Class: 9th

Subject: Computer

Unit 8: Web Development with HTML, CSS and JavaScript

Multiple Choice Questions (MCQs)

1. Which of the following tag is not a correct HTML tag?

(a)

(b)

(c) <head>

(**d**) <footer> ✅ (Incorrect in older HTML versions; valid in HTML5)

2. What does CSS stand for?

(**a**) Cascading Style Sheets ✅

(b) Computer Style Sheets

(c) Creative Style Sheets

(d) Colorful Style Sheets

3. Which of the following tag is used to create a hyperlink in HTML?

(a) <link>

(b) <a> ✅

(c) <href>

(d) <nav>

4. Which property is used to change the background color in CSS?

(a) color

(b) background-color ✅

(c) bgcolor

(d) background

5. Which HTML attribute is used to define inline styles?

(a) class

(b) style ✅

(c) font

(d) styles

6. Which of the following is the correct syntax for a CSS rule?

(a) selector {property: value;} ✅

(b) selector: (property=value;}

(c) selector {property=value}

(d) selector: {property: value;}

7. In JavaScript, which markup is used for comments?

(a) /**/

(b) // ✅

(c) <-

(d) /**/ (duplicate option; correct is b)

8. How do you include JavaScript in an HTML document?

(a) <script src="script.js"></script> ✅

(b) <java src="script.js"> </java>

(c) <js src="script.js"> </js>

(d) <code src="script.js"> </code>

9. Which HTML tag is used to create an unordered list?

(a)

(**b**) ✅

(c)

(d) <list>

10. Which tag is used to display a horizontal line in HTML?

(a)

(**b**) <hr> ✅

(c) <line>

(d) <hline>

Important MCQs from Chapter 8: Web Development

1. What is the process of creating websites and web applications called?

(a) Web Designing

(b) Programming

(c) Web Development ✅

(d) Software Engineering

2. Which language is used to add interactivity to web pages?

(a) HTML

(b) CSS

(c) PHP

(d) JavaScript ✅

3. What does HTML do in web development?

(a) Adds animations

(b) Styles the content

(c) Structures the content ✅

(d) Handles databases

4. Which of the following is a back-end programming language?

(a) HTML

(b) CSS

(c) JavaScript

(d) PHP ✅

5. Which component of web development handles what users see and interact with?

(a) Server-side Development

(b) Back-end Development

(c) Full-stack Development

(d) Front-end Development ✅

6. Which tool is used to style the content of a web page?

(a) HTML

(b) CSS ✅

(c) JavaScript

(d) PHP

7. What is the role of a database in web development?

(a) Style content

(b) Add interactivity

(c) Store and manage data ✅

(d) Design user interface

8. Which of the following is a benefit of learning web development?

(a) Decreased job opportunities

(b) Limited creativity

(c) Entrepreneurship ✅

(d) Poor digital skills

9. A developer who works on both front-end and back-end is called a:

(a) UI Designer

(b) Server Admin

(c) Full-stack Developer ✅

(d) Creative Coder

10. Which of the following is NOT part of front-end development?

(a) HTML

(b) CSS

(c) PHP ✅

(d) JavaScript

11. Who invented HTML?

(a) Bill Gates

(b) Charles Babbage

(c) Tim Berners-Lee ✅

(d) Steve Jobs

12. Which year was HTML first introduced?

(a) 1985

(b) 1991 ✅

(c) 1995

(d) 1999

13. Which is the latest major version of HTML?

(a) HTML 3.2

(b) HTML 4.01

(c) HTML 5 ✅

(d) HTML 2.0

14. What does the <h1> tag define in HTML?

(a) Paragraph

(b) Image

(c) Largest heading ✅

(d) Link

15. Which tag is used to define a paragraph in HTML?

(a) <para>

(b) <p> ✅

(c) <text>

(d) <pr>

16. Which tag is used to start an HTML document?

(a) <start>

(b) <!DOCTYPE html> ✅

(c) <html5>

(d) <begin>

17. What is the function of the <head> tag in HTML?

(a) Contains visible content

(b) Displays images

(c) Contains meta-information ✅

(d) Makes text bold

18. Which of the following is a paired tag?

(a) <img>

(b)

