CSS Essentials - The Complete Guide by Arun Raj

Arun Raj - The Complete Guide to HTML & CSS

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1. Introduction to CSS

1.1 What is CSS?

- CSS (Cascading Style Sheets) is used to style HTML elements, controlling layout, colors, fonts, and more.

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

1.2 Role of CSS in Web Development

- Enhances the appearance of web pages.
- Enables responsive designs for various devices.
- Separates content (HTML) from presentation (CSS).

1.3 Types of CSS

Inline CSS: Style within an HTML element.
html

```
<p style="color: red;">This is red text.</p>
```

Internal CSS: Style within `<style>` tags in the `<head>`.
html

```
<style>
  h1 {
    font-size: 24px;
  }
</style>
```

External CSS: Style in a separate file linked with `<link>`.
html
```
<link rel="stylesheet" href="styles.css">
```

1.4 CSS Syntax and Selectors Overview

Syntax:
css
```
selector {
  property: value;
}
```
Example:
css
```
body {
  background-color: lightgrey;
}
```

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2. CSS Selectors

2.1 Basic Selectors

Type Selector: Targets elements by tag name.
css
```
p {
  color: green;
}
```
Class Selector: Targets elements by class.
css
```
.myClass {
  font-weight: bold;
}
```
ID Selector: Targets elements by ID.
css
```
#myId {
  text-align: center;
}
```

2.2 Grouping and Universal Selectors

Grouping Selector:
css
```
h1, h2, h3 {
  margin: 10px;
}
```

Universal Selector:
css
```
* {
  padding: 0;
  margin: 0;
}
```

2.3 Attribute Selectors

Example:
css
```
input[type="text"] {
  border: 1px solid black;
}
```

2.4 Pseudo-classes

Example:
css
```
a:hover {
  color: red;
}
```

2.5 Pseudo-elements

Example:
css
```
p::first-line {
  font-style: italic;
}
```

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3. CSS Box Model

3.1 Understanding Content, Padding, Border, and Margin

Example:
css
```
div {
  margin: 10px;
  padding: 15px;
  border: 2px solid black;
}
```

3.2 Border Properties

Example:
css

```
div {
  border: 1px solid black;
  border-radius: 10px;
}
```

3.3 Margin and Padding Properties

Example:
css

```
p {
  margin: 20px;
  padding: 10px;
}
```

3.4 Box Sizing

Example:
css

```
div {
  box-sizing: border-box;
}
```

---

4. CSS Colors and Backgrounds

4.1 Color Formats

Example:
css

```
h1 {
  color: rgb(255, 0, 0);
}
```

4.2 Background Properties

Example:
css
```css
body {
  background-image: url("background.jpg");
}
```
4.3 Gradient Backgrounds

Example:
css
```css
div {
  background: linear-gradient(to right, red, yellow);
}
```

---

5. CSS Text and Fonts

5.1 Font Properties

Example:
css
```css
p {
  font-family: Arial, sans-serif;
}
```

5.2 Text Properties

Example:
css
```css
h1 {
  text-align: center;
}
```

5.3 Text Effects

Example:
css
```css
p {
  text-shadow: 2px 2px 4px grey;
}
```

---

6. CSS Positioning

6.1 Static Positioning

Example:
css
```
div {
  position: static;
}
```

6.2 Relative and Absolute Positioning

Example:
css
```
div {
  position: relative;
  top: 10px;
  left: 20px;
}
```

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7. CSS Layouts

7.1 Flexbox Layout

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

7.2 Grid Layout

Example:
css
```
.grid-container {
  display: grid;
  grid-template-columns: 1fr 1fr;

}
```

7.4 Grid Layout

7.4.1 Grid Container and Grid Items

- Define a grid container with `display: grid`.

Example:
css
```
.grid-container {
  display: grid;
  gap: 10px;
}
.grid-item {
  background-color: lightblue;
  border: 1px solid black;
  padding: 10px;
  text-align: center;
}
```
html
```
<div class="grid-container">
  <div class="grid-item">Item 1</div>
  <div class="grid-item">Item 2</div>
  <div class="grid-item">Item 3</div>
</div>
```

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7.4.2 Defining Rows and Columns

- Use `grid-template-rows` and `grid-template-columns`.

Example:
css
```
.grid-container {
  display: grid;
  grid-template-columns: 1fr 2fr;
  grid-template-rows: auto 100px;
}
```

- This creates two columns where the first column takes 1 fraction and the second column takes 2 fractions.

7.4.3 Grid Template Areas

- Define named areas for easier layout management.

Example:
css
```
.grid-container {
  display: grid;
  grid-template-areas:
    "header header"
    "sidebar main";
}
.header {
  grid-area: header;
}
.sidebar {
  grid-area: sidebar;
}
.main {
  grid-area: main;
}
```

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8. CSS Responsive Design

8.1 Introduction to Media Queries

- Media queries allow different styles for different devices.

Example:
css
```
@media (max-width: 768px) {
  body {
    background-color: lightgrey;
  }
}
```

8.2 Breakpoints and Fluid Layouts

- Define breakpoints for screen sizes, e.g., 480px, 768px, 1024px.

Example:
css
```
@media (min-width: 1024px) {
  .container {
    max-width: 960px;
  }
}
```

8.3 CSS Units

- **Absolute Units**: px.
- **Relative Units**: %, em, rem, vh, vw.

Example:
css
Copy code
```
h1 {
  font-size: 2rem;
}
```

8.4 Mobile-First Design Principles

- Design for smaller screens first, then add styles for larger screens using media queries.

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9. CSS Animations and Transitions

9.1 CSS Transitions

Example:
css
```
button {
  transition: background-color 0.3s;
}
button:hover {
  background-color: lightgreen;
}
```

9.2 CSS Animations

Example:
css
```css
@keyframes slide {
  from {
    transform: translateX(0);
  }
  to {
    transform: translateX(100px);
  }
}
div {
  animation: slide 2s infinite;
}
```

9.3 Transformations

Example:
css
```css
.box {
  transform: scale(1.2) rotate(45deg);
}
```

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9.4 Hover and Focus Animations

Example:
css
```css
a:hover {
  color: red;
  text-decoration: underline;
}
```

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10. CSS Frameworks (Introduction)

10.1 What are CSS Frameworks?

- Predefined CSS files to simplify development, e.g., Bootstrap, Tailwind CSS.

10.2 Overview of Popular Frameworks

- **Bootstrap**: Offers pre-styled components like buttons and grids.
- **Tailwind CSS**: A utility-first framework for custom designs.

10.3 Advantages and Disadvantages

- **Advantages**: Saves time, responsive designs.
- **Disadvantages**: Limited customizations, additional learning curve.

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11. CSS Best Practices

11.1 Writing Clean and Maintainable CSS

- Use meaningful class names and avoid IDs for styling.

11.2 Naming Conventions

BEM: Block__Element--Modifier.
css

```
.button__icon--large {
  font-size: 20px;
}
```

11.3 Avoiding Redundancy and Overwriting Styles

- Avoid using the `!important` declaration.

11.4 Performance Optimization

- Minify CSS files and use a single CSS file to reduce HTTP requests.