Session 5

Mohamed Emary

March 20, 2024

Cont. CSS

Border

`border` property is used to set the border of an element. It is a shorthand property for setting the `width`, `style`, and `color` of the border on different sides of an element, in the form `border: width style color;`.

To remove the default border, set to an element like button use `border: none;`.

`border-width`: It is used to set the width of the border. It takes values in `px`, `em`, `rem`, `%`, etc.

`border-width` can also be set individually for each side of the element using `border-top-width`, `border-right-width`, `border-bottom-width`, and `border-left-width`, or the shorthand property `border-width: top right bottom left;`.

`border-style`: It is used to set the style of the border. It can take values like:

- `solid`
- `dotted`
- `dashed`
- `double`
- `outset`
- `inset`

`border-color`: It is used to set the color of the border. It can take values like:

- `color-name`
- `#hex`
- `rgb()`
- `rgba()`
- `hsl()`

- `hsla()`
- `transparent`

`border-radius`: It is used to set the radius of the border. It can take values in `px`, `em`, `rem`, `%`, etc.

To make element look like a circle, set `border-radius` to `50%` if the element is a square (width and height are equal).

You can also set the radius individually for each corner of the element using:

- `border-top-left-radius`
- `border-top-right-radius`
- `border-bottom-left-radius`
- `border-bottom-right-radius`

CSS Sprites

One of the important things you should take in mind as a web developer is the **HTTP requests**. The more the requests, the more the time it takes to load the page which will lower the performance of the website.

So to improve the performance of the website, we can use CSS sprites. CSS sprites are a way to reduce the number of HTTP requests made for image resources, by combining images in one file.

For example, consider the following image, It has 20 icons of different colors, each of 76x76 pixels and the whole image is 384x310 pixels.

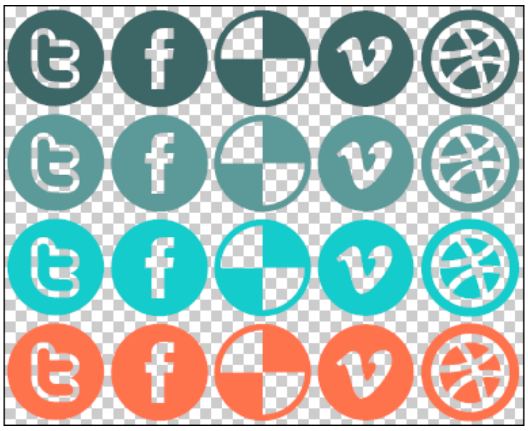


Figure 1: CSS Sprites

It has a lot of icons. Instead of loading each icon separately, we can combine all the icons in one image and use CSS to display the required icon.

```css
.icon {
    width: 76px;
    height: 76px;
    background-image: url('icons.png');
}

.icon-1 {
    background-position: 0 0;
}

.icon-2 {
    background-position: -76px 0;
}
```

Background Clip

`background-clip`: It is used to specify the painting area of the background. It can take values like:

- `border-box` (default) - Starts placing the background **from the border** of the element.

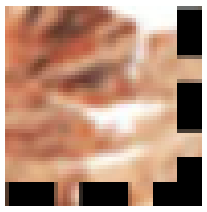


Figure 2: border-box

- `padding-box` - Starts placing the background **from the padding** of the element.

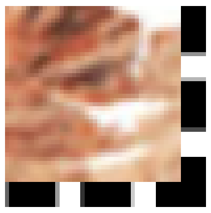


Figure 3: padding-box

- `content-box` - Starts placing the background **from the content** of the element.

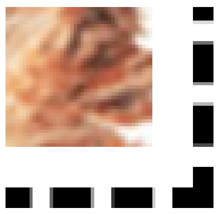
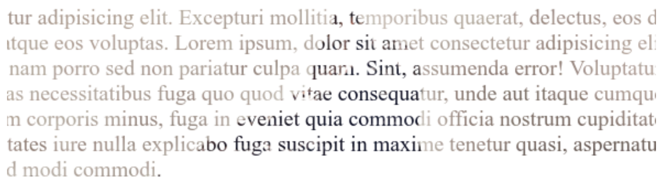


Figure 4: content-box

- `text` - Makes the background to be painted within the text, but the text `color` has to be set to `transparent`. (Not supported in all browsers)



tur adipisicing elit. Excepturi mollitia, temporibus quaerat, delectus, eos d
ıtque eos voluptas. Lorem ipsum, dolor sit amet consectetur adipisicing el
nam porro sed non pariatur culpa quam. Sint, assumenda error! Voluptatu
as necessitatibus fuga quo quod vitae consequatur, unde aut itaque cumqu
m corporis minus, fuga in eveniet quia commodi officia nostrum cupiditat
tates iure nulla explicabo fuga suscipit in maxime tenetur quasi, aspernatu
d modi commodi.

Figure 5: text

Note that `background-clip` has some compatibility issues with older browsers.

Viewport Units

Viewport units are a new set of units designed to be used in CSS for responsive design. They are relative to the viewport width and height.

Viewport is the browser window size. 1vw = 1% of viewport width, 1vh = 1% of viewport height.

