →ABCDE2345F1Z4

## Step2. Create the following Ledger Accounts.

Accounts Info> Leger> Single>Create

Ledger	Group	Details to be filled
Purchases CCTV A/c	Purchases Accounts	Is GST Applicable – ‘Applicable’, Set/Alter GST Details – ‘Yes’, Nature of transaction – ‘Purchase Taxable’, (from configuration make yes to ‘Show all GST tax types’) type- Integrated tax as ‘28%’ then Central Tax and State Tax will automatically reflects as ‘14%’ and ‘14%’ respectively; Type of supply – ‘Goods’)
After Set/Alter GST Details – ‘Yes’, GST Details Screen will appear select Nature of transaction – ‘Purchase Taxable’ GST Details-> Nature of Transaction->Purchase Taxable Show all GST tax types -> Yes		

**Tax type - Integrated Tax -28%; then Central Tax and State Tax will automatically reflect as ‘14%’ and ‘14%’ respectively. Cess 0% and then press Enter Key**

Ledger	Group	Details to be filled
Sales CCTV A/c	Sales Account	Is GST Applicable – ‘Applicable’, Set/Alter GST Details – ‘Yes’ Nature of transaction – ‘Sales Taxable’ (from configuration make yes to ‘Show all GST tax types’) type- Integrated tax as ‘28%’ then Central Tax and State Tax will automatically reflects as ‘14%’ and ‘14%’ respectively; Type of supply – ‘Goods’

**Same Steps to be followed for creating Sales CCTV Ledger A/c**

SGST A/c	Duties and Taxes	Type of Duty/Tax - ‘GST’, Tax Type – ‘State Tax’, Percentage of Calculation – ‘0%’
----------	------------------	--



CGST A/c	Duties and Taxes	(Type of Duty/Tax - 'GST', Tax Type – 'Central Tax', Percentage of Calculation – '0%')
Angel Public School A/c	Sundry Debtors	Fill the details with PIN code
Shiva Enterprises A/c	Sundry Creditors	Fill the details with PIN code

### Step.3. Create Inventory details :

- (a) Create Units of Measure – Unit/Ut
- (b) Create Stock groups or Category as '**Camera**'
- (c) Create Stock Item/Product as '**CCTV**' with GST rate 28%

NOTE: GST rates applicable for each commodity are given at the time of creation of stock items/products. For the creation of inventory items/products, following are the steps:

Step 3.1 Create Unit of Measure: Inventory/Inventory Info> Unit of Measure/Measurement >>Give unit name/symbol as Ut> Formal Name/description as Units >Select applicable Unit Quantity Code (UQC) from the pop up list(optional).> Accept/Save the details.

Step 3.2 Create Stock groups or Category: Inventory/Inventory Info>Stock groups or Category as Camera>Accept/Save the details without changing any field.

Step 3.3 Create Stock Items/Product: Inventory /Inventory Info>Stock Items/Product> Type the name of the item/product CCTV>Select the Under Group/Category as Camera>Select Unit of Measurement/ Measure as Ut > Set / Alter GST Details : Yes (then give all the GST details for that Stock Item like HSN, Taxability, IGST %, CGST%, SGST%, etc.)Type of supply – 'Goods' Accept/Save the details.

### Step 4. Create Purchase and Sales Vouchers :

- 1) **Purchase Voucher:** >Accounting Vouchers > (Purchase Voucher) > Type Voucher Date as **1/04/2019**>Supplier Invoice No. >Party's name field : > Enter **Shiva Enterprises** > Purchase Ledger field > Select **Purchase CCTV A/c** > Select Name of the item/product as **CCTV**>Enter Quantity as **50** and Rate Rs.**10000**>Select '**SGST**'> Select '**CGST**'>Save/Accept.
- 2) **Sales Voucher :** Accounting Vouchers > Select Sales Voucher > Enter Voucher Date> Party's name field : **Angel Public School**> Sales Ledger field – Select **Sales CCTV** > Select Name of the item/product as **CCTV**>Enter Quantity **30** units and

Rate **Rs.12000**>Select '**SGST**'> Select '**CGST**' > Save/Accept

### Step 5. Display Reports :

1) Tax Invoice i.e. Sales Invoice –

Reports ->Display ->Day Book ->Sales Voucher

Tax Invoice						
<b>Shree Ganesh Trading Company</b> Shahu Puri Estate Kolhapur GSTIN/UIN: 27ABCDE2345F124 State Name : Maharashtra, Code : 27		Invoice No. : <b>1</b> Delivery Note	e-Way Bill No. Dated: <b>2-Apr-2019</b> Mode/Terms of Payment	Supplier's Ref Other Reference(s)		
Buyer <b>Angels Public School</b> Satara State Name : Maharashtra, Code : 27		Buyer's Order No. Despatch Document No. Despatched through	Dated Delivery Note Date Destination	Terms of Delivery		
Sl No	Description of Goods	HSN/SAC	Quantity	Rate	per	Amount
1	CCTV		30 unt	12,000.00	unt	3,60,000.00
	SGST					50,400.00
	CGST					50,400.00
Total			30 unt			<b>₹ 4,60,800.00</b>
Amount Chargeable (in words)						E & O E
<b>INR Four Lakh Sixty Thousand Eight Hundred Only</b>						
HSN/SAC		Taxable Value	Central Tax		State Tax	
			Rate	Amount	Rate	Amount
		3,00,000.00	14%	50,400.00	14%	50,400.00
Total		3,60,000.00		50,400.00		50,400.00
Tax Amount (in words)		<b>INR One Lakh Eight Hundred Only</b>				
Declaration We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct.		for Shree Ganesh Trading Company Authorized Signatory				

This is a Computer Generated Invoice

## 2) GST Reports

i) Display > Statutory Reports > GST >GSTR2

ii) GST Annual Computation -- > in Pdf form(print mode)->

Shree Ganesha Trading Company Shahupuri Estate Kolhapur GST Annual Computation 1-Apr-2019 to 31-Mar-2020						
GSTIN : 27ABCDE2345F1Z4						Page 1
Total number of vouchers for the period						2
Included in Annual Computation						2
Included in HSN/SAC Summary						0
Incomplete HSN/SAC information (to be provided)						2
Not relevant for Annual Computation						0
Incomplete/Mismatch in information (to be resolved)						0
Particulars	Taxable Value	Integrated Tax Amount	Central Tax Amount	State Tax Amount	Cess Amount	Tax Amount
<u>Liability</u>						
Outward and Inward Supplies on Which Tax is Payable (Including Advances)	3,60,000.00		50,400.00	50,400.00		1,00,800.00
Outward Supplies on Which Tax is not Payable						
Total Liability	3,60,000.00		50,400.00	50,400.00		1,00,800.00
<u>Input Tax Credit</u>						
Input Tax Credit			70,000.00	70,000.00		1,40,000.00
ITC Reversal and Ineligible ITC Declared						
Input Tax Credit After Reversal & Ineligible ITC			70,000.00	70,000.00		1,40,000.00
<u>HSN/SAC Summary</u>						
Summary of Outward Supplies						
Summary of Inward Supplies						

### Example 2 :

With the help of any open source or free education version Accounting Software Enter the following transactions in appropriate vouchers of Balaji Enterprises, College Road, Nashik, Maharashtra 422005 with GSTIN 27PQRST1234T2Z1, Dealers of House hold Articles. Prepare various reports with GST calculations.

- 1) On 01/08/2018 Purchased from M/s. Bangalore Kitchen suppliers, Sudhama Nagar, Bengaluru, Karnataka 560002 with GSTIN 29ABCDE1235R2Z4
  - (a) 100 Nos. of LPG Stoves @ Rs.8500/- per Stove, GST 18%
  - (b) 50 Nos. of Wash Basin @Rs.7000/- per basin, GST 28%
- 2) On 02/08/2018 Sold 40 Nos. of LPG Stoves @Rs.10000/- per Stove with GST18% to Anandh Multi Agencies, Kuppam Nagar, Chennai, Tamil Nadu 600033 (GSTIN-33STUVW1345S2Z6 )

#### Solution:

The above transactions clearly indicate that the purchase and sale both are out of Maharashtra State. Therefore only IGST is applicable i.e. Integrated GST

#### Step 1.

- i) Create a new company in the name of Balaji Enterprises, College Road, Nashik, Maharashtra, Pin code – 422005, financial year begins on 1/04/2018.
- ii) Enabling GST

Features>Statutory & Taxation > Enable Goods and Services Tax (GST) – Yes  
Set/alter GST details – Yes
- iii) Fill State and GSTIN details

#### Step 2 : Create following Ledger accounts. Account Info > Ledgers > Single > Create

Ledger	Under Group
Inter-State Purchase	Purchase Accounts Is GST Applicable – Applicable Set/Alter GST Details – No Type of supply – Goods
M/s. Bangalore Kitchen Suppliers	Sundry Creditor

Inter-State Sales	Sales Accounts Is GST Applicable – Applicable Set/Alter GST Details – No Type of supply – Goods
Anandh Multi Agencies	Sundry Debtor
IGST	Duties and Taxes Type of Duty/Tax – GST Tax Type – Integrated Tax Percentage of Calculation – ‘0%’

### Step.3 Create Inventory details:

- (a) Create Units of Measure – Nos.
- (b) Create Stock group/category - Households
- (c) Create Stock Items/products:
  - (i) LPG Stoves - Type GST Rate 18% in the field ‘Integrated Tax’..
  - (ii) Wash Basin - Type GST Rate 28% in the field ‘Integrated Tax’

**NOTE:** GST rates applicable for each commodity are given at the time of creation of stock items/products. For the creation of inventory items/products, steps to be followed are :

**Step.3.1.** Create Units of Measure: Inventory/Inventory Info> Units of Measure/ Measurement >Give unit name/symbol as **Nos**> Formal Name/description as **Number** >Select applicable Unit Quantity Code (UQC) from the pop up list NOS-Numbers> Accept/Save the details

**Step.3.2.** Create Stock groups or Category: Inventory/Inventory Info>Stock groups or Category as **Households**>Accept/Save the details without changing any field

**Step.3.3.** Create Stock Items/Product: Inventory /Inventory Info>Stock Items/Product> Type the Item/Product name **LPG Stoves** >Select the Under Group/Category as **Household**>Select Unit of Measurement/ Measure as **Nos** > Type GST Rate 18% in the field ‘Integrated Tax’>Accept/Save the details

**Step.3.4.** Create Stock Items/Product: Inventory /Inventory Info>Stock Items/Product> Type the Item/Product name **Wash Basin** >Select the Under Group/Category as **Household**>Select Unit of Measurement/ Measure as **Nos** > Type GST Rate 28% in the field ‘Integrated Tax’>Accept/Save the details

#### **Step 4. Create Purchase and Sales Vouchers**

- 1) **Purchase Voucher:** Accounting Vouchers > Select Purchase Voucher>Type Voucher Date>Supplier Invoice No. >Party’s name field : M/s. Bangalore Kitchen suppliers > Purchase Ledger field – Select Inter-state Purchase > Select Stock Item/Product LPG Stoves > Enter Quantity as 100Nos and Rate Rs.8500> Select second Stock Item/Product Wash Basin>Enter Quantity as 50Nos and Rate Rs.7000>Select ‘IGST’> Save/Accept.
- 2) **Sales Voucher :** Accounting Vouchers > Select Sales Voucher > Enter Voucher Date>Party’s name field : Anandh Multi Agencies > Sales Ledger field – Select Inter-state Sale > Select Name of the item/product LPG Stoves >Enter Quantity 40 Nos and Rate Rs.10000>Select ‘IGST’ > Save/Accept.

#### **Step 5: Display GST Reports:**

- i) Display > Statutory Reports > GST >**GSTR-2**
- ii) Display > Statutory Reports > GST >**GST Annual Computation**

#### **II) GST on Services –**

While calculating GST on Services all the services purchased can be recorded in Purchase Voucher. For example paid advertisement charges, consultancy charges, professional charges, maintenance charges, transportation charges, IT charges etc. to be considered as services purchased for the company and hence to be recorded in Purchase Voucher.

Similarly, while calculating GST on Services all the services sold can be recorded in Sales Voucher. For example received advertisement charges, consultancy charges, professional charges, maintenance charges, transportation charges, IT charges etc. to be considered as services sold by the company and hence to be recorded in Sales Voucher.

E.g. Digisoft India Ltd Company is a company which develops websites. They have developed a website for Enhance Learning Institute for Rs 50,000/- as design charges. Entry for the same will be



Voucher Entry	Group Name	Voucher Type
Enhance Learning Institute A/c ....Dr 50000 To Design charges A/c 50000	Sundry Debtor Sales	Sales Voucher

**Note :** While calculation GST for the company rendering only services Accounting Features should change to “Maintain Accounts Only” as YES option

**Let us understand this with the help of following example :**

M/s. Freelance Technical Consultancy Company from Shraddhanand Peth, Ambazari Rd, Nagpur, Maharashtra 440010 (GSTIN 27HIJKL1234M5Z6) is a freelancing company which tackle problems and provide IT solutions to the big organisation. The company renders services like website designing, Digital Marketing consultation, etc. Following transactions has taken place in the month of October 2017. **With the help of any open source or free education version Accounting Software** enter the following transactions in appropriate vouchers of M/s. Freelance Technical Consultancy Company with GST calculations.

- 1-10-2017 Received Design charges from M/s Mehta Construction Group, Amravati, Rs.50,000/- by cheque, (SBI Ch. No.579678) GST-18%
- 2-10-2017 Received Consultancy charges from M/s Perfect Engineers Ltd, Wardha, Rs.50,000/-, GST 5%
- 2/10/2017 Paid Advertisement charges Rs.30,000/-, GST-18% to M/s. Online Digital Marketing Ltd, Mumbai.
- 02/10/2017 Paid Web hosting charges to M/s. Popular Web hoster, Bangalore, Karnataka by Cheque Rs.30,000/-, (SBI Ch.No.325647) IGST-18%

**Print GST Reports GSTR-2 and GST Annual Computation.**

**Solution:**

**In the above transactions we have to consider SGST, CGST, IGST**

**Step1. Create a new company :** M/s. Freelance Technical Consultancy Company from Shraddhanand Peth, Ambazari Rd, Nagpur, Maharashtra 440010, financial year begins on 1/04/2017. Enable GST by filling GSTIN 27HIJKL1234M5Z6.

**Note :** Don't forget to change the company features if the company renders 'Service Only' as Feature -> Accounting Features -> Maintain Accounts Only 'Yes'

## Step2. Create the following Ledger Accounts

Ledger	Under Group and details to be filled
Design Charges	Sales Account (Is GST Applicable – ‘Applicable’, Set/Alter GST Details – ‘Yes’, Nature of Transaction – Sales Taxable, Type GST Rate in the field Integrated Tax, Type of supply – ‘Service’)
M/s Mehta Construction Group	Sundry Debtors
SBI A/c	Bank Account
SGST	Duties and Taxes (Type of Duty/Tax - ‘GST’, Tax Type – ‘State Tax’, Percentage of Calculation – ‘0%’, Rounding method – ‘Not applicable’)
CGST	Duties and Taxes (Type of Duty/Tax - ‘GST’, Tax Type – ‘Central Tax’, Percentage of Calculation – ‘0%’, Rounding method – ‘Not applicable’)
Consultancy Charges	Sales Account (Is GST Applicable – ‘Applicable’, Set/Alter GST Details – ‘Yes’, Nature of Transaction – Sales Taxable, Type GST Rate in the field Integrated Tax, Type of supply – ‘Service’)
M/s Perfect Engineers Ltd	Sundry Debtors
Advertisement Charges	Purchase Account (Is GST Applicable – ‘Applicable’, Set/Alter GST Details – ‘Yes’, Nature of Transaction – Purchase Taxable, Type GST Rate in the field Integrated Tax, Type of supply – ‘Service’)
M/s Online Digital Marketing Ltd	Sundry Creditors
M/s. Popular Web hoster	Sundry Creditors
IGST	Duties and Taxes (Type of Duty/Tax - ‘GST’, Tax Type – ‘Integrated Tax’, Percentage of Calculation – ‘0%’, Rounding method – ‘Not applicable’)
Web Hosting Charges	Purchase Account (Is GST Applicable – ‘Applicable’, Set/Alter GST Details – ‘Yes’, Nature of Transaction – Inter-State Purchase Taxable, Type GST Rate in the field Integrated Tax, Type of supply – ‘Service’)

### Step.3. Accounting Vouchers:

Transaction	Voucher Type	Procedure
1 (Due Entry)	Sale	Debit – M/s Mehta Construction group Credit- Design charges Credit- CGST Credit- SGST (Recommended that Entry to pass in Invoice Mode – Accounting Invoice and not in Voucher Mode – Dr / Cr mode. So that GST amount should be auto calculated.)
1 (Receipt entry)	Receipt	Debit - SBI Credit- M/s Mehta Construction group
2 (Due Entry)	Sale	Debit – M/s Perfect Engineers Ltd Credit- Consultancy charges Credit- CGST Credit- SGST (Recommended that Entry to pass in Invoice Mode – Accounting Invoice and not in Voucher Mode – Dr / Cr mode. So that GST amount should be auto calculated.)
2 (Receipt entry)	Receipt	Debit - Cash Credit- M/s Perfect Engineers Ltd
3 (Due Entry)	Purchase	Debit – Advertisement Charge Debit- CGST Debit – SGST Credit- M/s. Online Digital marketing Ltd (Recommended that Entry to pass in Invoice Mode – Accounting Invoice and not in Voucher Mode – Dr / Cr mode. So that GST amount should be auto calculated.)
3 (Payment entry)	Payment	Debit - M/s. Online Digital marketing Ltd Credit – Cash
4 (Due Entry)	Purchase	Debit – Web Hosting Charges Debit- IGST Credit- M/s. Popular Web hoster (Recommended that Entry to pass in Invoice Mode – Accounting Invoice and not in Voucher Mode – Dr / Cr mode. So that GST amount should be auto calculated.)
4 (Payment entry)	Payment	Debit - M/s. Popular Web hoster Credit – Cash

## Step 4. Display GST Reports:

(a) GSTR-2

(b) GST Annual Computation

### Summary

- Accounting Software is application software used to record accounting transactions.
- Process of Computerised Accounting starts with creation of company or organisation.
- Automated accounting system is an approach to maintain up-to-date accounting records with the aid of Accounting Software.
- In Computerised Accounting every Ledger account should be given proper group.
- Accounting group is a collection of Ledger accounts of same nature.
- Voucher is pre-numbered accounting document.
- In computerised accounting every voucher maintains its debit and credit record.
- Receipt, Payment, Sales, Purchase, Contra, Journal are the commonly used voucher types.
- Selection of Vouchers depends upon nature of transaction.
- GST stands for Goods and service tax.
- GST is an Indirect tax implied in India from 1st July 2017.
- Posting a transaction through voucher is called voucher entry.
- In Computerised Accounting various financial and inventory reports can be generated after finishing the recording.
- Accounting Software are available such as Tally, GNUKhata, GNUCAsh, Ledger SMB, Akaunting etc. for maintaining computerised accounting.
- GSTIN is a 15 digit PAN based Registration Number.
- First two digits of GSTIN indicate state code.
- For Maharashtra GSTIN code is 27.
- HSN and SAC are the codes given to goods and services under GST.
- There are three types of GST- CGST,SGST,IGST
- GST rates are different for different commodities/products.
- For calculating GST on Goods, accounts with inventory mode and GST on Services accounts only mode should be selected while creating company.

## Exercise

### Q.1 Fill in the blanks.

- 1) A pre-numbered accounting document used for posting daily transactions is called as \_\_\_\_\_.
- 2) When cash is going out of the business \_\_\_\_\_ type of voucher is used.
- 3) Return of goods to a supplier comes under \_\_\_\_\_ type of voucher.
- 4) \_\_\_\_\_ was the first country to implement the GST in 1954.
- 5) GSTIN stands for \_\_\_\_\_.
- 6) GST came into force in India with effect from \_\_\_\_\_.
- 7) Rectifying entries or transfers or adjustment entries comes under \_\_\_\_\_ voucher type.

### Q.2 State whether the statement is TRUE or FALSE.

- 1) Creation of company is the first step in Computerized Accounting process.
- 2) All Ledger accounts have same groups in Computerized Accounting.
- 3) Receipt voucher is used when the cash is accepted.
- 4) Cash deposited into bank comes under bank voucher.
- 5) Recording a transaction through voucher is called as voucher entry.