(c) <p> ✅

(d) <hr>

19. Which of the following is an unpaired (self-closing) tag?

(a) <p>

(b) <h1>

(c) <body>

(d)
 ✅

20. What file extension is used to save an HTML file?

(a) .txt

(b) .docx

(c) .html ✅

(d) .exe

11. Which HTML tag is used to create a paragraph?

(a) <para>

(b) <paragraph>

(c) <p> ✅

(d) <text>

12. Which of the following heading tags is used for the main title of a web page?

(a) <h6>

(b) <h4>

(c) <h1> ✅

(d) <h3>

13. Which HTML tag is used to create a hyperlink?

(a) <link>

(b) <href>

(c) <url>

(d) <a> ✅

14. What does the mailto: attribute in a link do?

(a) Links to an image

(b) Opens a new browser window

(c) Sends an email ✅

(d) Displays a message

15. Which HTML tag is used to display an image?

(a) <pic>

(b) <image>

(c) <img> ✅

(d) <src>

16. Which attribute in the <img> tag is used to describe the image?

(a) src

(b) href

(c) alt ✅

(d) desc

17. Which HTML tag is used to create a numbered list?

(a)

(b)

(c) ✅

(d) <list>

18. Which tag is used to define a row in an HTML table?

(a) <td>

(b) <tr> ✅

(c) <table>

(d) <th>

19. What is the correct syntax for writing an HTML comment?

(a) // This is a comment

(b) <!-- This is a comment --> ✅

(c) /* This is a comment */

(d) # This is a comment

20. Which tag is used to create a bulleted (unordered) list in HTML?

(a)

(b)

(c) ✅

(d) <list>

21. What is the purpose of CSS in web development?

(a) Storing data

(b) Adding interactivity

(c) Styling HTML content ✅

(d) Creating database

22. Which of the following is the correct format for a CSS rule?

(a) {selector: value; property}

(b) selector: {property = value}

(c) selector {property: value;} ✅

(d) property (selector: value);

23. Which method is used to include CSS inside an HTML tag directly?

(a) External Style

(b) Internal Style

(c) Inline Style ✅

(d) Embedded Style

24. Which tag is used to link an external CSS file in an HTML document?

(a) <style>

(b) <script>

(c) <link> ✅

(d) <css>

25. What is the correct property to change the background color in CSS?

(a) background-style

(b) background-color ✅

(c) bgcolor

(d) color-bg

26. How can you make text bold using CSS?

(a) font-color: bold;

(b) font-style: bold;

(c) font-weight: bold; ✅

(d) text-bold: true;

27. What is the purpose of @keyframes in CSS?

(a) To load external fonts

(b) To define animation steps ✅

(c) To insert HTML

(d) To apply media queries

28. Which property defines how long a CSS animation should take?

(a) animation-speed

(b) duration

(c) animation-duration ✅

(d) transition-time

29. Which HTML tag is commonly used with CSS for dividing and styling sections?

(a) ✅

(b)

(c) <section>

(d) <break>

30. What happens when you hover over an element with a transition?

(a) It disappears

(b) It changes instantly

(c) It changes smoothly ✅

(d) It changes only on click

31. What is the main purpose of JavaScript?

(a) To style web pages

(b) To make web pages interactive and engaging ✅

(c) To store data in web pages

(d) To print web pages

32. Which keywords are used to declare variables in JavaScript?

(a) define

(b) var, let, const ✅

(c) int

(d) declare

33. Which of the following is an example of a string data type in JavaScript?

(a) 123

(b) true

(c) "Athar" ✅

(d) [1, 2, 3]

34. How do you call a function named greet in JavaScript?

(a) call greet;

