

week::six

CSS3 Transitions, Transformations, & Animations

Transitions

Use

- Create simple (and complex) animated effects within a browser without JavaScript.
- Use carefully, however, ensuring that the animations do not get in the way, slow down, or detract from of the user experience.

Key Pseudo-Class Triggers

```
:hover  
:focus  
:active
```

How to Apply

- Transition properties must be included in the **normal** state CSS rule, not within the CSS trigger rule.

Properties

```
transition-property: background;  
transition-duration: 0.3s;  
transition-timing-function: ease;  
transition-delay: 0.6s;
```

Shorthand Syntax:

```
transition: [property] [duration] [timing-function] [delay];  
transition: color 0.2s linear;  
transition: all 1s ease 0.3s;
```

Vendor Prefixes

- None needed! Can use if you are targeting older browsers.

What Can Be Transitioned?

- Many, but not all, CSS properties.
- You will most likely run into a property that cannot be transitioned.
- A complete list:
 - <http://www.w3.org/TR/css3-transitions/#properties-from-css->

Hardware Acceleration?

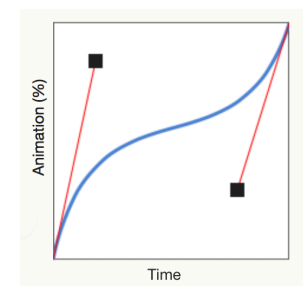
- Some transitions are hardware accelerated in WebKit, and other browsers have implemented acceleration as well.

Timing Function Values

- ease
- linear
- ease-in
- ease-out
- ease-in-out
- cubic-bezier (see right)

Resources

- Great Tutorial:
 - <http://css3.bradshawenterprises.com/all/>



Transformations

Use

- Can be static or triggered by a user action
- Use only one transform property per CSS selector—multiple options can be applied together using a single transform.

Triggers

[none – static]

:hover
:focus
:active
:checked

Properties

```
transform: scale(1, 2);
transform-origin: top left;
```

Property Options

translate	Moves an element by a given number of pixels, on the X axis, the Y axis, both.
rotate	Rotates an HTML element.
scale	Controls the size of an element on the X axis, the Y axis, or both.
skew	Skew an element by a given angle in the X direction, Y direction, or both.

Examples

```
transform: rotate(360deg);
transform: skew(35deg);
transform: scale(1, 0.75);
transform: translate(20px, 25px);
transform: skew(30deg) scale(1.1,1.1) rotate(40deg) translate(10px, 20px);
```

Vendor Prefixes

```
-webkit-transform: rotate(180deg);
-ms-transform: rotate(180deg);
transform: rotate(180deg);
```

What Can Be Transformed?

- Block-level and inline elements

Hardware Acceleration?

- Some transitions are hardware accelerated in WebKit, and other browsers have implemented acceleration as well.

Resources

- Great Tutorial:
 - <http://css3.bradshawenterprises.com/all/>
- Getting Hardboiled:
 - <http://blog.typekit.com/2011/01/25/case-study-getting-hardboiled-with-css3-2d-transforms/>
- Dan Cederholm:
 - <http://css3exp.com/moon/>

3D Transforms

What About 3D Transforms?

- 3D adds the Z-axis, which allows you to move an object forward and backward in the visual plane.
- Support is good, but not as good as 2D transforms.

Examples

```
transform: rotate3d(360deg);
transform: rotateX(180deg);
transform: rotateY(180deg);
transform: skew(35deg);
transform: scale3d(1, 0.75);
transform: translate3d(20px, 25px);
perspective: 800px; // perspective is the distance of the 3D plane
```

CSS Animations

Use

- Can be used with transitions & transforms to animate certain CSS properties.

Triggers

- Animations play by default.
- None natively, though jQuery/JavaScript can be used.

Properties

```
.element {
  animation: move_me 6s infinite;
}

@keyframes move_me {
  0% { transform: scale(1); }
  50% { transform: scale(.2); }
  100% { transform: scale(1); }
}
```

Shorthand Syntax:

```
animation: [@keyframes_name] [duration] [timing-function] [delay] [name];
```

Property Options

animation-name:	CSS name of animation
animation-duration:	Animation length in seconds (s) or milliseconds (ms)
animation-timing-function:	Takes transition timing values (see above)
animation-delay:	Animation starting delay length in seconds (s) or milliseconds (ms)
animation-direction:	Sets direction of the animations. Can be normal (default), reverse , alternate , and alternate-reverse .
animation-iteration-count:	Number of times animation repeats
animation-fill-mode:	Controls how an animation applies its styles.
animation-play-state:	Sets the state of an animation to either paused or running .

What Can Be Animated?

- o Quite a few properties can be animated.
- o For a complete list, see:
 - https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_animated_properties

Vendor Prefixes

- o Animations should be prefixed:


```
@-webkit-keyframes MyAnimation {}
@keyframes MyAnimation {}

.animatedElement {
  -webkit-animation: MyAnimation 2s;
  animation: MyAnimation 2s;
}
```

Hardware Acceleration?

- o Any transition or transform that is hardware-accelerated will be animated using the GPU.
- o Properties that are accelerated include:
 - transform
 - opacity
 - filter

Resources

- o <https://css-tricks.com/almanac/properties/a/animation/>
- o Instructor CSS Animation CodePen Collection:
 - <https://codepen.io/collection/nJNmGV/>

Triggering & Creating Transitions using jQuery Effects

Use

- o Our jQuery code to show and hide mobile navigation can also be used to create many different “special” effects on a web page.
- o They can be triggered by touch/clicking, providing an interactive experience for those on mobile/touch devices. (and allowing us to NOT rely on :hover)

Code Breakdown

```

20 <script>
21 // Load jQuery and other Javascript after page is done loading
22
23
24
25 $( document.body ).ready(function () {
26
27     $( "#mobilenav" ).click(function() {
28         $( "#primary" ).slideToggle( "fast", function() { });
29     });
30
31 });
32
33 /*
34
35
36
37
38
39 </script>
40

```

Tells the browser to load the following JS after the page is done loading

Tells the script to be “listening” to the element with ID of “mobilenav” for a click or touch event.

This is the action line.

- #primary targets the element to be animated/changed/hidden
- slideToggle is the effect to be applied
- “fast” is a property of the effect

jQuery Effects Reference

- o <https://api.jquery.com/category/effects/>