- 6) Goods sold from Solapur to Hubli is an example of SGST.
- 7) GST is focus on one nation one tax.
- 8) GSTIN is PAN based registration number.
- 9) CGST, SGST and IGST Ledgers are common for goods and services

### Q.3 Choose Single correct answer from the given options.

- 1) Contra Voucher is used for \_\_\_\_\_
  - a) Master Entry
  - b) Withdrawal of cash from bank
  - c) Reports
  - d) Credit Purchase
- 2) Salary account comes under which of the following head \_\_\_\_
  - a) Indirect Income
  - b) Indirect Expenses
  - c) Direct Income
  - d) Direct Expenses
- 3) In India the GST Act came into effect on \_\_\_\_\_
  - a) 1st July 2018
  - b) 1st July 2017
  - c) 1st June 2018
  - d) 1st June 2017

- 4) Sale or purchase out of state involves \_\_\_\_ in invoice.
  - a) OutGST
  - b) IGST
  - c) WithGST
  - d) NoGST
- 5) GSTIN is \_\_\_\_ digit alphanumeric number.
  - a) 13
  - b) 10
  - c) 15
  - d) 1
- 6) In GSTIN first two digits represents \_\_\_\_ code.
  - a) State
  - b) Central
  - c) Company
  - d) General
- 7) GST is \_\_\_\_ type of tax.
  - a) Regular
  - b) Indirect
  - c) Direct
  - d) Irregular
2. Valid types of vouchers are \_\_\_\_ and \_\_\_\_
  - a) contra
  - b) sales
  - c) income
  - d) expenditure
  - e) liability
3. \_\_\_\_ and \_\_\_\_ are ledger accounts can be created under Group Indirect Expenses.
  - a) Insurance
  - b) Sale
  - c) Rent
  - d) Bank Loan
  - e) Octroi
4. Codes given to Goods and Services under GST are \_\_\_\_ and \_\_\_\_\_.
  - a) HSN
  - b) HSC
  - c) SSC
  - d) SAC
  - e) HNS

**Q.4 Choose Two correct answers from the given options.**

1. Every voucher maintained its \_\_\_\_ and \_\_\_\_ record.
  - a) debit
  - b) in
  - c) out
  - d) credit
  - e) open

**Q.5 Activity**

**Find out the GST exemption list for various goods and services.**





**Let us learn**

- E-Commerce – concept, advantages, disadvantages and types.
- E-Commerce Trade cycle.
- Various Payment modes.
- Common forms of E-Commerce.
- Electronic Data Interchange.
- E-Governance-concept, advantages and types.
- Various security measures.

**4.1 Introduction**

E-Commerce stands for Electronic Commerce. Before moving to the concept of E-Commerce, let's first, understand what is commerce?

Commerce is an important part of a business. In simple words, commerce is nothing but buying and selling of goods. That means when we buy a product or service from others or sell a product or

service to others then it is called as commerce.

One of the most popular activity on the Web is shopping. E-Commerce became possible in 1991 when the Internet was opened to commercial use. Since that date thousands of businesses have taken up residence at websites. History of e-commerce is a history of a new, virtual world which is evolving according to the customer advantage.

**4.2 Definition of E-Commerce**

“E-Commerce can be broadly defined as the process of buying and selling of goods or services using an electronic medium such as Internet.”

E-commerce is also referred as a paperless exchange of business information using EDI, E-mail, Electronic fund transfer etc.



### 4.3 Difference between Traditional Commerce and E-Commerce :

Traditional Commerce	E-commerce
Traditional commerce focuses on the exchange of products and services through personal interactions so it is manual.	E-commerce trading activities are online via the internet and can be considered automatic.
Traditional commerce is limited to business hours, mostly during the day.	E-commerce is 24X7, it can be done anytime day and night.
As far as consumer interactions are concerned, traditional commerce provides face to face interaction.	E-commerce can be termed as screen to face interaction.
Traditional commerce is limited to a particular geographical location.	E-commerce is global and has no physical limitation.
Modes of payment in traditional commerce include cash, cheques and credit cards.	In E-commerce modes of payments are bank transfer, credit card, e-wallet, mobile payment and many more.
Goods and delivery of services is instant with traditional commerce.	In E-commerce delivery of goods or services takes some time.
Traditional Commerce's scope is local.	E-commerce's scope is global.

### 4.4 Advantages of E-Commerce :

- **Global scope :** E-commerce provides the sellers with a global reach. Now sellers and buyers can meet in the virtual world, without barrier of place (geography).
- **Electronic transaction :** E-commerce reduces the paper work and significantly lower the transaction cost. E-Commerce enables the use of credit cards, debit cards, smart cards, electronic fund transfer via bank's website and other modes of electronic payment.
- **Cost Saving :** E-commerce application provides users with more options to compare and select the cheaper and better option. It helps in reducing the cost of searching a product. E-commerce has enabled rural areas to access services and products, which are otherwise not available to them.
- **Anytime shopping :** One other great advantage is the convenience. A customer can shop 24×7. The website is functional at all times, it does not have working hours like a shop.
- **No intermediaries :** Electronic commerce also allows the customer and the business to be in touch directly, without any intermediaries. This allows for quick communication and transactions.
- **Public services :** E-commerce helps the government to deliver public

services such as healthcare, education, social services at a reduced cost and in an improved manner.

#### 4.5 Disadvantages of E-Commerce :

- **Setup Cost :** The setup of the hardware and the software, the training cost of employees, the constant maintenance and upkeep are all quite expensive.
- **Physical presence :** This lack of a personal touch can be a disadvantage for many types of services and products like interior designing or the jewellery business.
- **Security :** Security is another area of concern. Credit card theft, identity theft etc. remain big concerns with the customers.
- **Goods Delivery :** There may arrive some problem with fulfilment of order. Even after the order is placed there can be problems with shipping, delivery, mix-ups etc. This leaves the customers unhappy and dissatisfied.

#### 4.6 Types of E-Commerce :

The most common participants in e-Commerce are business, administration, government and consumer. The primary e-Commerce types are as follows:

- **Business - to - Consumer (B2C) :** In B2C model, business sells its products directly to a customer. A customer can view the products shown on the website. The customer can choose a product and order the same. The website will then send a

notification to the business organization via email and the organization will dispatch the product/ goods to the customer. These B2C businesses are online retailers. Example : Amazon, Flipkart etc.

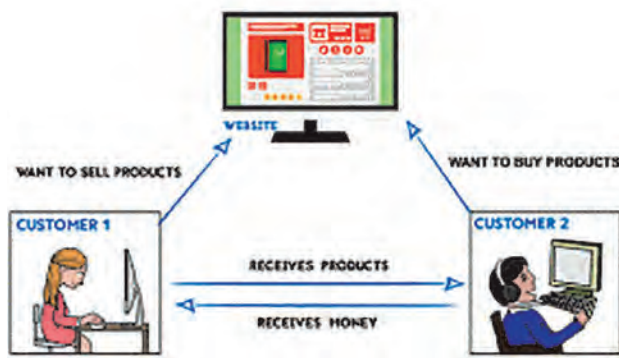


- **Business - to - Business (B2B) :** In B2B model, business sells its products to an intermediate buyer who then sells the product to the final customer. As an example, a wholesaler places an order from a company's website and after receiving the consignment, sells the product to the final customer who comes to buy the product at one of its retail outlets. Example : Tata communications (network provider).



- **Consumer - to - Consumer (C2C) :** In C2C model, consumer helps

consumer to sell their assets like residential property, cars, motorcycles etc., or rent a room by publishing their information on the website. Website may or may not charge the consumer for its services. Example OLX, Quikr, online auction.



- **Consumer - to - Business (C2B) :** In this model, consumers have products or services of value that can be consumed by businesses. For example, the comparison of interest rates of personal loan/car loan provided by various banks via websites. A business organization who fulfills the consumer's requirement within the specified budget, approaches the customer and provides its services. For e.g. - A blog can be written by an author for a business to improve sale of products, ebay.

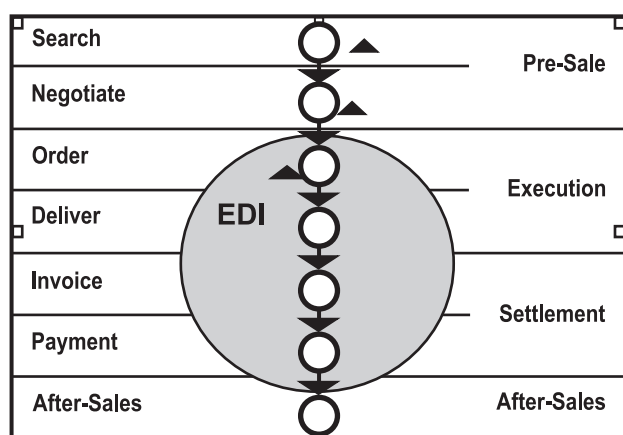


## 4.7 E-Commerce Trade Cycle

A trade cycle is the series of exchanges, between a customer and supplier that take place when a commercial exchange is executed. A general trade cycle consists of following phases:

- **Pre-Sales :** It consist of two steps like Search and Negotiate. Customer search for required website for product to be purchased. In Negotiate step customer find a supplier who offers good quality product at cheaper price and then customer agrees the terms forwarded by supplier.
- **Execution :** This phase consist of Order and Delivery. Customer sends an order for the selected product and after processing the order, customer receives delivery of the product.
- **Settlement :** This phase consist of Invoice (if any) and Payment. Invoice means customer will receive a bill for purchased product and after confirmation of received product, customer will pay for the same.
- **After-Sales :** This phase consists of warranty and After Sale Services. In warranty period, customer will get all maintenance services for free or at minimum cost. After sale services means customer will do complaints (if any) about the performance of product and get maintenance service from the supplier.





**Trade Cycle**

## 4.8 Modes of Payment



- 1. Credit Cards :** Credit cards are the most common way for customers to pay online. Merchants can reach out to an international market with credit cards, by integrating a payment gateway into their business.
- 2. Mobile Payments :** Mobile payments offer a quick solution for customers to purchase on e-commerce websites. Mobile payments are also commonly used on donation portals, browser games and social media networks. Customer can pay by scanning a barcode on an app on mobile. Examples are apps like BHIM, UPI, Paytm, Google Pay, Paypal,..etc.
- 3. Bank Transfers :** Bank transfer is used when money is sent from one bank account to another. Transferring

money from bank account is usually fast and safer than withdrawing and paying in cash because every transaction will be authenticated by checking customer's banking credentials. Example : NEFT, IMPS etc.

- 4. E-wallets :** E-wallet is a type of electronic card which is used for transactions made online through a computer or a smartphone. E-wallet is a type of pre-paid account in which a user can store money for any future online transaction. An E-wallet is protected with a password. Examples are State Bank Buddy, Paytm Wallets...



### Do it yourself

*Find out some more payment modes used in E-Commerce.*

## 4.9 Forms of E-Commerce

Some common forms of E-Commerce are as follows.

- M-commerce (Mobile commerce) :** M-Commerce is the buying and selling of goods and services through wireless handheld devices such as smartphones and tablets. As a form of e-commerce, m-commerce enables users to access online shopping platforms without needing to use a desktop computer. Some of application of M-Commerce are mobile banking, ticket booking, E-bill payment, online auctions, stock market trading.



- Social Commerce :** Social commerce is a form of electronic commerce that involves social media, online media that supports social interaction. It enable shoppers to get advice from trusted individuals, find goods and services and then purchase them. The social networks that spread this advice have been found to increase the customer's trust in one retailer over another. Social commerce is the use of networking websites such as Facebook, Instagram and Twitter as vehicles to promote and sell products and services. The success of a social commerce campaign is measured by the degree to which consumers interact with the company's marketing through retweets, likes and shares.



#### 4.10 E-Commerce Technology

Electronic commerce draws on

technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems and automated data collection systems. Let's see one of the common E-commerce technology i.e EDI.

#### Electronic Data Interchange (EDI) :

EDI is the electronic interchange of business information using a standardized format; a process which allows one company to send information to another company electronically rather than on paper. Business entities conducting business electronically are called trading partners. Many business documents can be exchanged using EDI, two most common documents are purchase orders and invoices. It is computer-to-computer interchange of strictly formatted documents via telecommunications or physically transported on electronic storage media.



#### 4.11 E-Governance

It signifies the implementation of information technology in the government processes and functions so as to cause simple, moral, accountable and transparent governance. The basic purpose of e-governance is to simplify



processes for all, i.e. government, citizens, businesses etc. at National, State and local levels. Hence, E-governance delivers SMART government. (S- Simple, M-Moral, A-Accessible, R-Responsive, T-Transparent Government)

#### 4.11.1 Advantages of E-governance :

- Reduced corruption
- High transparency
- Increased convenience
- Direct participation of constituents
- Reduction in overall cost.
- Expanded reach of government

#### 4.11.2 Types of E-Governance :

E-Governance is of 4 types depending on the specific types of services.



#### 1. Government-to-Citizen (G2C)

The Government-to-citizen refers to the government services which enable citizens to get access to wide variety of public services. Most of the government services fall under G2C. It helps the ordinary people to reduce the time and cost to conduct a transaction. A citizen can have

access to the services anytime from anywhere. Furthermore, Many services like license renewals and paying tax are essential in G2C. It also focuses on geographic land barriers.

#### 2. Government-to-Business (G2B)

The Government to business is the exchange of services between Government and Business organizations. G2B provides access to relevant forms needed to comply. The G2B also consists of many services exchanged between business sectors and government. It aims at eliminating paper work, saving time, cost and establish transparency in the business environment, while interacting with government.

#### 3. Government-to-Government (G2G)

The Government-to-Government refers to the interaction between different government departments, organizations and agencies. In G2G, government agencies can share the same database using online communication. The government departments can work together. In conclusion, G2G services can be at the local level or the international level. Likewise, it provides safe and secure inter-relationship between domestic or foreign government.

#### 4. Government-to-Employee (G2E)

The Government-to-Employee is the internal part of G2G sector. Furthermore, G2E aims to bring employees together and improvise

knowledge sharing. Similarly, G2E provides online facilities to the employees like applying for leave, reviewing salary payment record and checking the balance of holiday. The G2E sector provides human resource training and development. So, G2E is also the relationship between employees, government institutions and their management.

Some effective examples of successful implementation of E-Governance projects are e-Mitra project (Rajasthan), e-Seva project (Andhra Pradesh), CET (Common Entrance Test) .



#### Do you know?

**Digital India** is a campaign launched by the Government of India in order to make Government's services available to citizens electronically. Digital India was launched by the Prime Minister of India Narendra Modi on 1 July 2015 with an objective of connecting rural areas with high-speed Internet networks and improving digital literacy.

Some of the facilities provided through this initiative are Bharat net, digital locker, e-education, e-health, e-sign, e-shopping and national scholarship portal.

**UMANG** (Unified Mobile Application for New-age Governance) Mobile App: It is a Government's all-in-one single unified secure multi-platform, multi-lingual, multi-service freeware mobile app for accessing over 1,200 central and state government services through smart phones, feature phones, tablets

and desktops. It includes services like AADHAAR card, DigiLocker, Bharat Bill Payment System, PAN, EPFO services, PMKVY services, AICTE, CBSE. It also provides utilities like bills payments, education, job search, tax, business, health, agriculture, travel, Indian railway tickets bookings, birth certificates, e-District, e-Panchayat, police clearance, passport, other utility services from private companies and much more.

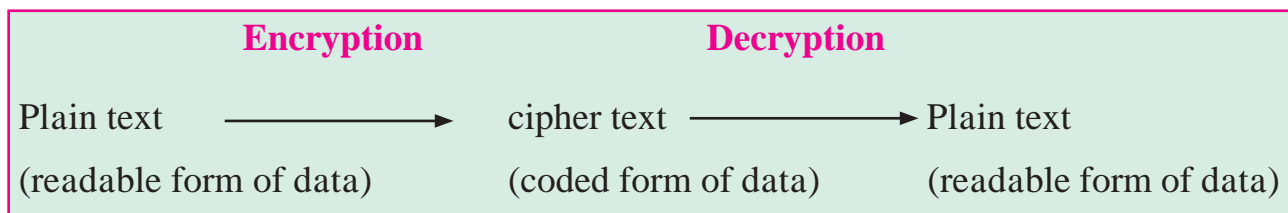
## 4.12 Security Measures in E-Commerce

E-Commerce security refers to the principles which guide safe electronic transactions, allowing the buying and selling of goods and services through the Internet.

**A) Encryption :** Encryption is widely used on the internet to protect user information being sent between a browser and a server. This includes passwords, payment information and other personal information that should be considered private. The process consists of two processes as encryption and decryption. Encryption converts Plain text (readable form of data) into Cipher Text (coded form of data) means non-readable form of data. Decryption is exactly opposite process of encryption. It converts Cipher text into Plain text.

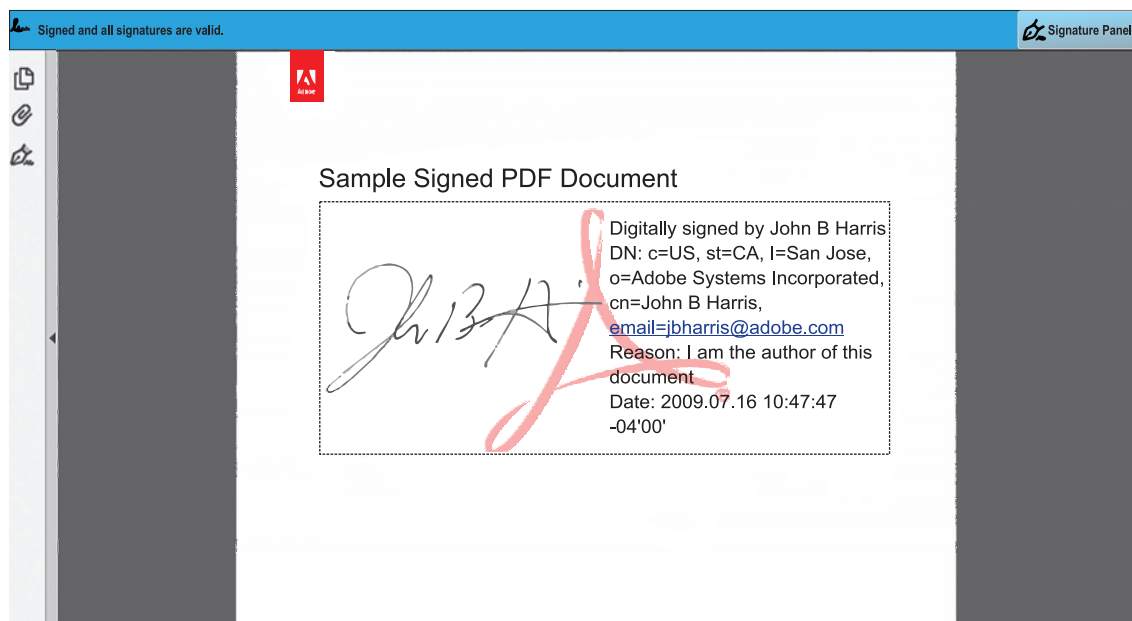
### Encryption is of two types-

1. Symmetric  
(Private-Key Encryption)
2. Asymmetric  
(Public-Key Encryption)



**B) Digital Signature :** A digital signature is also known as an electronic signature. A digital signature guarantees the authenticity of an electronic document or message in digital communication and uses encryption technique ( asymmetric cryptography) to provide proof of original and unmodified documentation. Digital signatures are used in e-commerce, software distribution, financial transactions. This is the direct transfer of information between two partners.

**C) Digital Certificate :** A Digital Certificate is an electronic "password" that allows a person, organization to exchange data securely over the Internet using the public key infrastructure (PKI). Digital Certificate is also known as a public key certificate or identity certificate. In this information is transferred between two authorized partners who have digital certificates issued by some supreme authority.



### Do it yourself

Visit Maharashtra Government website, view various Government Resolutions (GR) and observe the digital signature of various authorities.

## Summary

- Buying and selling of goods or services on internet is called as E-Commerce.
- Common types of E-Commerce are B2C, B2B, C2C and C2B.
- When any business transaction takes place, it completes one trade cycle. Trade cycle consist of phases like presale, execution, settlement and after sale etc.
- In E-Commerce commonly used payment modes are credit card, mobile payment, bank transfer, e-wallet etc.
- Some common forms of E-Commerce are M-Commerce, social commerce.
- Electronic Data Interchange (EDI) is one of the most important technology for paperless exchange of information.
- E-Governance is the implementation of information technology in the government processes and functions.
- Types of E-Governance are G2C, G2B, G2G and G2E.
- In E-Commerce confidential information can be protected by using encryption, digital signature and digital certificate.

## Exercise

### Q.1 Fill in the blanks.

1. E-Commerce's scope is .....
2. Search and Negotiate are the part of ..... phase of trade cycle.
3. The..... phase consist of Order and Delivery.
4. E-wallet is a type of ..... account in which a user can store his/her money for any future online transaction.
5. EDI is ..... exchange of information.

6. The ..... type of e-governance refers to the government services which enable citizens to get access to wide variety of public services.
7. The e-governance which provides safe and secure inter-relationship between domestic or foreign government is .....

### Q.2 State True/False.

1. C2C type of E-commerce deals with Business and Customer.
2. The lack of a personal touch can be a disadvantage for many types of services and products in E-commerce.

3. Checking the balance of holiday is an example of G2C.
4. E-commerce provides more options to compare and select the cheaper and better options.
5. M-commerce can be used through desktop computer.

**Q.3 Multiple Choice Question.**  
(1 correct answer)

1. Invoice and payment are included in .....phase of trade cycle.
  - a) Presale                      b) execution
  - c) settlement                d) After sale
2. License renewal is an example of ..... e-governance.
  - a) G2C                        b) G2B
  - c) G2G                        d) G2E

**Q.4 Multiple Choice Question.**  
(2 correct answer)

1. Encryption consist of two processes.....and .....
  - a) encryption                b) signature
  - c) decryption                d) digitization
  - e) security
2. Social commerce is a subset of electronic commerce that involves social media like ... .. & .....
  - a) Facebook                b) Instagram
  - c) gmail                      d) hardware
  - e) software

**Q.5 1) Match the following.**

A	B
1. M-commerce	a) Coded form of data
2. Cipher Text	b) B2B
3. EDI	c) E-bill payment
4. Wholesaler-to Retailer	d) Paperless exchange of information
5. License renewal services	e) G2G
6. Online facility to employees like leave	f) G2C
7. Government agencies share same database	g) G2E

**Q.6 Answer in brief.**

1. Explain phases of trade cycle.
2. Explain M-Commerce.
3. Describe process of encryption.
4. What is E-governance.
5. List out advantages of E-commerce.
6. Which are the different types of e-governance?
7. State two examples of G2E services.
8. Write any four advantages of e-governance.





