

# What is `transition`?

- It allows **smooth animation** when a CSS property changes.

## # Syntax:

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

- **property** → Which property will animate (all, background-color, transform, width, font-size).
  - **duration** → How long the transition lasts (0.3s, 1s, etc.).
  - **timing-function** → How the speed progresses (ease, linear, ease-in, ease-out, ease-in-out).
    - ease - transition will start slow, then go fast, and end slow (this is default)
    - linear - transition will keep the same speed from start to end
    - ease-in - transition will start slow
    - ease-out - transition will end slow
    - ease-in-out - transition will have a slow start and end
  - **delay** → Time before transition starts (optional).
- 

## CSS Transform

The transform property **alters the visual appearance of an element** in 2D or 3D space without affecting the normal document flow.

It's commonly used for animations, interactive UI effects, and layout adjustments.

### 🔍 Transform Types

#### 1 2D Transforms

These operate on the **X and Y plane**.

##### 1. `translate()` – Move element

- Moves the element along the X (horizontal) and Y (vertical) axes.

```
transform: translate(50px, 20px); /* move right 50px, down 20px */
```

- Variants:
  - `translateX(50px)` → only X-axis
  - `translateY(20px)` → only Y-axis
  - `translateZ(50px)` → in 3D along Z-axis

##### 2. `rotate()` – Rotate element

- Rotates the element clockwise (positive) or counterclockwise (negative).

```
transform: rotate(45deg); /* rotates 45° clockwise */
```

- Variants:

- rotateX(45deg) → 3D rotation along X-axis
- rotateY(45deg) → 3D rotation along Y-axis
- rotateZ(45deg) → same as 2D rotate

### 3. scale() – Resize element

- Scales element relative to its original size.

`transform: scale(1.5); /* 150% of original size */`

- Variants:
  - scaleX(2) → double width only
  - scaleY(0.5) → half height only

### 4. skew() – Skew element

- Tilts an element along X or Y axes.

`transform: skew(20deg, 10deg); /* skew X 20°, skew Y 10° */`

- Variants:
  - skewX(20deg) → only X-axis
  - skewY(10deg) → only Y-axis

## 2 3D Transforms

These operate along the **Z-axis**, adding depth.

- translateZ(50px) → move closer/farther in 3D space
- rotateX(45deg) → rotate around horizontal axis
- rotateY(45deg) → rotate around vertical axis
- perspective() → adds perspective effect for 3D

### Transform Origin

- Default: transform-origin: 50% 50%; → center of element.
- Can change pivot point:

`transform-origin: top left; /* rotates/scales from top-left corner */`

### Combining Transforms

Multiple transforms can be applied at once:

`transform: translateX(50px) rotate(30deg) scale(1.5);`