

1. What is CSS?

CSS (Cascading Style Sheets) is a stylesheet language used to describe the presentation of a document written in HTML or XML. It controls the layout, colors, fonts, and overall visual styling of web pages.

2. Types of CSS

- Inline CSS: style applied directly in the HTML element using the 'style' attribute.

Example: `<p style='color:red;'>Red Text</p>`

- Internal CSS: style defined within a `<style>` tag in the `<head>` section of HTML.

Example:

```
<style>  
p { color: blue; }  
</style>
```

- External CSS: style placed in an external file and linked with `<link>` tag.

Example: `<link rel='stylesheet' href='styles.css'>`

3. CSS Syntax

A CSS rule-set consists of a selector and a declaration block.

Example:

```
p {  
color: green;  
font-size: 16px;  
}
```

4. Common CSS Properties

- color: Sets text color. Example: color: red;
- background-color: Sets background. Example: background-color: yellow;
- font-size: Changes size. Example: font-size: 18px;
- padding: Space inside element. Example: padding: 10px;
- margin: Space outside element. Example: margin: 20px;
- border: Adds border. Example: border: 1px solid black;

5. Selectors

- Universal Selector: * { margin: 0; }
- Element Selector: p { color: blue; }
- Class Selector: .box { padding: 10px; }
- ID Selector: #main { font-size: 20px; }
- Grouping: h1, h2, p { color: gray; }

6. Pseudo-classes and Pseudo-elements

- Pseudo-class: a:hover { color: red; }
- Pseudo-element: p::first-line { font-weight: bold; }

7. Box Model

Every element is a box consisting of:

- Content
- Padding
- Border

- Margin

Example:

```
div {  
    padding: 10px;  
    border: 2px solid black;  
    margin: 20px;  
}
```

8. Flexbox (CSS3 Layout)

A layout model for flexible and responsive layouts.

Example:

```
.container {  
    display: flex;  
    justify-content: center;  
    align-items: center;  
}
```

9. Grid Layout

Grid is a powerful 2D layout system.

Example:

```
.grid-container {  
    display: grid;  
    grid-template-columns: auto auto;  
    gap: 10px;
```

```
}
```

10. Media Queries (Responsive Design)

Used to apply different styles on different devices.

Example:

```
@media (max-width: 600px) {  
    body { background-color: lightblue; }  
}
```

11. Animations and Transitions

CSS allows smooth transitions and animations.

Example Transition:

```
div {  
    transition: background-color 0.5s ease;  
}  
  
div:hover {  
    background-color: red;  
}
```

12. Units in CSS

- px: pixels (absolute)
- %: percentage (relative)
- em/rem: relative to font size
- vw/vh: viewport width/height

13. Custom Properties (CSS Variables)

```
:root {  
  --main-color: #06c;  
}  
  
h1 {  
  color: var(--main-color);  
}
```