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Introduction to Web Development

Module 2 - Components in Web Development

HTML - 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

Why Learn HTML?

- **It's the backbone of every website**
HTML structures all online content—like headings, images, text, and links—providing the foundation for web pages. It's the starting point for building any site.
- **Super easy and beginner-friendly**
With its intuitive tags and straightforward syntax, HTML is one of the easiest languages to pick up, especially for newcomers.
- **Works across all browsers and devices**
Every browser (like Chrome, Firefox, Safari) supports HTML, ensuring your web content displays consistently everywhere.
- **Fast and lightweight**
HTML files are typically small in size, which means pages load quickly—even in slower network environments.

Structure of HTML

```

<!DOCTYPE html> ← Tells the document type
<html> ← The Root Element
  <head> ← Contains the header information
    <title>Title of the Page</title> ← Defines Title of the Page
  </head>
  <body> ← Holds the Content of the Page
  Tags related to layout and formatting
  </body>
</html>
  
```

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CSS

CSS stands for **Cascading Style Sheets**. It's a stylesheet language used to describe the presentation of a document written in HTML. CSS defines how elements should be displayed on screen, on paper, or in other media.

Why we use CSS?

- CSS allows you to separate the structure (HTML) from the presentation (CSS), making your code cleaner and more maintainable.
- By linking a single CSS file to multiple HTML pages, you ensure a consistent look and feel across your website.
- **Responsive Design:** CSS enables you to create designs that adapt to different screen sizes, enhancing user experience on mobile devices.

JavaScript

JavaScript is a programming language that makes websites interactive and dynamic. It runs inside your web browser and lets you do things like:

- Change content on the page without reloading it
- Respond to user actions like clicks, typing, or mouse movements
- Create animations, games, and complex web applications

Why we use JavaScript?

- Makes websites interactive (buttons, forms, animations).
- Updates content without reloading the page (dynamic user experience).
- Builds complex web applications like games, chats, and social media.
- Works on all devices with browsers (phones, tablets, computers).
- Used both on frontend and backend (with Node.js).
- Huge community and lots of tools for developers.

CSS Example

```
body {  
    background-color: lightblue;  
}  
  
h1 {  
    color: white;  
    text-align: center;  
}  
  
p {  
    font-family: verdana;  
    font-size: 20px;  
}
```

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```
<!DOCTYPE html>
<html>
<head>
  <title>Simple document.write
  Example</title>
</head>
<body>
<script>
  document.write("Hello,
  world!");
</script>
</body>
</html>
```

JavaScript Example

My First JavaScript

Click me to display Date and Time

Thu Sep 04 2025 12:18:12 GMT+0530 (India Standard Time)

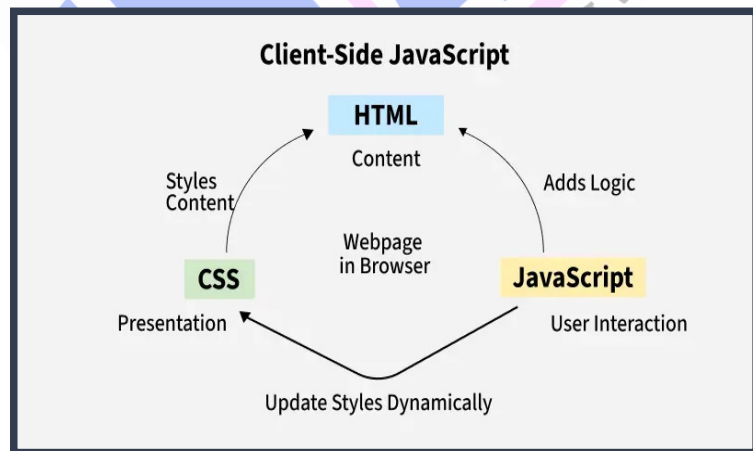
The Core Equation

Web Page = HTML + CSS + JavaScript

- HTML = Structure (skeleton of the page)
- CSS = Style (clothes & design)
- JavaScript = Behavior (movement, interaction)

Real-life Example

If you're creating a button:
 Button = <button> (HTML) + background-color:red (CSS) + onClick action (JavaScript)



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Backend Language: PHP

PHP stands for "PHP: Hypertext Preprocessor". It is a server-side scripting language designed specifically for web development, but it can also be used as a general-purpose programming language.

Popular Platforms Built with PHP:

- WordPress
- Magento
- Laravel (a modern PHP framework)

What is a PHP File?

- PHP files can contain text, HTML, CSS, JavaScript, and PHP code
- PHP code is executed on the server, and the result is returned to the browser as plain HTML
- PHP files have extension ".php"

What can a PHP Do?

- PHP can generate dynamic page content
- PHP can create, open, read, write, delete, and close files on the server
- PHP can collect form data
- PHP can send and receive cookies

Backend Language: Python

Python is a high-level, interpreted, and general-purpose programming language known for its simplicity and readability. It was created by Guido van Rossum and first released in 1991.

What can Python do

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.

Why Python

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).

```
PHP Example
<!DOCTYPE html>
<html>
<body>

<?php
echo "My first PHP script!";
?>

</body>
</html>
```



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- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

Python Example

```
print("Hello, World!")
```

Python Example: Add Two Numbers

```
a = 10  
b = 5  
sum = a + b  
print("The sum is:", sum)
```

Output: The sum is: 15

Assignment

Q1. (Simple)

Which of the following is the standard markup language used to structure web pages?

- JavaScript
- HTML
- CSS
- Python

Q2. (Simple)

Which web technology is mainly responsible for making a webpage interactive and dynamic?

- HTML
- CSS
- JavaScript
- PHP

Q3. (Medium-Hard)

If a developer wants to ensure a consistent design across multiple pages, which approach is best?

- Writing inline CSS on every page

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- b) Using one external CSS file linked to multiple HTML pages
- c) Adding JavaScript for styling
- d) Writing the same HTML code repeatedly

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Q4. (Hard)

Which of the following statements about **PHP** is TRUE?

- a) PHP code runs directly in the browser, like JavaScript.
- b) PHP files must always end with the .html extension.
- c) PHP executes on the server and sends plain HTML to the browser.
- d) PHP cannot handle form data or cookies.

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Q5. (Hard)

Which feature makes **Python** highly suitable for web and application development?

- a) It only works on Windows systems.
- b) It requires writing more lines of code compared to other languages.
- c) It has simple, English-like syntax and can be executed immediately in an interpreter.
- d) It cannot be used for database connectivity.

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