

FRONT END ENGINEERING



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Web Application

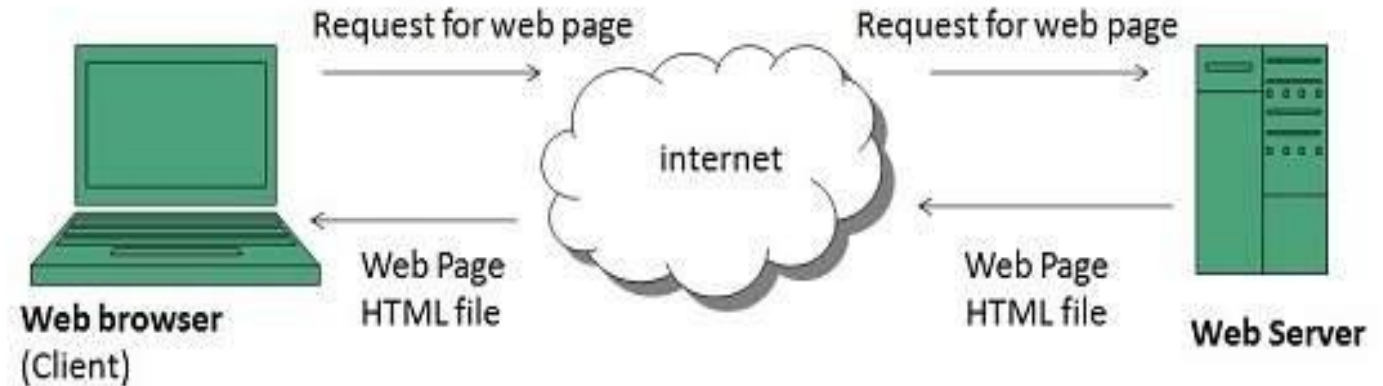
- **What can we do on web?**

We rely on different websites/web apps for **different tasks**.

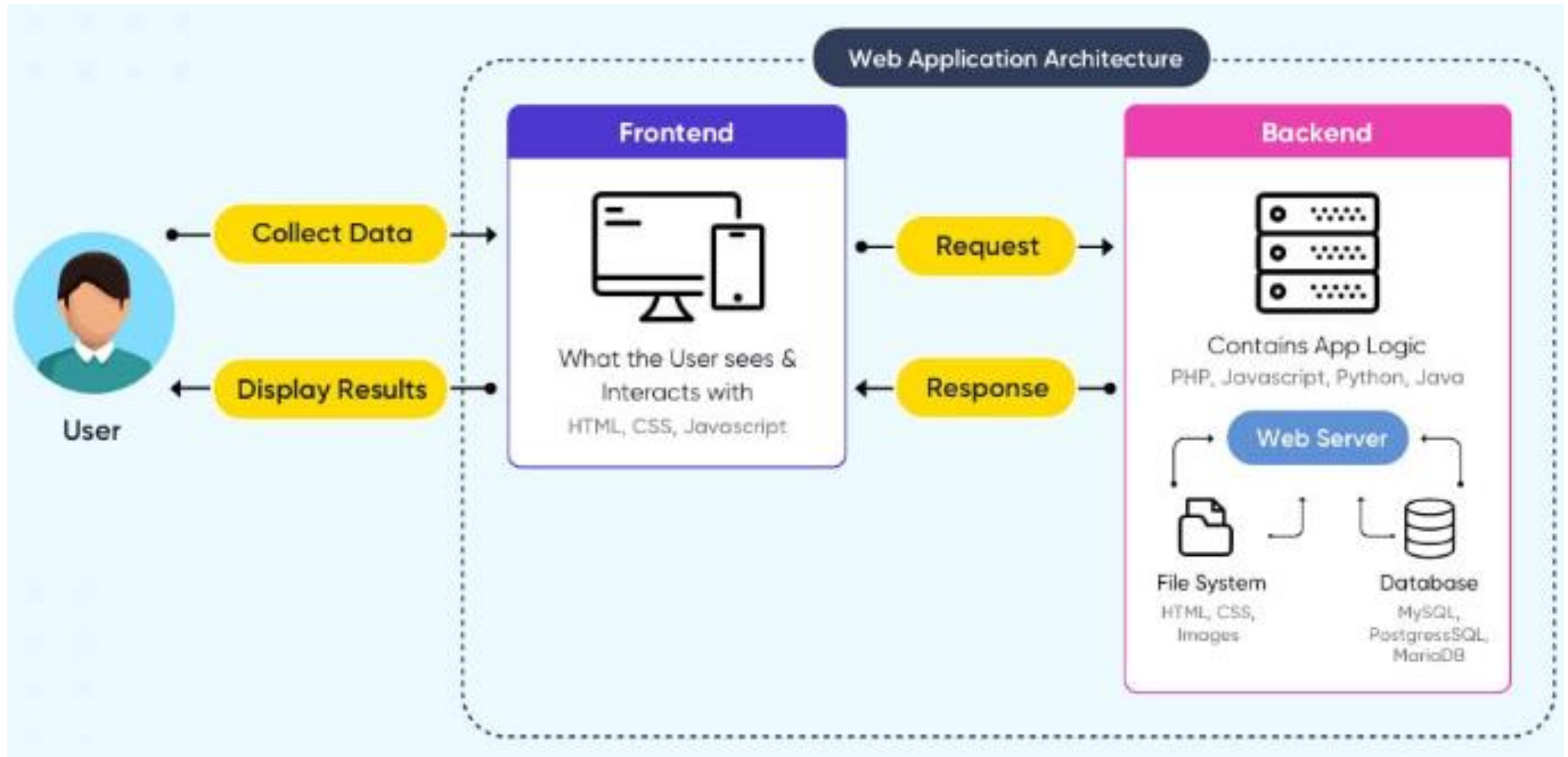
- *Submitting online application*
- *Banking transactions*
- *Purchasing of goods*
- *Watching movies .etc*

