



Department of Computer Science

Full Stack Web Development

Assignment: 01

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Question: 1

Tasks:

HTML and CSS Essentials

This document outlines the fundamental concepts you'll encounter when working with HTML and CSS for web development.

HTML (HyperText Markup Language)

- **Structure and Content:** HTML provides the building blocks for a web page's content and structure. It uses tags like `<h1>` for headings, `<p>` for paragraphs, and `` for images to define the content and its organization.
- **Elements and Attributes:** Elements are the fundamental units of HTML content, defined by opening and closing tags (e.g., `bold text`). Attributes provide additional information about an element, such as `id` for unique identification or `class` for applying styles.
- **Semantic Elements:** These elements describe the meaning of a content section, like `<header>` for the header or `<nav>` for navigation menus. Semantic elements enhance accessibility and SEO (Search Engine Optimization).

CSS (Cascading Style Sheets)

- **Presentation and Styling:** CSS handles the visual presentation of an HTML document. It defines styles like font size, color, layout, and margins using properties and values.
- **Selectors:** Selectors target specific HTML elements or groups of elements in your CSS code for styling. Examples include element types (`p` for paragraphs), classes (`.highlight` for a specific class), and IDs (`#unique-element`).
- **Box Model:** CSS represents elements as boxes with content, padding, borders, and margins. You can style each of these components independently.
- **Common Properties:** CSS offers various properties to control the look and feel of your web page. These include properties for font styles (e.g., `font-size`, `color`), backgrounds, borders, positioning elements, and more.

Linking HTML and CSS:

External Stylesheets: You can link external CSS files to your HTML document using the `<link>` tag. This separates content structure (HTML) from presentation (CSS) and promotes code maintainability.

Common HTML Elements and Attributes:

- `<div>`: Defines a division or section in an HTML document.
- `<p>`: Represents a paragraph of text.
- `<a>`: Creates hyperlinks to other web pages or resources.
- ``: Inserts an image into the webpage.
- ``, ``, ``: Create unordered and ordered lists with list items.
- `<table>`, `<tr>`, `<td>`: Constructs tables with rows and cells for organizing data.
- `<form>`, `<input>`, `<textarea>`, `<button>`: Builds interactive forms for user input.

Summary:

HTML and CSS are fundamental technologies for creating and styling web pages. HTML provides the structure and content of a webpage using elements and attributes, while CSS controls the presentation and layout of HTML elements. Understanding key concepts such as the basic structure of HTML documents, elements vs. attributes, inline styling, external and internal CSS, selectors, the box model, and responsive design is essential for building modern, visually appealing, and user-friendly websites.

Question: 02

Tasks:

Code:

```
<!DOCTYPE html>
<html>
<head>
  <title>Exploring HTML Elements</title>
</head>
<body>
  <h1>Welcome to Air University!</h1> <p>Air University is located in
Islamabad and it is one of the most successful universities in
Pakistan.</p> <h2>Here are some interesting facts:</h2> <ul>
  <li>Did you know <em>HTML</em> stands for HyperText Markup
Language?</li> <li>CSS (Cascading Style Sheets) determines how HTML elements
are displayed.</li> </ul>

   <a href="https://www.au.edu.pk">Click here to visit
our website!</a> </body>
</html>
```

Explanation of Elements:

- <h1> - Defines the main heading of the webpage with the largest font size.
- <p> - Represents a paragraph of text within the document.
- <h2> - Creates a subheading with a smaller font size than <h1>.
- - Defines an unordered list for displaying items without a specific order.
- - Represents a list item within the unordered list.
- - Embeds an image into the webpage. The `src` attribute specifies the image source, and `alt` provides alternative text for accessibility.
- <a> - Creates a hyperlink (anchor) that directs users to another webpage when clicked. The `href` attribute defines the target URL.
- Inline Styles applied to the image using the `style` attribute:
 - `width: 200px; height: 150px;` - Sets the width and height of the image.
 - `border: 1px solid blue;` - Adds a blue border around the image.