(b) greet(); ✅

(c) run greet;

(d) start greet;

35. What does the alert() function do in JavaScript?

(a) Changes the webpage title

(**b**) Displays a pop-up message ✅

(c) Declares a variable

(d) Comments out code

36. Which is an example of a function with two parameters in JavaScript?

(a) function add(a) { }

(**b**) function add(a, b) { } ✅

(c) function add() { }

(d) function add(a, b, c) { }

37. How do you declare an array in JavaScript?

(a) var scores = "90, 85, 88";

(**b**) var scores = [90, 85, 88]; ✅

(c) var scores = (90, 85, 88);

(d) var scores = {90, 85, 88};

38. Which event triggers when a user clicks on an

element?

(a) onload

(b) onmouseover

(c) onclick ✅

(d) onkeyup

39. What is a variable in JavaScript?

(a) A function that runs automatically

(b) A container that stores data ✅

(c) A type of event

(d) A style property

40. Which of the following is the correct syntax to declare a variable using var?

(a) var name = "Athar"; ✅

(b) variable name = "Athar";

(c) var name == "Athar";

(d) var name := "Athar";

41. Which language is used to add interactive functionality to HTML elements?

(a) CSS

(b) JavaScript ✅

(c) PHP

(d) SQL

42. What happens when you click a button that runs JavaScript to change the background color of a webpage?

(a) The page reloads

(b) The page background color changes ✅

(c) The text color changes

(d) The font size changes

43. Which tool is commonly used to debug JavaScript code in web browsers?

(a) Text Editor

(b) Browser Developer Tools ✅

(c) Image Editor

(d) Command Prompt

44. What is the purpose of reading error messages during debugging?

(a) To find website visitors

(b) To understand what went wrong and how to fix it ✅

(c) To change colors on the page

(d) To add new features

45. What is a common debugging practice when your JavaScript code is not working?

(a) Ignore errors

(b) Check the code line by line for missing semicolons or braces ✅

(c) Refresh the browser repeatedly

(d) Delete the code

46. Which of the following is NOT a common issue in web development?

(a) Broken links

(b) Incorrect HTML structure

(c) CSS issues

(**d**) Using JavaScript functions ✅

47. What does cross-browser testing ensure?

(a) Website works only on Chrome

(**b**) Website looks consistent and works well in multiple browsers ✅

(c) Website works only on Internet Explorer

(d) Website design is changed automatically

48. Responsive design testing is important to ensure a website looks good on:

(a) Desktops only

(b) Smartphones only

(**c**) All devices including desktops, tablets, and smartphones ✅

(d) Printed paper

49. Which part of web development focuses on what users see and interact with?

(a) Back-end Development

(**b**) Front-end Development ✅

(c) Database Management

(d) Server Configuration

50. What does HTML stand for?

(a) HyperText Markup Language ✅

(b) HighText Markup Language

(c) HyperTransfer Markup Language

(d) Hyperlink Text Markup Language

Exercise Short Questions:

1. What is the purpose of the <head> tag in HTML?

Answer:

The <head> tag contains metadata about the HTML document such as the title, links to stylesheets, scripts, and other resources that are not displayed on the web page itself.

2. Explain the difference between an ordered list and an unordered list in HTML.

Answer:

- An ordered list (<ol>) displays items in a numbered or alphabetical order.
- An unordered list (<ul>) displays items with bullet points and has no specific order.

3. How do you add a comment in CSS?

Answer:

CSS comments are written using the following syntax:

/* This is a comment */

4. What are the different ways to apply CSS to an HTML document?

Answer:

There are three ways to apply CSS:

1. Inline CSS – directly within an HTML tag using the style attribute.

2. Internal CSS – inside a <style> tag in the <head> section.

3. External CSS – by linking a separate .css file using the <link> tag.

5. How can you include JavaScript in an HTML file?

Answer:

JavaScript can be included in HTML using the <script> tag. It can be written:

Inside the <head> or at the end of the <body>.

