Introduction

Web: An Overview

The Web is another very powerful communication mode of recent origin. It has turned out to be an increasingly important resource of encompassing all conceivable aspects of human life like business, education, entertainment, governance, personal life, health and what not. Web sites are hosted by anyone including individuals, organisations, business enterprises, and voluntary organisations etc. who have an interest in telling the world about themselves or about their products/services. While most Web sites are free, some are fee-based (subscription-based). In case of the latter, the accesses to some or all of the contents are restricted by pass -word. Such include business, academic journal, and entertainment Web sites.

Considering the vast range of entities involved, Web sites can be generally categorized as:

- Personal Web sites
- Commercial Web sites
- Organisational including government and non-profit organization Web sites, and
- Entertainment Web sites

Personal Web sites An individual can keep in touch with his close ones, seeks jobs or expresses himself through a Web site. Web pages are also means of not only sharing but also finding out about other individuals, their culture, interests and life.

Business Web sites Business / commercial enterprises make good use of the Web to promote their business. They publish their products /services to millions of potential customers globally and at no extra cost for the additional target audience that emerge from time to time. It is done 24 hours a day, seven days a week in various languages as they choose. Unlike print materials the Web pages put into use multimedia and that too in colour at no extra cost. They can update prices, and the latest news, faster, easier and at much cheaper rate compared to brochures/ leaflets traditionally used. Web pages of other/ similar products or advertisers or advertising campaigns can be linked to their pages. The Web is also used as an extra outlet for sales. Web sites place all, big or small, on equal footing as the reach of one‘s Web is as good as that of any competitor. The

business/commercial Web sites are freely accessible to all. However, they needn‘t be so, if so wished. They can be restricted by use pass-word. Those that are on private networks are invariably inaccessible to outsiders.

Organisational including Government and Non-profit Organization Web Sites Organizations, including governmental or volunteer groups, use the Web to promote their causes like education, social issues, health or for that matter any filed conceivable. For instance, let us take the case of the MIET college whose objective is promotion of education. It uses its Web site to reach out to the students, their parents, and teaching and staff community. The Web page functions as a much superior and cheaper alternative to the brochure informing about the university, location, organizational structure, centres/departments, and programmes. The latest news pertaining to exam results, time-table, admissions, convocations, and circulars to staff are made available on its Web site. Advertisements and tender notices find the Web as the most favourite location which, at times, provides for applying online. The public relations activities are also carried out through the Web. The V. C‘message, photo galleries, contact detials, Frequently Asked Questions (FAQs), information on collaboration with other organizations are some instances of public relations activities that appear on the site. Links provided useful or allied sites lead a user to similar or related services provided by other organisations. It has also provided access to University‘s digital library, classroom teaching, video lectures, audio lectures and study materials. Besides, the information on the site can be browsed in more than one language. Thus the advantages of Web site vis-a-vis the traditional print system is tremendous.

Entertainment Web sites Entertainment sites are heralding an important development in the Web field as it is very often seen as the only reason for people, especially the youth, to use the Web. These may be cinemas, games, music, humour pages and the like. For this reason entrainment sites are deemed as the most demanding ones.

Web 2.0

- The term means such internet applications which allow sharing and collaboration opportunities to people and help them to express themselves online.
- The concept behind Web 2.0 refers to rich web applications, web-oriented architecture, and social web. It refer to changes in the ways web pages are

designed and used by the users, without any change in any technical specifications.

- Web 2.0 become popular in 2004.
- The term was invented by Darcy DiNucci in 1999 and later popularized by Tim O'Reilly and Dale Dougherty at the O'Reilly Media Web 2.0 Conference in late 2004. The Web 2.0 framework specifies only the design and use of websites and does not place any technical demands or specifications on designers.

Examples of web 2.0

- Web 2.0 examples include hosted services (Google Maps),Web applications (Google Docs, Flickr), Video sharing sites (YouTube), wikis (MediaWiki), blogs (WordPress), social networking (Facebook), folksonomies (Delicious), Microblogging (Twitter), podcasting (Podcast Alley) & content hosting services and many more.