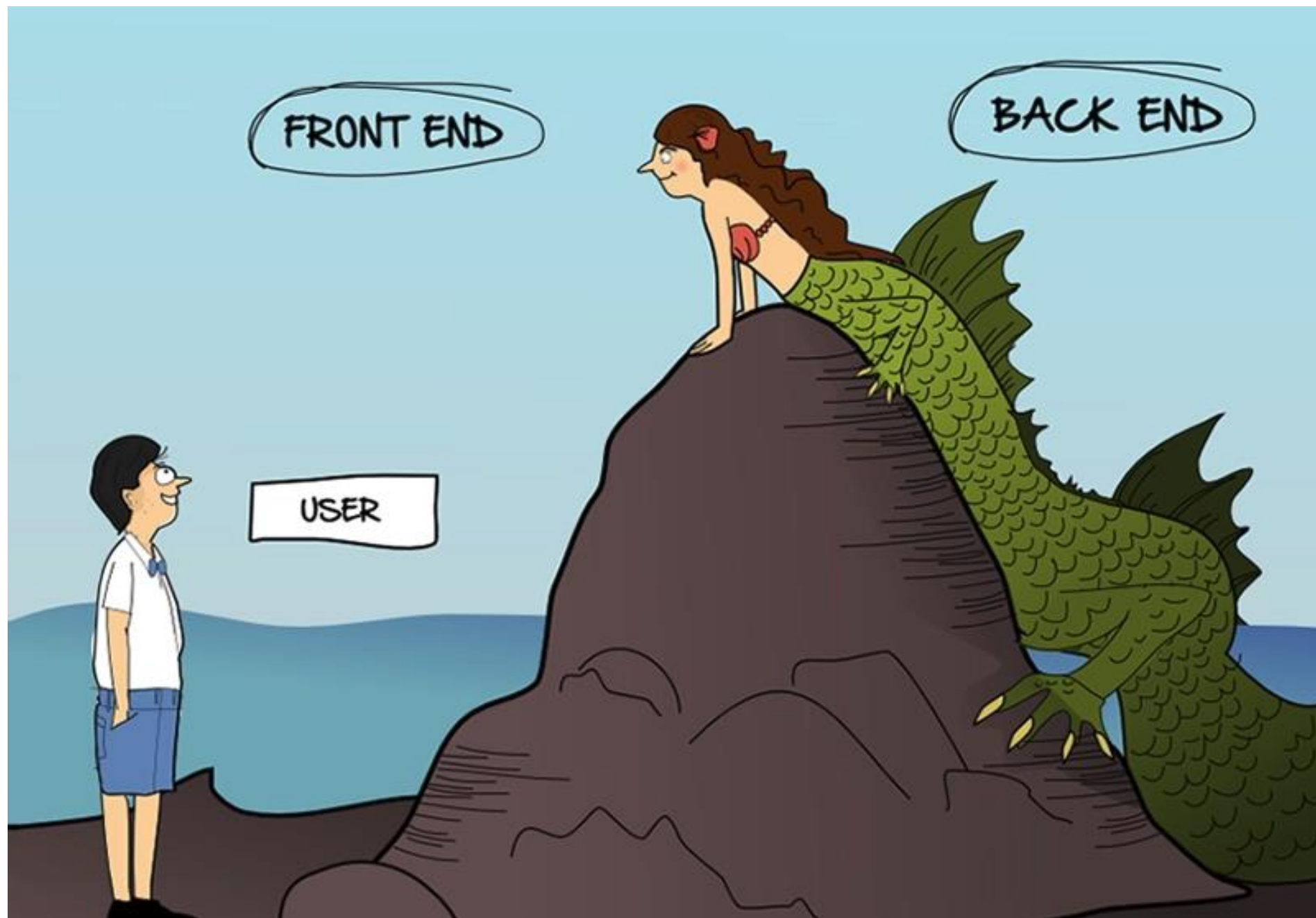
- A **web page** contain texts, images, graphics, sounds animations etc.