As an external file using:

<script src="script.js"></script>

6. Describe the syntax for creating a hyperlink in HTML.

Answer:

To create a hyperlink, use the <a> tag with the href attribute:

Click Here

7. What is the function of the tag in HTML?

Answer:

The tag is a block-level container used to group HTML elements together. It is commonly used for layout and applying CSS styles.

8. How do you link an external CSS file to an HTML document?

Answer:

Use the <link> tag inside the <head> section like this:

<link rel="stylesheet" href="styles.css">

9. What is the use of the <table> tag in HTML?

Answer:

The <table> tag is used to create a table for displaying data in rows (<tr>) and columns (<td>).

10. Explain the box model in CSS.

Answer:

The CSS box model consists of the following layers:

- **Content**: The actual text or image.
- **Padding**: Space around the content.
- **Border**: A line surrounding the padding.
- **Margin**: Space outside the border, separating the **element** from others.

Important Short Questions:

1. What is Web Development?

Answer:

Web development is the process of creating websites and web applications using programming languages and tools to design, build, and maintain them.

2. Why is learning web development useful for career opportunities?

Answer:

It opens up job opportunities such as web developer or designer, as many companies need professionals to build and manage websites.

3. What is the role of HTML in front-end development?

Answer:

HTML structures the content on web pages using elements like headings, paragraphs, images, and links.

4. What is the function of CSS in web development?

Answer:

CSS styles the HTML content by changing colors, fonts, layouts, and overall appearance of web pages.

5. How does JavaScript help in front-end development?

Answer:

JavaScript adds interactivity to web pages, enabling features like animations, form validation, and games.

6. What is the role of web servers in back-end development?

Answer:

Web servers store and deliver web pages to users when they request a URL.

7. What is full-stack development?

Answer:

Full-stack development involves working on both front-end (UI) and back-end (server, database) parts

of a web application.

8. Who invented HTML and in which year?

Answer:

HTML was created by Tim Berners-Lee in 1991 to make sharing information on the internet easier.

9. What tools are needed to set up a web development environment?

Answer:

You need a text editor (like Notepad++, VS Code) to write code and a web browser (like Chrome, Firefox) to view the web page.

10. Write the basic structure of a simple HTML page.

Answer:

<!DOCTYPE html>

<html>

<head>

<title>My First Web Page</title>

</head>

```
<body>
<h1>Welcome to My Website</h1>
<p>This is my first web page.</p>
</body>
</html>
```

11. What is the role of <!DOCTYPE html> in an HTML document?

Answer:

It tells the browser that the document is written in HTML5.

12. Name any two main sections of an HTML document.

Answer:

1. <head> – Contains meta-information (like title).

2. <body> – Contains visible content of the web page.

13. What is the function of the <body> tag in HTML?

Answer:

The <body> tag displays all the visible content like text, images, and links on the web page.

14. Differentiate between paired and unpaired tags with examples.

Answer:

- **Paired Tag:** Comes with opening and closing tags (e.g., ...).
- **Unpaired Tag**: Self-closing tag with no closing part (e.g., <img> or
).

15. What is the purpose of the <title> tag in HTML?

Answer:

It sets the title of the web page, which appears on the browser tab.

16. Why are heading tags important for SEO?

Answer:

They help search engines understand the structure and main topics of a page, which improves search ranking.

17. Write the correct syntax of a hyperlink that

opens a website.

Answer:

Visit **Example**.com

18. How is an image inserted in HTML? Write one example.

Answer:

Using <img> tag. **Example**:

<img src="image.jpg" alt="A description of the image">

19. List the tags used to create an HTML table.

Answer:

<table>, <tr>, <th>, and <td> are used to create a table.

20. Write the syntax of an HTML comment.

Answer:

<!-- This is a comment -->

21. What is the purpose of using CSS in web development?

Answer: CSS is used to control the design, layout, colors, and fonts of web pages, improving their appearance and user experience.

