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

Answer:1 Selectors are pattern used to select element user wish to style in HTML Document.Selectors can target elements based on tag,group,Id,class and universal.

1.Element selector : p {

Color :blue;

}

This will make all p elements blue

2.Id Selector: #header {

Font-size:24;

}

This will give font size 24 to id header

3.class selector:

.highlight{

Background-color:yellow;

}

This will give background color yellow to all the classes with name highlight

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

CSS Specificity is  a set of rules that determines which CSS styles are applied to an element when there are conflicting styles. It is a way for the browser to decide which styles take precedence when multiple rules could apply to the same element.

P{

Color:blue;

}

.highlight {

Color:green

}

#main{

Color:red

}

<p class="highlight" id="main" style="color: orange;">Hello World</p>

The computed color for the <p> element will be orange because inline styles have the highest specificity.

When multiple styles apply to the same element, the browser resolves conflicts based on the specificity of the selectors:

1.Inline 2.Id Selectors 3.Class Selectors 4.Element Selectors

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

CSS (Cascading Style Sheets) can be applied to HTML documents in three primary ways: internal CSS, external CSS, and inline CSS. Each method has its own advantages and disadvantages, and the choice of which to use often depends on the specific needs of a project.

1. Internal CSS

Definition: Internal CSS is defined within a <style> tag in the <head> section of an HTML document. It applies styles to that specific document only.

Advantages:

1.Simplicity

2.No additional Files

Disadvantages:

1.Limited Reusability

2.Increased Load Time

2. External CSS

Definition: External CSS is defined in a separate .css file, which is linked to the HTML document using a <link> tag in the <head> section.

Advantages:

1.Reusability

2.Separation Of Concerns

3.Caching

Disadvantages:

1.Additional HTTP Request

2.Dependancy

3. Inline CSS

Definition: Inline CSS is applied directly to an HTML element using the style attribute.

Advantages:

1.Quick and Easy

2.Specificity

Disadvantages:

1.Poor Maintainability

2.Limited Reusability

3.Overriding isssues.

**CSS Box Model:**

**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 a fundamental concept in web design that describes how elements are structured and how their dimensions are calculated in a web page. Every element on a web page is represented as a rectangular box, and the box model consists of several components: content, padding, border, and margin.

1.Content:

This is the innermost part of the box, where text, images, or other media are displayed.

2.Padding:

 Padding is the space between the content and the border. It creates an inner space around the content.

3.Border:

The border surrounds the padding (if any) and the content. It can be styled with different widths, colors, and styles (solid, dashed, etc.).

4.Margin:

 Margin is the outermost space that separates the element from other elements. It creates space outside the border.

**Question 2: What is the difference between border-box and content-box box-sizing inCSS?Which is the default?**

In CSS, the box-sizing property defines how the width and height of an element are calculated, specifically how padding and borders are included in the total size of the element. There are two main values for the box-sizing property: content-box and border-box.

1.Content-box:

* Definition: This is the default value for the box-sizing property. When box-sizing is set to content-box, the width and height of an element are calculated based solely on the content area. Padding and borders are added to the width and height, which means they increase the total size of the element.

2.Border-box:

* Definition: When box-sizing is set to border-box, the width and height of an element include the content, padding, and border. This means that the specified width and height are the total dimensions of the element, making it easier to manage layouts without worrying about additional padding and borders.

**Flex-box:**

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

CSS Flexbox (Flexible Box Layout) is a layout model in CSS that provides a more efficient way to design complex layouts and align items within a container. It allows for responsive design by enabling items to grow, shrink, and be distributed within a container, making it easier to create flexible and adaptive layouts.

1. Flex Container:
   * The flex container is the parent element that holds the flex items. To create a flex container, you apply the display: flex; or display: inline-flex; property to an element.
   * The flex container establishes a new context for its child elements (the flex items) and controls their layout.
2. Flex-item:

* Flex-items are the diret children of a flex container. These are the elements that will be laid out using the flexbox model.
* Flex items can be manipulated in terms of size,alignment and order within flex container.

