Chapter 5: - Advanced CSS

Advanced CSS Styling 🖌️

CSS is a powerful styling language that allows you to create visually appealing and interactive web pages. When designing a modern website, understanding **pseudo-classes, pseudo-elements, animations, and transitions** is crucial. These features enable dynamic styling effects, smooth animations, and refined user interactions.

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1. Pseudo-Classes in CSS 🎭

What are Pseudo-Classes?

A **pseudo-class** is a keyword added to a CSS selector that specifies a special state of the selected element. They are used to apply styles dynamically without modifying the HTML structure.

Commonly Used Pseudo-Classes

Pseudo-Class	Description
:hover	Styles an element when the user hovers over it.
:focus	Styles an element when it is focused (like an input field when clicked).
:nth-child(n)	Selects an element based on its position among its siblings.
:first-child	Selects the first child of a parent.
:last-child	Selects the last child of a parent.
:checked	Applies styles to checked <input> elements.
:disabled	Styles elements that are disabled.

Examples

1. :hover - Changing button color on hover

```
button {
  background-color: blue;
  color: white;
  padding: 10px 20px;
  border: none;
}

button:hover {
  background-color: darkblue;
}
```

📌 *When the user hovers over the button, the background color changes.*

2. :focus - Highlighting an input field when focused

```
input:focus {
  border: 2px solid green;
  outline: none;
}
```

📌 *When the input field is selected, it gets a green border.*

3. :nth-child(n) - Styling alternate list items

```
li:nth-child(odd) {
  background-color: lightgray;
}
```

📌 *Applies a background color to odd-numbered list items.*

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2. Pseudo-Elements in CSS 🎨

What are Pseudo-Elements?

A **pseudo-element** allows you to style specific parts of an element, like adding text or modifying certain portions without additional HTML.

Commonly Used Pseudo-Elements

Pseudo-Element	Description
::before	Inserts content before an element's actual content.
::after	Inserts content after an element's actual content.
::first-letter	Styles the first letter of a block of text.
::first-line	Styles the first line of a block of text.
::selection	Styles the text when it is selected.

Examples

1. ::before and ::after - Adding Icons

```
h1::before {
  content: " 🔥 ";
}

h1::after {
  content: " 🚀 ";
}
```

📌 *Adds a fire emoji before and a rocket after every <h1> element.*

2. ::selection - Changing text highlight color

```
::selection {
  background-color: yellow;
  color: red;
}
```

📌 *When the user selects text, it appears in red with a yellow background.*

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3. CSS Transitions for Smooth Effects ⏳

What are Transitions?

CSS **transitions** allow changes in CSS properties to occur smoothly over a specified duration instead of happening instantly.

Basic Syntax

```
selector {
  transition: property duration timing-function delay;
}
```

- property: The CSS property to animate (e.g., background-color).
- duration: The time the transition takes (e.g., 0.5s).
- timing-function: The acceleration of the transition (ease, linear, ease-in, ease-out, ease-in-out).
- delay: The time before the transition starts (optional).

Examples

1. Smooth Button Hover Effect

```
button {
```

```
  background-color: blue;
  transition: background-color 0.5s ease;
}

button:hover {
  background-color: darkblue;
}
```
📌 *When the user hovers over the button, the background color changes smoothly over 0.5 seconds.*

2. Expanding a Div on Hover

```
.box {
  width: 100px;
  height: 100px;
  background-color: red;
  transition: width 0.5s ease-in-out;
}

.box:hover {
  width: 200px;
}
```
📌 *When hovered, the box expands smoothly.*

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4. CSS Animations for Dynamic Effects 🎬

What are Animations?

CSS **animations** allow elements to transition between styles using keyframes. They provide more complex and controlled effects compared to transitions.

Basic Syntax

```
@keyframes animation-name {
  from { property: value; }
  to { property: value; }
}

selector {
  animation: animation-name duration timing-function delay iteration-count direction;
}
```

- @keyframes defines the animation.
- animation-name: The name of the animation.
- duration: The length of the animation (e.g., 2s).
- timing-function: How the animation progresses (ease, linear, etc.).
- delay: Time before the animation starts (optional).
- iteration-count: How many times the animation runs (infinite, 1, 2, etc.).
- direction: The direction of the animation (normal, reverse, alternate, etc.).

Examples

1. Bouncing Ball Animation

```
@keyframes bounce {
  0% { transform: translateY(0); }
  50% { transform: translateY(-50px); }
```

```
  100% { transform: translateY(0); }
}

.ball {
  width: 50px;
  height: 50px;
  background-color: orange;
  border-radius: 50%;
  animation: bounce 1s ease infinite;
}
```

📌 *Creates a bouncing effect by moving the element up and down.*

2. Rotating Loader Animation

```
@keyframes spin {
  from { transform: rotate(0deg); }
  to { transform: rotate(360deg); }
}

.loader {
  width: 50px;
  height: 50px;
  border: 5px solid gray;
  border-top: 5px solid blue;
  border-radius: 50%;
  animation: spin 1s linear infinite;
}
```

📌 *Creates a spinning effect similar to a loading indicator.*

Key Takeaways 🎯

✓ **Pseudo-classes** add dynamic styling based on element states (e.g., :hover, :focus).

✓ **Pseudo-elements** style specific parts of an element (e.g., ::before, ::after).

✓ **Transitions** create smooth changes in styles over time.

✓ **Animations** provide advanced motion effects using @keyframes.

By mastering these concepts, you can build visually appealing and interactive websites that enhance user experience! 🚀