Position

A CSS property that allows you to control the position of an element. It can take values like:

- `static` (default) - The element is positioned according to the normal flow of the document.
- `relative` - The element is positioned according to the normal flow of the document, and then offset relative to itself based on the values of `top`, `right`, `bottom`, and `left`.
- `absolute` - The element is removed from the normal flow of the document, and no space is created for the element in the page layout. It is positioned relative to its closest non statically positioned ancestor if any; otherwise, it is placed relative to the initial containing block.
- `fixed` - The element is removed from the normal flow of the document, and no space is created for the element in the page layout. It is positioned relative to the initial containing block established by the viewport, except when one of its ancestors has a `transform`, `perspective`, or `filter` property set to something other than `none`, in which case that ancestor behaves as the containing block.
- `sticky` - The element is treated as `relative` positioned until it crosses a specified threshold, at which point it is treated as `fixed` positioned.

When using `position: relative;` the element will be positioned relative to its normal position.

```css
.relative-one {
    position: relative;
    top: 20px; /* Moves the element 20px down of its normal
     ↪  position */
    left: 20px; /* Moves the element 20px right of its normal
     ↪  position */
}

.relative-two {
    position: relative;
    top: 20px;
    bottom: 20px; /* No effect since the page flows from top to
     ↪  bottom */
                  /* Normally no one will use top and bottom
                   ↪  together */
}

.relative-three {
    position: relative;
    left: 20px;
    right: 20px;  /* No effect since the page flows from left to
     ↪  right unless you change it */
```

```
                        /* Normally no one will also use right and left
                         ↪  together */
}
```

In `static` position, the `top`, `right`, `bottom`, and `left` properties have no effect.

When using `position: absolute;` the element will be positioned relative to the viewport, unless its ancestor (parent or a parent of a parent) has a `position` property set to `relative`, `absolute`, `fixed`, or `sticky`, in which case it will be positioned relative to its non statically positioned ancestor.

```css
.absolute-one {
    position: absolute;
    top: 20px;  /* Moves the element 20px down of the top of the
     ↪  viewport */
    left: 20px; /* Moves the element 20px right of the left of the
     ↪  viewport */
}

.absolute-two {
    position: absolute;
    bottom: 0px;
    right: 0px;
} /* Moves the element to the bottom right of the viewport */
```

When using `position: relative` the original place of the element will be reserved even if the element is moved away from it.

The element can also span over other elements.

When using `position: absolute` the original place of the element will not be reserved.

To make an absolute child move relative to its parent give its parent a position different from `static`, otherwise it will move relative to its closest positioned ancestor and if no positioned ancestor is found it will move relative to the viewport.

When using `position: fixed` the original place of the element will not be reserved, and the element will be positioned relative to the viewport.

When using `position: sticky` the original place of the element will be reserved until it reaches a specified threshold (with scroll for example), at which point it is positioned relative to the viewport.

When using `position: sticky;` the element will be positioned relative to its normal position until it crosses a specified threshold, at which point it is positioned relative to the viewport.

Relative positioning is mostly used in animations because it allows you to control the position of an element relative to its normal position, so you can move elements around without disrupting the rest of the layout.

`z-index` property is used to specify the stack order of an element. An element with greater `z-index` will be displayed above an element with a lower `z-index`.

The element with the greater `z-index` will be displayed above the element with the lower `z-index`.

default value for `z-index` is `auto`, which is the default order at which elements were written in the HTML code.

```html
<div class="one"></div>
<div class="two"></div>
```

```html
<div class="three"></div>
```

```css
.one {
    position: relative;
    z-index: 1;
}

.two {
    position: relative;
    z-index: 3;
}

.three {
    position: relative;
    z-index: 2;
}
```

In the page `.two` will be displayed above `.three` and `.one` will be displayed below `.three`.

Stacking context

Stacking context is used to determine which elements appear in front of others. Elements with a higher stack order (higher `z-index` value) appear in front of elements with a lower stack order.

If we have a collection of sibling elements, each with a `z-index` value, the element with the highest `z-index` value will be displayed above the others. And if one of those elements has a lower `z-index` value than its siblings, it will be displayed below them.

Important Note

If we have 3 siblings `.one`, `.two`, and `.three` which have `z-index` values of 1, 2, and 3 respectively, and element `.one` has a child `.one-child` with `z-index` value of 999, `.one-child` will still be displayed below `.two` and `.three` because `.two` and `.three` have higher `z-index` values than the parent `.one`. But if you remove the `z-index` value from the parent `.one` and try to give `.one-child` a `z-index` value of 999 again, the `.one-child` will be displayed above `.two` and `.three`.

Also, if we still have the parent `.one` without a `z-index` value (the child element here appears above its parent siblings) but we give it an `opacity` value like 0.5 for example, the `.one-child` item will return again below `.two` and `.three` because the `opacity` property affects the stacking context.

Coloring System:

- color name (eg. `red`)
- Hex `#RRGGBB`
- Hex with alpha `#RRGGBBAA`
- `rgb(r, g, b)`
- `rgba(r, g, b, a)` - a is the opacity

You can't specify opacity with hex colors.

To hide an element You can use:

- `display: none` - Item space will be not be reserved
- `visibility: hidden` - Item space will be reserved
- `opacity: 0` - Item space will be reserved

Absolute Position

Using absolute position we can make an element expand to the full width and height of the page and make it cover the whole page.

```css
.cover {
    background-color: teal;
    position: absolute;
    top: 0;
    right: 0;
    bottom: 0;
    left: 0;
}
```

Mostly we use positioning when we want to make a layered design, or to make an element fixed in a position on the page without being affected by the scrolling and without affecting other elements.