BORDER-RADIUS – HOW TO CREATE ROUNDED CORNERS (CSS3)

The **CSS3** border-radius property allows web developers to easily utilise rounder corners in their design elements, without the need for corner images or the use of multiple div tags, and is perhaps one of the most talked about aspects of **CSS3**.

Since first being announced in **2005** the **boder-radius** property has come to enjoy widespread browser support (*although with some discrepancies*) and, with relative ease of use, web developers have been quick to make the most of this emerging technology.

Here's a basic example: This box should have a rounded corners for **Firefox, Safari/Chrome,Opera** and **IE9**. The code for this example is, in theory, quite simple:

#**example1** {
border-radius: 15px;
}

However, for the moment, you'll also need to use the **–moz–** prefix to support **Firefox** (see the browser support section of this article for further details):

#**example1** {
-moz-border-radius: 15px;
border-radius: 15px;
}

How it Works

Rounder corners can be created independently using the four individual **border-*-radius** properties (**border-bottom-left-radius**, **border-top-left-radius**, etc.) or for all four corners simultaneously using the border-radius shorthand property.

We will firstly deal with the syntax for the individual border-*-radius properties before looking at how the **border-radius** shorthand property works.

BORDER-BOTTOM-LEFT-RADIUS, BORDER-BOTTOM-RIGHT-RADIUS, BORDER-TOP-LEFT-RADIUS, BORDER-TOP-RIGHT-RADIUS

The **border-*-radius** properties can each accept either one or two values, expressed as a length or a percentage (percentages refer to the corresponding dimensions of the border box).

THE SYNTAX:

```
border-*-*-radius: [  | <%> ] [  | <%> ]?
```

EXAMPLES:

border-top-left-radius: 10px 5px;

```
border-bottom-right-radius: 10% 5%;


border-top-right-radius: 10px;
```

Where two values are supplied these are used to define, in order, the horizontal and vertical **radii** of a quarter ellipse, which in turn determines the curvature of the corner of the outer border edge.

Where only one value is supplied, this is used to define both the horizontal and vertical radii equally.

The following diagram gives a few examples of how corners might appear given differing **radii**:

If either value is zero, the corner will be square, not round.

BORDER-RADIUS

The **border-radius** shorthand property can be used to define all four corners simultaneously. The property accepts either one or two sets of values, each consisting of one to four lengths or percentages.

THE SYNTAX:

```
[  |  ]{1,4} [ / [  |  ]{1,4} ]?
```

EXAMPLES:

```
border-radius: 5px 10px 5px 10px / 10px 5px 10px 5px;


border-radius: 5px;


border-radius: 5px 10px / 10px;
```

The first set of (1-4) values define the horizontal **radii** for all four corners. An optional second set of values, preceded by a '/', define the vertical radii for all four corners. If only one set of values are supplied, these are used to determine both the vertical and horizontal equally.

For each set of values the following applies:

- If all four values are supplied, these represent the top-left, top-right, bottom-right and bottom-left radii respectively.
- If bottom-left is omitted it is the same as top-right, if bottom-right is omitted it is the same as top-left, and if only one value is supplied it is used to set all four radii equally.

BROWSER SUPPORT

At present **Opera** (version 10.5 onward), **Safari** (version 5 onward) and **Chrome** (version 5 onward) all support the individual **border-*-radius** properties and the border-radius shorthand property as natively defined in the current **W3C Specification** (*although there are still outstanding bugs on issues such as border style transitions, using percentages for lengths, etc.*).

Mozilla Firefox (version 1.0 onward) supports border-radius with the -moz- prefix, although there are some discrepancies between the Mozilla implementation and the current **W3C specification** (see below).

Update: Recent **Firefox** nightly versions support border-radius without the -moz- prefix.

Safari and **Chrome** (and other webkit based browsers) have supported border-radius with the -webkit- prefix since version 3 (no longer needed from version 5 onward), although again with some discrepancies from the current specification (see this article for further details of how older versions of Webkit handle border-radius).

Even **Microsoft** have promised, and demonstrated in their recent preview release, support for **border-radius** from Internet Explorer 9 onward (without prefix).

THE -MOZ- PREFIX

Mozilla's Firefox browser has supported the border-radius property, with the `-moz-` prefix, since version 1.0. However, it is only since version 3.5 that the browser has allowed elliptical corners, i.e. accepting two values per corner to determine the horizontal and verical radii independently.

Prior to version **3.5**, the browser only accepted one value per corner, resulting in corners with equal horizontal and vertical radii.

The syntax, from **Firefox 3.5** onwards, for the main part follows the current **W3C specification**, as described throughout this article, prefixed by **-moz-**. The only major difference is in the naming of the individual **border-*-radius** properties, with the **-moz-** prefixed properties following a slightly different naming convention as follows:

W3C Specification	Mozilla Implementation
border-radius	-moz-border-radius
border-top-left-radius	-moz-border-radius-topleft
border-top-right-radius	-moz-border-radius-topright
border-bottom-right-radius	-moz-border-radius-bottomright
border-bottom-left-radius	-moz-border-radius-bottomleft

The **Mozilla** implementation also behaves slightly differently from the specification when percentages are supplied. You can read more on the **Mozilla Developer Center** here.

CROSS BROWSER EXAMPLES

Here's a few basic examples that should work in current versions of **Firefox, Safari/Chrome,Opera** and even **IE9**:
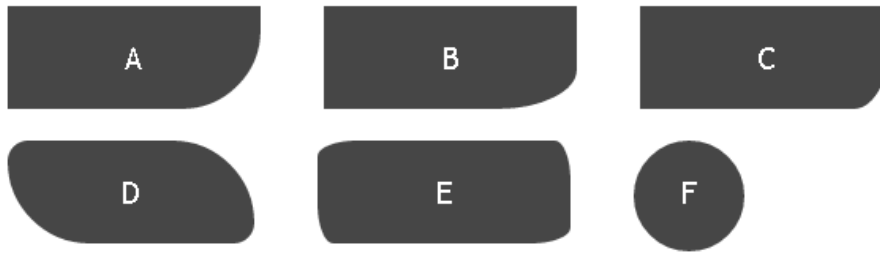
```css
#Example_A {
height: 65px;
width:160px;
-moz-border-radius-bottomright: 50px;
border-bottom-right-radius: 50px;
}


#Example_B {
height: 65px;
width:160px;
-moz-border-radius-bottomright: 50px 25px;
border-bottom-right-radius: 50px 25px;
}

#Example_C {
height: 65px;
width:160px;
-moz-border-radius-bottomright: 25px 50px;
border-bottom-right-radius: 25px 50px;
}

#Example_D {
height: 5em;
width: 12em;
-moz-border-radius: 1em 4em 1em 4em;
border-radius: 1em 4em 1em 4em;
}

#Example_E {
height: 65px;
width:160px;
-moz-border-radius: 25px 10px / 10px 25px;
border-radius: 25px 10px / 10px 25px;
}

#Example_F {
height: 70px;
width: 70px;
-moz-border-radius: 35px;
border-radius: 35px;
}
```