GSAP Animation Basics

Introduction

GSAP (GreenSock Animation Platform) is a powerful JavaScript library for creating high-performance animations in web projects. Understanding its core functions and parameters helps build smooth, professional animations.

Core Methods

1. gsap.to() – Animates from the element's current state to the given values.

Example: Move an element from its current position to x=300.

2. gsap.from() – Animates from the given values to the element's current state.

Example: Start from x=-200 and fade in to its normal position.

3. gsap.fromTo() – Explicitly defines both start and end values.

Example: Start at x=-200 and move to x=300.

Key Parameters

- **x**: Horizontal movement (positive → right, negative → left).
- **y**: Vertical movement (positive → down, negative → up).
- **opacity**: Transparency (0 = invisible, 1 = fully visible).
- **scale**: Size scaling (1 = normal, 2 = double size, 0.5 = half size).
- **rotation**: Rotation in degrees.
- **duration**: Time (in seconds) for the animation to complete.

Easing

Easing controls the speed curve of the animation (how it accelerates and decelerates).

- **power1.in**: Starts slow, speeds up.
- **power1.out**: Starts fast, slows down.
- **power1.inOut**: Slow at start and end, fast in the middle.
- **power2, power3, power4**: Stronger curves, more pronounced effect.
- **bounce.out**: Simulates a bouncing effect.
- **elastic.out**: Overshoots and comes back, like a spring.

Timeline

GSAP timelines allow sequencing multiple animations in order. Example:

```
let tl = gsap.timeline();
tl.from('#box', {x: -200, opacity: 0, duration: 1})
.to('#box', {x: 200, scale: 1.5, duration: 1});
```

Coordinate System

In GSAP, the origin (0,0) is the element's original position.

- x: Positive → moves right, Negative → moves left.
- y: Positive → moves down, Negative → moves up.

Conclusion

With gsap.to(), gsap.from(), gsap.fromTo(), and easing options, you can create smooth, engaging animations. Experiment with parameters like x, y, scale, opacity, and rotation to build interactive experiences.