So the major difference between web 1.0 and web 2.0 is that web 2.0 websites enable users to create, share, collaborate and communicate their work with others, without any need of any web design or publishing skills. These capabilities were not present in Web 1.o environment.

Advantages of Web 2.0

- Available at any time, any place.
- Variety of media.
- Ease of usage.
- Learners can actively be involved in knowledge building.
- Can create dynamic learning communities.
- Everybody is the author and the editor, every edit that has been made can be tracked.
- User-friendly.
- Updates in the wiki are immediate and it offers more sources for researchers.
- It provides real-time discussion.

Web 3.0

- Web 3.o is referred to as an intelligent web or third generation of internet-based services. The term was coined by John Markoff in 2006. He explained “There is no easy consensus about how to define what is meant by Web 3.0, but it is generally seen as a reference to the semantic Web(a proposed development of the World Wide Web in which data in web pages is structured and tagged in such a way that it can be read directly by computers. For e.g-Siri, Apple's voice recognition assistant, is the best example of the Semantic Web).
- Web 3.0 is supposed to be more connected and intelligent with major emerging technology trends like semantic web, data mining, machine learning, natural language processing, artificial intelligence and other such technologies focused on information which is machine facilitated.
- So Web 3.0 is the idea of such a web that will store information in such a way that computers and other devices will understand on their own. FB app and Google Voice search, Apple’s Siri are some of the examples of web 3.o usage.

What is a Web Site?

A Web site is a collection of related Web pages, images, videos or other digital assets that are addressed relative to a common Uniform Resource Locator (URL), often consisting of only the domain name, or the IP address, and the root path ('/') in an Internet Protocol-based network.

A Web site is hosted on at least one Web server, accessible via a network such as the Internet or a private local area network.

Web site is a site or set of files stored on the World Wide Web. It is viewed with a browser like Microsoft Internet Explorer, Firefox, Safari or Netscape. Each Web site contains a home page (the main page which users see when they enter the site) and additional documents and files.

The sites are owned and managed by individuals or organisations or companies to promote their interests.

The pages of a Web site can usually be accessed from the homepage or otherwise called Uniform Resource Locator (URL). The browser (the user‘s application to access homepage) with help of HTTP (the communication mode/programme to access files that are stored in the Web page) transfers and displays the page content according to its HTML markup instructions (on how

the structured data/text should be presented) onto a display terminal. The user, thus, gets the view of the web content/pages. All publicly accessible Web sites collectively constitute the World Wide Web, commonly known as the Web (and abbreviated as WWW or W3)

Internet and Web

The terms "Internet" and "web" are often used interchangeably, but they refer to different concepts:

Internet:

The Internet is a global network of interconnected computer networks. It's a massive infrastructure that connects millions of private, public, academic, business, and government networks worldwide.

The Internet itself is not a service or a single entity; rather, it's a network of networks. It provides the physical infrastructure and protocols for data transmission.

The Internet enables the exchange of data and information between devices and networks worldwide. It's the backbone of various services and applications, including the World Wide Web.

World Wide Web (Web):

The World Wide Web, commonly referred to as the "web," is a subset of the Internet. It's a system of interlinked documents and resources that are accessed through the Internet.

The web was invented by Sir Tim Berners-Lee in the late 1980s and early 1990s. It consists of web pages that are written in HTML (Hypertext Markup Language) and are accessible via web browsers like Chrome, Firefox, and Safari.

The web is built on top of the Internet infrastructure and is a collection of information resources, multimedia content, and web applications. It uses hyperlinks to connect web pages and allows users to navigate between them.

In summary, the Internet is the underlying global network of interconnected networks, while the World Wide Web is a specific application of the Internet that allows users to access and interact with information and resources in the form of web pages. Many other services and applications, such as email, file

sharing, and online gaming, also utilize the Internet but are not part of the World Wide Web.

Fundamentals of Web

The fundamentals of working of a Web are knowledge of

HTML,

Role of server and

importance of the browser

Basic principles involved in developing a web site

Developing a website involves several fundamental principles to ensure that it functions well, looks appealing, and provides a great user experience. Here are some basic principles involved in developing a website:

1. Define Your Purpose and Goals:

Clearly define the purpose of your website and its goals. Are you creating an e-commerce site, a blog, a portfolio, or a corporate website? Understanding your objectives is essential for making design and content decisions.

