CSS AND CSS 3

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

Ans

A CSS selector is a pattern used to select HTML elements that you want to style.
It tells the browser "which element(s) should get this CSS rule."

1. **Element Selector: This will make all `<p>` (paragraph) text blue**

2.Class Selector

- **Targets elements with a specific `class` attribute**

3.ID Selector: Targets an element with a specific `id` attribute.

2.: Explain the concept of CSS specificity. How do conflicts between multiple stylesget resolved?

Ans

What is CSS Specificity?

→ Specificity is the set of rules CSS uses to decide *which style wins* when multiple styles target the same element.

Element selectors (`p`, `h1`, `div`) → Lowest power

Class selectors (`.className`), pseudo-classes (`:hover`, `:first-child`)

ID selectors (`#idName`)

Inline styles (`<h1 style="color: red;">`) → Highest priority

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

Ans

1. Inline CSS: Defined directly inside the HTML element using the `style` attribute.

Advantages

- Quick to apply (good for testing or single-use styles).
- Overrides internal and external CSS (highest priority).

❌ **Disadvantages**

- Not reusable (you have to repeat styles for every element).
- Makes HTML messy and harder to maintain.
- Not good for large projects.

2. **Internal CSS**:inside a `<style>` tag in the `<head>` section of the HTML fi**le.**

Advantages

- **Keeps CSS in one place (better than inline).**
- **Easy to apply unique styles to a single page.**

❌ **Disadvantages**

- **Styles are only available for that one HTML file.**
- **If you have many pages, you must duplicate the CSS.**
- **Increases page size if repeated across multiple files.**

3. External CSS:Written in a separate `.css` file and linked with `<link>` in the `<head>`.

Advantages

Reusable: one CSS file can style multiple pages.

Keeps HTML clean and more maintainable.

Best for large projects.

Reduces code duplication.

❌ Disadvantages

Requires an extra HTTP request to load the CSS file (can slightly slow down first load).

Without internet or if the file fails to load, styles won't apply.

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

Ans

CSS Box Model

Every element in a webpage is considered a **box**. The **box model** describes how the size of that box is calculated.

It has **4 main parts (from inside → outside):**

1. **Content**
   - ○ The actual text, image, or content inside the element.
   - ○ Controlled by properties like `width` and `height`.
2. **Padding**
   - ○ The space **between the content and the border**.
   - ○ Increases the element's size (but keeps background color visible).
3. **Border**
   - ○ A line around the padding and content.
   - ○ Its thickness adds to the element's size.
4. **Margin**
   - ○ The **outer space** between the element and other elements.
   - ○ Creates spacing but does not have background color.

5.: What is the difference between border-box and content-box box-sizing inCSS? Which is the default?

Ans

`box-sizing` in CSS

The `box-sizing` property defines how the browser calculates the total width and height of an element.

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1. content-box (default)

- `width` and `height` apply only to the content.
- Padding and border are added outside the width/height.

border-box

- `width` and `height` include **content + padding + border**.
- Makes sizing easier for layouts (preferred in modern CSS).

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

Ans.

CSS Flexbox (Flexible Box Layout) is a layout model that makes it easy to arrange elements in rows or columns, and to distribute space between them efficiently.

👉 It is especially useful for **responsive design** (adjusting layout across screen sizes).

🔹 Key Concepts

1. Flex Container

- The parent element that holds flex items.
- You make an element a flex container by using:

Flex Item

- The child elements inside the flex container.

7.: Describe the properties justify-content, align-items, and flexdirection used in Flexbox.

Ans

1. flex-direction

- **Defines the direction of the main axis (the line along which items are placed).**
- **Values:**
  - `row` → **Default, items placed left → right**
  - `row-reverse` → **right → left**
  - `column` → **top → bottom**

2. justify-content

- **Aligns items along the main axis (depends on `flex-direction`).**

If `flex-direction: row` → aligns items horizontally.
If `flex-direction: column` → aligns items vertically.