- Web pages are developed in HTML



Web Application Architecture





Front end vs. back end

- Front end development is programming which focuses on the visual elements used to see on client side
- Back-end ensure the website performs correctly, focusing on organization of data, logic, application programming interface (APIs)



Frontend

Focuses on layout, animations, content organization, navigation, graphics.

Programming languages:
JavaScript, HTML, CSS



Backend

Focuses on building code, debugging, database management.

Programming languages:
Python, Java

Front-End Technologies



HTML



CSS



JavaScript



ReactJS



AngularJS



VueJS

Back-End Technologies



NodeJS



PHP



Python



Java



Ruby

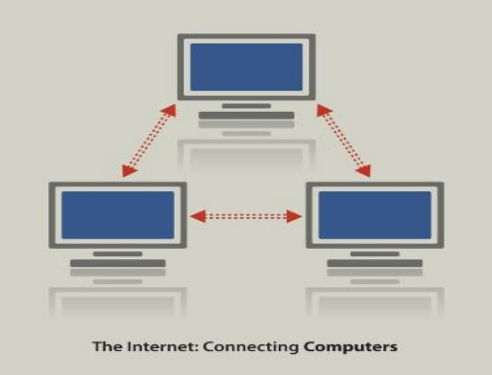
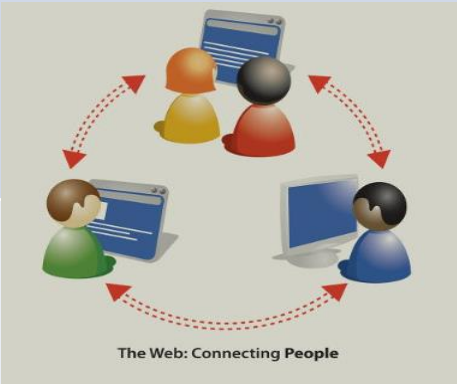


Go

Internet and Web(WWW)

- **Internet:-** A global computer network and it is a collection of computers and devices connected via communication channels and transmission media allow to share resources (hardware, software, data, information).
 - **WWW(World Wide Web)** –It is a repository of interlinked hypertext documents(web pages) and other resources files that can be accessed via the internet.
 - These web resources are identified by **Uniform Resource Locators (URLs)**.
 - URL is the address of a given unique resource on the Web
 - Ex. <https://www.chitkara.edu.in/>
Here login.html is a web resource(webpage)
-

Difference between Internet and World Wide Web

Internet	WWW
 <p data-bbox="919 325 1207 651">It is a network of network Network connecting computers</p>	 <p data-bbox="1302 315 1640 651">It is a repository of Common resoucrs Connects users/ resources over internet</p>
Nature of Internet is hardware .	Nature of www is software .
Internet consists of computers, routers, cables, bridges, servers, cellular towers, satellites etc	www consists of information like text, images, audio, video
Internet works on the basis of Internet Protocol (IP)	WWW works on the basis of Hyper Text Transfer Protocol (HTTP)
Computing devices are identified by IP Addresses	Information pieces are identified by Uniform Resource Locator (URL)

Browser:

- A browser is a **program** that allows us to view and explore information on the web . A software application for **retrieving, presenting, and traversing** information resources on the World Wide Web.
- Web browser can **show text, audio, video, animation and more**. It is the responsibility of a web browser to **interpret text and commands contained in the web page**.
- User can request for any web page by just entering a URL into address bar

Uniform Resource Locators, or URLs:

- A Uniform Resource Locator, or URL is the **address of a document/ web page** found on the WWW.
- Ex. <http://www.google.com/login.html>



- URL contains 1) Protocol 2) Domain 3)Content/filename/pathname

1) Protocol: A protocol that is used to transfer pages on the web.

- HTTP: Hypertext protocol: <http://www.aucegypt.edu>
- FTP: File Transfer Protocol: <ftp://ftp.dartmouth.edu>

2) Domain It is a unique reference that identifies a website

It divide World Wide Web sites into categories based on the nature of their owner, and they form part of a site's address, or uniform resource locator (URL).