2. Understand Your Target Audience:

Identify your target audience and understand their needs, preferences, and behaviours. Tailor your website to cater to their expectations.

3. Plan Your Website Structure:

Organize your website's content logically. Create a sitemap to outline the hierarchy of pages and how users will navigate through the site.

4. Responsive Design:

Ensure your website is responsive, meaning it adapts to various screen sizes and devices (desktops, laptops, tablets, smartphones). Responsive design is critical for a positive user experience and SEO.

5. User-Friendly Navigation:

Design intuitive navigation menus and user interfaces. Make it easy for visitors to find what they're looking for by providing clear labels and a consistent layout.

6. Content Strategy:

Develop a content strategy that includes high-quality text, images, videos, and other media. Ensure your content is informative, engaging, and relevant to your audience.

7. Visual Design:

Create a visually appealing design that aligns with your brand identity. Use a consistent color scheme, typography, and imagery. Balance aesthetics with usability.

8. Optimize for Speed:

Optimize your website's performance to load quickly. Compress images, minimize code, and leverage caching to reduce load times. Speed is crucial for user retention and SEO.

9. Mobile Optimization:

Pay special attention to the mobile experience. Mobile traffic is significant, so ensure that your site functions well on smaller screens.

10. SEO (Search Engine Optimization):

Implement SEO best practices to improve your website's visibility on search engines like Google. This includes using relevant keywords, optimizing meta tags, and creating quality backlinks.

11. Security:

Prioritize website security. Install an SSL certificate for data encryption, keep software and plugins up to date, and regularly back up your site to protect against cyber threats.

12. Accessibility:

Make your website accessible to people with disabilities by following web accessibility standards (WCAG). This includes providing alt text for images, keyboard navigation, and clear heading structures.

13.Testing and Quality Assurance:

Thoroughly test your website on different browsers and devices to ensure it functions as expected. Fix any bugs or issues that arise.

14. Content Management System (CMS):

Consider using a CMS like WordPress, Joomla, or Drupal to make it easier to manage and update your website's content.

15. Legal and Privacy Compliance:

Ensure that your website complies with legal requirements, including copyright, privacy policies, and GDPR (if applicable).

16. Analytics and Monitoring:

Implement web analytics tools like Google Analytics to track visitor behavior, traffic sources, and other important metrics. Use this data to make informed decisions for improvement.

17. Backup and Recovery Plan:

Establish a regular backup and recovery plan to protect your website's data and content in case of unexpected issues.

Remember that web development is an on-going process. Regularly update and improve your website based on user feedback, analytics data, and evolving industry trends to keep it relevant and effective.

Planning Process

Before launching a website, the planning process is vital to ensuring everything goes smoothly down the road. In this day and age, there are so many sites out there on the internet. It is almost impossible for a business to do well without having a website that works well for both the company and its clients. Interestingly enough, there is a lot to be done before the coding of a website takes place. There are many steps which need to be followed for it to be properly developed. The purpose of development planning is to make sure nothing is forgotten.

There are seven steps that should be followed from start to finish when developing a website.

- Research and goal setting
- Planning
- Designing the layout

- Writing the content
- Coding
- Testing and launching
- Maintaining

1. RESEARCH AND GOAL SETTING

As with any project, it is important to do proper research and set goals before beginning. By setting goals, it will help the website to have a direction and will also help your business to achieve specific accomplishments. The planning and goal setting process could take about 1-2 weeks to complete. It is a very important first step to creating a website that sells. There are a few questions you should ask yourself during this phase:

What do I hope for my website to accomplish?

Who is the audience I would like to target?

What are the main goals of the website?

By setting goals for your website, you will be helping the site to have a clear direction and purpose. This is important to the rest of the steps. When setting your goals, you should think about outlining what you would like the rest of the steps to look like. Step 1 will guide you through the rest of the process smoothly.