22. Define the basic structure of a CSS rule.

Answer:

A CSS rule consists of a selector and a declaration block:

selector { property: value; }

23. What is a CSS selector?

Answer:

A selector identifies the HTML element to which the style rules will be applied.

24. Write any two methods to integrate CSS into an HTML document.

Answer:

1. Inline CSS

2. Internal CSS

(Third is External CSS)

25. Give an example of inline CSS.

Answer:

<h1 style="color: blue;">Hello</h1>

26. What is the purpose of the <link> tag in HTML?

Answer:

It links an external CSS file to the HTML document for applying styles.

27. Write any two CSS properties used for styling fonts.

Answer:

1. font-family

2. font-size

28. How do you change the background color of a web page using CSS?

Answer:

body { background-color: blue; }

29. What is the role of @keyframes in CSS?

Answer:

@keyframes defines the animation by specifying styles at different stages (e.g., from red to yellow).

30. What is the difference between animation and transition in CSS?

Answer:

- **Animation**: Controls changes over time using keyframes.
- **Transition**: Smoothly animates changes from one style to another on events like hover.

31. What is JavaScript used for in web development?

Answer:

JavaScript is used to make websites interactive. It allows features like animations, pop-up messages, form validations, and interactive elements (e.g., clicking a button to show a message).fje

32. Write a simple JavaScript code to display an alert message.

Answer:

alert("Hello, Students!");

This line shows a pop-up alert box with the message "Hello, Students!" when the script runs.

33. How do you declare a variable in JavaScript?

Answer:

You can declare a variable using var, let, or const keywords. **Example**:

var name = "Ali";

34. Write the syntax to declare a variable named name with value "Ali".

Answer:

var name = "Ali";

This stores the string "Ali" in the variable named name.

35. What is a dry run in programming?

Answer:

A dry run is a step-by-step manual execution of code without using a computer, to understand what the output will be. It helps in tracing errors or logic.

36. Name any two data types in JavaScript.

Answer:

1. String – for text, e.g., "Hello"

2. Number – for numeric values, e.g., 15

37. Write an example of a Boolean variable.

Answer:

var isStudent = true;

Here, true is a Boolean value indicating a yes/no or true/false condition.

38. What is an array in JavaScript?

Answer:

An array is a collection of values stored in a single variable.

Example:

var scores = [90, 85, 88];

39. What is a function in JavaScript?

Answer:

A function is a reusable block of code that performs

a specific task when called. It helps avoid repetition in code.

40. Write a simple JavaScript function that displays "Hi!".

Answer:

```
function greet() {
    alert("Hi!");
}
```

41. How do you call a function named greet in JavaScript?

Answer:

```
greet();
```

This line executes the function and displays the message in the alert.

42. Write an example of a function with two parameters that adds two numbers.

Answer:

```
function add(a, b) {
    var sum = a + b;
```

```
    alert("Sum is: " + sum);
}
```

43. What is an event in JavaScript?

Answer:

An event is an action triggered by the user or browser, like clicking, loading a page, typing, or moving the mouse.

44. Name any two common HTML events.

Answer:

1. onclick – when the user clicks an element
2. onmouseover – when the mouse hovers over an element

45. Write an example of an event handler for a button click.

Answer:

```
<button onclick="alert('Clicked!')">Click Me</button>
```

Here, when the button is clicked, it shows the alert "Clicked!".

46. What is debugging?

Answer:

Debugging is the process of finding and fixing errors (bugs) in your code to make sure it works correctly.

47. Name any two debugging techniques.

Answer:

1. Using browser developer tools

2. Reading error messages

48. How can browser developer tools help in debugging?

Answer:

Browser developer tools help by showing error messages in the console and allowing you to set breakpoints to inspect code behavior.

49. What is the purpose of console.log() in JavaScript?

Answer:

The console.log() function is used to display debug

messages in the browser console for checking variable values or flow of code.