**Let us learn**

- DBMS concepts.
- Various table operations.
- Query and form creation.
- Report generation.
- Introduction to relational data model

Base is an open source database management system software, and designed to allow users to easily create, access, modify and view database.

### 5.1 DBMS concepts

Data means all kinds of facts, figures and details related to people, places, things or events. Data may be in any form. It may be written, oral, computerised or non-computerised. Data in its original form may not be of much use. Data must be processed in a proper way to generate the useful and meaning information.

Information is the required result obtained from processing of the data. Information is the output generated through processing of raw data. Information is important because it forms the foundation for decision making.

Database is a collection of related data items stored in an organised manner. A Database consists of different objects like table, query, form and report. **Table** is a collection of related data. **Query** is

used to retrieve information from database. **Form** is used to collect the information from user. **Report** is used to represent the data in printed form.

### Database Management System Software (DBMS) :

A database management system is a software designed to define, manipulate, retrieve and manage data in a database. It provides various functions that allow entry, storage and retrieval of large quantities of information and provide ways to manage that information. It also defines rules to validate and manipulate the data.

### 5.2 Introduction to Base

Base is a Relational Database Management Software (RDBMS). A DBMS that is based on relational data model is called as RDBMS. A data model is the internal structure of database which describes way of storing and retrieving of data. Relational data model is one of the most popular data model because it is very simple to understand and to manipulate. In RDBMS data is stored in the most simple and versatile structure i.e. table. Base is collection of related data objects known as Tables, Forms, Queries and Reports.

To start base, Install Libreoffice from its official website and click on start →



Start → All programs → Libreoffice → Libreoffice Base. A database wizard will be started. To create new database user have to select 'Create a new Database and click on 'Next' button. In 'Save and Proceed' step click on 'Finish'. A 'Save

As' window will appear on the screen, select location to save the database → Type name for database in 'File Name' box then click on 'Save' button. By default extension of Base file is '.odb'.

### LibreOffice Base Screen :

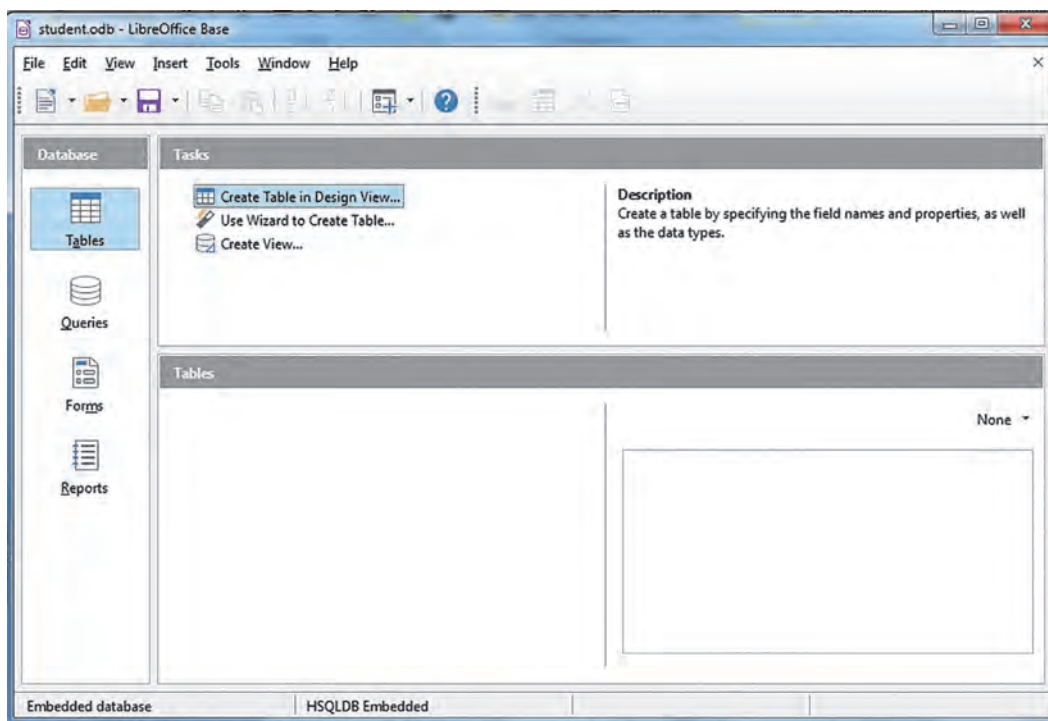


Fig. 5.1 : Database

### Screen of Base consist of following parts :

- A) Title Bar :** It is the topmost bar present on the screen of Base. It displays icon of the application, name of the file and name of the application. By default it displays 'Filename.odb – Libre Office Base'. It consist of three buttons on right corner as minimize, maximize/ restore and close.
- B) Menu Bar :** It is present below Title bar. It displays names of different menus as File, Edit, View, Insert,

Tools, Windows, Help etc. Each menu consist of a drop-down list (Pop-up) of various options related to that particular menu.

- C) Standard Tool Bar :** Standard tool bar consist of different icons which are used for standard operations (regularly repeating operations) like opening a new document, saving a document, printing a document, cut, copy, paste, undo, redo and many more.

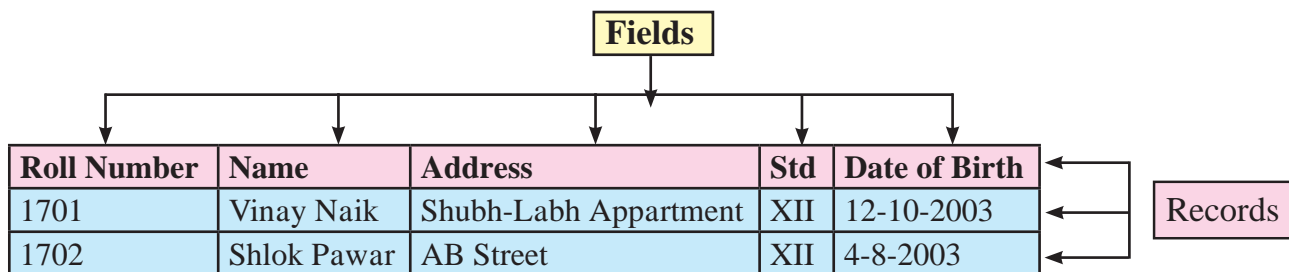
- D) Working Area :** Rest of the part

below standard tool bar is called as working area. It is divided into two panes- Left pane and right pane. Left pane displays name of database objects like tables, queries, forms and reports. Right pane displays activities related to that particular object.

### 5.3 Table

Table is a basic unit for storing data in database. Tables are organised in the

form of columns and rows. Before creating a table user should first decide the entity. Entity is any real world object about which data is to be stored. Each entity has collection of attributes associated with it. For example student is an entity which has attributes like roll number, name, address, standard, date of birth etc. Attributes of an entity are stored in the form of columns. The information stored under each column forms a row which is called as record/tuple.



### Data types in Base :

Data types available in Base can be divided into three categories as alphanumeric, numeric, calender (date and time) and binary type.

Data Type Name	Description
Tiny Integer [TINYINT]	Stores small Integer.
BigInt[BIGINT]	Stores Big Integer(hopping whole number), rarely used
Image[LONGVARBINARY]	Stores Image.
Binary[VARBINARY]	Stores binary information of variable length.
Binary(fix)[BINARY]	Stores binary data of fixed length.
Memo[LONGVARCHAR]	Stores descriptive type of information i.e large block of text like article text.
Text(fix)[CHAR]	Stores fix sized text.

Data Type Name	Description
Number[NUMERIC]	Stores a number with or without decimal point. Base will display datatype's original length and allow to set decimal places after decimal point in design view of table. it is used when accuracy is required.
Decimal[DECIMAL]	
Integer[INTEGER]	Stores Integer most commonly used data type.
Small Integer[SMALLINT]	Stores integer
Float[FLOAT]	Stores a number with decimal point.
Real[REAL]	Stores a number with or without decimal point. It is used when approximate result required
Double[DOUBLE]	
Text[VARCHAR]	Stores variable sized text.
Text[VARCHAR_IGNORECASE]	A case insensitive version.
Yes/No [BOOLEAN]	Stores boolean type of data.
Date[DATE]	Stores date in mm/dd/yy format.
Time[TIME]	Stores time in hh:mm:ss format
Date/Time [TIMESTAMP]	Stores date as well as time.
Other[OTHER]	Stores any other object.

**Note :** When it is confirmed that number will be accepted as a input for a field and not used in any kind of calculations, then it is better to have that field's data type as text. For example pincode, mobile number are numeric but not used in any calculation so it can have text data type.



### Do it Yourself

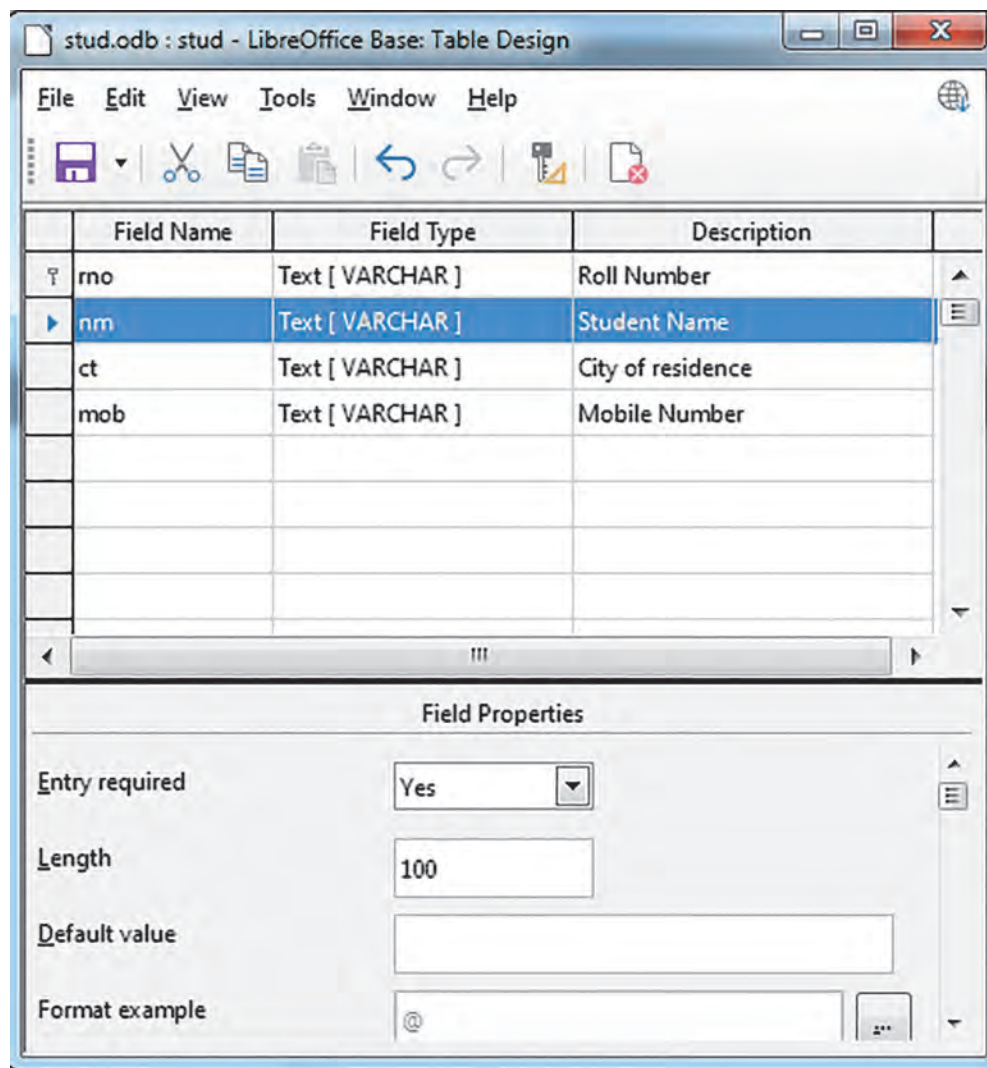
- Find the rules for naming field names in Libreoffice Base.

### 5.3.1 Creating a table :

Steps are as follows :

1. Open a database and from left pane click on 'Tables' icon
2. From right pane click on 'Create table in Design View'
3. A window will appear on the screen, type 'Field Name'

4. Select 'Field type' ( field type means type of data to be stored in that field e.g. 'Name' Field should have 'Text' as a Field Type)
  5. In next column type the description about the field.
  6. In the bottom section in 'Field Properties' select 'Yes' for 'Entry required' property.
  7. You can set default value and for numeric field types you can set decimal places also. In this way create all fields.
  8. Right click on the small button present on the left side of the field name which is decided as primary key and select 'primary key' option.
  9. Click on 'Save' icon to save the table, type name for the table, Click on 'ok'.
- Following fig.5.2 displays creation of a table with it's required fields and datatypes.




**Fig. 5.2 : Table Creation**

## B) Inserting records in the table :

Steps are as follows :

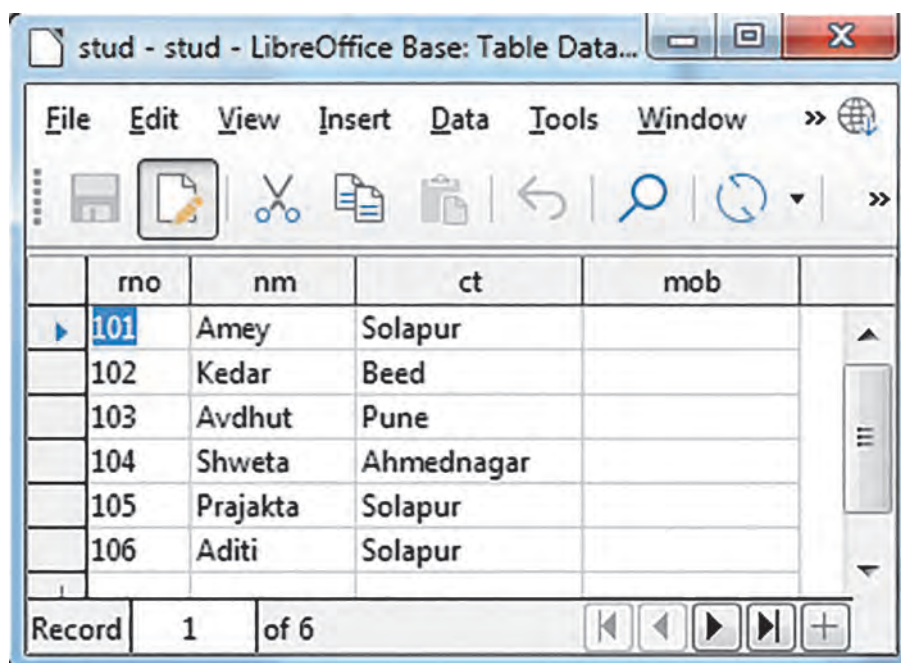
1. Open a database , from left pane click on 'Tables' icon.
2. In the right pane from bottom part double click on the name of Table in which data is to be inserted.
3. A window will appear on the screen, type data under each field and

complete one record, in this way add some records.

4. Click on 'Edit Data'  icon to make edit mode off, a window will appear.
5. Click on 'Yes' icon and click on 'close' button.

For inserting a new record 'Edit Data' must be on.

Following figure displays records are inserted into the table.



The screenshot shows a window titled 'stud - stud - LibreOffice Base: Table Data...'. It contains a table with the following data:

	rno	nm	ct	mob
▶	101	Amey	Solapur	
	102	Kedar	Beed	
	103	Avdhut	Pune	
	104	Shweta	Ahmednagar	
	105	Prajakta	Solapur	
	106	Aditi	Solapur	

At the bottom, it shows 'Record 1 of 6' and navigation buttons.

**Fig. 5.3 : Record insertion**

## Editing a record in the table :

Steps are as follows :

1. Double click on the required table.
2. Click on the required record for editing.
3. Do necessary changes.
4. Click on 'Edit Data' icon to make edit mode off, Click on 'Yes' and click on close button.

## Deleting a record from the table :

Steps are as follows :

1. Double click on the table , click on the record which is to be deleted
2. Click on 'Edit' menu, select 'Delete Record' option
3. Click on 'Yes' button to delete it permanently.





### Do it Yourself

- Create a table - Product with fields- pid, pnm, pdesc, pmonth, pwt, prate etc.
- Create a table- Event with appropriate fields.

## 5.4 Query Creation

A Query is a question asked within the database environment. For example how many students are in XII standard. Query displays subset of data contained in various tables of database Query is used to retrieve records from the table.

### Steps to create query by using wizard :

1. Open a database , from left pane click on 'Queries' objects.
2. From right pane click on 'Use Wizard to Create Query' (Wizard means step by step instructions provided by the computer to complete a task. )
3. Select name of 'Table' and shift fields from 'Available fields' list to 'Fields in

the query' list by clicking on arrow button and click on 'Next' button.

4. Select a field for sorting the records, select the order ascending/ descending then click on 'Next' button.
5. In next step the user has to select search condition (more than one search conditions can also be selected) select the field, select the condition, type value for condition then click on 'Next' button.
6. If you want to replace original field names with some new field names in the output of the query, then type aliases for each field and click on 'Next' button
7. Type name for the query and Click on 'Finish' button.

Following fig. displays output by executing a Query [a query is written for displaying list of records where City= 'Pune']\

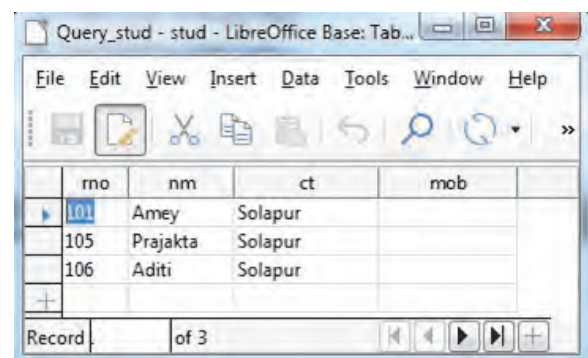
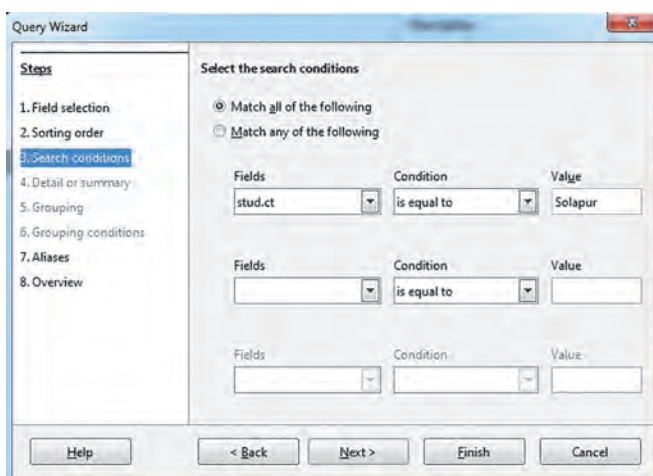


Fig. 5.4 : Output of a query



### Steps to create query in design view :

1. Open any saved database, click on 'Queries' object and in right pane click on 'Create Query in Design View' option.
2. From Add Table window select table and click on add button. Take two tables which have at least one common field. Drag the common field from first table to second table. A line will be displayed as a link between these two tables as they have one common field for joining. Close the add table window by clicking on close button.
3. In bottom section click inside first column of 'Field' row, select one by one field to be displayed in query output, set each field's Visible property 'On'. We can type alias for each field.
4. To calculate total of marks, in field name column, type formula for addition of subjects, for example phy+chem+math. Then in next column, to calculate Percentage type formula as (phy+chem+math)/3.
5. To execute query click on 'Run Query' icon or press F5 function key. The output will be displayed in same window in above portion. This output can be saved for further use.