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

* flex-direction: Defines the direction of the flex items (row, row-reverse, column, column-reverse).
* Justify-content: Aligns flex items along the main axis ( eg. Start,center,space-between,space-around, space evenly)
* Align-items: Aligns flex items along the cross axis(eg. Stretch,center,baseline)

**CSS Grid:**

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

CSS Grid is a powerful layout system in CSS that allows for the creation of complex, two-dimensional layouts using rows and columns. Unlike Flexbox, which is primarily one-dimensional (either in a row or a column), Grid enables you to design layouts that can span both dimensions simultaneously.

Differences Between CSS Grid and Flexbox

* Dimension:
  + Grid: Two-dimensional (rows and columns).
  + Flexbox: One-dimensional (either rows or columns).
* Layout Control:
  + Grid: Items are placed in specific grid cells, allowing for more control over the layout.
  + Flexbox: Items are laid out in a linear fashion, with their position relative to each other.
* Use Cases:
  + Grid: Best for complex layouts where you need to control both dimensions, such as web pages with multiple sections.
  + Flexbox: Ideal for simpler layouts where you want to align items in a single direction, such as navigation bars or card layouts.

When to use grid over flexbox:

1. When there are complex layouts
2. Overlapping items
3. fixed layouts
4. Responsive Design

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

The grid-template-columns, grid-template-rows, and grid-gap properties are essential components of the CSS Grid layout system. They allow you to define the structure and spacing of a grid container.

1. grid-template-columns

The grid-template-columns property defines the number and size of the columns in a grid container. You can specify fixed sizes (like pixels), relative sizes (like percentages), or flexible sizes using the fr unit (fractional units).

2. grid-template-rows

The grid-template-rows property defines the number and size of the rows in a grid container, similar to grid-template-columns. You can also use fixed sizes, percentages, or the fr unit.

3. grid-gap

The grid-gap property (also known as gap) defines the spacing between rows and columns in a grid layout. You can specify a single value for both row and column gaps or separate values for each.

.grid-container {

display: grid;

grid-template-columns: 100px 200px 1fr; /\* 3 columns \*/

grid-template-rows: 150px auto 2fr; /\* 3 rows \*/

grid-gap: 10px; /\* 10px gap between rows and columns \*/

background-color: lightgray;

padding: 10px;

}

**Responsive Web Designs and Media Queries:**

**Question 1: What are media queries in CSS, and why are they important for responsivedesign?**

Media queries in CSS are a powerful feature that allows developers to apply different styles to a webpage based on the characteristics of the device or viewport displaying the content. They enable responsive design by allowing the layout and appearance of a website to adapt to various screen sizes, resolutions, orientations, and other conditions.

Importance of media queries:

* Improved User experience
* Flexible layout
* Performance Optimization
* Accessibility
* Future Proofing

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

@ media only screen and (min-width: 600px)

{

P{

Font size: 25px

}

}

**Typography and Web fonts**

**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?**

Web-safe fonts are a set of fonts that are widely available and pre-installed on most operating systems and devices.

Common Examples:

* Arial
* Times New Roman
* Courier New
* Georgia
* Verdana
* Tahoma

Custom Web Fonts:

Custom web fonts are fonts that are not typically installed on users' devices. They are often loaded from a web font service (like Google Fonts, Adobe Fonts, or self-hosted) and can include a wide variety of styles and designs that are not available as web-safe fonts.

* Google Fonts (e.g., Roboto, Open Sans, Lato)
* Adobe Fonts (formerly Typekit)
* Custom fonts created by designers

Reasons to use Web-safe fonts over Custom fonts:

Performance Considerations

Simplicity and Reliability

Compatibility

Accessibility

Development Speed

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

The font-family property in CSS is used to specify the typeface that should be applied to text within an HTML element. It allows you to define one or more font families for an element, providing a way to control the appearance of text on a webpage. The font-family property can accept a specific font name, a generic font family, or a combination of both.

1. Choose a Google Font: Go to the Google Fonts website and select the font you want to use.
2. Get the Embed Link: After selecting the font, Google Fonts will provide an embed link. You can customize the styles (e.g., regular, bold, italic) you want to include.
3. Add the Link to Your HTML: Copy the provided <link> tag and paste it into the <head> section of your HTML document.
4. Use the Font in CSS: Finally, use the font-family property in your CSS to apply the custom font to your desired elements.