WEB PROGRAMMING NOTES (THEORY FORMAT)

Introduction to HTML

HTML, or HyperText Markup Language, is the standard language used to create webpages by defining the structure and meaning of web content. It uses a system of tags and attributes to describe different elements such as text, images, links, tables, and forms. A browser reads these tags and renders the content visually for users. HTML is not a programming language; rather, it is a markup language concerned with layout and structure. Every website is built upon HTML, making it the foundation of web development.

Basic Structure of an HTML Document

A valid HTML document begins with the declaration <!DOCTYPE html> that tells the browser which version of HTML is being used. The entire content is enclosed within the <html> tag. Inside it, the <head> section contains metadata such as the page title, links to CSS files, scripts, and character encoding. The <body> section contains all the visible content displayed on the webpage, including headings, paragraphs, links, images, tables, and other elements. This structure ensures that every webpage is organized and readable for both developers and browsers.

Heading Tags

HTML provides six heading levels from <h1> to <h6>. These tags represent titles and subheadings in decreasing order of importance. <h1> is typically used for the main page heading, while <h6> is used for minor subheadings. Headings help organize content, improve

readability, and contribute to search engine optimization because search engines use heading levels to understand the hierarchy of information.

Anchor Tags and the Mailto Attribute

The anchor tag <a> is used to create hyperlinks on a webpage. It contains the href attribute, which specifies the destination URL. When the mailto: keyword is used inside the href, the link opens the user's default email application with a pre-filled email address. For example, Send Email enables users to directly compose an email without manually copying the address.

Image Tag (height and width attributes)

The <img> tag is used to display images on a webpage and requires the src attribute to specify the image source. Additional attributes such as height and width allow developers to control the size of the displayed image. These attributes can accept values in pixels or percentages. Using proper image dimensions helps maintain layout consistency and improves webpage loading speed.

Paragraph Tag

Text on a webpage is usually written inside the <p> tag, which represents a paragraph. This tag automatically adds spacing before and after the text, helping maintain readability. It is one of the most commonly used tags in HTML because web pages rely heavily on textual content.

Center Tag

The <center> tag was traditionally used to align text or content at the center of a webpage. However, it is now deprecated in modern HTML standards. Instead, CSS properties such as text-align: center; or flexbox utilities are recommended for centering content because they offer more flexibility and maintain cleaner markup.

Break Tag

The <br> tag inserts a single line break in text content. Unlike the paragraph tag, it does not create extra spacing. It is useful for formatting addresses, poems, or situations where a deliberate line break is required without starting a new paragraph.

Tag (Non-breaking Space)

The   entity stands for non-breaking space and is used to add extra spaces in text where the browser normally collapses multiple spaces into one. It also prevents automatic line breaks at that position, ensuring the text stays together.

Pre Tag

The <pre> tag is used to display preformatted text. It preserves the original formatting of the content, including spaces, tabs, and line breaks. This tag is commonly used when displaying code snippets or ASCII art where exact spacing is important.

HR Tag

The <hr> tag inserts a horizontal rule or line across the page. It is mostly used to divide sections of content visually. The line can be styled using CSS to control thickness, color, and margins.

Small Tag

The <small> tag reduces the font size of the enclosed text compared to the surrounding content. It is typically used for disclaimers, copyright notices, or side comments that need less emphasis.

Table Tags (colspan, rowspan, border, border-collapse)

HTML tables are created using the <table> tag which contains rows <tr> and cells <td>. Header cells use <th>. The colspan attribute allows a cell to extend across multiple columns, while rowspan extends it across multiple rows. The border attribute adds visible borders to table elements, and using CSS border-collapse allows adjacent borders to merge into a single line for a cleaner table appearance.

Inline CSS Properties

Inline CSS is applied directly inside an HTML tag using the style attribute. Common inline CSS properties include color for changing text color, background-color for setting a background shade, font-size for controlling text size, font-family for choosing the typeface, font-weight for boldness levels, padding for adding inner spacing, and text-align for aligning text within an element. Inline styles are easy to use but not recommended for large projects because they mix design with structure.

Super and Subscript Tags

HTML provides the <sup> tag to display superscript text, which appears slightly above the normal line, commonly used for mathematical powers or ordinal indicators. The <sub> tag places text slightly below the normal line and is often used in chemical formulas or mathematical notation. Both tags help represent technical or scientific content clearly.

Marquee Tag (direction, behaviour, scrollamount, width, height)

The <marquee> tag creates scrolling text or images and is considered a deprecated element but still works in many browsers. The direction attribute controls the scrolling movement, such as left, right, up, or down. The behaviour attribute determines whether the text scrolls continuously, bounces, or slides. The scrollamount attribute controls the speed, while width

and height define the size of the marquee area. Despite its functionality, modern CSS animations are now preferred.

HTML Lists: dl, dt, dd, type, reversed, start

HTML supports definition lists using <dl> as the container, <dt> for the term, and <dd> for its description. Ordered lists <ol> can use the type attribute for numbering styles including numbers, uppercase letters, lowercase letters, and Roman numerals. The reversed attribute allows the list to count backward, and the start attribute specifies the beginning number. Unordered lists <ul> use bullets by default.

Nested Lists

A nested list refers to placing a list inside another list. Both ordered and unordered lists can be nested to represent hierarchical or multi-level information, such as chapters, subtopics, or menu structures. Proper nesting improves clarity and logical grouping of content.

Comments in HTML

HTML comments are written using <!-- comment --> and are ignored by the browser. They help developers annotate code, explain sections, temporarily disable code, or provide instructions without affecting the layout of the webpage.

Class Attribute

The class attribute is used to assign one or more class names to an HTML element. Classes allow grouping elements under a common identifier so they can be styled collectively using CSS or selected easily using JavaScript. They help maintain consistency and reusability across a webpage.

Div Tag

The <div> tag is a block-level container used to group large sections of content. It does not apply any styling by default but serves as a structural element to organize layout, apply CSS styles, or handle JavaScript behaviours. Divs are essential building blocks in webpage design.

Nav Tag

The <nav> tag represents a section of navigation links such as menus, bars, or tables of contents. It helps identify the main navigational areas for both users and search engines. Using <nav> improves webpage accessibility and semantic structure.

Span Tag

The <span> tag is an inline container used to style or manipulate small portions of text without starting a new block. It is useful for applying specific styles to words or phrases within a paragraph.

Input Tag

The <input> tag creates interactive fields in HTML forms, such as text boxes, checkboxes, radio buttons, email fields, and passwords. It uses the type attribute to define the kind of input expected. Input fields can also include attributes like placeholder to show hint text inside the box.

Button and Label

The <button> tag creates a clickable button that can submit forms or trigger JavaScript actions. Labels are defined using the <label> tag and are associated with form elements, improving accessibility. When a label is clicked, it activates the corresponding input field, making forms easier to use.