The research part of this step has a few different purposes. There are so many examples out there that it might be beneficial for you to look at and use some of the websites of your competitors. This can help you to determine what you want and don't want your website to have. It is also important to do some research on the target audience you hope to draw in.

Different age groups may be looking for something different when they visit a website. Understanding what your audience wants is crucial to planning the rest of your website. It is also important to research keywords you'd like to use with your website. By developing your website with SEO in mind, you will save yourself a lot of work in the future.

2. PLANNING THE SITE

Planning the website involves creating a wireframe and sitemap. This is an important step because it is kind of like the skeleton of your site. This process

can take about 2-6 weeks to complete. The sitemap allows the developer to get an outline of what the site will look like, what pages there will be and how they will interact with each other. This not only helps with planning but is also beneficial to the user experience.

A user should be able to easily navigate a site, and this begins with the development of the sitemap. Before you begin to plan content, a sitemap lets you design what the structure will look like. Once the sitemap is completed, the other part of this step is to create a wireframe or mock-up. These are just visual representations of what the site will look like. This does not include the layout details. That comes next.

3. DESIGNING THE LAYOUT

The details of the layout are what will give your website character. This is the step where you get to be creative with pictures, videos and what kinds of things the customer will notice when they come to your site. This process can take about 4-12 weeks from start to finish. The timing depends on experience, time spent on the project, and how thorough the developer is. During this step, it is especially important to keep referring back to the target audience you wish to focus on.

Consider colors, logos, and anything that will encourage your audience to interact with the site. By considering how you will create the layout of the website, you are attempting to bring the website to life. It should help the audience to get a feel for your business or product. Please note this step does not yet involve written content. That is the next step. The written content is so important that it needs its own step.

4. WRITING THE CONTENT

This step may be going on simultaneously with the other development planning steps. The written content of a website is so important to its success. While this step may be happening during other steps, it is one that is crucial and deserves a lot of expertise. It could take from 5 to 15 weeks. The written content on a website is going to help a visitor determine their next steps. It is vital to drawing customers in and keeping them. There is a lot to consider when working on the content of the website.

When determining what words to use, it is important that they are not too hard to understand. A general rule is that you have to assume not everyone is going

to want to read words that are higher vocabulary. A website should have a vocabulary that the average person can understand.

Again, considering the target audience is extremely important, especially when it comes to the text being used to give customers information. This can determine what kinds of words and voice will be used in the writing, which can create the mood for the content, whether it be good or bad. It also involves creating catchy titles and headlines to draw people in.

Additionally, it is also a good idea to be well-versed in writing a call-to-action. This is what you want the user to do after reading the content on the site. The content should get customers excited about buying a product or service. A website that has well-written content is going to be much more successful than ones that do not.

5. CODING THE WEBSITE

Now that all aspects of your website have been created, you are ready to actually begin creating the website itself. The coding typically begins with the homepage and gradually branches out to the other pages included in the site. This would be where the sitemap is followed to ensure everything is coded correctly. The coding step could take from 6 to 15 weeks, depending on how much content and how intricate you would like your website to be. It is also important to set up frameworks and CMS to make sure that everything will fit onto the server during the installation process. You wouldn't want to do all that work only to find out it doesn't fit.

Once the website is laid out according to the sitemap, it should be tested before moving any further. If all works well, then the rest of the content should be added, and formatting should be completed. This phase involves having a deep understanding of the technology you are using. In fact, if you are looking to do most of the work yourself, you should at least consider getting a developer to code for you, so that you can make sure everything works as planned.

During coding, don't forget to consider factors such as SEO, CMS plugins, and any additional tools you might be using for analyzing and testing the website in the future. If you consider these things now, you will save yourself time and energy later. By keeping SEO in mind, you will get better results, and more people will be exposed to your page. Anything worth doing is worth doing right.

6. TESTING AND LAUNCHING

Before the website is launched, it is crucial that it is tested out by real users. All the links and content should be tested to see if it works. Not only is it important to test out all the buttons and everything on the site, but it is also important to test out what users think of it. There is user testing that can be completed to make sure the website is giving users what they need to be successful on the test.