Question 03:

Tasks:

Code:

```
<!DOCTYPE html>
<html>
<head>
  <title>Interactive Webpage</title>
</head>
<body style="background-color: #f0f0f0; font-family: Arial, sans-serif;">

  <h1>Welcome to the Product Information Page!</h1>

  <p>Explore our featured products and leave a review!</p>

  <table border="1" style="width: 50%; margin-bottom: 20px;">
    <thead>
      <tr>
        <th>Product Name</th>
        <th>Description</th>
        <th>Price</th>
      </tr>
    </thead>
    <tbody>
      <tr>
        <td>Awesome Gadget</td>
        <td>This gadget does amazing things!</td>
        <td style="text-align: right;">$99.99</td>
      </tr>
      <tr>
        <td>Fantastic Widget</td>
        <td>A truly fantastic widget!</td>
        <td style="text-align: right;">$149.99</td>
      </tr>
    </tbody>
  </table>

  <h2>Leave a Review</h2>
  <form action="/submit_review" method="post" style="border: 1px solid #ccc; padding: 10px;">
    <label for="name">Your Name:</label>
    <input type="text" id="name" name="name" required style="width: 100%; margin-bottom: 10px;"><br>

    <label for="email">Email Address:</label>
    <input type="email" id="email" name="email" style="width: 100%; margin-bottom: 10px;"><br>
```

```

<label for="rating">Rating:</label>
<select id="rating" name="rating" required style="width: 100%; margin-
bottom: 10px;">
  <option value="">Select Rating</option>
  <option value="5">5 Stars (Excellent)</option>
  <option value="4">4 Stars (Very Good)</option>
  <option value="3">3 Stars (Good)</option>
  <option value="2">2 Stars (Fair)</option>
  <option value="1">1 Star (Poor)</option>
</select><br>

<label for="review">Your Review:</label>
<textarea id="review" name="review" rows="5" style="width: 100%; margin-
bottom: 10px;"></textarea><br>

  <input type="submit" value="Submit Review" style="background-color:
#4CAF50; color: white; padding: 10px 20px; border: none; cursor: pointer;">
</form>

<p>Want to learn more about our products? <a
href="https://www.example.com/products" style="color: blue; text-decoration:
underline;">Visit our product catalog!</a></p>

</body>
</html>

```

Question 4:

Tasks:

Impact of Effective Page Layouts on User Experience

Effective page layouts play a crucial role in shaping user experience (UX) on a website or application. Here's a breakdown of their impact:

- **Clarity and Navigation:** A well-organized layout with clear sections and navigation menus guides users intuitively towards their goals. They can find the information they need quickly and efficiently, reducing frustration and improving satisfaction.
- **Visual Hierarchy and Focus:** Effective layouts use visual elements like size, colour, and spacing to prioritize content. This helps users understand the importance of different sections and focus on the most relevant information.

- **Aesthetics and Engagement:** An aesthetically pleasing layout with balanced elements and consistent design principles creates a positive first impression and keeps users engaged.
- **Responsiveness and Accessibility:** Layouts that adapt to different screen sizes (desktop, mobile, etc.) ensure a seamless experience across devices. Additionally, layouts that consider accessibility features (e.g., proper color contrast, alternative text for images) improve usability for everyone.

Comparison of HTML Form Elements

Here's a table comparing common HTML form elements based on their functionality:

Element	Description	Use Case
<code><input type="text"></code>	Text input field for single-line text entry.	Usernames, passwords, names, addresses.
<code><input type="email"></code>	Text input field specifically for email addresses.	Ensures valid email format during input.
<code><input type="password"></code>	Text input field where characters are masked for password security.	User logins.
<code><input type="radio"></code>	Radio button for selecting one option from a group of mutually exclusive choices.	Selecting a preferred option (e.g., size, color).
<code><input type="checkbox"></code>	Checkbox for selecting multiple options (can be combined).	Selecting preferences or features.
<code><select></code>	Dropdown menu for selecting a single option from a list.	Choosing from predefined categories or values.

<code><textarea></code>	Multi-line text input field for longer text entries.	User comments, descriptions, reviews.
<code><input type="submit"></code>	Submit button to initiate form data submission.	Triggers form processing on the server.
<code><input type="reset"></code>	Reset button to clear all form entries and restore default values.	Allows users to start over without losing progress on the page.

