Assignment 2

CSS Selectors & Styling

Theory Assignment

• Question 1: What is a CSS selector? Provide examples of element, class, and ID selectors.

A **CSS selector** is a pattern used to select and style HTML elements. It tells the browser which HTML elements to apply styles to.

1. Element Selector

- Selects all elements of a specific type.

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

2. Class Selector

- Targets elements with a specific class attribute.
- Use a **dot (.)** before the class name.

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

3. ID Selector

- Targets a single element with a specific id attribute.
- Use a **hash (#)** before the ID name.

```
#header {
  font-size: 24px;
}
```

Assignment 2

- Question 2: Explain the concept of CSS specificity. How do conflicts between multiple styles get resolved?

CSS specificity determines which style rules take precedence when multiple styles target the same element, resolving conflicts by assigning a hierarchy to selectors. Selectors with higher specificity override those with lower specificity .

Use More Specific Selectors: If a class selector isn't working as expected, try using an ID selector or a more specific combination of selectors.

Order of Stylesheets: Styles in stylesheets loaded later take precedence over those in earlier stylesheets.

Inline Styles**:** If all else fails, use inline styles, but be mindful of maintainability.

- Question 3: What is the difference between internal, external, and inline CSS? Discuss the advantages and disadvantages of each approach.

Inline CSS : CSS is written directly within an HTML element using the style attribute.

advantages:

- Quick to apply styles to a single element.

Disadvantages:

- Has higher specificity, which can cause conflicts.

internal CSS : CSS is written inside a <style> tag within the <head> section of an HTML document.

Advantages:

- Useful for styling a single HTML page.
- Keeps styles in one place within the page.

Disadvantages:

- Not reusable across multiple pages.
- Difficult to maintain for large projects.

External CSS : CSS is written in a separate .css file and linked to the HTML document using the <link> tag.

Advantages:

- Reduces code duplication and improves maintainability.

Disadvantages:

- Requires an extra HTTP request to fetch the CSS file.

CSS Box Model

Theory Assignment

• Question 1: Explain the CSS box model and its components (content, padding, border, margin). How does each affect the size of an element?

The CSS **box model** is the foundation of layout and design in CSS. Every HTML element is considered a **box**, which consists of the following layers from innermost to outermost:

1. Content

    The actual content of the element—text, images, etc.

    Effect on size: This is the base width and height you define using width and height in CSS.

2. Padding

    The space inside the element, between the content and the border.

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- Effect on size: Padding increases the space *inside* the element, expanding the total size if box-sizing is set to content-box.

3. Border

- A line that wraps around the padding and content.
- Effect on size: Adds to the element's total size, unless using box-sizing: border-box.

4. Margin

- The space outside the border, separating the element from others.

- Effect on size: It does not increase the box size itself but affects spacing around the element.

• Question 2: What is the difference between border-box and content-box box-sizing in CSS?Which is the default?

Feature	content-box (Default)	border-box
Box-sizing behavior	Width/height apply only to content	Width/height include content + padding + border
Padding & Border effect	Increase total size of the element	Included within the specified width/height

CSS Flexbox

Theory Assignment

• Question 1: What is CSS Flexbox, and how is it useful for layout design? Explain the terms flex-container and flex-item.

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Flexbox is a CSS layout module designed to make it easier to arrange items in a one-dimensional row or column, and to distribute space dynamically, even when screen sizes or content lengths vary.

1. Flex Container

- The parent element that holds the flex items.
- You turn an element into a flex container by applying:

2. Flex Item

- The direct children of a flex container.
- They automatically become flexible boxes and obey the container's layout rules.

- Question 2: Describe the properties justify-content, align-items, and flex-direction used in Flexbox.

1. flex-direction

- Defines the main.
- Values:
    - row – Items are placed left to right.
    - row-reverse – Items are placed right to left.
    - column – Items are placed top to bottom .
    - column-reverse – Items are placed bottom to top.

justify-content

- Aligns flex items along the main axis .
- Values:
    - flex-start – Items align to the start of the main axis.
    - flex-end – Items align to the end.
    - center – Items are centered.

- space-between – Equal space between items.
- space-around – Equal space around items.
- space-evenly – Equal space between and around items.

3. align-items

- Aligns flex items along the cross axis.
- Values:
  - stretch – Items stretch to fill the container vertically
  - flex-start – Items align to the start of the cross axis.
  - flex-end – Items align to the end of the cross axis.
  - center – Items are centered.
  - baseline – Items align based on text baseline.

7. CSS Grid

Theory Assignment

• Question 1: Explain CSS Grid and how it differs from Flexbox. When would you use Grid over Flexbox?

CSS Grid is a two-dimensional layout system that allows you to design web layouts using rows and columns. It gives you precise control over grid lines, placement, and spacing.

Feature	CSS Grid	Flexbox
Layout type	2D – Rows and Columns	1D – Row or Column
Best for	Entire page layouts, complex structures	Navigation bars, small UI elements

Assignment 2

Use CSS Grid when:

- You’re building a full layout or structured page .
- You need precise control over both rows and columns.

Use Flexbox when:

- You're aligning items in a single row or column.
- You want simple horizontal/vertical alignment and spacing.

- Question 2: Describe the grid-template-columns, grid-template-rows, and grid-gap properties. Provide examples of how to use them.

1. grid-template-columns

Defines the number and width of columns in your grid layout.

```
.container {
  display: grid;
  grid-template-columns: 200px 200px 200px;
}
```

2. grid-template-rows

Defines the number and height of rows in your grid.

```
.container {
  display: grid;
  grid-template-rows: 100px 200px;
}
```

3. gap

Adds spacing between rows and columns.

```
.container {
```

```
  display: grid;
  grid-template-columns: 200px 200px 200px;
  grid-gap: 20px;
}
```

Responsive Web Design with Media Queries

Theory Assignment

• Question 1: What are media queries in CSS, and why are they important for responsive design?

Media queries are CSS techniques that allow you to apply different styles based on a device's characteristics—like its screen width, height, orientation, resolution, etc.

1. Device Compatibility
2. Improved User Experience
3. No Need for Separate Mobile Sites
4. Performance Optimization

• Question 2: Write a basic media query that adjusts the font size of a webpage for screens smaller than 600px.

```
@media (max-width: 600px) {
  body {
    font-size: 14px;
  }
}
```

Assignment 2

Typography and Web Fonts

Theory Assignment

- Question 1: Explain the difference between web-safe fonts and custom web fonts. Why might you use a web-safe font over a custom font?

1. Web-Safe Fonts

Web-safe fonts are fonts that are pre-installed on most operating systems., so they don't need to be downloaded by the user's browser.

Common Examples:

- Arial
- Times New Roman
- Verdana

2. Custom Web Fonts

Custom web fonts are fonts that you embed into your website using @font-face or services like Google Fonts, Adobe Fonts, etc.

- Unique branding and design flexibility
- Access to hundreds of font styles and weights
- Improve visual appeal and identity

- Question 2: What is the font-family property in CSS? How do you apply a custom Google Font to a webpage?

The font-family property in CSS is used to specify the typeface (font) that should be used for text on a webpage.

Step 1 :Go to https://fonts.google.com, choose a font (e.g., Roboto), and copy the <link> tag provided.

Apply the font using the font-family property.