Common top- level domains are:

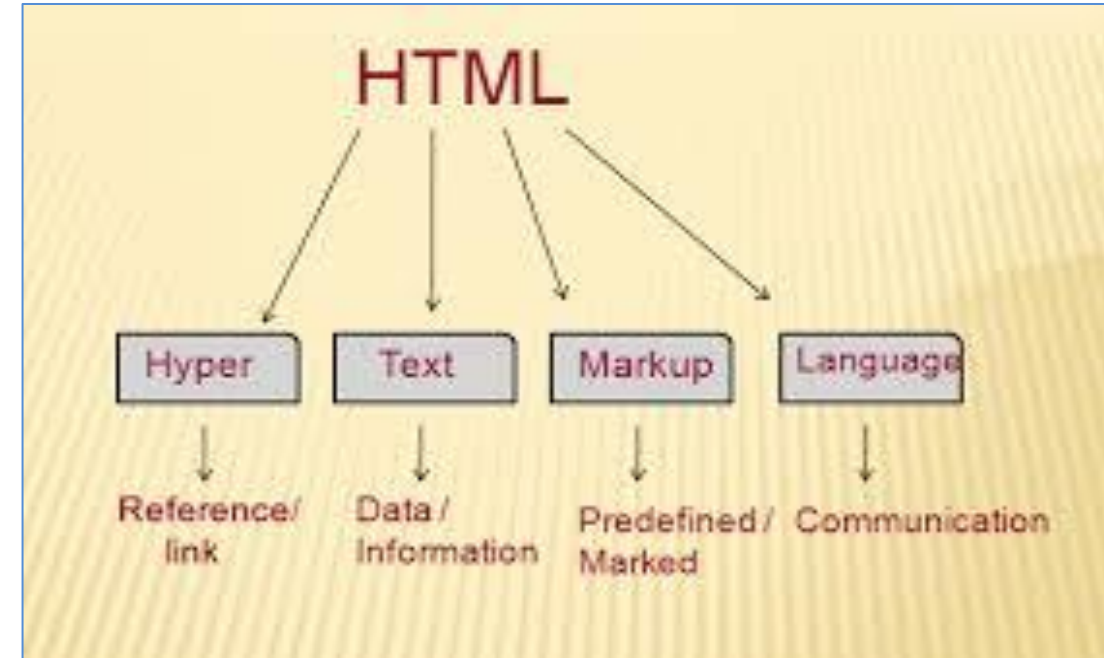
Domain - desc		Domain -desc	
.com —commercial enterprises		.mil —military site	
.org —organization site (non-profits, etc.)		.int —organizations established by international treaty	
.net —network		.biz —commercial and personal	
.edu —educational site (universities, schools, etc.)		.info —commercial and personal	
.gov —government organizations		.name —personal sites	

Each country linked to the Web has a two- letter top- level domain, for example .fr is France, .ie is Ireland.

3) File name or path name: The name of the document file requested.

HTML

- HTML stands for **Hyper Text Markup Language**
- HTML is used to **create web pages.**
- HTML is a format that **tells a browser how to display a web page.**
- An HTML file is a text file containing **small markup tags**
- HTML documents are **plain text files** with **special "tags"** or codes that a web browser uses to interpret and display information on web browser.
- An HTML file must have an **.htm** or **.html** file extension.



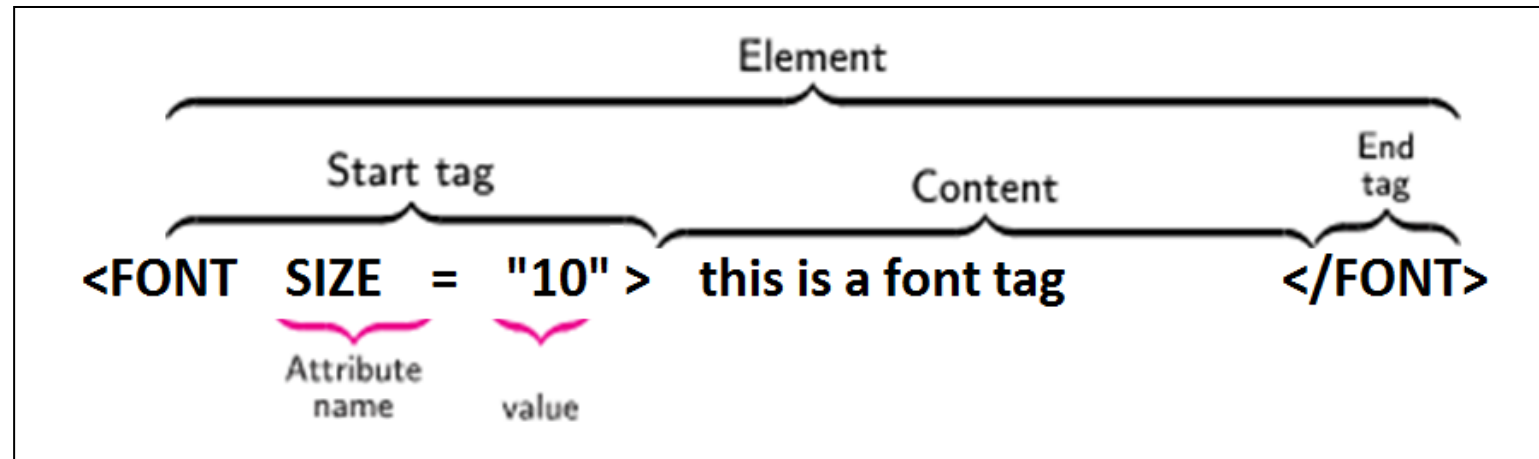
Anatomy of an HTML element or HTML Tags/Element structure:-