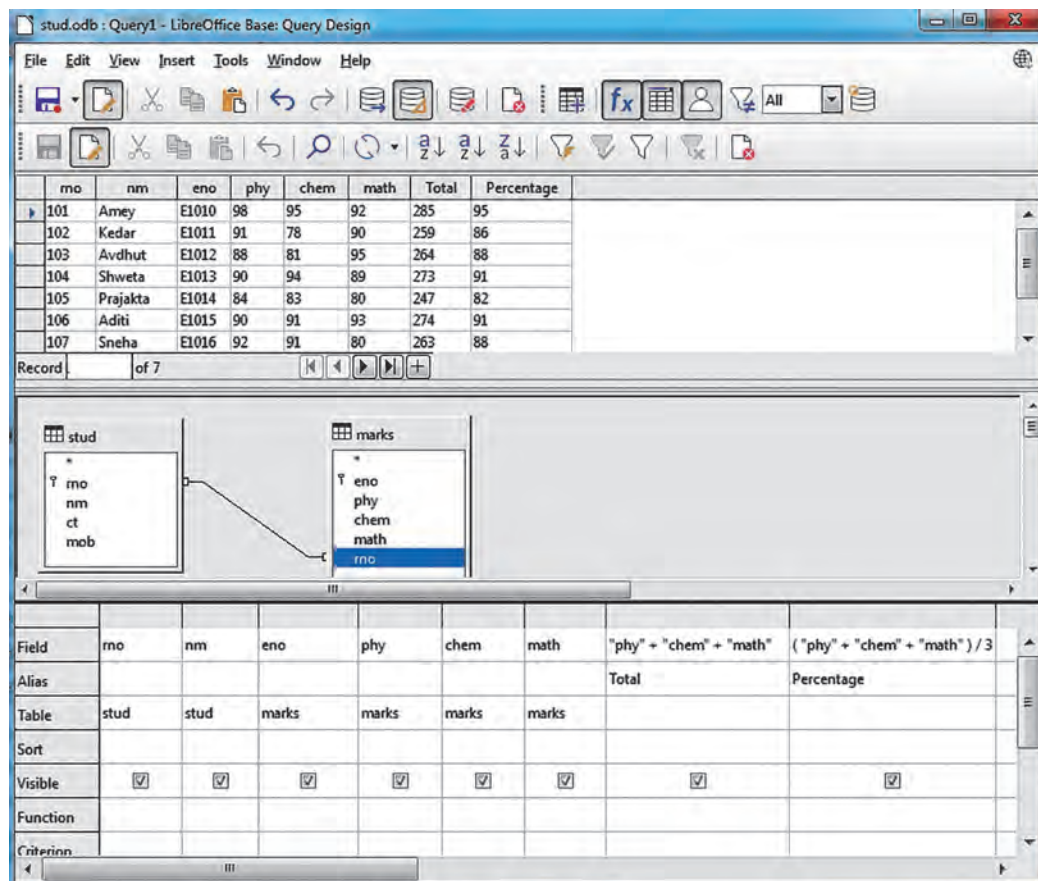


Fig. 5.5 : Query creation in Design View



### Do it Yourself

Create queries for following on product table.

1. To display product list which are manufactured in the month of December.
2. To display product list whose rate is greater than 100.

## 5.5 Form Creation

Form is an object which allows entering the data and editing or deleting existing data in the table. It consists of format, style and widgets like radio button, list boxes that provides easy and systematic way to insert records in the table Form is used to collect the data from the user. Steps to create a form are as follows :

1. Open a database, from left pane click on 'Forms' objects.
2. From right pane click on 'Use Wizard to Create Form'.
3. Select name of 'Table' and shift fields from 'Available fields' list to 'Fields in the form' list by clicking on arrow button then click on 'Next' button
4. Click on 'Next' button.
5. Select any one arrangement for main form for placing the controls (Ex-columnar labels left) and click on 'Next' button.
6. Click on 'Next' button.
7. Select style for the form , click on 'Next' button

8. Type Name for the form , click on 'Finish' button
9. To add new record click on 'New Record' icon present on form navigation tool bar(present at bottom side), fill up the record and click on 'Save record' icon. Click on 'Close' button to close the form window  
Following figure displays a form :

Fig. 5.6 : Form

## 5.6 Report Generation

The presentation of information in an organised and readable format as per the user's requirement is known as report. Various complex reports can be generated that can help in taking decisions by the management. Report is the representation of data in printed form. Steps to create a report are as follows :

1. Open a database, from left pane click on 'Reports' objects
2. From right pane click on 'Use Wizard to Create Report'
3. Select name of 'Table' and shift fields

- from 'Available fields' list to 'Fields in Report' list by clicking on arrow button, click on 'Next' button
4. Labels for the fields can be changed with new labels to display in report and click on 'Next' button
  5. If you want to see the records group-wise, (Ex-citywise) add a grouping level click on a field, click on arrow button and click on 'Next' button
  6. Select a field to sort the data, click on 'Next' button
  7. Choose Layout and Orientation, click on 'Next' button
  8. Type 'Title for the Report', click on 'Finish' button
  9. Report will be displayed in read-only mode in the form of 'LibreOffice Writer' file. Click on 'Close' button to close the report window. After Report generation, screen will be displayed as follows :

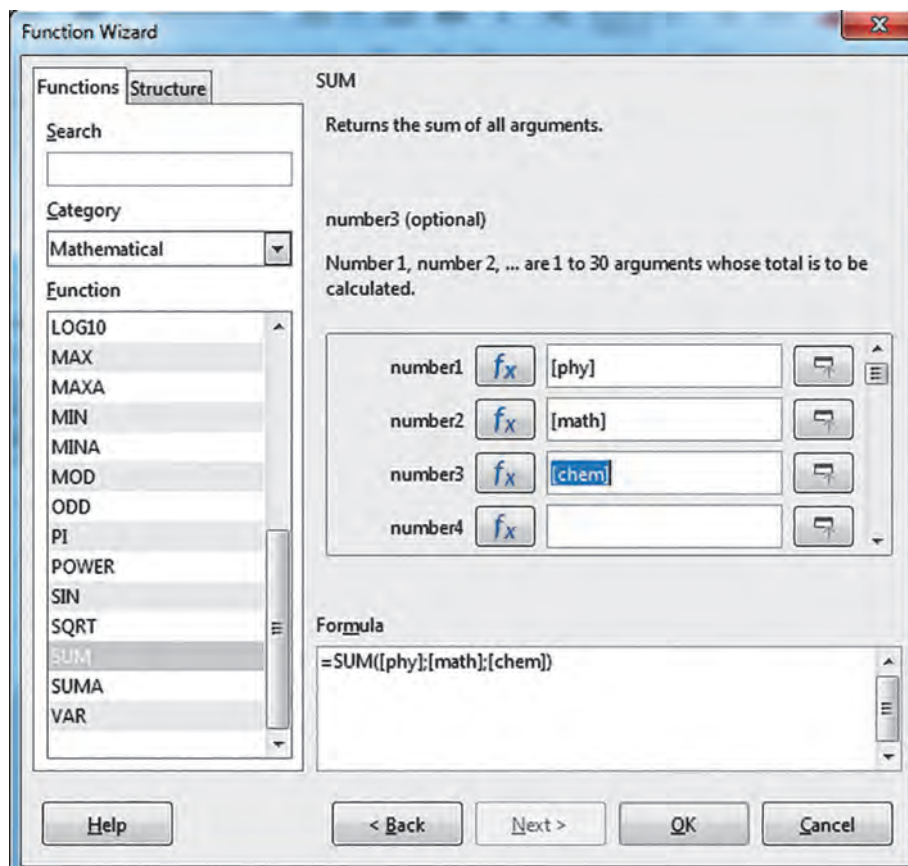
ct	rno	nm	mob
Ahmednagar	107	Sneha	mob
	104	Shweta	mob
Beed	102	Kedar	mob
Pune	103	Avdhut	mob
Solapur	106	Aditi	mob
	105	Prajakta	mob
	101	Amey	mob

**Fig. 5.7 : Report**

#### Steps to create report in design view :

1. Open any saved database, click on 'Reports' object and in right pane click on 'Create report in design View' option.
2. From right side, setting window(can be made on/off by clicking setting button from tool bar) of the window, click on 'Data' tab and for 'Content' select table name or any saved query name.
3. A small window will appear, click on field name and click on 'Insert' button, close that window. Here we have

- selected 'Marks' table and rno, phy, math, chem fields from the same table.
- Now to calculate total of marks draw a table and a textbox below all fields. Change table property of table as 'Total'. Click on textbox and from setting window click on 'Data' tab. Set 'Data Field Type' value as 'Field or Formula'. For 'Data Field' click on small button present aside of that field, a function wizard will start, select 'Sum' function, click on 'Next' button. Select field name to be used for addition by clicking on icon present on right side of the textbox (one field in each textbox to be selected) and click on 'Ok' button.
  - We can give some title for the report in 'Page Header' section by using 'Label' control and changing its label property to required Title.
  - To see output, click on 'Execute Report' button on standard tool bar.
  - Output will be displayed in 'Libre Office Writer' window in 'Read-Only Mode' but if we want to edit it then we can click on 'Edit Document' button, that will appear in the blue ribbon at the top of the report and save it. It will be saved as a Writer file. Report can be saved for further use or can be printed to make hard copy.



**Fig. 5.8 : Function Wizard**



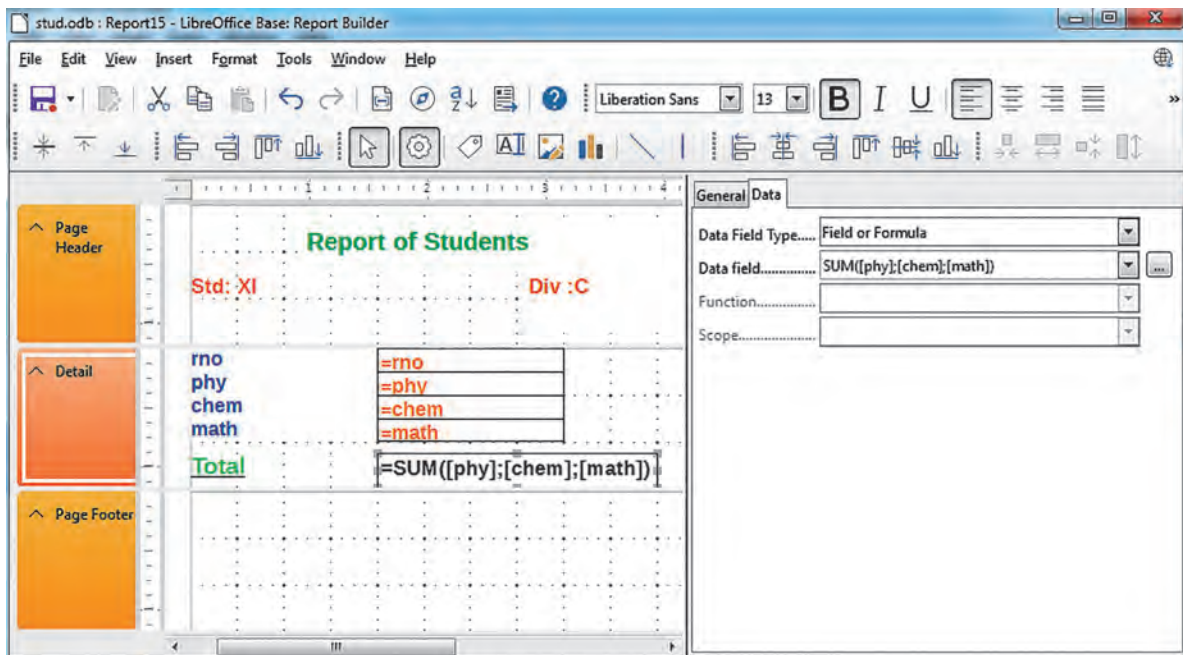


Fig. 5.9 : Design View of a Report

Report of Students	
Std: XI	Div : C
rno	101
phy	98
chem	95
math	92
<b>Total</b>	<b>285</b>
rno	102
phy	91
chem	78
math	90
<b>Total</b>	<b>259</b>
rno	103
phy	88
chem	81
math	95
<b>Total</b>	<b>264</b>
rno	104

Fig. 5.10 : Print View of the Report



### Do it Yourself

Generate monthly manufactured product's report.

## 5.7 Introduction to Data Model

Data model defines how the logical structure of a database is modeled. Data model defines how data is connected to each other and how they are processed and stored inside the system. Different types of DBMS are available and their classification is done based on the underlying data model. There are many types of data models such as relational data model, network data model, hierarchical data model, object-oriented data model, entity-relationship data model etc. In this book we are introducing Relational Data Model.

- **Relational Data Model** : The most commonly used data model is Relational Data Model. The DBMS following relational data model is called as relational database management system(RDBMS). It is specifically designed for relational databases. A relational database refers to a database that stores data in a structured format, using rows and columns. This makes it easy to locate and access specific values within the database. It is "relational" because the values within each table are related to each other. Tables may also be related to other tables. In relational model, tables are called relations that store data for different columns. Each

table can have multiple columns where each column name should be unique. Each row in the table represents a related set of values. Let us now understand the commonly used terminologies in relational data model:

- Attribute** : Characteristic or parameters for which data are to be stored in a relation. The columns of a relation are the attributes which are also referred as fields.
- Tuple** : Each row of data in a relation (table) is called a tuple. In a table with n columns, a tuple is a relationship between the n related values.
- Domain** : It is a set of values from which an attribute can take a value in each row. Usually, a data type is used to specify domain for an attribute. Every attribute has some pre-defined value scope, known as attribute domain. For example, in Student relation, the attribute Roll\_Number takes integer values and hence its domain is a set of integer values.
- Degree** : The number of attributes in a relation is called the Degree of the relation.
- Cardinality** : The number of tuples in a relation is called the Cardinality of the relation.

### • Relation : Student

Table is called as Relation					Row or Tuple Cardinality=3 (Total # of rows)
Primary Key ↓				Domain=number(expected value) ↓	
RollNumber	Name	City	BranchCode	MoNumber	
101	Amey	Solapur	CS		
102	Shweta	Ahmednagar	ELE		
103	Avdhut	Pune	MECH		
Column or Attribute Degree=5 (Total # of Columns) ↑			Foreign Key(references (Branch relation)) ↑		



- **Relation : Branch**

Primary Key  
↓

BranchCode	BranchName
IT	Information Technology
ELE	Electronics
MECH	Mechanical

- **Keys in a Relational Database :** The tuples within a relation must be unique. It means no two tuples in a relation should have same value for all attributes. That is, there should be at least one attribute in which data is unique and not NULL. So, we can uniquely identify each tuple of a relation. So, relational data model imposes some restrictions (constraints) on the values of the attributes and how the contents of one relation be referred from another relation. These restrictions are specified at the time of defining the database through different types of keys as given below :

**1. Candidate Key :** A relation can have one or more attributes that takes unique values. Any of these attributes can be used to uniquely identify the tuples in the relation. Such attributes are called candidate keys as each of them are candidates for the primary key.

In above example the relation student has five attributes out of which Roll\_Number and Mo\_Number always take unique values. No two students will have same roll number or same mobile

number. Hence, these two attributes are the candidate keys as they both are candidates for primary key.

**2. Primary Key :** Out of one or more candidate keys, the attribute used to uniquely identify the tuples in a relation is called the primary key of that relation.

**3. Composite Primary Key :** If no single attribute in a relation is able to uniquely distinguish the tuples, then more than one attribute are taken together as primary key. Such primary key consisting of more than one attribute is called Composite Primary key.

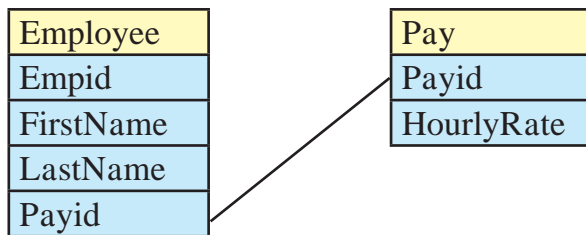
**4. Foreign Key :** A foreign key is used to represent the relationship between two relations. A foreign key is an attribute whose value is derived from the primary key of another relation. This means that any attribute of a relation (referencing), which is used to refer contents from another (referenced) relation, becomes foreign key if it refers to the primary key of referenced relation. The referencing relation is called Foreign Relation.

In above example Branch\_Code is foreign key in Student relation whereas it act as a primary key in Branch relation. Student relation is called as referenced relation and Branch relation is called as foreign relation.

There are 3 types of relationships in relational database design. They are as follows:

### 1. One-to-One (1:1) :

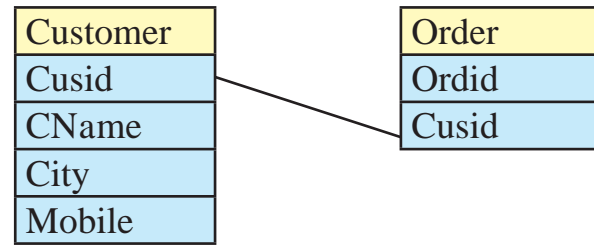
A row in table A can have only one matching row in table B, and vice versa. This is not a common relationship type, as the data stored in table B could just have easily been stored in table A. However, there are some valid reasons for using this relationship type. A one-to-one relationship can be used for security purposes, to divide a large table, and various other specific purposes.



In the above example, we could put an HourlyRate field straight into the Employee table and not bothered with the Pay table. However, hourly rate could be sensitive data that only certain database users should see. So, by putting the hourly rate into a separate table, we can provide extra security around the Pay table so that only certain users can access the data in that table.

### 2. One-to-Many (or Many-to-One) (1:M) :

This is the most common relationship type. In this type of relationship, a row in table can have one or many matching rows in table B, but a row in table B can have only one matching row in table A. One-to-Many relationships can also be viewed as Many-to-One relationships, depending on which way we look at it.

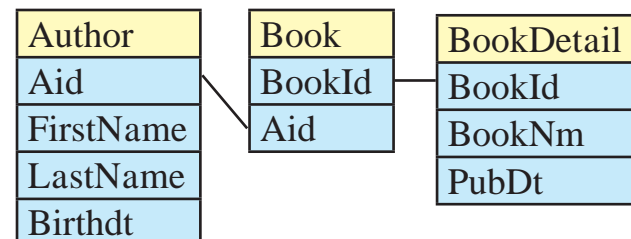


In the above example, the Order relation is the "many" and the Customer relation is the "one". Each Order can only be assigned one customer where as one customer can be assigned to many orders.

### 3. Many-to-Many (M:M) :

In a many-to-many relationship, a row in table A can have many matching rows in table B, and vice versa. A many-to-many relationship could be thought of as two one-to-many relationships, linked by an intermediary table. The intermediary table is typically referred to as a "junction table" (also as a "cross-reference table"). This table is used to link the other two tables together. It does this by having two fields that reference the primary key of each of the other two tables.

For example list of books, and a list of authors. Each book may have one or more authors, and each author may have written multiple books. In this case, you have many books related to many authors.



## Steps to develop relationship between relations in LibreOffice Base :

1. Create relations (tables) with one field common which must be a primary key of first table and the same key is referenced in another relation and called as foreign key in that table.
2. Click on 'Tools' menu and select 'Relationships' option.
3. A small window will appear, select table name and click on 'Add' button.

Place both table on the screen, now drag the common field from first table to second table. A line connecting two tables will be displayed this is called as relationship. To delete relationship just right click on line and select 'Delete'. To set some more settings about relation, right click on line and select 'Edit' option. A window will appear where we can set various update and delete options for the relationship.

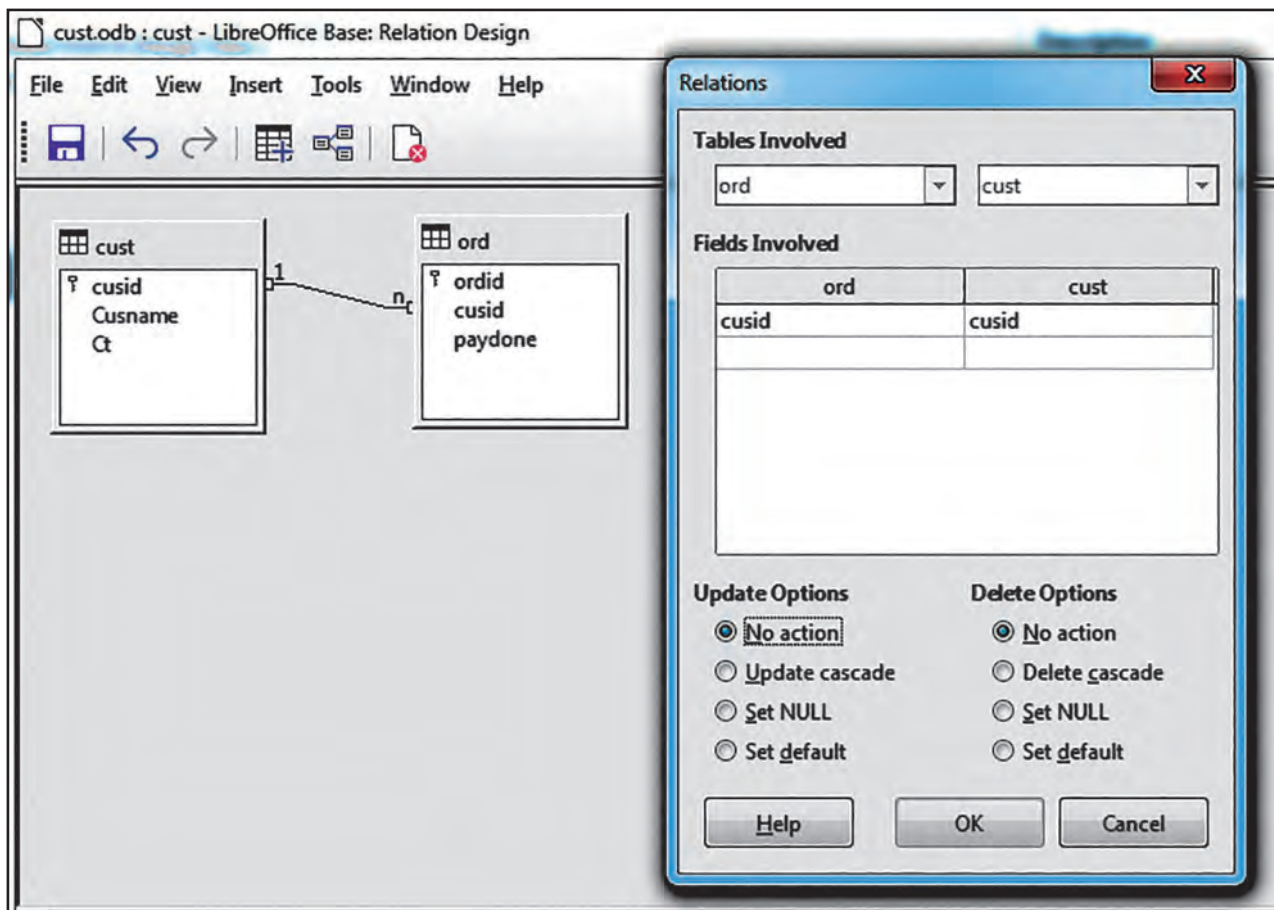


Fig. 5.11 : Relationship



### Do it Yourself

Find out databases with different relations and relationships.