50. Write an example of using console.log() in JavaScript.

Answer:

```
console.log("Debug message");
```

51. What is meant by reading error messages in debugging?

Answer:

It means carefully reading the messages shown by the browser to understand where and what type of error occurred.

52. List any two common coding issues in web development.

Answer:

1. Broken links

2. Incorrect HTML structure

53. What is cross-browser testing?

Answer:

Cross-browser testing ensures that a website works correctly on different browsers like Chrome, Firefox, and Edge.

54. What is responsive design testing?

Answer:

It is testing to ensure the website looks good and works well on all devices, like desktops, tablets, and smartphones.

55. What is the role of user testing in web development?

Answer:

User testing involves asking real users to try your website and give feedback so you can find and fix problems you might have missed.

Exercise Long Questions:

🌟 **Q1. Discuss the fundamental differences between HTML, CSS, and JavaScript in the context of web development.**

Answer:

In web development, HTML, CSS, and JavaScript are the three core technologies, each serving a distinct purpose:

HTML (HyperText Markup Language):

HTML is used to create the structure of a web page. It defines the layout and content by using elements like headings, paragraphs, images, and links. Think of HTML as the skeleton of a website, providing the basic framework for the content.

- **Example**: <h1>Welcome to My Website</h1>

CSS (Cascading Style Sheets):

CSS is responsible for the appearance and layout of the web page. It styles the HTML elements by controlling colors, fonts, spacing, borders, and positioning. CSS makes the web page visually attractive and user-friendly.

- **Example**:

```
h1 {
    color: blue;
```

```
    font-size: 30px;
}
```

JavaScript:

JavaScript adds interactivity and dynamic behavior to web pages. It allows the page to respond to user actions like clicks, inputs, and mouse movements. JavaScript can create animations, validate forms, load new content without refreshing, and much more.

🔹 **Example**:

```
alert("Welcome to the website!");
```

Summary:

- HTML = Structure and content
- CSS = Styling and layout
- JavaScript = Behavior and interactivity

🌟 **Q2. Explain the process of setting up a development environment for web development by discussing the necessary software and tools.**

Answer:

Setting up a web development environment involves installing software and tools that help you write, test, and debug your web projects efficiently. Here is the typical process and the essential components:

1. Text Editor or IDE:

You need a code editor to write HTML, CSS, and JavaScript. Popular options include:

- Visual Studio Code (VS Code): Lightweight, powerful, with extensions for web development.
- Sublime Text or Atom: Simple and customizable editors.

2. Web Browsers:

Modern browsers like Google Chrome, Firefox, Microsoft Edge, and Safari are essential for testing your web pages. Browsers also come with Developer Tools to inspect HTML elements, CSS styles, and debug JavaScript.

3. Version Control System (Optional but Recommended):

Tools like Git help you track changes in your code

and collaborate with others. GitHub or GitLab can host your repositories online.

4. Local Web Server (Optional for advanced development):

Sometimes, running a local server (like XAMPP, WAMP, or live-server extension) helps to test dynamic features or APIs.

5. Browser Developer Tools:

Every modern browser provides developer tools that let you:

- Inspect elements
- Debug JavaScript with breakpoints
- Monitor network activity
- Check responsive design

Steps to Set Up:

1. Install a code editor (e.g., VS Code).
2. Install and update your preferred web browsers.
3. Learn to use browser developer tools for debugging.

4. Optionally, set up Git and a local server for more advanced projects.

This setup provides everything needed to write, test, and debug your websites efficiently.