HTML tag:

- An HTML tag is **surrounded by the two characters** `<` and `>`.
- The surrounding characters are called **angle brackets**. Ex. `<html>`

HTML Element:

- Come in **pair in which** first tag is the **<start tag>**, the second tag is the **</end tag>**.
 - The **text** between the start and end tags is the **element content**.



- **Attribute:** An attribute in HTML provides extra information about the element, and it is applied within the start tag.
 - An HTML attribute contains two fields: **name & value**.
 - HTML tags are **not case sensitive** `` means the same as ``.

Basic structure of an HTML document

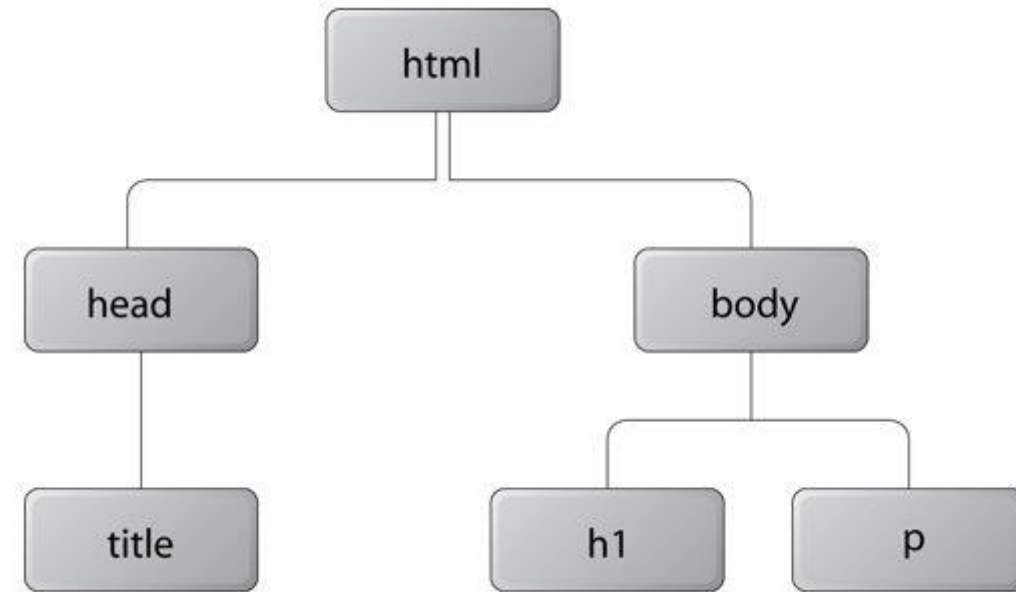
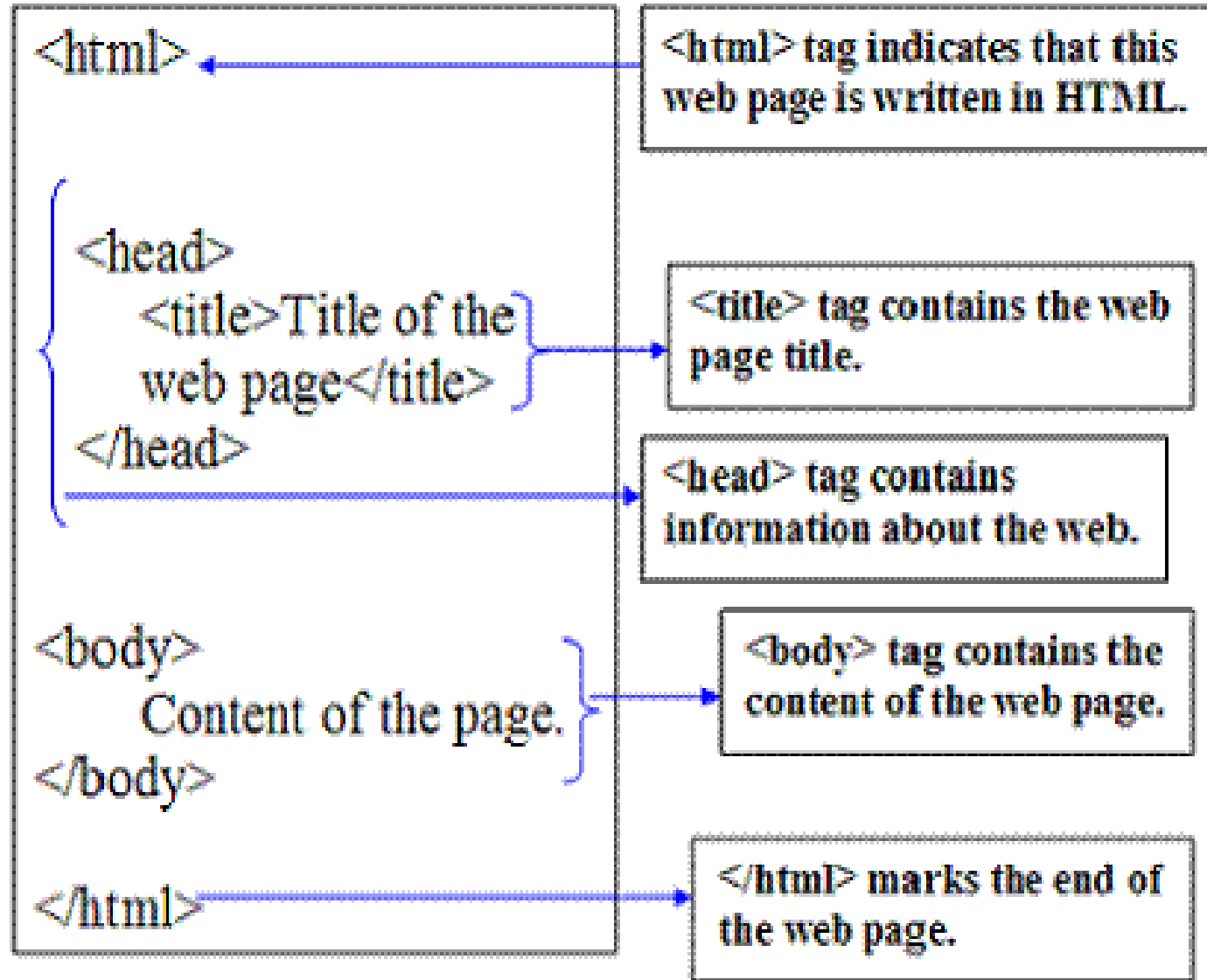