## Summary

- Data means all kinds of facts, figures & details related to people, places, things or events.
- Information is the result obtained from processing of data.
- Database is a collection of related data items stored in an organised manner.
- Table is a collection of rows and columns. User can insert, edit and delete records from table.
- User can create a query to retrieve/display records from table.
- Report is a printed form of data.
- Data model defines logical structure of a database.
- Types of relationships are 1:1, 1:M, M:M etc.

## Exercise

### Q.1 Fill in the blanks.

1. .... is a collection of related data.
2. Queries are used to ..... information from database.
3. The representation of data in printed form is called as .....

### Q.2 State True/False.

1. Form is used to collect the data from the user.
2. Menu bar is present below Title bar.
3. Columns are called as records.

### Q.3 Multiple Choice Question. (1 Correct Answer)

1. Rows in Base are called as .....  
a) records                      b) fields  
c) table                         d) database

2. File extension of Base is .....

- |         |         |
|---------|---------|
| a) .odt | b) .ods |
| c) .odb | d) .odp |

### Q.4 Answer in brief.

1. Define database.
2. What is a query?
3. Define report.
4. Explain working area of Base.

### Q.5 Match the following.

- | A         | B                                 |
|-----------|-----------------------------------|
| 1. Query  | a) Collect information from user. |
| 2. Report | b) Collection of related data.    |
| 3. Form   | c) Retrieve data from database.   |
| 4. Table  | d) printed form of data.          |



## Let us learn

- Introduction
- Concept of Enterprise, Resource, Planning.
- Functional units of ERP
- ERP and related Technologies.
- ERP solution providers/ERP packages
- ERP and Internet
- Benefits of ERP
- Limitations in ERP implementation
- Future of ERP

## 6.1 Introduction



In today's competitive world, one has to manage the future of an enterprise more cleverly. Managing the future means managing the information. A large enterprise may generate huge amount of data such as financial data, customer details, purchase details, employee data

etc. Only the organization that makes the best possible use of this information can succeed. In this age of information explosion, it is very difficult to manage this huge information by people alone.

Information technology and its related technologies can be used for planning and organizing resources and information of an enterprise. Hence most of the organizations are moving to Enterprise Resource Planning (ERP) packages as a solution to their information management problem.

## 6.2 What is an Enterprise?

"An enterprise is a group of people and other resources working together for a common goal".

An enterprise acts as a single entity and an organisation is divided into different units based on the operations performed in it.

An enterprise may consist of different sections such as manufacturing or production, planning, sales, purchase, finance, distribution etc. Each department will have their own duties and responsibilities and they are working to achieve the objective which is set for the enterprise.





**Fig. 6.1 : An Enterprise**

### 6.3 What is Resource?

There are different types of resources in an enterprise like men, material, money and machine. Information system can be designed for various departments of an enterprise so that accurate and timely data can be provided to the concerned persons.

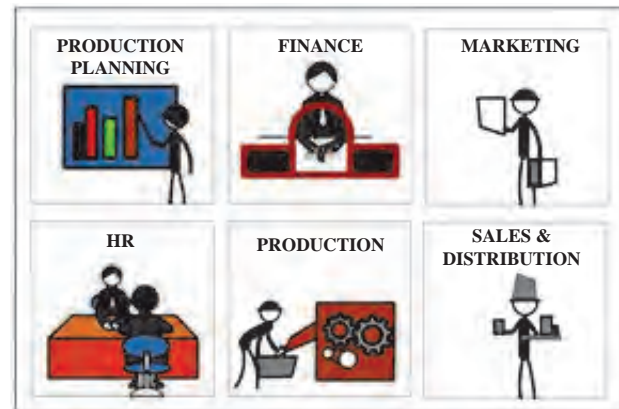
### 6.4 What is Planning?

Planning helps managers **to improve future performance**, by establishing objectives and selecting a course of action, for the benefit of the organisation.

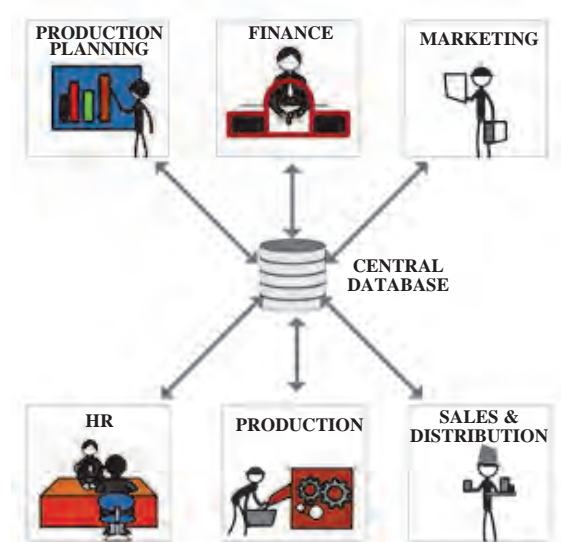
### 6.5 Concept of Enterprise Resource Planning

In some enterprises, different departments function independently. So the information that is produced by each department may be available only to the top management of the department and it is not available to the other departments. In Fig.6.2 there is no communication between different sections of an enterprise. The ERP system often integrates accounts

payables, stock control systems, order monitoring systems and customer databases into one system.



**Fig. 6.2 : An enterprise with no or little Communication between departments**



**Fig. 6.3 : An enterprise with Central Database**

For better benefit and efficiency, each department must know what the other departments are doing. An enterprise can be considered as a system and all its departments as its sub systems. Information about the entire enterprise can be stored in a centralized database and it is made available to all departments as can be seen in fig.6.3

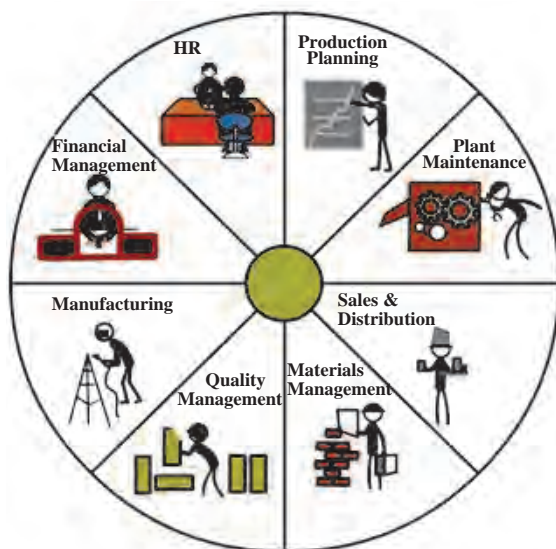


Conceptually, ERP replaces the old stand alone computer systems in each area of an enterprise such as finance, human resource, manufacturing, sales, etc. With a single software program that facilitates various functional modules. Thus, employees in any department get the required information related to the activities of the respective department. In addition to this, the information will be available across the departments.

For example, Finance department can use ERP to see if any sales order has been shipped from the warehouse so as to make further payments.

## 6.6 Functional Units of ERP

The resources available in an enterprise must be utilized effectively. So it is the responsibility of the management to plan the resources. The ERP system helps the management in making the planning process more productive and efficient. The entire ERP package contains many modules or sub units.



**Fig. 6.4 : Functional units of ERP**

- 1. Financial module :** This module is the core of many ERP software packages. It can collect financial data from various functional departments and generate valuable financial reports. Financial reports include balance sheets, general ledger, trial balance, financial statements, etc. This module also includes financial accounting, investment management, enterprise controlling and treasury.
- 2. Manufacturing module :** Manufacturing module contains necessary business rules to manage the entire production process. This module of ERP enables an enterprise to combine technology and business processes to get integrated solutions. It also provides freedom to change manufacturing and planning methods as and when required.
- 3. Production planning module :** This module is used for optimising the utilisation of available resources and helps the organisation to plan their production. This module identifies the materials required, allocates optimal resources using data and sales forecasting with the sales data.
- 4. HR module :** HR stands for Human Resource. HR module maintains an updated and complete employee database including personal information, salary details, attendance, performance, promotion, etc. of all employees in an enterprise.

**5. Inventory control module :** This module covers processes of maintaining the appropriate level of stock in the warehouse. It is responsible for identifying the inventory requirements and setting the target of the stock items required.

**6. Purchasing module :** Purchase Module helps for generating purchase order evaluating the supplier, and billing. It is closely connected with the inventory, finance and production planning module.

**7. Marketing module :** Marketing module is used for monitoring and tracking customer orders, increasing customer satisfaction and for eliminating credit risks.

**8. Sales and distribution module :** This module helps for tracking enquiries, order placement, order scheduling, dispatching and invoicing. This module is closely integrated with the e-commerce website of the organization.

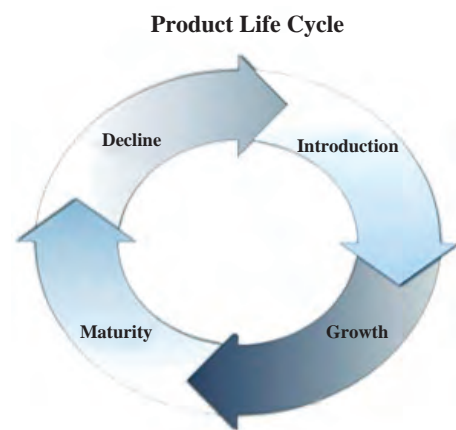
**9. Quality management module :** This module is used for managing the quality of the product. The quality management module fulfills the following functions-Quality planning, Quality inspection and Quality control.

## 6.7 ERP and related technologies

An ERP system integrates separate business functions-material management, product planning, sales, distribution, financial and others - into single

applications. If some other technologies which are going to be discussed in this section are used along with stand alone ERP package, the performance of the enterprise will be increased significantly. Let us discuss some of the related technologies used along with ERP packages.

**1. Product Life Cycle Management (PLM) :** Product Life Cycle Management is the process of managing the entire life cycle of a product. Product life cycle is used for determining the lifespan of a product. As shown in the fig.6.5 the general schematic diagram of four stage product life cycle which consists of development and introduction of a new product, then its growth in the market, its maturity and at last its decline if it cannot compete with similar products of other companies.



**Fig. 6.5 : General schematic diagram of four stage product life cycle**

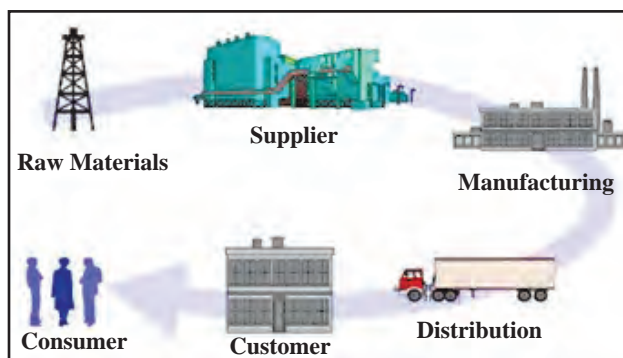
The information gathered from product life cycle will help an enterprise to understand the state/status of a product in the existing market.

## 2. Management Information System (MIS) :

In MIS there are three components those are Management, Information and System. Management is the end user of the data that is decision maker, information is the processed data and system is the integration and holistic view of the enterprise. An enterprise may contain different categories of employees like clerks, assistants, officers, executives, managers etc. All of them are the users of MIS. MIS will collect relevant data from inside and outside an enterprise. This data is processed and stored in a centralized database and is made available to its users whenever it is needed. MIS has the capability to generate reports as and when the user demands it.

## 3. Supply Chain Management (SCM):

The supply chain consists of all the activities associated with moving goods from the supplier to the customer. It begins with collecting raw materials and ends with receiving the goods by the consumer. It is very important for companies to move



**Fig. 6.6 : Activities involved in SCM**  
**Supply Chain Management**

product to their customers quickly. Faster product delivery or availability will increase the sale and satisfaction of customers. So it is very important to manage the activities in supply chain. Software packages are available in the market for managing the same.

## 4. Customer Relationship Management (CRM) :

CRM is a term applied to processes implemented by a company to handle its contact with its customers. CRM covers methods and technologies used by companies to manage their relationships with clients. It is not only the responsibility of customer service group or IT team. It touches all major part of an enterprise. Fig 6.7 shows the processes involved in CRM. It includes the capture, storage and analysis of customer information. The data gathered as a part of CRM must consider customer privacy and data security. Customers want the assurance that their data is not shared with third parties without their consent



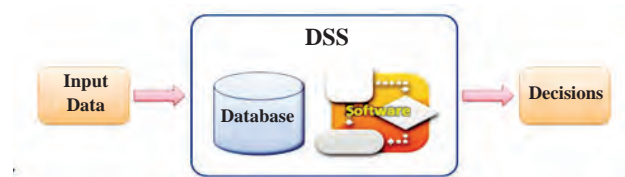
**Fig. 6.7 : Process in CRM**

and not accessed illegally by third parties. Customers also want their data used by companies to provide a benefit to them.

The technology requirement of customer relationship management consists of a database to store entire information about the customer and a software for interacting, analyzing and supporting customers.

### 5. Decision Support System (DSS) :

Decision Support Systems are interactive, computer-based systems that aid users in judgment and choice activities. It is a computer program application that analyses business data and presents it so that users can make business decisions more easily. DSS focuses on providing help in analysing situations rather than providing right information in the form of various types of reports. DSS needs a strong database management system to provide the support in decision making.



**Fig. 6.8 : Function of DSS**

### 6.8 ERP solution providers/ERP packages

Selection of ERP package is very crucial in the implementation of an ERP system. If an ERP package is chosen correctly, implemented judiciously and used efficiently, the productivity of the enterprise will be increased. ERP package

vendors are investing huge amount of time, money and effort in the research and development of packaged solutions. There are so many ERP vendors in the world. Some of the popular ERP packages are Oracle, SAP, Odoo, Bitrix24 etc. Microsoft Dynamics, and Tally.

**1. Oracle :** Oracle was originally known for its database system rather than its ERP system. The ERP310 package from Oracle provides strong finance and accounting module. It also provides good customer and supplier interaction, effective production analysis, efficient human resource management and better pricing module.

**2. SAP :** SAP stands for Systems, Applications and Products for data processing. SAP developed Customer Relationship Management (CRM), Supply Chain Management (SCM), and Product Life cycle Management (PLM) software.

**3. Odoo :** Odoo is an open source ERP tool that offers capabilities such as CRM, HR, accounting, sales, document management, inventory management, invoicing, project management, The software is available in both cloud-based and on-premise options.

**4. Bitrix24 :** Bitrix24 is a free online ERP solution that works for businesses of all sizes. It includes apps for customer relationship management (CRM), project management, task management, employee management, document management, and human resource (HR) management.



**5. Microsoft Dynamics :** Microsoft Dynamics is part of Microsoft business solutions. It provides a group of enterprise resource planning products primarily aimed at mid-sized enterprises. This package can be installed and used easily and it provides good user interface. It also provides customer relationship management (CRM) software

**6. Tally ERP :** Tally solutions Pvt Ltd is an Indian Software Company. Tally ERP is a business accounting software for accounting, inventory and payroll system.

In the near future, new ERP vendor may introduce new ERP packages and existing ERPs may get more facilities and capabilities. Selecting an ERP solution is a serious exercise and has to be executed with great care.

### 6.9 ERP and Internet

New trend in ERP development and use involves vendors making the software available to client companies on the internet. The communication between the server where an ERP system is installed and many clients (End-User PCs) is done through the internet. Implementation of Web based ERP gives the end user cost effective solution tool for ERP management. Today, many ERP systems (ERP suites) run in the cloud as a SaaS (Software as a Service). A cloud ERP makes it easier and more secure for businesses to manage their information. These systems can be maintained by a company who specializes in upkeep on servers and databases, keeping them

secure, and can make it easier to scale as your business grows. For companies that cannot have or do not want their data in the cloud, on-premise ERP can run on a company's data center. Alternatively, a company can have a hybrid ERP that runs some of their systems in the cloud and other systems on premise.

### 6.10 Benefits of ERP

There are so many advantages on implementing an ERP system in an enterprise. Some of the major benefits are briefly explained :

- 1. Improved resource utilization :** An enterprise can plan and manage its resources effectively by installing ERP software. So the wastage or loss of all types of resources can be reduced, and improved resource utilization can be ensured.
- 2. Better customer satisfaction :** Customer satisfaction means meeting maximum customers' requirements for a product or service. Using an ERP system, a customer will get more attention and service of an enterprise without spending more money and time.
- 3. Provides accurate information :** In today's competitive world, an enterprise has to plan and manage the future cleverly. To achieve this an enterprise needs high quality, relevant, updated and accurate information.
- 4. Decision making capability :** Accurate and relevant information given to decision makers will help



them to take better decisions for running a system more smoothly. Better decision from an enterprise will help them to go a step ahead of its competitors.

- 5. Increased flexibility :** An ERP system allows organizations to be more flexible so that they can more easily adapt and capitalize on new business opportunities.
- 6. Information integrity :** The most important advantage of ERP is in its promotion of integration of various departments and hence we will get an integrated form of information about the enterprise. The entire information about an enterprise is stored in a centralized database, so that complete visibility into all the important processes across various departments of an organisation can be achieved.

### 6.11 Limitations in ERP Implementation

Some of the problems and limitations of using an ERP package in an enterprise are as follows -

#### 1. High cost

The cost of ERP software configuration and implementation is very high. The high price of the package, associated license fees and other charges are the main problems of ERP installation.

- 2. Requirement of additional trained staff :** To run an ERP system, trained and experienced employees are to be appointed in the enterprise. The correct selection of an ERP package

alone cannot guarantee the success of an enterprise. In addition, the contribution of skilled and trained persons in using ERP system is very important.

- 3. Operational and maintenance issues :** Implementation of an ERP needs major changes in the current process of an enterprise. Sometimes, it will be difficult to adjust with these changes by employees and management of an enterprise, as it is human nature to resist changes.
- 4. Security Control :** Implementation of an ERP needs to follow security measures on each and every stage. This includes access controlled restrictions based on hierarchy in an organisation. The system has to take care of unauthorized access at each level in an organisation.

### Future of ERP

1. Artificial Intelligence services are impacting every facet of business operations.
2. The concept of machine learning is going to revolutionize ERP. It will help businesses to achieve high levels of automation.
3. Embedded business intelligence, analytics and data management features built into ERP will be the next future ERP.
4. There will be more ERP transactions triggered by sensors and external systems or devices.

## Summary

- An enterprise is a group of people and other resources working together for a common goal.
- Different types of resources in an enterprise are men, material, money and machine.
- Planning helps to improve future performance of an organisation.
- ERP is a computer systems consist of various functional modules so that authorised employee of any department in an organisation can access information of other department whenever needed.
- Financial , Manufacturing , Production planning , HR ,Inventory control , Purchasing , Marketing , Sales and distribution , Quality management etc are functional modules of ERP
- There are many technologies used in ERP, some of them are - Business Process Re-engineering, Data Warehouse, Product Life Cycle Management (PLM), Management Information System (MIS), Customer Relationship Management (CRM) etc.
- There are so many ERP vendors in the world. Some of the popular ERP packages are Oracle, SAP, Odoo, Microsoft Dynamics, and Tally.
- There are lots of benefits of implementing ERP in an organization.
- There are some areas where the an oraganisation may face some problems for implementing ERP.

## Exercise

### Q.1 Fill in the blanks.

1. "An ..... is a group of people and other resources working together for a common goal".
2. Different types of resources in an enterprise are men, ....., money and machine.
3. The ..... module can collect financial data from various functional departments and generate valuable financial reports.
4. A ..... is a source of an organization's electronically stored data.

### Q.2 State True or False.

1. Planning helps to improve future performance of an organisation.
2. MIS is implemented by a company to handle its contact with its customers

3. To run an ERP system, trained and experienced employees are needed.
4. Better decision from an enterprise will help them to go a step ahead of its competitors.

### Q.3 Match the following.

#### Group 'A'

#### Group 'B'

- |                          |                                  |
|--------------------------|----------------------------------|
| 1. Trained Staff         | a) ERP Package                   |
| 2. Information integrity | b) Problem in ERP Implementation |
| 3. Odoo                  | c) ERP Technology                |
| 4. MIS                   | d) Benefits of ERP               |

### Q.4. Write short answers.

1. Give any four benefits of ERP system.
2. List down different modules of ERP system.
3. Describe any 2 problem areas in ERP implementation.



### Do it Yourself

List out few more ERP solutions providers / packages.