🌟 **Q3. Create a basic HTML page that includes a header, a paragraph, an image, and a hyperlink.**

Answer:

Here is a simple example of an HTML page with all the required elements:

```
<!DOCTYPE html>
<html>
<head>
    <title>Basic HTML Page</title>
</head>
<body>
    <!-- Header -->
    <h1>Welcome to My Website</h1>
    <!-- Paragraph -->
```

```
    <p>This is a simple web page created to demonstrate basic HTML elements.</p>

    <!-- Image -->

    <img src="https://via.placeholder.com/150" alt="Sample Image" />

    <!-- Hyperlink -->

    <p>Visit <a href="https://www.example.com" target="_blank">Example Website</a> for more information.</p>

</body>

</html>
```

Explanation:

- <h1> defines the main header on the page.
- <p> is used to add a paragraph of text.
- <img> embeds an image; src specifies the image URL and alt provides alternative text.
- <a> creates a hyperlink; href is the link target, and target="_blank" opens the link in a new tab.

🌟 **Q4. How do you style a table using CSS? Create a sample table and apply styles to it.**

Answer:

Styling tables using CSS improves readability and appearance. You can change borders, colors, padding, and more. Below is an example of a styled table with HTML and CSS:

```
<!DOCTYPE html>
<html>
<head>
    <title>Styled Table Example</title>
    <style>
        table {
            width: 60%;
            border-collapse: collapse;
            margin: 20px 0;
            font-family: Arial, sans-serif;
        }
```

```
        th, td {
            border: 1px solid #333;
            padding: 10px;
            text-align: center;
        }
        th {
            background-color: #4CAF50;
            color: white;
        }
        tr:nth-child(even) {
            background-color: #f2f2f2;
        }
        tr:hover {
            background-color: #ddd;
        }
    </style>
</head>
<body>
```

```
<table>
    <tr>
        <th>Name</th>
        <th>Age</th>
        <th>City</th>
    </tr>
    <tr>
        <td>Alice</td>
        <td>25</td>
        <td>New York</td>
    </tr>
    <tr>
        <td>Bob</td>
        <td>30</td>
        <td>London</td>
    </tr>
    <tr>
        <td>Charlie</td>
```

```
            <td>28</td>
            <td>Paris</td>
        </tr>
    </table>
</body>
</html>
```

Explanation of CSS:

- border-collapse: collapse; merges adjacent borders for a cleaner look.
- th, td have borders, padding, and centered text.
- th has a green background and white text to highlight headers.
- tr:nth-child(even) colors even rows with a light grey for zebra striping.
- tr:hover changes background on mouse hover for interactivity.

🌟 **Q5. Describe the different CSS selectors and provide examples of each.**

CSS selectors are used to select HTML elements to

apply styles. Different types of selectors allow precise targeting of elements.

- **Type Selector**: Selects all elements of a given tag name.

🔹 **Example**:

```
p {
  color: blue;
}
```

This makes all <p> elements have blue text.

- **Class Selector**: Selects elements with a specific class attribute. Prefix with a dot (.).

🔹 **Example**:

```
.highlight {
  background-color: yellow;
}
```

This applies a yellow background to all elements with class="highlight".

- **ID Selector**: Selects a unique element with a specific ID attribute. Prefix with a hash (#).

- **Example**:

```
#main-header {
    font-size: 30px;
}
```

This styles the element with id="main-header" with larger font size.

- **Universal Selector**: Selects all elements on the page.
  - **Example**:

```
* {
    margin: 0;
    padding: 0;
}
```

This removes default margin and padding from all elements.

- **Attribute Selector**: Selects elements with a specified attribute or attribute value.
  - **Example**:

```
input[type="text"] {
    border: 1px solid black;
}
```

This styles all <input> elements with type “text”.

- **Descendant Selector**: Selects elements that are inside another element.

🔹 **Example**:

```
div p {
    color: green;
}
```

All <p> elements inside a will have green text.

- **Pseudo-class Selector:** Selects elements in a certain state, like when hovered or first child.

🔹 **Example**:

```
a:hover {
    color: red;
}
```

This changes link color to red when mouse hovers

over it.

🌟 **Q6. Explain the process of creating a responsive web page using CSS with the help of examples and explanations.**

Responsive web design ensures that web pages look good and function well on all devices — desktops, tablets, and mobiles.