Fig.Tree Structure of HTML Doc

HTML `<html>` Tag

- The `<html>` tag represents the root of an HTML document.
- The `<html>` tag is the container for all other HTML elements (except for the `<!DOCTYPE>` tag).
- An HTML tag is a piece of markup language used to indicate the beginning and end of an HTML element in an HTML document.
- As part of an HTML element, HTML tags help web browsers convert HTML documents into web pages.

```
<html> HTML Contents... </html>
```


Program for Displaying Welcome

```
<html>  
<head>  
</head>  
<body bgcolor="cyan">  
    welcome to web world  
</body>  
</html>
```

<head> Tag

- The <head> element is a container for metadata (data about data) and is placed between the <html> tag and the <body> tag.
- Metadata is data about the HTML document. Metadata is not displayed.
- Metadata typically define the document title, character set, styles, scripts, and other meta information.

```
<head>
  <title>Title of the document</title>
</head>
```

```
<head>
  <style>
    h1 {color:red;}
    p {color:blue;}
  </style>
</head>
```

HTML <body> Tag

- The **<body>** tag defines the document's body.
- The **<body>** element contains all the contents of an HTML document, such as **headings, paragraphs, images, hyperlinks, tables, lists, etc.**

There can only be one **<body>** element in an HTML document.

```
<html>
<head>
  <title>Title of the document</title>
</head>

<body>
  <h1>This is a heading</h1>
  <p>This is a paragraph.</p>
</body>

</html>
```

HTML Headings:-

HTML headings are **titles or subtitles** that you want to display on a webpage.

<h1> is the largest heading tag and

<h6> is the smallest one

<h1>Heading no. 1</h1>

<h2>Heading no. 2</h2>

<h3>Heading no. 3</h3>

<h4>Heading no. 4</h4>

<h5>Heading no. 5</h5>

<h6>Heading no. 6</h6>

Heading no. 1

Heading no. 2

Heading no. 3

Heading no. 4

Heading no. 5

Heading no. 6

Displaying Texts and like breaks

Tag	Description
<p>	This tag represents a paragraph.
<h1> to <h6>	Defines header 1 to header 6
 	Inserts a single line break
<hr>	Defines a horizontal rule
<!-->	Defines a comment

<p> - Paragraph Tag

The <p> tag defines a paragraph. Browsers automatically add some space (margin) before and after each <p> element..