# SKILL ORIENTED PRACTICALS (SOP)

**Note :**

Students should file minimum 12 Skill Sets from the SOP's as follows -

- Advanced Web Designing - Any 05
- Digital Marketing - Any 02
- Computerised Accounting with GST - Any 03
- Database concepts using LibreOffice Base - Any 02

# 1. Advanced Web Designing

## SOP 1 : Creation of website using HTML5

Create a website using html5 and CSS using any 4 css properties . Write a code for 2 separate pages having different file name such first page as index.html, 2nd page as page2.html as form.html. Use any theme such as college profile or company profile etc. Every page must contain proper Meta information and design webpage as follows-

- 1) The index page must contain a heading which is highest among other text on pages and must be at center of the page. There must be a paragraph which introduces general information about the theme chosen. It must have at least 3 physical style tags and one image with alternate text. This page must be connected to other page with proper navigational links.
- 2) The 2nd page must contain the feedback or enrollment form related with theme chosen with feature of html5. The form must contain text element and email address of the company or person .Include the submit button.

## SOP 2 : Create a webpage using HTML and CSS code to design a web page as the layout displayed below.

The top section will display the heading ,'Tourist places' in header. The section on the left has list of cities. The right hand side display tourist places in any one of the city .

Use Inline style sheet in the top section to display background colour for the text 'Tourist places'. Use internal stylesheet for the left and right section with background colours and font styles.

Tourist places	
<b>City</b> 1. Pune 2. Banglore 3. Hyderabad 4. Delhi	<b>Tourist places in Pune</b> • Shaniwarwada • Kelkar Museum • Sinhgad fort



### SOP 3 : Create a website using HTML and CSS code to design a web pages as follows -

The first webpage will accept the name of the traveller, Date of travel, telephone number . It also has submit button as an image .

The second webpage has information about the name of transporter, time , seat no and destination displayed one below the other in the form of unordered list as

Name of transporter – Air Asia

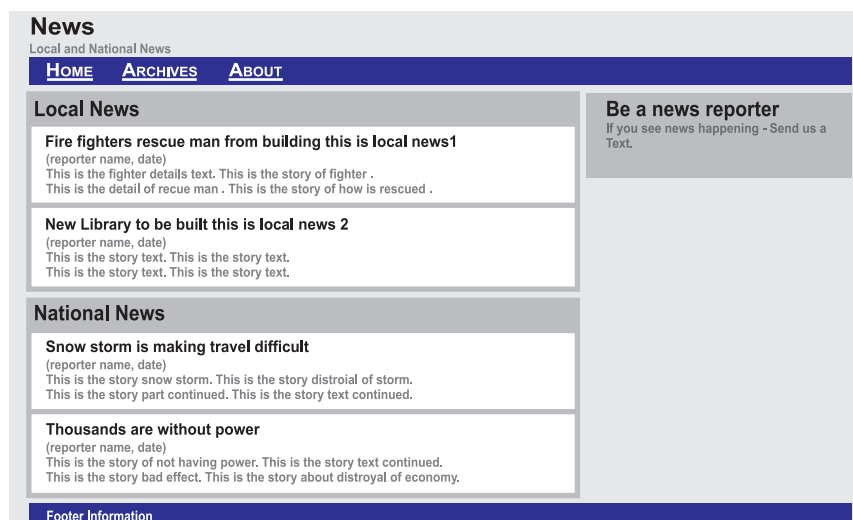
Seat no – B39

Destination - Delhi

Both pages should be interlinked. Create external stylesheet with relevant tags.

### SOP 4 : Creation of website using HTML 5 and CSS.

Create a webpage as given layout use <nav>,<header>,<footer>,<aside>,<article> with CSS.



### SOP 5 : Use of Audio on web pages using html5.

Create a webpage named audio.html to set an audio file in web page with controls such that it uses html 5 elements. The audio file must play as soon as the webpage loads in browser and it will start over again, every time when it is completed.

Create another webpage named audio1.html which provides multiple source file formats for the same audio file that plays a sound with controls. The code must incorporate the list of sound files formats (like wav, MP3 or ogg etc).

### **SOP 6 : Use of video on web pages using html5.**

Create a webpage named video.html to display a video file on web page and plays automatically. The dimension of video area should be 150\* 150 pixels.

Create another webpage which provide multiple source file formats for the same video file that plays a video with controls. The dimension of video area should be 300\* 300 pixels. The code must incorporate the list of video files formats (like webM, MP4 or ogg etc).

### **SOP 7 : Navigation on an image using Client side image Mapping in web page using html 5.**

- Create a webpage named imagemap. html with an inserted image having jpeg, png or gif extension. Create 3 different shapes (like rectangle, circle and polygon) which do not overlap. Note down the co-ordinates making use of Ms-Paint/GIMP/IrfanView/Pinta. Each shape should be mapped or navigate with a different URL, one of the clickable area should navigate to a local webpage.



## 2. Digital Marketing

**SOP 1:** With the help of SEO tool which is freely available optimize the website and write down the following findings. Ask the teacher/examiner to provide URL of the website to be optimized.

- 1) Name of the website you are optimizing.
- 2) Whether the site has Title Tag?
- 3) Whether the site has Header Tags? If yes, which tags are there?
- 4) Whether the Images used has Alt Attributes?
- 5) What is the comment about usability?

**SOP 2:** Assume that you are appointed as a Digital Marketing Expert for a company name as XYZ Marketing Private Ltd. They have a website hosted on a web server. Suggest your client changes needed in the website to improve the speed of website and also make him aware about following

- 1) Total numbers of recommended improvements are?
- 2) Mention grades given for the following points
  - i) SEO
  - ii) Usability
  - iii) Performance
  - iv) Security
- 3) Check for broken links and images.
- 4) Whether the website has links with the social media? If yes ,Give name of the social media .

(Take the name of the website from your teacher/examiner and get a report for Search Engine Optimization with tool freely available.)

**SOP 3:** By using any Audit tool freely available on Internet optimize the website given by the teacher/examiner and write down the following findings.

- 1) What is the name of the Website
- 2) Whether all CSS and javascript files seem visible to Googlebot?
- 3) Whether the webpage seems to display well on mobile devices?
- 4) Check whether the webpage is secured with HTTPS?
- 5) Check whether the website has robot.txt file or not.

**SOP 4:** With the help of SEO tool which is freely available (e.g. <https://www.seoptimizer.com/>) optimize that website and write down the following findings. (URL of the website is being provided by the examiner /teacher.)

- 1) Write the name of the website you are optimizing.
- 2) Check for broken links and images.
- 3) Check and review back links are present or not
- 4) Whether the website flagged as safe by popular malware scanners? Name any two malware scanners.
- 5) Check the following list and say Yes or No
  - i) Mobile Viewports used?
  - ii) iframes used?
  - iii) Legible Font Sizes used?
  - iv) Tap Target Sizing on a touchscreen?

(**Note :** you can use any Search Engine Optimization Tool which is freely available over the internet, such as [https://www.seoptimizer.com](https://www.seoptimizer.com/), <https://www.woorank.com>, <https://seositecheckup.com> etc.)



### 3. Computerised Accounting with GST

**SOP 1 :** Mr. Ravindrakumar started business by the name M/s Bitwise Trading Company in the year 2019

#### COMPANY DETAILS

Company Name:	M/s Bitwise Trading Company
Address:	102 M.G. Road, Bhavana Nagar, Latur - 413512
State:	Maharashtra
Website:	www.bitwisetrading.com
E-mail Id:	info@bitwise.com
Maintain:	Account with Inventory
Financial Year From:	01-04-2019
Books Begin From :	01-04-2019

With the help of any open source or free education version accounting software pass the following transactions in appropriate vouchers to display and print various reports such as Trial Balance, Profit & Loss A/c, Balance Sheet and Day Book.

Date	Particulars	Amount (Rs)
1/04/2019	Mr. Ravindrakumar started business with cash	5,00,000
1/4/2019	Purchased goods from Sharada Steel works on credit	20,000
2/5/2019	Paid salary to staff	5,000
1/6/2019	Cash deposited into Bank of India	50,000
2/6/2019	Sold goods to Rakesh Enterprises on cash	25,500
2/7/2019	Purchased Machinery	10,000
2/12/2019	Received Interest on cash deposited in Bank of India	2,000



**SOP 2 : With the help of any open source or free education version accounting software create a company using following details :**

Company Name :	M/s Bags and Baggage Traders
Company Address :	J. M. Ratna Road, Near Maruti Mandir, Ratnagiri, Maharashtra Pin Code 415612
Website :	www.bagsandbaggage traders.com
Email id :	contact_us@ bagsandbaggage traders.com
GSTIN :	27STUVW1234C2Z1
Books Beginning:	01/04/2019

Enter the following transactions in appropriate vouchers using by applying GST. Print GST computation Report and Tax Invoice

- 1) On 01/08/2019 purchased 150 pieces of Leather Handbags @ Rs.2500 per piece, with GST 28% from Genuine Leather Bags, Sai Baba Nagar, D.P.Road, Navi Mumbai, Maharashtra, Pin code 400039 with GSTIN 27LMNOP5678V2Z2.
- 2) On 02/09/2019 Sold 80 pieces of them @Rs.3500 per piece, GST 28%, to M/s Shoppers Stock ,Pari Industrial Estate, Chiplun, Maharashtra, Pin code 415605 with GSTIN 27JKLMN4321C1Z2

**Print GSTR-2 and Sales Tax Invoice**

**SOP 3 : With the help of any open source or free education version accounting software enter the following transactions in appropriate vouchers by creating a company. Company details are as below.**

Company Name :	M/s Swastik Garment Suppliers
Company Address :	M. G. Road, Industrial Estate, Aurangabad, Maharashtra Pin Code 431001
Website :	www.swastikgarments.com
Email id :	info@ swastikgarments.com
GSTIN :	27KLMNA4321V1Z2
Books Beginning :	01/04/2017

- 1) On 01/07/2017 Purchased 150 pieces of T-shirts @Rs. 450 per piece with GST 12% from M/s. Jalaram Textiles, 1/05 Sector B, Gandhi Nagar, Ahmadabad, Gujarat Pin code 382010.

- 2) On 02/07/2017 Sold 100 T-shirts @Rs.600 per piece with GST 12% to M/s Dress Align Garments, Shirdi. Ahmednagar, Maharashtra – 423107.

**Print GST computation Report and Sales Tax Invoice**

**SOP 4 :** Happy World Tours and Travels Company from J.M. Road, Deccan Gymkhana, Pune, Maharashtra 411004 (GSTIN 27STUVW1212T1Z2 ) is a tourism company that provides travel and tourism related services to the general public. The company renders services like air ticket booking, railway ticket booking, group tour booking, vehicle on rent etc. Following transactions has taken place in the month of November 2019. With the help of any open source or free education version accounting software enter the following transactions in appropriate vouchers of Happy World Tours and Travels Company with GST calculations.

Sr	Date	Transaction
1	1/11/2019	Received Commission Rs50000 with 18% GST from M/s Success Business Agency, Pune Maharashtra on group tour booking by cheque Bank of India (Chq. No. 302010)
2	2/11/2019	A Motor Cab Rented to the regular client Mr. Ajay Singh Gupta, Aundh, Pune on a cost of Rs15000 with 5% GST by cash.
3	2/11/2019	Paid Rs. 20000 for Website Development charges to M/s Soft Corner India Limited, Karnataka with GST 18% GST by cheque Bank of India (Chq. No. 302255)

**Print GST Reports GSTR-2 and GST Annual Computation.**



## 4. Database concepts using LibreOffice Base

### SOP 1 :

- Create a table student with fieldnames- rollno, studname, class, div, city, dob etc.
- Insert minimum 8 records.
- Create a form based on student table.

### SOP 2 :

- Create a table employee with fields names- empid, empname, empdept, empqual, empjoindate, empsal etc. Insert minimum 8 records.
- Create queries to display records from the employee table.
  1. where employee qualification is “MBA”
  2. where employee department is “Accounts”.
  3. where employee salary >70000
  4. where employee name is “Mr. Suhas Kale”

### SOP 3 :

- Create table Product with fieldnames prodid, prodname, qty, rate, modelyear with appropriate data type. Insert minimum 8 records.
  1. Generate report to display records in ascending order of prodname.
  2. Generate report to display records in descending order of product rate.
  3. Generate report to display modelyear wise product list
  4. Build a query to display amount (qty\*rate).
  5. Generate a bill report with appropriate titles and calculate amount for each record.



## SEO Report for one sample website



Your Agency Limited

555 9999

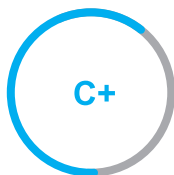
enquiries@youragency.com

youragency.com

## Website Report for test.com

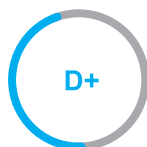
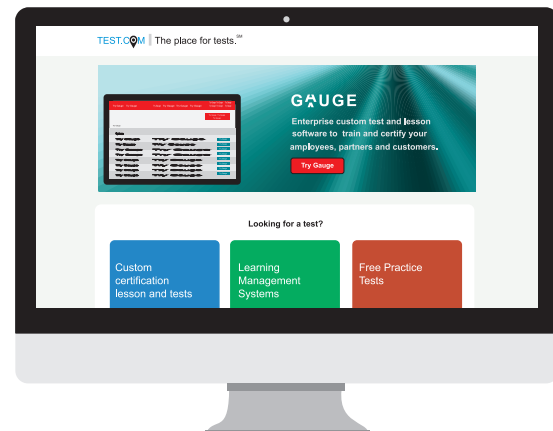
This report grades your website on the strength of a range of important factors such as on-page SEO optimization, off-page backlinks, social, performance, security and more. The overall grade is on a A+ to F- scale, with most major industry leading websites in the A range. Improving a website's grade is recommended to ensure a better website experience for your users and improved ranking and visibility by search engines.

## test.com's Result



Your page could be better

You have 15 Improvements Recommended



SEO



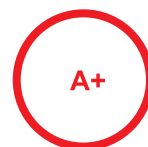
Usability



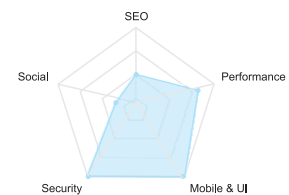
Performance



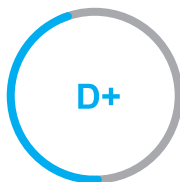
Social



Security



## SEO Results



Your SEO could be better

Your page has some level of optimization but could be improved further. SEO optimization is important to ensure you can maximize ranking potential and drive traffic to your website from search engines. You should ensure you page fulfills common recommended improvements outlined here before moving onto more advanced SEO strategies.

HTML HEADER

### Title Tag



Your page does not appear to have a title tag. Title tags are very important for search engines to correctly understand and categorize your content.

### Meta Description Tag



Your page appears to be missing a meta description tag. A meta description is important for search engines to understand the content of your page, and is often shown as the description text blurb in search results.

## BODY CONTENT

### Header Tags



Your page is not making effective use of header tags.

HTML header tags are an important way of signaling to search engines the important content topics of your page, and subsequently the keywords it should rank for.

### Header

Tag	Frequency
H1	0
H2	0
H3	0
H4	0
H5	0
H6	0

### Keyword Consistency



Your page's main keywords are not distributed well across the important HTML tags.

Your page content should be focused around particular keywords you would like to rank for. Ideally these keywords should also be distributed across tags such as the title, meta and header tags.

Keyword	Title	Meta Description Tag	Headings Tags	Page Frequency	
browser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	
site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	
requires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	
javascript	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	

Keyword	Title	Meta Description Tag	Headings Tags	Page Frequency	
cookies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	<input type="text"/>
enabled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	<input type="text"/>
please	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	<input type="text"/>
change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	<input type="text"/>
settings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	<input type="text"/>
upgrade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	<input type="text"/>

## Amount of Content



Your page has a low volume of text content which search engines can interpret as 'thin content'. It has been well researched that higher text content volumes are related to better ranking ability in general.

## Word Count: 18



## Image Alt Attributes

You do not have any images missing ALT attributes on your page.

### LINKS

#### Number of Backlinks

You have a strong level of backlink activity to this page.



160761

External  
Backlinks



318789

All Backlinks



77

Moz Domain  
Authority

#### On-page Link Structure

We found 0 total links. 0% of your links are external links and are sending authority to other sites. 0% of your links are nofollow links, meaning authority is not being passed to those destination pages.



#### Broken Links

We have not detected any broken links on your page.



#### Friendly URLs

Your page links appear friendly (easily human or search engine readable).



### OTHER

#### Robots.txt

Your website appears to have a robots.txt file.



<http://test.com/robots.txt>



## XML Sitemaps



We have not detected or been able to retrieve a XML sitemaps file successfully.

A sitemap includes a list of your pages that are available for crawling, as well as other useful

information for search engines such as last update times and priority of pages. Sitemaps are recommended to ensure that search engines can intelligently crawl all of your pages.

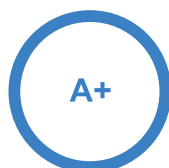
## Analytics



We could not detect an analytics tool installed on your page.

Website analytics tools like Google Analytics assist you in measuring, analyzing and ultimately improving traffic to your page.

## Usability



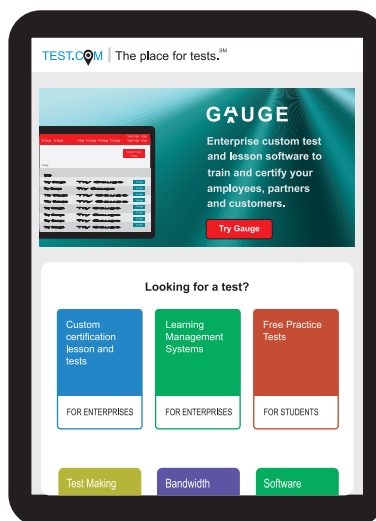
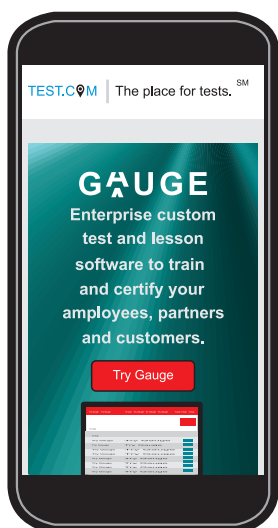
### Your usability is very good!

Your page is highly usable across devices. Usability is important to maximize your available audience and minimize user bounce rates (which can indirectly affect you search engine rankings).

## Device Rendering



This check visually demonstrates how your page renders on different devices. It is important that your page is optimized for mobile and tablet experiences as today the majority of web traffic comes from these sources.



## Use of Mobile Viewports

Your page specifies a viewport matching the device's size, allowing it to render appropriately across devices. ✓

## Flash Used?

No Flash content has been identified on your page. ✓

## iFrames Used?

There are no iFrames detected on your page. ✓

## Favicon

Your page has specified a favicon. ✓

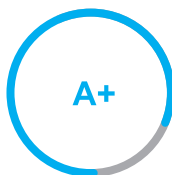
## Legible Font Sizes

The text on your page appears to be legible across devices. ✓

## Tap Target Sizing

The links and buttons on your page appear to be appropriately sized for a user to easily tap on a touchscreen. ✓

## Performance Results

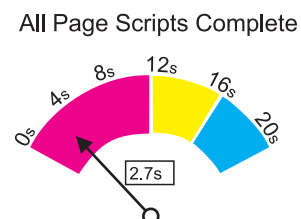
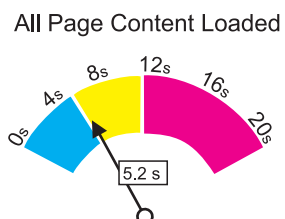
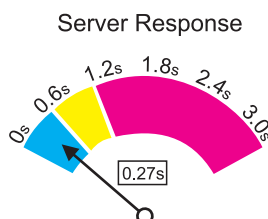


### Your performance is very good!

Congratulations, your page has performed very well in our testing meaning it should be reasonably fast and responsive for users. Performance is important to ensure a good user experience, and reduced bounce rates (which can also indirectly affect your search engine rankings). Continue to monitor your performance over time to ensure there are no periodic fluctuations.

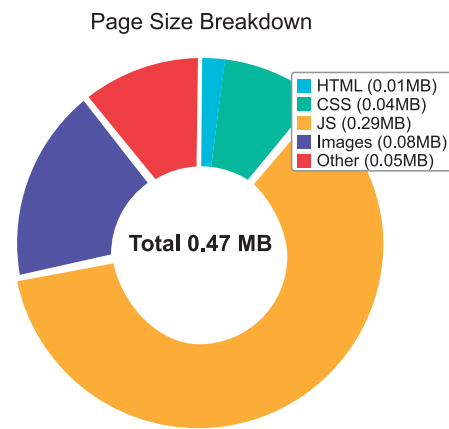
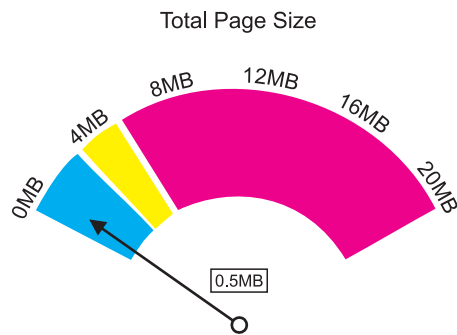
### Page Speed Info

Your page's server response time is reasonably low which is good for load speed and user experience. ✓



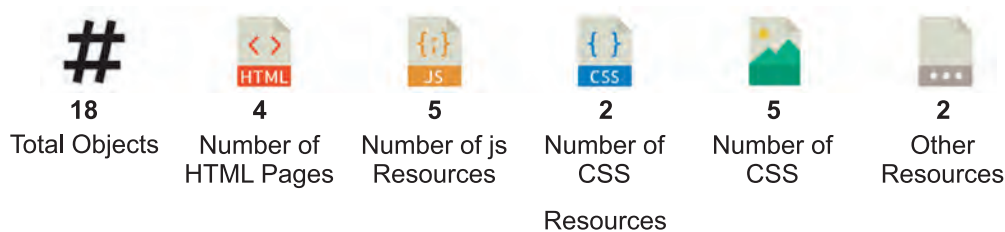
### Page Size Info

Your page's file size is reasonably low which is good for Page Load Speed and user experience. ✓



### Number of Resources

This check displays the total number of files that need to be retrieved from web servers to load your page. As a general rule, having more files to retrieve increases the number of server requests and can subsequently increase page load time. It is a good idea to removing unnecessary files or consolidate files like styles and scripts where possible.