Question 5

Tasks:

HTML Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>My Portfolio Website</title>
  <link rel="stylesheet" href="task5.css">
</head>
<body>
  <header>
    <h1>John Doe</h1>
    <p>Web Developer & Designer</p>
  </header>

  <nav>
    <ul>
      <li><a href="#">About Me</a></li>
      <li><a href="#">Skills</a></li>
      <li><a href="#">Projects</a></li>
      <li><a href="#">Contact</a></li>
    </ul>
  </nav>

  <main>
    <section class="about-me">
      <h2>About Me</h2>
      <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nullam euismod diam ante, at fringilla quam pulvinar vitae. Proin vel enim vel mi venenatis laoreet. Sed vel leo dui. Donec eu diam at ligula pretium blandit.

```



```

Aenean eu leo quam. Pellentesque ornare sem lacinia quam venenatis
vestibulum.</p>
</section>

<section class="skills">
  <h2>Skills</h2>
  <ul class="skills-list">
    <li>HTML & CSS</li>
    <li>JavaScript</li>
    <li>Python</li>
    <li>Graphic Design</li>
  </ul>
</section>
</main>

<footer>
  <p>&copy; 2024 John Doe</p>
</footer>
</body>
</html>

```

CSS Code:

```

body {
  font-family: Arial, sans-serif;
  margin: 0;
  padding: 0;
}

header {
  background-color: #f0f0f0;
  padding: 20px;
  text-align: center;
}

h1 {
  margin-bottom: 5px;
}

nav {
  background-color: #e0e0e0;
  padding: 10px;
  display: flex;
  justify-content: space-around;
}

nav ul {

```

```
list-style: none;
margin: 0;
padding: 0;
}

nav li {
  display: inline-block;
  margin-right: 20px;
}

a {
  text-decoration: none;
  color: black;
}

main {
  padding: 20px;
}

section {
  margin-bottom: 20px;
}

h2 {
  margin-bottom: 10px;
}

.about-me p {
  line-height: 1.5;
}

.skills-list {
  padding: 0;
  margin: 0;
}

.skills-list li {
  margin-bottom: 5px;
}

footer {
  background-color: #f0f0f0;
  padding: 10px;
  text-align: center;
}
```

Question 6:

Tasks:

Html Code:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Words of Inspiration</title>
  <link rel="stylesheet" href="task6.css">
</head>
<body>
  <header>
    <h1>Find Inspiration Here</h1>
  </header>

  <main>
    <section class="quote">
      <blockquote>"The only person you are destined to become is the person
you decide to be." - Ralph Waldo Emerson</blockquote>
      <p>This quote by Ralph Waldo Emerson emphasizes the power of personal
choice in shaping our own destiny.</p>
    </section>

    <section class="quote">
      <blockquote>"The future belongs to those who believe in the beauty of
their dreams." - Eleanor Roosevelt</blockquote>
      <p>Eleanor Roosevelt's words remind us of the importance of holding onto
our dreams and aspirations.</p>
    </section>

    <section class="quote">
      <blockquote>"Twenty years from now you will be more disappointed by the
things that you didn't do than by the ones you did do. So throw off the
bowlines, sail away from safe harbor, catch the trade winds in your sails.
Explore, Dream, Discover." - Mark Twain</blockquote>
      <p>Mark Twain encourages us to embrace adventure and not let fear hold
us back from exploring possibilities.</p>
    </section>
  </main>

  <footer>
    <p>&copy; 2024 Inspiration Station</p>
  </footer>
</body>
</html>
```

CSS Code:

```
body {
  font-family: Arial, sans-serif;
  margin: 0;
  padding: 20px;
  line-height: 1.5;
}

header {
  text-align: center;
  margin-bottom: 20px;
}

h1 {
  font-size: 2em;
}

.quote {
  margin-bottom: 20px;
  border-left: 5px solid #ddd;
  padding-left: 20px;
}

blockquote {
  font-style: italic;
  margin-bottom: 10px;
}

p {
  font-size: 0.9em;
}

footer {
  text-align: center;
  margin-top: 20px;
}
```

External CSS vs. Inline Styling:

External CSS:

Pros:

- **Maintainability:** Styles are centralized in a separate file, making updates easier and avoiding code duplication.

- **Readability:** Cleaner HTML code improves readability and separation of concerns.
- **Scalability:** Easier to manage styles for complex layouts or multiple pages.

Cons:

- **Initial Setup:** Requires creating and linking an external CSS file.
- **Specificity Issues:** Overly specific selectors in external styles might require additional work to override inline styles.

Inline Styling:

Pros:

- **Simplicity:** Easy to apply styles directly to an element, especially for quick adjustments.
- **Override Power:** Inline styles have higher specificity and can override external CSS in some cases.

Cons:

- **Maintainability:** Can become messy and difficult to maintain for complex layouts or changes.
- **Readability:** Inline styles clutter the HTML code, making it harder to read and understand.
- **Scalability:** Difficult to manage styles consistently across multiple elements or pages.

GitHub:

I have also deployed this complete assignment to GitHub repository. The link for the repository is mentioned in private comment on GCR.