- **Common values:**
  - `flex-start` **→ items at the start**
  - `flex-end` **→ items at the end**
  - `center` **→ items in the center**
  - `space-between` **→ equal space between items**
  - `space-around` **→ equal space around items**
  - `space-evenly` **→ equal space everywhere**

3. align-items

- **Aligns items along the cross axis (the axis perpendicular to the main axis).**

If `flex-direction: row` → aligns items vertically.
If `flex-direction: column` → aligns items horizontally.

- **Common values:**
  - `flex-start` **→ items at start of cross axis**
  - `flex-end` **→ items at end of cross axis**
  - `center` **→ items in middle of cross axis**
  - `stretch` **→ items stretch to fill (default)**
  - `baseline` **→ align text baselines**

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

Ans

What is CSS Grid?

CSS Grid Layout is a 2-dimensional layout system in CSS.

- It allows you to design web pages in **rows and columns**.
- You define a **grid container** and place child elements (grid items) inside it.

What is Flexbox?

- **Flexbox (Flexible Box Layout)** is a **1-dimensional layout system**.
- It arranges items in **a row OR a column** (not both at once).
- Great for distributing space and aligning items.

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

Ans

1. `grid-template-columns`

- **Defines the number of columns and their widths in a grid.**
- **Values can be:**
  - **Fixed size (`100px`)**
  - **Percentage (`50%`)**
  - **Fraction (`fr` → flexible portion of available space)**
  - **`auto` (size depends on content**

11.: What are media queries in CSS, and why are they important for responsive design?

ans.What are Media Queries?

A media query is a CSS technique that lets you apply styles only when certain conditions are true — such as screen size, device type, or orientation.

Why are Media Queries Important?

- **They make websites responsive → meaning the layout adapts to different devices (mobile, tablet, desktop).**
- **Ensure better user experience (no zooming or horizontal scrolling).**

- Allow custom styles for print, dark mode, orientation, etc.
- Essential for modern web design since users browse on many devices.

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

Ans

```
/* Default font size for larger screens */

body {

  font-size: 18px;

}



/* Media query for smaller screens (below 600px) */

@media (max-width: 600px) {

  body {

    font-size: 14px;

  }
```

}What happens:

- On desktop/laptop (width > 600px) → font size = 18px
- On mobile/small screen (width ≤ 600px) → font size = 14px

13. Explain the difference between web-safe fonts and custom web fonts. Whymight you use a web-safe font over a custom font?

Ans.

Web-Safe Fonts

- **Pre-installed on almost all devices and operating systems.**
- **Examples: `Arial`, `Times New Roman`, `Verdana`, `Courier New`, `Georgia`.**
- **Do not require downloading — they load instantly.**

✅ Advantages:

- **Very fast (no extra file download).**
- **Always available → consistent look across devices.**

❌ Disadvantages:

- **Limited choices (only a few basic fonts).**
- **Designs may look less unique or stylish**

Custom Web Fonts

- **Fonts that are not pre-installed → loaded from the web using services like Google Fonts or by hosting font files (`.woff`, `.ttf`, etc.).**

Why Use Web-Safe Fonts Instead of Custom Fonts?

- **Performance-critical websites (fast loading is more important).**
- **Email templates → most email clients block external font downloads.**
- **Minimalist designs where standard fonts look clean and professional.**
- **Older browsers or low-bandwidth environments (custom fonts might not work properly).**

13.What is the font-family property in CSS? How do you apply a custom GoogleFont to a webpage?

Ans

What is the `font-family` Property?

- **The `font-family` property in CSS specifies the font style to be used for text.**
- **You can list multiple fonts as a fallback system → if the first font is not available, the next one is used.**

How to Apply a Custom Google Font

- **Google Fonts makes it easy to add stylish fonts.**
- ✅ **Step 1: Import the Font**
- **In the `<head>` of your HTML, include the Google Fonts link:**
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