### JavaScript Errors

Your page is not reporting any JavaScript errors.



### GZIP Compression

Your website is using GZIP compression.



### Optimize Images

Your page appears to include images which are poorly optimized. Properly formatting and compressing images can have a significant impact on page load performance.



### Minification

All your JavaScript and CSS files appear to be minified.



### W3C Validity

Your page does not appear to be W3C compliant. W3C compliance ensures the use of modern standards and improves the likelihood of your page rendering appropriately in future browser versions.



**Errors: 5**

**Warnings: 3**

## Deprecated HTML

No deprecated HTML tags have been found within your page.

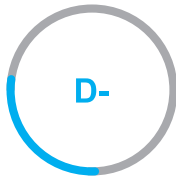


## Inline Styles

No inline styles have been found within your page's HTML tags.



## Social Results



### Your social needs improvement

You appear to have a weak social presence or level of social activity (or we may just not be able to see your profiles!). Social activity is important for customer communication, brand awareness and as a marketing channel to bring visitors to your website. We recommend that you list all of your profiles on your page for visibility, and begin to build a following on those networks.

#### Facebook Connected

No associated Facebook Page found as a link on your page.



#### Twitter Connected

No associated Twitter profile found as a link on your page.



#### Twitter Connected

No associated Google+ profile found linked on your page.



#### Twitter Connected

No associated Instagram profile found linked on your page.



#### Twitter Connected

No associated Youtube channel found linked on your page.



#### Twitter Connected

No associated LinkedIn profile found linked on your page.



#### Social Shares

Your page appears to be being shared on social networks.



621543  
Facebook



0  
LinkedIn

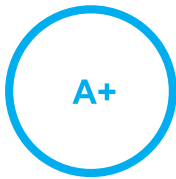


4911  
Pinterest



7344  
Stumbleupon

## Security Results



### Your security looks very good!

We haven't identified obvious security problems on your website. Security is important to ensure your website protects user data, doesn't become compromised or experience downtime or data loss. We recommend ongoing patching and the continuous use of protective monitoring tools.

#### SSL Enabled

Your website has SSL enabled.



#### HTTPS Redirect

Your page successfully redirects to a HTTPS (SSL secure) version.



#### Malware Check

Your website has been flagged as safe by popular malware scanners



#### Critical Software Up To Date

No outdated software versions were identified on you server.



#### Email Privacy





No email addresses have been found in plain text on you page.



## Technology Results

### Technology List

These software or coding libraries have been identified on your page.

Technology	Version
 Google Analytics	UA
 Google Tag Manager	
 ZURB Foundation	
 jQuery	

### Server IP Address

69.172.200.235

### DNS Servers

ns65.worldnic.com  
ns66.worldnic.com

### Web Server

nginx/1.13.12

### Charset

text/html

*i*

*i*

*i*

*i*

*i*



## Recommendations

SEO	Add a title tag (ideally between 10 and 70 characters)	High Priority
SEO	Include a meta description tag	High Priority
SEO	Use your main keywords across the important HTML tags	Medium Priority
SEO	Implement a XML sitemaps file	Medium Priority
Social	Create and link your Facebook Page	Medium Priority
SEO	Make greater use of header tags	Medium Priority
Performance	Ensure your page is W3C compliant	Low Priority
SEO	Increase Page text content	Low Priority
Performance	Optimize your images to reduce their file size	Low Priority
SEO	Implement an analytics tracking tool	Low Priority
Social	Create and link your Twitter profile	Low Priority
Social	Create and link an associated Google+ profile	Low Priority
Social	Create and link associated Instagram profile	Low Priority
Social	Create and link an associated Youtube channel	Low Priority
Social	Create and link an associated LinkedIn profile	Low Priority



## Appendix - II

Steps for google analytics are as follows :

1. Open the website <https://analytics.google.com>.
2. Login with your Gmail Id and password.
3. Click on 'Start Measuring' button.
4. From Account setup type Account name (Required) relevant to your website e.g. here the website is hsc board practical, so it is mentioned in Account name. Click on Next button.

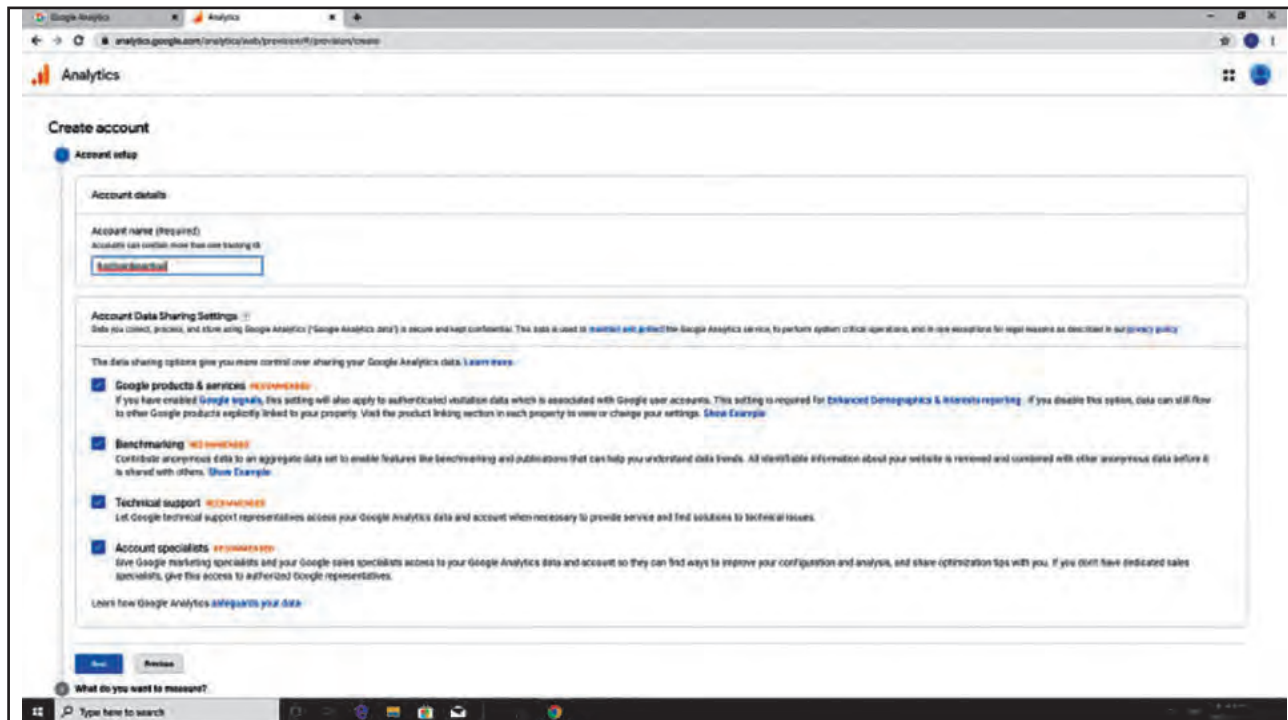


Fig. 2.10 : Account Setup Screen

5. Select any one option from 'What do you want to measure'? Web/Apps/Apps & Web and click on 'Next' button.

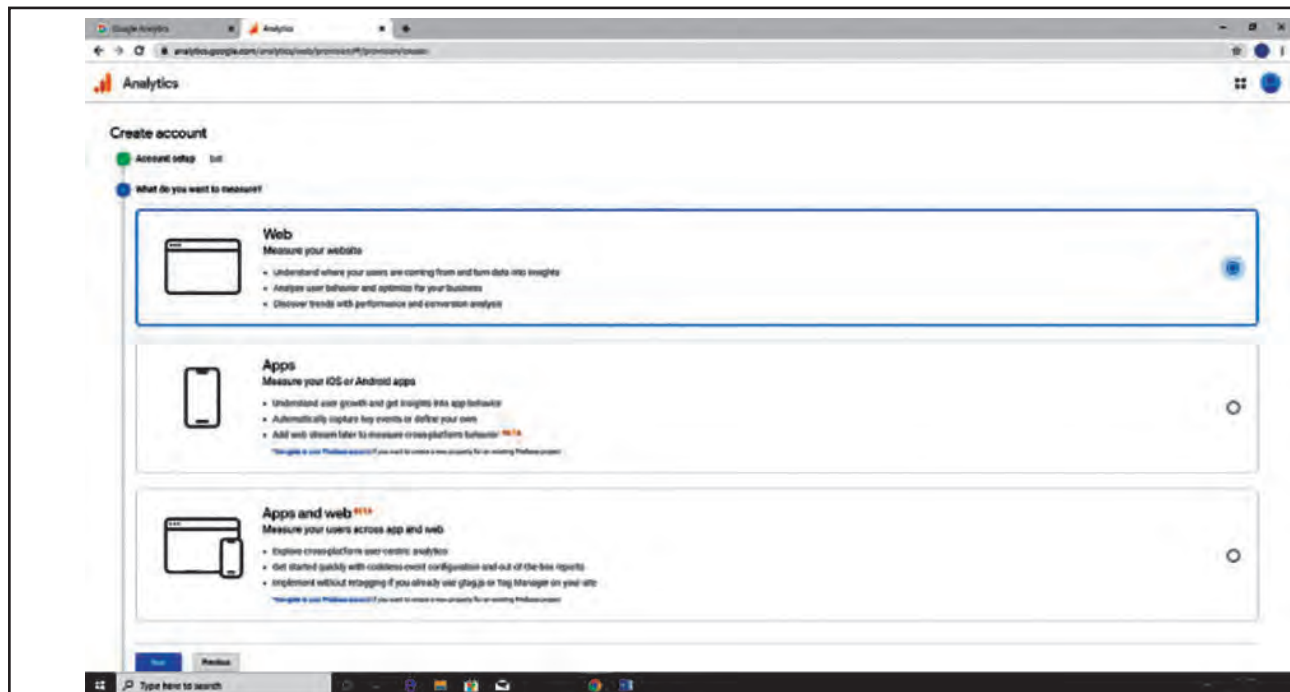


Fig. 2.11 : What do you want to measure Screen

6. In 'Property setup' option type Website name, Website URL, Industry Category, Reporting Time Zone and click on 'Create' button

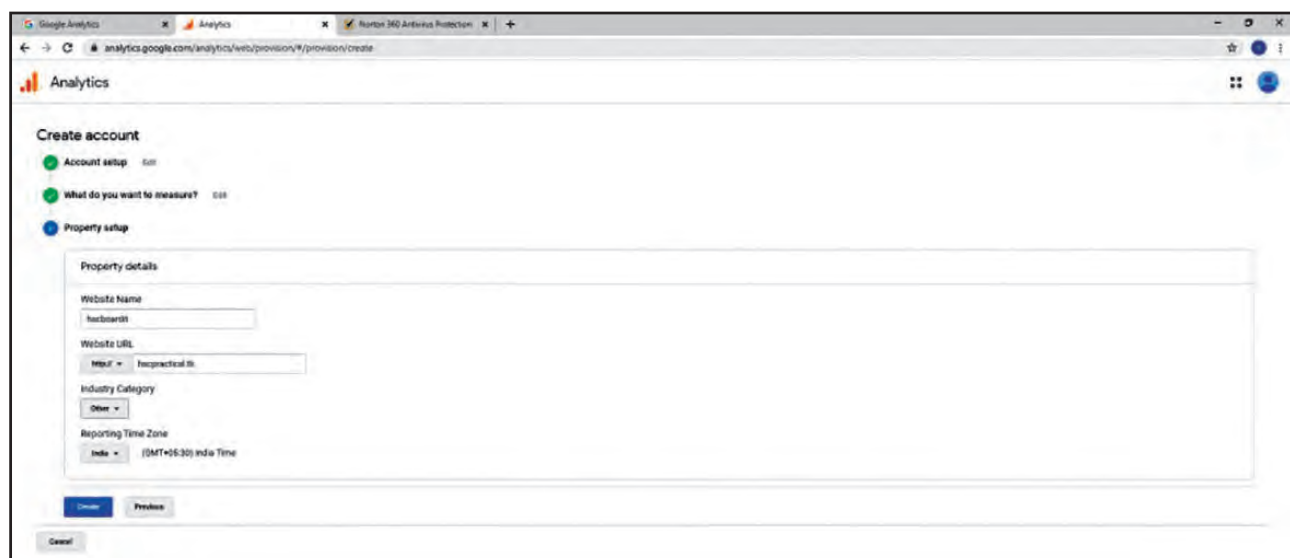
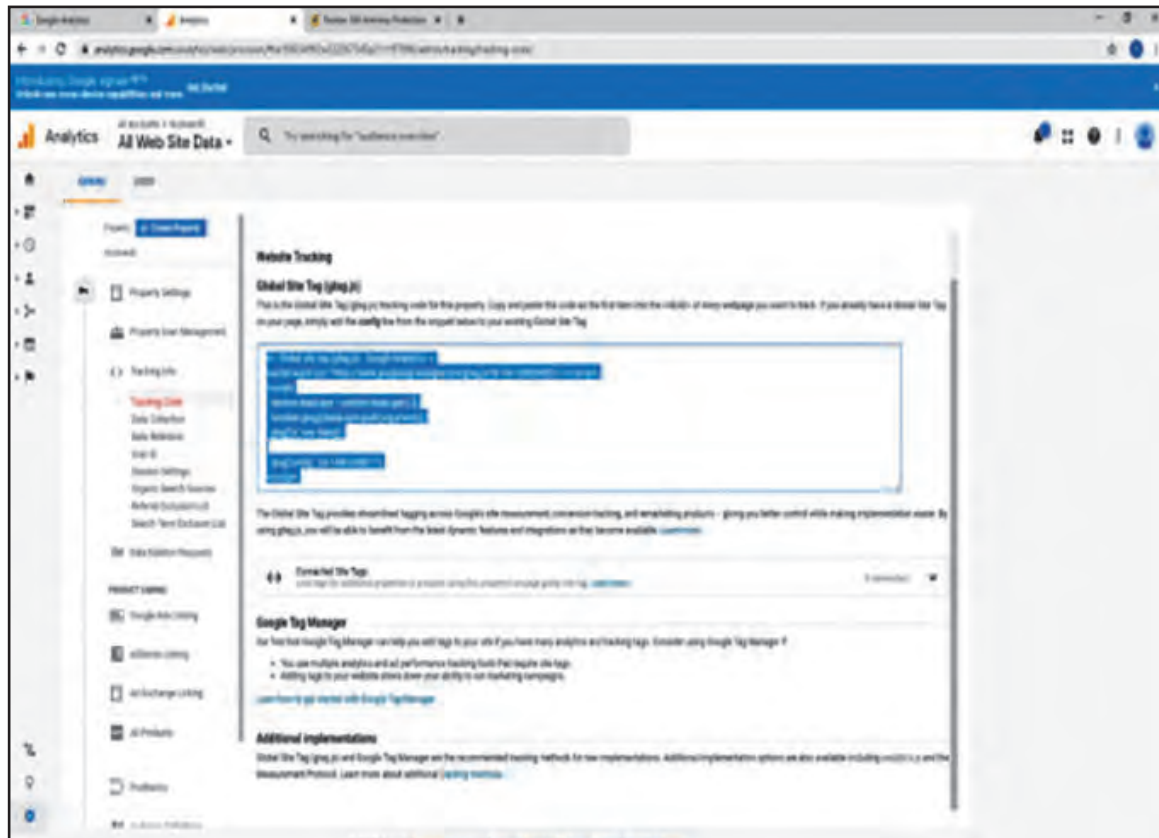


Fig. 2.12 : Property setup Screen

7. Choose country as India and Accept the terms by selecting 'I Accept' checkbox and then click on 'I Accept' button
8. You will come across Tracking Id page along with website tracking JavaScript code.



**Fig. 2.12 : JavaScript Code Screen**

```
<!-- Global site tag (gtag.js) - Google Analytics -->
<script async src="https://www.googletagmanager.com/gtag/
js?id=UA-158034982-1"></script>
<script>
window.dataLayer = window.dataLayer || [];
function gtag(){dataLayer.push(arguments);}
gtag('js', new Date());
gtag('config', 'UA-158034982-1'); </script>
```

**Fig. 2.13 : JS Code to be copy**

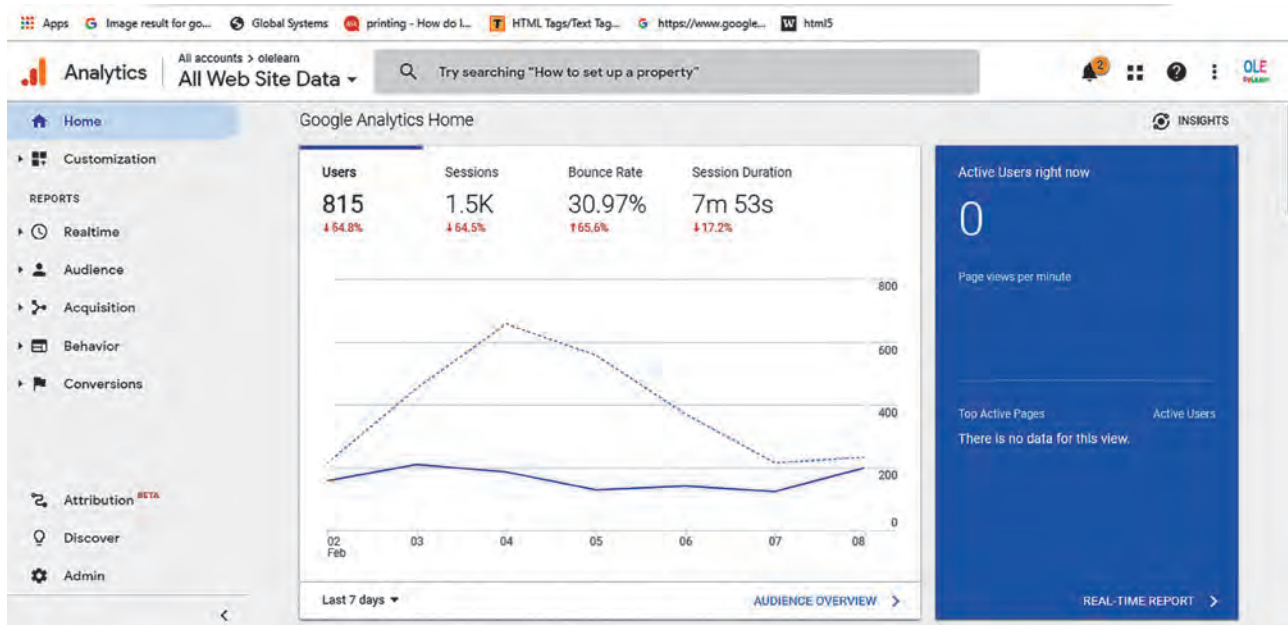
9. Copy the above generated JavaScript code and paste it in the header section of all the web pages of your website.
10. Upload those web pages again and refresh the analytics page to view the reports.