Again, there are tools that can be used to determine if anything needs to be changed. Make sure to check all written content, including spelling and grammar. If your website has forms, ensure that they are working correctly as well. These might be important ways the users can get in touch with you or sign up for alerts and messages. Without these working properly, it can be very difficult for the user and also will be difficult for you to have a successful website.

Don't just check the website once, but check it over multiple times. When you are confident that everything is in working order, you can go ahead and launch your website live. When it comes to launching, you are finally ready and can do this by uploading it to the server. You will need FTP (File Transfer Protocol) for this process. It is also important to make sure everything is running smoothly immediately after launching. Testing and launching may take 2-4 weeks to complete.

7. MAINTENANCE

You might think your job is done once the website is launched, but this is not the case. Since technology and products are changing more rapidly than ever before, it is important to stay up-to-date with what is happening on the internet. Maintaining a website is hard work, but the more effort put into its maintenance, the better. There are a few different pieces to website upkeep.

For one, it should constantly be checked out for errors. When a user encounters an error, this may be frustrating and may cause them to find what they are looking for somewhere else. Errors can also completely block them from the information they need to make a decision on purchasing a product or service. This is why it is important to not only test your website for user experience before the launch, but after as well.

User-experience should be tested often, and it should be ongoing. This will ensure that if something comes up, it can be fixed right away. A website that

has constant broken links or outdated content will not make its users happy. By having regular maintenance on a website, bugs can be fixed as soon as they are detected. A problem cannot be fixed if it is not known. An unhappy user means that you are losing current or potential customers.

Another important aspect of maintaining a website is to ensure that all content is current. This means that the correct information is on the website such as contact information, pricing, and customer reviews. By giving bad or outdated information, a customer will not be able to get in touch with the business owner, complete a purchase, and it can be frustrating.

While maintaining a website can be important, it might seem like hard work. It is important to know that there are many tools out there that can be downloaded right onto the website. Reports can be sent daily or in other time increments to give you data and information about how the site is performing.

Domains and Web Hosting

Web Hosting

Web hosting is a service that allows organizations and individuals to post a website or web page onto the Internet.
Web hosting is the place where all the files of your website live. It is like the home of your website where it actually lives.
A web host, or web hosting service provider, is a business that provides the technologies and services needed for the website or webpage to be viewed in the Internet. Websites are hosted, or stored, on special computers called servers. When Internet users want to view your website, all they need to do is type your website address or domain into their browser. Their computer will then connect to your server and your webpages will be delivered to them through the browser.

Most hosting companies require that you own your domain in order to host with them. If you do not have a domain, the hosting companies will help you purchase one.

Here are some features you should be expecting from your hosting provider:

Email Accounts:- As mentioned earlier, most hosting providers require users to have their own domain name. With a domain name (e.g. www.yourwebsite.com) and email account features provided by your hosting company, you can create domain email accounts (e.g. yourname@yourwebsite.com).

FTP Access:- The use of FTP lets you upload files from your local computer to your web server. If you build your website using your own HTML files, you can transfer the files from your computer to the web server through FTP, allowing your website to be accessed through the internet.

WordPress Support: WordPress is an online website creation tool. It is a powerful blogging and website content management system, which is a convenient way to create and manage website. WordPress powers over 25% of websites on the internet. Most hosting providers will tell you right away if their plans are WordPress-compatible or not. The simple requirements for hosting your WordPress websites include: PHP version 7 or greater; MySQL version 5.6 or greater.

While you can technically build your own server at home, most people buy hosting from a hosting company.

A hosting company is a company that owns a bunch of pre-configured servers that they lease out according to different hosting plans.

Domain Names

Domain name is the address of your website that people type in the browser's URL bar to visit your website.

Internet is basically a giant network of computers connected to each other through cables. To easily identify them, each computer is assigned a series of numbers called IP Address.

Computers have no problem identifying and remembering these numbers. However, it is impossible for humans to remember and use these numbers to connect to websites on the internet.

To solve this problem, domain names were invented.

A domain name can have words which makes it easy to remember website addresses.