<p>This is a paragraph</p>

 Line Breaks:-

The
 tag is used when we want to **start a new line**, but don't want to start a new paragraph.

This Code	output
<p>This is a para graph with line breaks</p>	This is a para graph with line breaks

<hr> The element is used for **horizontal rules** that act as **dividers between sections**

HTML Text Formatting Elements

HTML Formatting is a process of formatting text for better look and feel.

Element name	Description
	Bold Text
	This is a logical tag, which tells the browser that the text is important.
<i>	used to make text italic.
	used to display content in italic.
<mark>	This tag is used to highlight text.
<u>	used to underline text written between it.
<strike>	This tag is used to draw a strikethrough on a section of text
<sup>	-Superscript text
<sub>	Subscript text
	This tag is used to display the deleted content.
<ins>	This tag displays the content which is added
<big>	This tag is used to increase the font size by one conventional unit.
<small>	This tag is used to decrease the font size by one unit from base font size.

Adding the spaces between text:

- Web page shows only one space between the two words. It does not matter that how much we have pressed the spacebar.
- If we want to show more than one space before or after the text on the webpage then we have to give the following tag:
- ** Non-breaking space**
- This tag is used for **displaying only one space** between the text.

`<p>There is one space between these words.</p>`

`<p>There are two spaces between these words.</p>`

`<p>There are five spaces between these words.</p>`

There is one space between these words.

There are two spaces between these words.

There are five spaces between these words.

Adding the spaces between text:

- If we want to insert/add the **longer space** then we also use the following tags for showing **two** or **four spaces** between the text on the web page:
- ** ** This tag is used for **displaying two spaces**.
- ** ** This tag is used for **displaying four space**

We can also add the `<pre>` tag, which displays the text on the web page as same as entered in the Html document.

```
<pre> Any text or paragraph </pre>
```

Some Useful HTML Character Entities

symbol	Description	Entity Name	Entity Number
	non-breaking space	 	
<	less than	<	<
>	greater than	>	>
&	ampersand	&	&
"	double quotation mark	"	"
'	single quotation mark (apostrophe)	'	'
¢	cent	¢	¢
£	pound	£	£
¥	yen	¥	¥
€	euro	€	€
©	copyright	©	©
®	registered trademark	®	®

LISTS

- A list is a **collection of items**.
- HTML offers web authors three ways for specifying lists of information.
- All lists must contain one or more list elements

Lists are of three types

1. Un ordered list ** Items **marked with bullets.

- html
- css
- javascript

2. Ordered List ** Items marked with **numbers or letters

- 1.Coffee
- 2.Tea
- 3.Milk

3. Definition list <dl> Arranges items in the same way as they are arranged in a **dictionary**.

- Coffee
- black hot drink
- Milk
- white cold drink

LISTS

Unordered Lists :

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

Example

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

- Beetroot
- Ginger
- Potato
- Radish

UNORDERED LISTS WITH “TYPE” ATTRIBUTE

The type Attribute

we can use type attribute for tag to specify the **type** of bullet we like. By default, it is a **disc**.

Following are the possible options –

<ul type = "square"> **<ul type = "disc">** **<ul type = "circle">**

Example

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

- Beetroot
- Ginger
- Potato
- Radish

ORDERED LISTS

Ordered Lists:-

- Items are **numbered** list instead of bulleted, This list is created by using **** tag.
- The **numbering starts at one** and is incremented by one for each successive ordered list element tagged with .

Example

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Ordered List</title>
  </head>
  <body>
    <ol>
      <li>Beetroot</li>
      <li>Ginger</li>
      <li>Potato</li>
      <li>Radish</li>
    </ol>
  </body>
</html>
```

1. Beetroot
2. Ginger
3. Potato
4. Radish

ORDERED LISTS WITH TYPE ATTRIBUTE

The type Attribute:

- we can use **type** attribute for tag to specify the type of numbering we like. By default, it is a number.

Following are the possible options.

<ol type = "1"> - Default-Case Numerals.

<ol type = "I"> - Upper-Case Numerals.

<ol type = "i"> - Lower-Case Numerals.

<ol type = "A"> - Upper-Case Letters.

<ol type = "a"> - Lower-Case Letters.

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

1. Beetroot
2. Ginger
3. Potato
4. Radish

ORDERED LISTS WITH “START” ATTRIBUTE

The start Attribute

we can use **start** attribute for tag to specify the starting point of numbering we need. Following are the possible options –

<ol type = "1" start = "4"> - Numerals starts with 4.

<ol type = "I" start = "4"> - Numerals starts with IV.

<ol type = "i" start = "4"> - Numerals starts with iv.

<ol type = "a" start = "4"> - Letters starts with d.

<ol type = "A" start = "4"> - Letters starts with D.

