CSS3 Transitions and Animations

CSS3 Transitions

CSS3 transitions allow you to change property values smoothly (over a given duration), rather than instantly. This is useful for creating interactive UI elements and adding visual interest to a webpage.

Key Properties

- transition: A shorthand property for setting the four transition properties into a single declaration.
- transition-property: The CSS property you want to add an effect to.
- transition-duration: The duration of the transition (e.g., 2s, 500ms).
- transition-timing-function: The speed curve of the transition (linear, ease, ease-in, ease-out, ease-in-out, cubic-bezier).
- transition-delay: Defines when the transition effect will start.

Example

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

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

In this example, when the button is hovered over, its background color transitions from blue to green over 0.5 seconds.

Detailed Breakdown

transition-property

Specifies the name of the CSS property the transition effect is for.

transition-duration

Specifies how many seconds or milliseconds a transition effect takes to complete.

transition-timing-function

Specifies the speed curve of the transition effect.

transition-delay

Specifies when the transition effect will start.

CSS3 Animations

CSS3 animations allow you to animate transitions from one CSS style configuration to another. They are more complex than transitions and provide more control over the intermediate steps in the animation sequence.

Key Properties

- @keyframes: Specifies the animation code. The @keyframes rule contains the styles that the element will have at certain times.
- animation: A shorthand property for setting the eight animation properties into a single declaration.
- animation-name: Specifies the name of the @keyframes animation.
- animation-duration: Specifies the duration of the animation.
- animation-timing-function: Specifies the speed curve of the animation.
- animation-delay: Specifies a delay before the animation starts.
- animation-iteration-count: Specifies the number of times an animation should be played.
- animation-direction: Specifies whether an animation should be played forwards, backwards or in alternate cycles.
- animation-fill-mode: Specifies how a CSS animation should apply styles to its target before and after it is executing.
- animation-play-state: Specifies whether the animation is running or paused.

Example

```css
@keyframes example {
  0% {background-color: red; left: 0px; top: 0px;}
  25% {background-color: yellow; left: 200px; top: 0px;}
  50% {background-color: blue; left: 200px; top: 200px;}
  75% {background-color: green; left: 0px; top: 200px;}
  100% {background-color: red; left: 0px; top: 0px;}
}

div {
  width: 100px;
  height: 100px;
  position: absolute;
  animation: example 5s infinite;
}
```

In this example, a `div` element moves in a square and changes color along the way, repeating infinitely every 5 seconds.

Detailed Breakdown

@keyframes
Defines the animation.

animation-name
Specifies the name of the @keyframes animation.

animation-duration
Specifies how many seconds or milliseconds an animation takes to complete one cycle.

animation-timing-function
Specifies the speed curve of the animation.

animation-delay
Specifies a delay before the animation starts.

animation-iteration-count
Specifies the number of times an animation should be played.

animation-direction
Specifies whether an animation should play forward, backward, or in alternate cycles.

animation-fill-mode
Specifies how a CSS animation should apply styles to its target before and after it is executing.

animation-play-state
Specifies whether the animation is running or paused.

Practical Considerations

- Browser Support: Ensure you check compatibility as older browsers may not support all properties.
- Performance: Excessive use of animations can lead to performance issues, especially on mobile devices.
- Accessibility: Consider users with motion sensitivity; provide options to disable animations if necessary.