Now if you wanted to visit a website on the internet, you don't need to type a string of numbers. Instead, you can type in an easy to remember domain name, for example, website.com.

How They are Related

Domain names and web hosting are two different services. However, they work together to make websites possible.

Basically a domain name system is like a massive address book that is constantly updated. Behind each domain name, there is an address of the web hosting service storing the website's files.

Without domain names, it will not be possible for people to find your website and without web hosting you cannot build a website.

How Hosting & Domains Work

Domain Registration

When you register a domain name, you are leasing it from the Internet Corporation for Names and Numbers (ICANN). ICANN provides domains via approved registrars.

A domain does not do anything on its own. Registration provides you the right to “point” your domain wherever you want.

Responsive Web Design

Responsive web design is about creating web pages that look good on all devices!
A responsive web design will automatically adjust for different screen sizes and viewports.

Responsive Web Design is about using HTML and CSS to automatically resize, hide, shrink, or enlarge, a website, to make it look good on all devices (desktops, tablets, and phones).

The practice consists of a mix of flexible grids and layouts, images and an intelligent use of CSS media queries. As the user switches from their laptop to iPad, the website should automatically switch to accommodate for resolution, image size and scripting abilities.

In other words, the website should have the technology to automatically respond to the user’s preferences. This would eliminate the need for a different design and development phase for each new gadget on the market.

Responsive Design Techniques

1. **CSS Transitions and Media Queries**
   Setting The Viewport:- To create a responsive website, add the following <meta> tag to all your web page
   Eg:- <meta name="viewport" content="width=device-width, initial-scale=1.0">

2. **Responsive Images:-** Responsive images are images that scale nicely to fit any browser size.

   Using the width Property

   If the CSS width property is set to 100%, the image will be responsive

   and scale up and down:

Eg:- <img src="img_girl.jpg" **style="width:100%;"**>
<img src="img_girl.jpg" style="**max-width:100%;**height:auto;">

Show Different Images Depending on Browser Width

The HTML <picture> element allows you to define different images for different browser window sizes.
Resize the browser window to see how the image below change depending on the width:
Eg:-

```
<picture>
<source srcset="img_smallflower.jpg" media="(max-width: 600px)">
<source srcset="img_flowers.jpg" media="(max-width: 1500px)">
<source srcset="flowers.jpg">
<img src="img_smallflower.jpg" alt="Flowers">
</picture>
```

3. **Responsive Text Size**

The text size can be set with a "vw" unit, which means the "viewport width".

That way the text size will follow the size of the browser window:

<h1 style="**font-size:10vw**">Hello World</h1>
Viewport is the browser window size. 1vw = 1% of viewport width. If the viewport is 50cm wide, 1vw is 0.5cm.

4. **Media Queries**

In addition to resize text and images, it is also common to use media queries in responsive web pages.

With media queries you can define completely different styles for different browser sizes.
Example: resize the browser window to see that the three div elements below will display horizontally on large screens and stacked vertically on small screens:

Types of Websites

There are basically two main types of website - **static and dynamic.**

A static site is one that is usually written in plain HTML and what is in the code of the page is what is displayed to the user.

You don't need the knowledge of web programming and database design to create a static website. Its web pages are coded in HTML.

The codes are fixed for each page so the information contained in the page does not change and it looks like a printed page.

Web pages are returned by the server with no change therefore, static Websites are fast. There is no interaction with databases. Also, they are less costly as the host does not need to support server-side processing with different languages.

Note: Static does not mean that it will not respond to user actions, These Websites are called static because these cannot be manipulated on the server or interaction with databases (which is the case in Dynamic Websites).

A dynamic site is one that is written using a server-side scripting language such as PHP, ASP, JSP etc. In such a site the content is called in by the scripting language from other files or from a database depending on actions taken by the user.

In Dynamic Websites, Web pages are returned by the server which are processed during runtime means they are not prebuilt web pages but they are built during runtime according to the user's demand with the help of server-side scripting languages such as PHP, Node.js, ASP.NET and many more supported by the server. So, they are slower than static websites but updates and interaction with databases are possible.