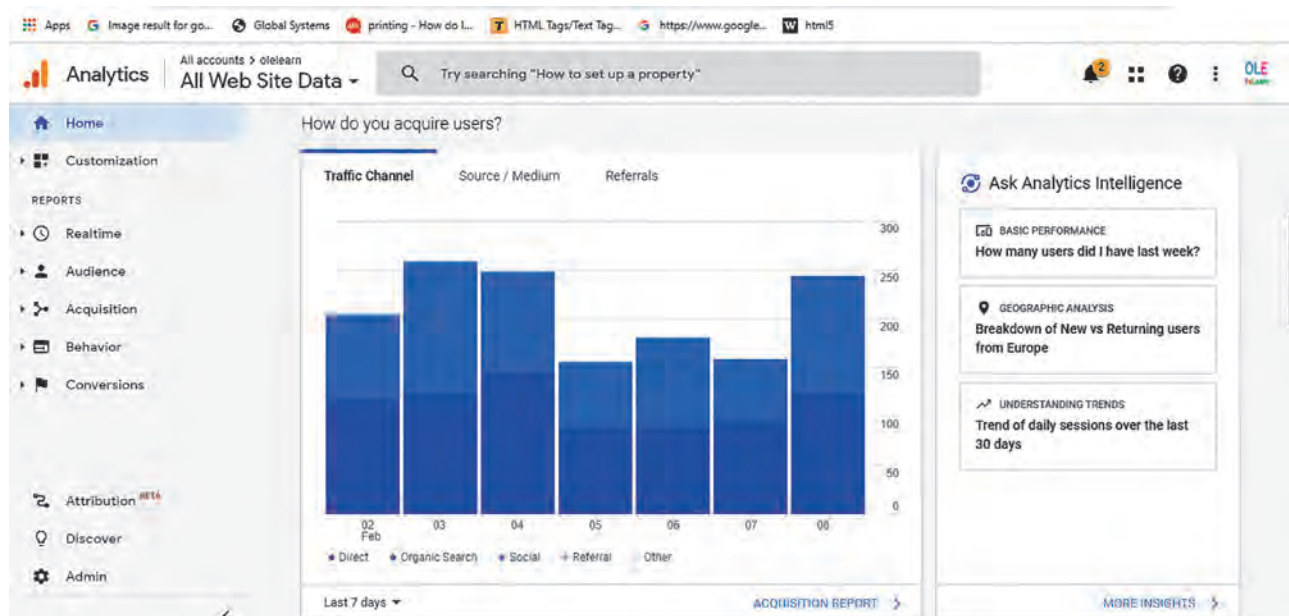
For information purpose only

## Appendix - III

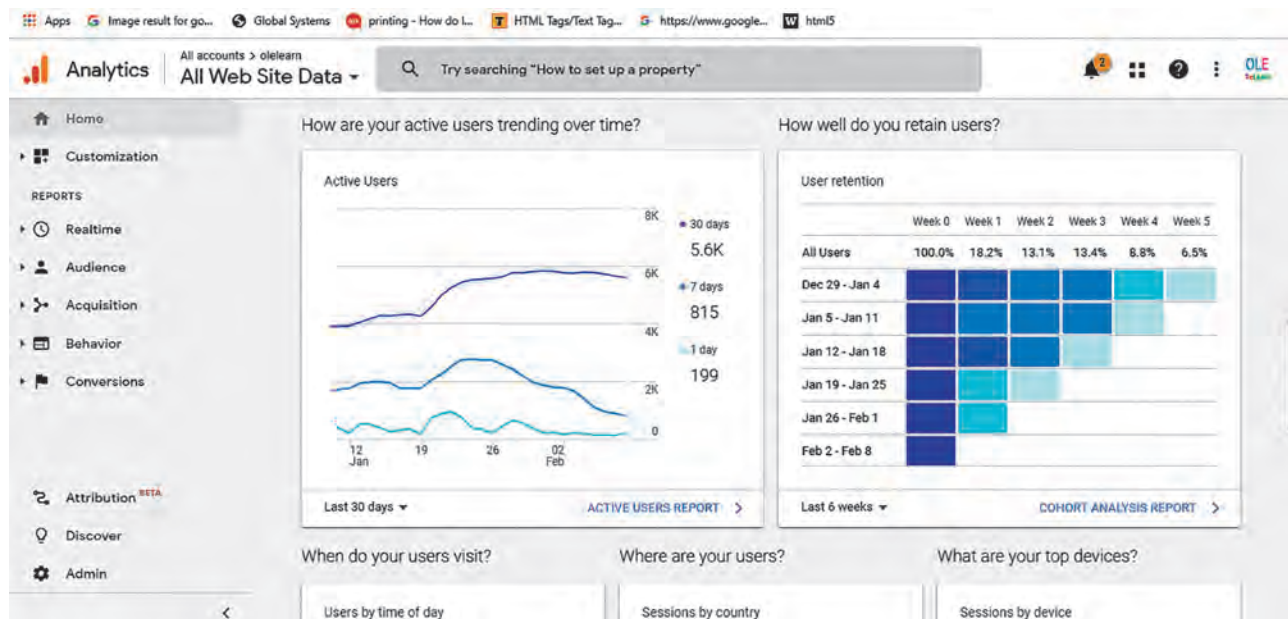
### Overall Google Analytics Report



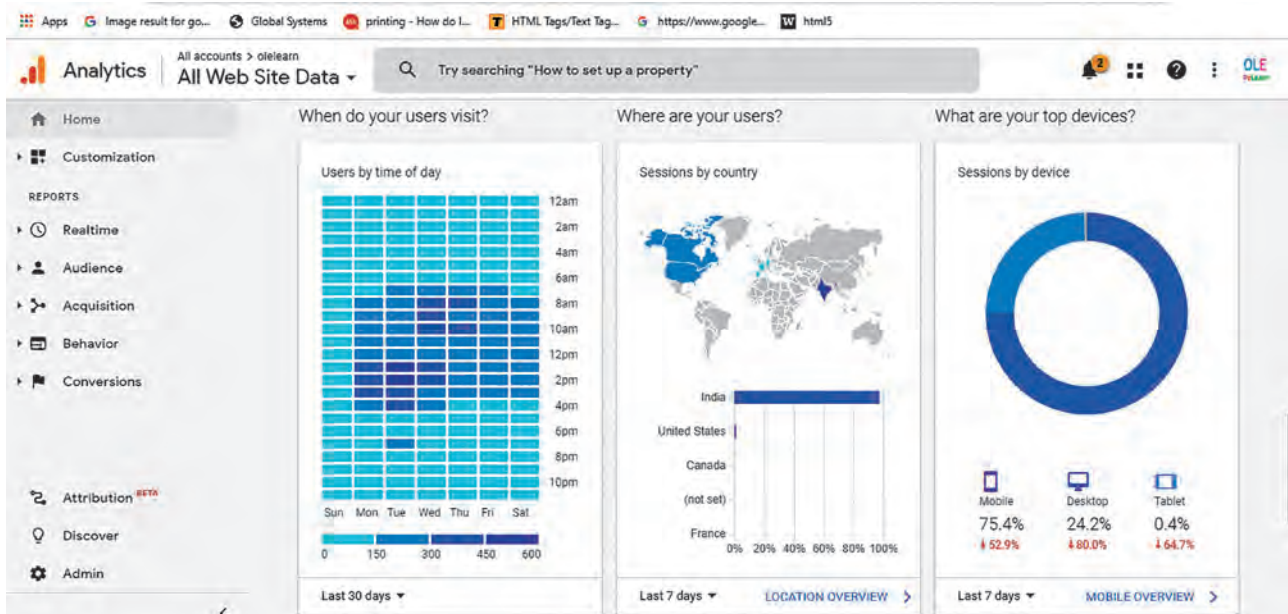
### Organic / Non organic Search Report



## Active Users and Retained users report

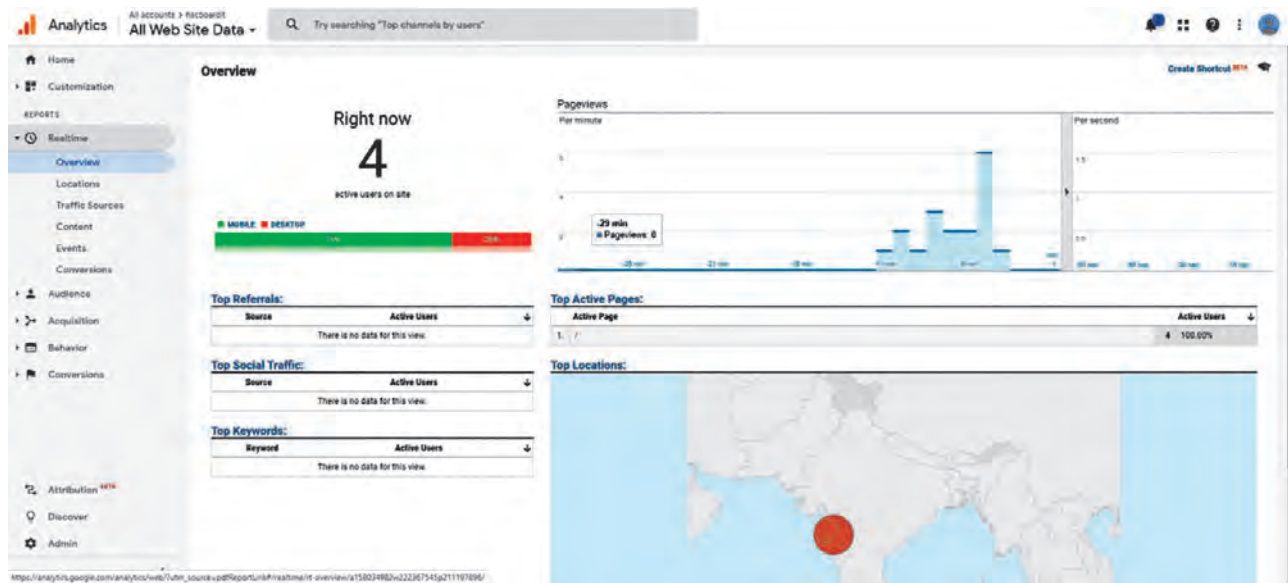


## Users Access Times / Locations / Devices





## Real Time Users Report



For information purpose only

## Appendix - IV

### Accounting Voucher Display

Tax Invoice						
<b>Shree Ganesha Trading Company</b> Shahapuri Estate Kolhapur GSTIN/UIN: 27ABCDE2345F1Z4 State Name : Maharashtra, Code : 27				Invoice No.      e-Way Bill No.		Dated
				1		2-Dec-2019
				Delivery Note		Mode/Terms of Payment
				Supplier's Ref.		Other Reference(s)
Buyer <b>Angel Public School</b> Satara State Name : Maharashtra, Code : 27				001		
				Buyer's Order No.		Dated
				Despatch Document No.		Delivery Note Date
				Despatched through		Destination
				Terms of Delivery		
SI No.	Description of Goods	HSN/SAC	Quantity	Rate	per	Amount
1	CCTV		30 Ut	12,000.00	Ut	3,60,000.00
	CSGT					50,400.00
	SGST					50,400.00
Total			30 Ut			₹ 4,60,800.00
Amount Chargeable (in words)						E. & O.E
<b>INR Four Lakh Sixty Thousand Eight Hundred Only</b>						
HSN/SAC		Taxable Value	Central Tax		State Tax	
			Rate	Amount	Rate	Amount
		3,60,000.00	14%	50,400.00	14%	50,400.00
						1,00,800.00
Total		3,60,000.00		50,400.00		50,400.00
						1,00,800.00
Tax Amount (in words) : <b>INR One Lakh Eight Hundred Only</b>						
Declaration				for Shree Ganesha Trading Company		
We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct.				Authorised Signatory		
This is a Computer Generated Invoice						

## GST Annual Computation Report

Shree Ganesha Trading Company Shahupuri Estate Kolhapur						
GST Annual Computation 1-Apr-2019 to 31-Mar-2020						
GSTIN : 27ABCDE2345F1Z4						Page 1
<b>Total number of vouchers for the period</b>						2
Included in Annual Computation						2
Included in HSN/SAC Summary						0
Incomplete HSN/SAC information (to be provided)						2
Not relevant for Annual Computation						0
Incomplete/Mismatch in information (to be resolved)						0
Particulars	Taxable Value	Integrated Tax Amount	Central Tax Amount	State Tax Amount	Cess Amount	Tax Amount
<b>Liability</b>						
Outward and inward Supplies on Which Tax is Payable (Including Advances)	3,60,000.00		50,400.00	50,400.00		1,00,800.00
Outward Supplies on Which Tax is not Payable						
<b>Total Liability</b>	3,60,000.00		50,400.00	50,400.00		1,00,800.00
<b>Input Tax Credit</b>						
Input Tax Credit			70,000.00	70,000.00		1,40,000.00
ITC Reversal and Ineligible ITC Declared						
Input Tax Credit After Reversal & Ineligible ITC			70,000.00	70,000.00		1,40,000.00
<b>HSN/SAC Summary</b>						
Summary of Outward Supplies						
Summary of Inward Supplies						

## GSTR-2

Shree Ganesha Trading Company Shahupuri Estate Kolhapur						
GST Computation 1-Apr-2019 to 30-Apr-2019						
GSTIN/UID : 27ABCDE2345F1Z4						Page 1 1-Apr-2019 to 30-Apr-2019
<b>Returns Summary</b>						
<b>Number of vouchers for the period</b>						2
Included in returns						1
Invoices ready for returns						0
Invoices with mismatch in information						1
Not included in returns due to incomplete information						0
Not relevant for returns						1
Incomplete HSN/SAC information (to be provided)						0
Particulars	No. of Invoices	Taxable Value	Total Tax	Total ITC Available	Reconciliation Status	
<b>To be reconciled with the GST portal</b>						
B2B Invoices - 3, 4A	1	5,00,000.00	1,40,000.00	1,40,000.00		
Credit/Debit Notes Regular - 6C						
<b>To be uploaded on the GST portal</b>						
B2BUR Invoices - 4B						
Import of Services - 4C						
Import of Goods - 5						
Credit/Debit Notes Unregistered - 6C						
Nil Rated Invoices - 7 - (Summary)						
Advance Paid - 10A - (Summary)						
Adjustment of Advance - 10B - (Summary)						
<b>Total Inward Supplies</b>		5,00,000.00	1,40,000.00	1,40,000.00		
ITC Reversal/Reclaim - 11 - (Summary)						
<b>Total No. of Invoices</b>	1					
HSN/SAC Summary - 13						
<b>Reverse Charge Liability to be Booked</b>						
Reverse Charge Inward Supplies						0.00
Import of Service						0.00
<b>Advance Payments</b>						
Amount Unadjusted Against Purchases						
Purchase Against Advance from Previous Periods						

## GSTR-3B

<b>Shree Ganesha Trading Company</b> Shahupuri Estate Kolhapur <b>GST Computation</b> 1-Apr-2019 to 30-Apr-2019			
<b>GSTIN/UIN</b> : 27ABCDE2345F1Z4		Page 1 <b>1-Apr-2019 to 30-Apr-2019</b>	
<b>Returns Summary</b>			
<b>Total number of vouchers for the period</b>		<b>2</b>	
Included in returns		2	
<i>Participating in return tables</i>		2	
<i>No direct implication in return tables</i>		0	
Not relevant for returns		0	
Incomplete/Mismatch in information (to be resolved)		0	
<b>Table No.</b>	<b>Particulars</b>	<b>Taxable Value</b>	<b>Tax Amount</b>
3.1	Outward supplies and inward supplies liable to reverse charge	3,60,000.00	1,00,800.00
3.2	Of the supplies shown in 3.1 (a) above, details of inter-state supplies made to unregistered persons, composition taxable persons and UIN holders		
4	Eligible ITC		1,40,000.00
5	Value of exempt, nil rated and non-GST inward supplies		
5.1	Interest and Late fee Payable		
<b>Reverse Charge Liability and Input Credit to be booked</b>			
	Reverse Charge Inward Supplies		0.00
	Import of Service		0.00
	Input Credit to be Booked		
<b>Advance Payments</b>			
	Amount Unadjusted Against Purchases		0.00
	Purchase Against Advance from Previous Periods		



## Career Opportunities

### Cloud Computing Engineers

#### Basic Requirements :

**Cloud engineers** typically have at least a bachelor's degree in **computer science** or information technology. Those in the field often have years of software development experience, working with a variety of programming languages such as Java, Angular JS, C++, and Python.

Cloud computing engineers define, design, build, and maintain systems and solutions leveraging systems and infrastructure managed by cloud providers such as Amazon Web Services (AWS) and Microsoft Azure. Following are some of job roles in the cloud computing domain.

- Cloud Architect
- Cloud Consultant
- Cloud Product and Project Manager
- Cloud Services Developer
- Cloud Software and Network Engineer
- Cloud System Administrator
- Cloud System Engineer

### Computer Network Specialists

#### Basic Requirements :

Computer network specialists and analysts define, design, build, and maintain a variety of data communication networks and systems. They typically have a bachelor's degree in computer science or a related field. Some also have a master's degree in business administration (MBA), with a focus on information systems. Network related jobs and projects. The job profiles are as-

- Computer and Information Research Scientist
- Computer and Information Systems Manager
- Computer Network Architect
- Computer Systems Analyst
- Computer Systems Manager
- IT Analyst
- IT Coordinator
- Network Administrator
- Network Architect
- Network and Computer Systems Administrator
- Network Engineer
- Network Systems Administrator
- Senior Network Architect
- Senior Network Engineer
- Senior Network System Administrator
- Telecommunications Specialist

### Computer Support Specialist

#### Basic Requirements :

The computer user support specialist must be knowledgeable about the functioning of a computer system. Some of the employers appoint the technicians on the basis of an associate's degree or postsecondary classes, while others prefer the applicants to have a bachelor degree.

Computer support specialists and network administrators help computer users and organizations. Some of these workers support computer networks by testing and evaluating network systems and ensuring that the day-to-day operations work. Others provide customer service by helping people with their computer problems. Some require a



bachelor's degree, while others need an associate degree or post-secondary classes. They work as-

- Customer Support Administrator
- Customer Support Specialist
- Desktop Support Manager
- Desktop Support Specialist
- Help Desk Specialist
- Help Desk Technician
- IT Support Manager
- IT Support Specialist
- IT Systems Administrator
- Senior Support Specialist
- Senior System Administrator
- Support Specialist
- Systems Administrator
- Technical Specialist
- Technical Support Engineer
- Technical Support Specialist

### **Database Administrator**

#### **Basic Requirements :**

Many employers prefer database administrators with at least a bachelor's degree in computer science or a related field. In some cases, a master's degree is required for higher-level positions. A bachelor's degree program is a 4-year program and is a prerequisite to a 2-year master's degree program.

Database administrators help store and organize data for companies and/or customers. They protect the data from unauthorized users. Some work for companies that provide computer design services. Others work for organizations with large database systems, such as educational institutions, financial firms and more. They can be employed as-

- Data Center Support Specialist
- Data Quality Manager
- Database Administrator

### **Senior Database Administrator Information Technology Leadership Basic Requirements :**

Obtain a bachelor's degree in computer science or information technology. Develop IT and leadership experience in a variety of IT roles, from entry-level support positions to IT manager. Most IT director positions require 10 years of experience. Earn your master's degree.

Leadership in IT draws from candidates with strong technology backgrounds and superior management skills. They have experience in creating and implementing policies and systems to meet IT objectives, and the ability to budget the time and funds necessary.

- Chief Information Officer (CIO)
- Chief Technology Officer (CTO)
- Director of Technology
- IT Director
- IT Manager
- Management Information Systems Director
- Technical Operations Officer

### **Information Security Specialist**

#### **Basic Requirements :**

Hiring managers for IT security specialist positions generally require at least an undergraduate degree (associate or bachelor) in information security, computer information systems, network security, computer science or a related field of study.

The increased incidence of security breaches and the associated danger of identity theft has enhanced the importance of protecting data on commercial and governmental sites. Information securities analysts help defend an organization's computer network and computer systems.



The job roles offered to them are-

- Information Security
- Security Specialist
- Senior Security Specialist

### **Software/Application Developer**

#### **Basic Requirements :**

Most computer software development jobs require bachelor's degrees in computer science or software engineering. These programs have significant math requirements that include a sequence in calculus, differential equations, and linear algebra. A sequence in physics is also required.

Software developers design, run, and test various computer programs and applications. Application Developers create new applications and code solutions. They usually have a bachelor's degree in computer science or a related field. They also have strong programming skills, so can be employed as-

- Application Developer
- Applications Engineer
- Associate Developer
- Computer Programmer
- Developer
- Java Developer
- Junior Software Engineer
- .NET Developer
- Programmer
- Programmer Analyst
- Senior Applications Engineer
- Senior Programmer
- Senior Programmer Analyst
- Senior Software Engineer
- Senior System Architect
- Senior System Designer
- Senior Systems Software Engineer
- Software Architect
- Software Developer

- Software Engineer
- Software Quality Assurance Analyst
- System Architect
- Systems Software Engineer
- Mobile Application Developer

### **Web Developer**

#### **Basic Requirements :**

Many employers prefer prospective Web developers to hold a bachelor's degree in computer science or a related field. Coursework often includes programming, database management, mathematics, Web design and networking.

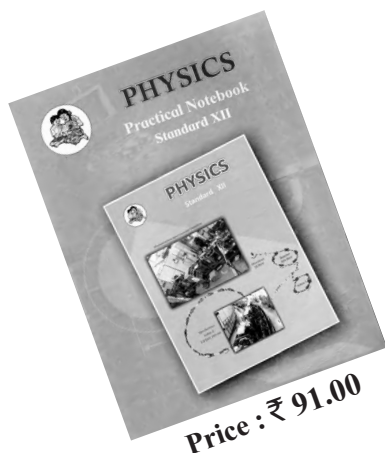
Web developers design, create, and modify websites. They are responsible for maintaining a user-friendly, stable website that offers the necessary functionality for their client's needs. Some jobs require a bachelor's degree, while others need an associate degree, including classes in HTML, JavaScript, or SQL. This education can help to get employment as-

- Front End Developer
- Senior Web Administrator
- Senior Web Developer
- Web Administrator
- Web Developer
- Webmaster
- UX Designer

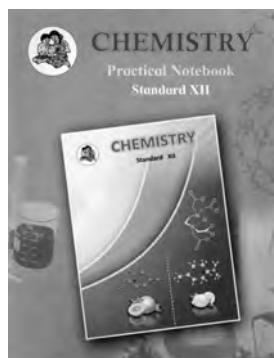
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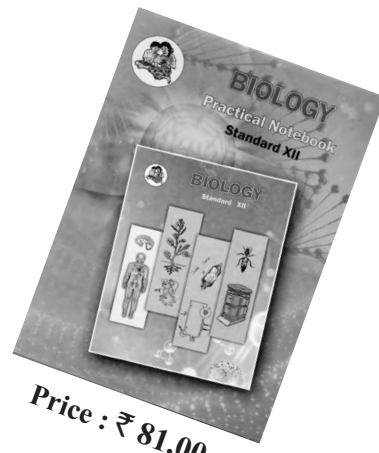
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