Key steps to create a responsive page:

- Use Flexible Layouts: Avoid fixed widths. Use relative units like percentages (%), em, or rem.

🔹 **Example**:

```
.container {
  width: 90%;    /* adapts to screen size */
  margin: auto;
}
```

- **Media Queries**: Allow CSS to apply different styles based on screen size.

🔹 **Example**:

```
@media (max-width: 600px) {
```

```
    body {
        background-color: lightgray;
    }
    .container {
        width: 100%;
    }
}
```

- This changes the background and container width when screen width is 600px or less (like on mobiles).
- Flexible Images and Media: Use CSS to ensure images scale with screen size.

Example:

```
img {
    max-width: 100%;
    height: auto;
}
```

This prevents images from overflowing their

container on smaller screens.

- **Use Responsive Units**: Use vw (viewport width), vh (viewport height), %, em, and rem instead of fixed px sizes.

🔹 **Example Overview:**

```
.container {
    width: 80%;
    margin: auto;
}
@media (max-width: 768px) {
    .container {
        width: 95%;
    }
}
```

The page adapts by adjusting the container width based on screen size, improving readability on smaller devices.

🌟 **Q7. Write a JavaScript function that changes the background color of a web page when a button is clicked. Provide the complete code and explain how it works.**

Complete HTML and JavaScript Code:

```
<!DOCTYPE html>
<html>
<head>
    <title>Change Background Color</title>
    <script>
        function changeBackground() {
            // Change the background color of the body to a random color
            const colors = ["#FF5733", "#33FF57", "#3357FF", "#F3FF33"];
            const randomColor = colors[Math.floor(Math.random() * colors.length)];
            document.body.style.backgroundColor =
```

```
randomColor;
        }
    </script>
</head>
<body>
    <button onclick="changeBackground()">Change Background Color</button>
</body>
</html>
```

Explanation:

- The function changeBackground() picks a random color from the colors array.
- Math.random() generates a random number between 0 and 1, which is multiplied by the array length to get a random index.
- document.body.style.backgroundColor sets the background-color property of the <body> element to the selected color.
- The button has an onclick attribute that calls

the changeBackground() function when clicked, triggering the color change.

🌟 **Q8. How do you add animations and transitions using CSS? Provide examples and explain the properties involved.**

CSS Transitions allow smooth changes between CSS property values, typically on user interactions like hover.

Example of a transition:

```
button {
    background-color: blue;
    color: white;
    transition: background-color 0.5s ease;
}

button:hover {
    background-color: green;
}
```

- transition property tells the browser to animate

changes to background-color over 0.5 seconds with an easing effect.

- When you hover over the button, the background smoothly changes from blue to green.
- CSS Animations allow complex sequences of style changes controlled by keyframes.

🔹 **Example of a simple animation:**

```
@keyframes slideIn {
  from {
    transform: translateX(-100%);
  }
  to {
    transform: translateX(0);
  }
}
.box {
  width: 100px;
```

```
    height: 100px;
    background-color: orange;
    animation: slideIn 2s forwards;
}
```

@keyframes slideIn defines the animation steps — moving an element from outside the left side of the screen (translateX(-100%)) to its original position (translateX(0)).

The .box element applies the animation named slideIn, lasting 2 seconds.

forwards ensures the element stays in the final position after animation ends.

Summary of Important Properties:

- **transition**: Controls smooth change of properties; syntax: transition: property duration timing-function;
- **animation**: Applies keyframe-based animations; syntax: animation: name duration timing-function delay iteration-count direction fill-mode;

- **@keyframes**: Defines the frames/stages of an animation with from and to or percentage values.

Note:

This chapter is designed to provide a solid foundation of knowledge, with the goal of deepening understanding and encouraging further exploration of the subject. The content has been carefully selected to support effective learning and inspire students to engage with the topic more deeply.

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Purpose: To contribute to education by offering insightful, valuable content that enhances learning

and understanding.

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