Difference between Static and Dynamic Websites:

STATIC WEBSITE	DYNAMIC WEBSITE
Content of Web pages cannot be change at runtime.	Content of Web pages can be changed.

No interation with database possible.	Interaction with database is possible
It is faster to load as compared to dynamic website.	It is slower then static website.
Cheaper Development costs.	More Development costs.
No feature of Content Management.	Feature of Content Management System.
HTML, CSS, Javascript is used for developing the website.	Server side languages such as PHP, Node.js are used.
Same content is delivered everytime the page is loaded.	Content may change everytime the page is loaded.

Introduction to HTML

HTML(Hyper Text Transfer language)

- HTML stands for Hyper Text Markup Language
- HTML is the standard markup language for creating Web pages
- HTML describes the structure of a Web page
- HTML consists of a series of elements
- HTML elements tell the browser how to display the content
- HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", etc.

"Hypertext" refers to the hyperlinks that an HTML page may contain.
"Markup language" refers to the way tags are used to define the page layout and elements within the page.

Structure of HTML

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1> First Heading</h1>
<p>first paragraph.</p>

</body>
</html>
```

- The <!DOCTYPE html> declaration defines that this document is an HTML5 document
- The <html> element is the root element of an HTML page
- The <head> element contains meta information about the HTML page
- The <title> element specifies a title for the HTML page (which is shown in the browser's title bar or in the page's tab)
- The <body> element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.

- The <h1> element defines a large heading
- The <p> element defines a paragraph

HTML Tags

HTML tags are like keywords which defines that how web browser will format and display the content. With the help of tags, a web browser can distinguish between an HTML content and a simple content. HTML tags contain three main parts: opening tag, content and closing tag(Paired tags). But some HTML tags are unclosed tags(Unpaired tags).

When a web browser reads an HTML document, browser reads it from top to bottom and left to right. HTML tags are used to create HTML documents and render their properties. Each HTML tags have different properties.

Unclosed HTML(Unpaired Tags) Tags

Some HTML tags are not closed, for example br and hr.

**
** Tag: br stands for break line, it breaks the line of the code.

<hr> Tag: hr stands for Horizontal Rule. This tag is used to put a line across the webpage.

HTML body tags:- 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.

<p>, <h1>, <h2>, <h3>, <h4>, <h5>, <h6>, , , <abbr>, <address>, <cite>, <q>, <code>, <ins>, <del>, <pre>,
,<hr>,<u>,<b>,<i>

<a>,<img>,<font>,<frame>,<table>,<li>,<iframe>,<frameset> etc

HTML Head tags:-

The HTML <head> element is a container for the following elements: <title>, <style>, <meta>, <link>, <script>, and <base>.

Tag	Description
<head>	Defines information about the document

<title>	Defines the title of a document
<base>	Defines a default address or a default target for all links on a page
<link>	Defines the relationship between a document and an external resource
<meta>	Defines metadata about an HTML document
<script>	Defines a client-side script
<style>	Defines style information for a document

<title>

The <title> element defines the title of the document. The title must be text-only, and it is shown in the browser's title bar or in the page's tab.

<style>

The <style> element is used to define style information for a single HTML page. It is used for inline CSS and Internal CSS.

Eg:

```
<style>
  body {background-color: blue;}
  h1 {color: red;}
  p {color: blue;}
</style>
```

<link>

The <link> element defines the relationship between the current document and an external resource.

The <link> tag is most often used to link to external style sheets:

Eg: `<link rel="stylesheet" href="mystyle.css">`

<meta>

The <meta> element is typically used to specify the character set, page description, keywords, author of the document, and viewport settings.

The metadata will not be displayed on the page, but are used by browsers (how to display content or reload page), by search engines (keywords), and other web services.

Eg

```
<meta charset="UTF-8">
<meta name="description" content="Free Web tutorials">
<meta name="keywords" content="HTML, CSS, JavaScript">
<meta name="author" content="John Doe">
```

<script>

The <script> element is used to define client-side JavaScripts.

Eg:-

```
<script>
function myFunction() {
  document.getElementById("demo").innerHTML = "Hello JavaScript!";
}
</script>
```

<base>

The <base> element specifies the base URL and/or target for all relative URLs in a page.

The <base> tag must have either an href or a target attribute present, or both.

There can only be one single <base> element in a document!