```
<html>
<head> <title>HTML Ordered List</title> </head>
<body>
<ol type = "i" start = "4">
  <li>Beetroot</li>
  <li>Ginger</li>
  <li>Potato</li>
  <li>Radish</li>
</ol>
</body>
</html>
```

```
iv. Beetroot
v. Ginger
vi. Potato
vii. Radish
```

DEFINITION LISTS

Definition Lists:

- HTML supports a **list style** which is called definition lists where entries are listed like in a **dictionary or encyclopedia**.
- The definition list is the ideal way to present a glossary, list of terms, or other name/value list.

Definition List makes use of following three tags.

- 1). **<dl>** - Defines the start of the list
</dl> - Defines the end of the list
- 2). **<dt>** - A term
- 3). **<dd>** - Term definition

HTML

This stands for Hyper Text Markup Language

HTTP

This stands for Hyper Text Transfer Protocol

```
<html>
  <head>
    <title>HTML Definition List</title>
  </head>
  <body>
    <dl>
      <dt>HTML</dt>
      <dd>This stands for Hyper Text Markup Language</dd>
      <dt>HTTP</dt>
      <dd>This stands for Hyper Text Transfer Protocol</dd>
    </dl>
  </body>
</html>
```

IMAGES

 tag

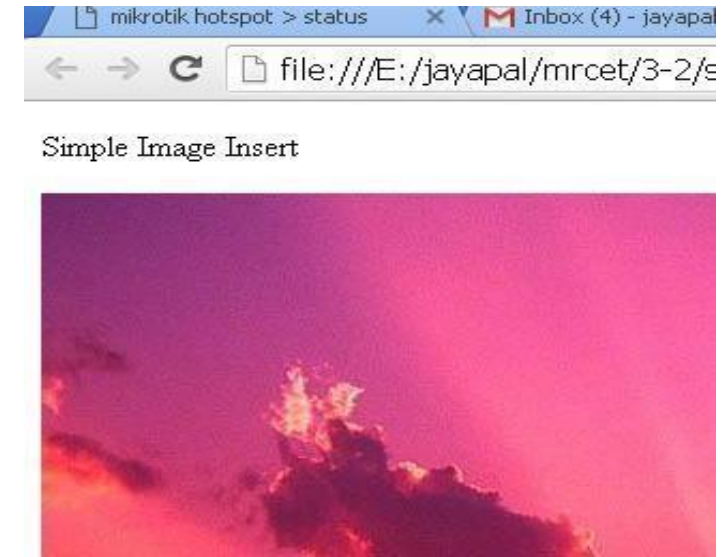
The HTML `` tag is used to **embed an image in a web page**.

- Closing tags are not used in HTML image element.

The tag has two required attributes:

src - Specifies the path to the image

alt - Specifies an alternate text for the image



Insert Image :

we can insert any image in web page by using `` tag.

Syntax:

```
<img src = "Image URL"  attributes-list>
```

Ex.:

```

```

IMAGES:

Set Image Width/Height

```
<img src = "/html/images/test.png" alt = "Test Image" width = "150" height = "100"/>
```

```
<html>
```

```
<body>
```

```
<h2>Image Size</h2>
```

```

```

```
</body>
```

```
</html>
```



IMAGES

IMAGE ALIGNMENT

•The align attribute specifies the **horizontal and vertical alignment** of the image in relation to the surrounding text/elements.

Value	Description
left	Align the image to the left
right	Align the image to the right
top	Align the image on the top
bottom	Align the image on the bottom
Middle	Align the image on the middle

Example

```
<img src = "test.png" alt = "Test Image" align = "right"/>
```

IMAGES:

SET IMAGE BORDER:

- The `` border attribute is used to specify the border width around the image.
- The default value of `` border attribute is 0.
- It is not supported by HTML 5. Use CSS instead of this attribute

```
<img src = "test.png" alt = "Test Image" border = "3"/>
```

Anchor tag <a>

- The HTML anchor tag defines a **hyperlink** that links one page to another page.
- It can create hyperlink to other web page as well as files, location, or any URL.

syntax

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

Ex>

```
<a href = "www.goolge.com"> Click Here </a>
```

```
<a href = "home.html"> Home page</a>
```

Program to create a Hyperlink

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
    <title></title>
```

```
</head>
```

```
<body>
```

Click on ` this-link ` to go on home page of Chitkara University.

```
</body>
```

```
</html>
```