```
<head>
<base href="https://www.w3schools.com/" target="_blank">
</head>
```

HTML Elements

- An HTML element is defined by a start tag, some content, and an end tag:
- Eg:
- <h1>My First Heading</h1>
- My first paragraph.
- Nested HTML Elements
- HTML elements can be nested (this means that elements can contain other elements).

- All HTML documents consist of nested HTML elements.

- Never Skip the End Tag
- Some HTML elements will display correctly, even if you forget the end tag:
- Empty HTML Elements
- HTML elements with no content are called empty elements.
- The
 tag defines a line break, and is an empty element without a closing tag:
- Eg: This is a
 paragraph with a line break.

HTML Attributes

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

- Eg: **The href Attribute**
- The <a> tag defines a hyperlink. The href attribute specifies the URL of the page the link goes to:
- Visit W3Schools

- **The src Attribute**
- The <img> tag is used to embed an image in an HTML page. The src attribute specifies the path to the image to be displayed:
- <img src="img_girl.jpg">

The width and height Attributes
- Eg: <img src="img_girl.jpg" width="500" height="600">
- <img src="img_girl.jpg" alt="Girl with a jacket">
- The style Attribute
- This is a red paragraph.
  The title Attribute
- This is a paragraph.

Web standards and W3C recommendations

Web standards and W3C recommendations play a crucial role in ensuring the interoperability, accessibility, and sustainability of the World Wide Web. The World Wide Web Consortium (W3C) is an international community that develops and maintains these standards to ensure that the web remains an open, accessible, and consistent platform for information and services. Here's an overview of web standards and W3C recommendations:

What are Web Standards?

Web standards are a set of guidelines and specifications that web developers and browser manufacturers follow to create consistent and compatible websites and web applications. These standards help ensure that web content is accessible across different browsers, devices, and assistive technologies. Web standards cover various aspects of web development, including HTML, CSS, JavaScript, and more.

W3C (World Wide Web Consortium):

The World Wide Web Consortium (W3C) is an international consortium of organizations that develop and maintain web standards and recommendations. It was founded in 1994 by Tim Berners-Lee, the inventor of the World Wide Web. W3C's mission is to lead the web to its full potential by creating open standards and guidelines.

W3C Recommendations:

W3C recommendations are technical specifications and guidelines developed by W3C working groups. These recommendations define the best practices and standards for various web technologies. When a specification reaches the recommendation status, it signifies that it has gone through a rigorous review process and is ready for implementation by web developers and browser manufacturers.

Examples of Key W3C Recommendations:

a. HTML (Hypertext Markup Language): HTML is the markup language used to structure web content. W3C provides specifications for various versions of HTML, such as HTML5, which is widely used for modern web development.

b. CSS (Cascading Style Sheets): CSS is used for controlling the presentation and layout of web pages. W3C provides CSS specifications that ensure consistent styling across different browsers.

c. Web Accessibility: W3C has developed the Web Content Accessibility Guidelines (WCAG) to ensure that web content is accessible to people with disabilities. Accessibility is a crucial aspect of web standards.

d. Web APIs: W3C defines APIs (Application Programming Interfaces) that allow web developers to access various functionalities of web browsers, enabling the development of interactive web applications.

e. Web Security: Recommendations related to web security, such as Content Security Policy (CSP), help developers protect their websites and users from security threats.

Importance of Web Standards:

Web standards are essential for several reasons:

Interoperability: They ensure that web content works consistently across different browsers and devices.

Accessibility: Standards like WCAG promote web accessibility for all users, including those with disabilities.

Future-Proofing: Following standards ensures that websites remain compatible with future technologies and updates.

Security: Adhering to security standards helps protect websites and user data.
In summary, web standards and W3C recommendations are the foundation of a well-functioning and accessible web. They provide guidelines and specifications that web developers and browser makers follow to create a consistent and user-friendly web experience. Staying updated with these standards is essential for anyone involved in web development.