

 무료 전자 책

배우기

CSS

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1: CSS

HTML . HTML . . HTML .

1	1996-12-17
2	1998-05-12
	2015-10-13

Examples

HTML HTML <link> HTML .

<link> rel "stylesheet" , href . URL . HTML5 type .

<link> HTML <head> . .

hello-world.html

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8" />
    <link rel="stylesheet" type="text/css" href="style.css">
  </head>
  <body>
    <h1>Hello world!</h1>
    <p>I ♥ CSS</p>
  </body>
</html>
```

style.css

```
h1 {
  color: green;
  text-decoration: underline;
}
p {
  font-size: 25px;
  font-family: 'Trebuchet MS', sans-serif;
}
```

CSS href . CSS HTML href="foldername/style.css" .

```
<link rel="stylesheet" type="text/css" href="foldername/style.css">
```


CSS . : 100 CSS 100 "" 100 100 . .

HTML CSS .

```
<link rel="stylesheet" type="text/css" href="main.css">
<link rel="stylesheet" type="text/css" href="override.css">
```

CSS . main.css

```
p.green { color: #00FF00; }
```

" , main.css .css . override.css . main.css . .

```
p.green { color: #006600; }
```

" .

", .

HTML CSS . HTML .CSS . .

HTML <style></style> CSS HTML . . HTML <head> (body).

```
<head>
  <style>
    h1 {
      color: green;
      text-decoration: underline;
    }
    p {
      font-size: 25px;
      font-family: 'Trebuchet MS', sans-serif;
    }
  </style>
</head>
<body>
  <h1>Hello world!</h1>
  <p>I ♥ CSS</p>
</body>
```

. . <style> CSS .

<style> CSS . .

.

```
<h1 style="color: green; text-decoration: underline;">Hello world!</h1>
<p style="font-size: 25px; font-family: 'Trebuchet MS';">I ♥ CSS</p>
```

, .

CSS @ (CSS)

@import CSS at-rule . @charset . @import at-rules . @import .

@import

@import .

A.

```
<style>
  @import url('/css/styles.css');
</style>
```

B.

additional-styles.css CSS CSS .

```
@import '/additional-styles.css';
```

CSS . .

```
@import 'https://fonts.googleapis.com/css?family=Lato';
```

@import .

```
@import '/print-styles.css' print;
@import url('landscape.css') screen and (orientation:landscape);
```

JavaScript CSS

style JavaScript CSS , .

```
var el = document.getElementById("element");
el.style.opacity = 0.5;
el.style.fontFamily = 'sans-serif';
```

. CSS font-family javascript fontFamily .

JavaScript <style> <link> HTML <body> <head> .

jQuery

jQuery CSS .

```
$('#element').css('margin', '5px');
```

:

```
$('#element').css({
  margin: "5px",
  padding: "10px",
  color: "black"
});
```

jQuery CSS (`:font-size`) . . .

```
$('.example-class').css({
  "background-color": "blue",
  fontSize: "10px"
});
```

-
- [JavaScript - CSS](#) . . .
 - [jQuery - CSS](#)

CSS

`list-style-type`, `list-style-image` `list-style-position` . `list-style-type` `list-style-position` .
`disc`, `outside` `none`. `list-style` .

list-style-type .

`list-style-type` .

-
-
-
-
-
-
-

([W3C wiki](#))

, - .

```
li {
  list-style-type: square;
}
```

list-style-image `none` `URL` .

```
li {
  list-style-image: url(images/bullet.png);
}
```

list-style-position (`"inside"` `"outside"`) .

```
li {  
  list-style-position: inside;  
}
```

CSS : <https://riptutorial.com/ko/css/topic/293/css->

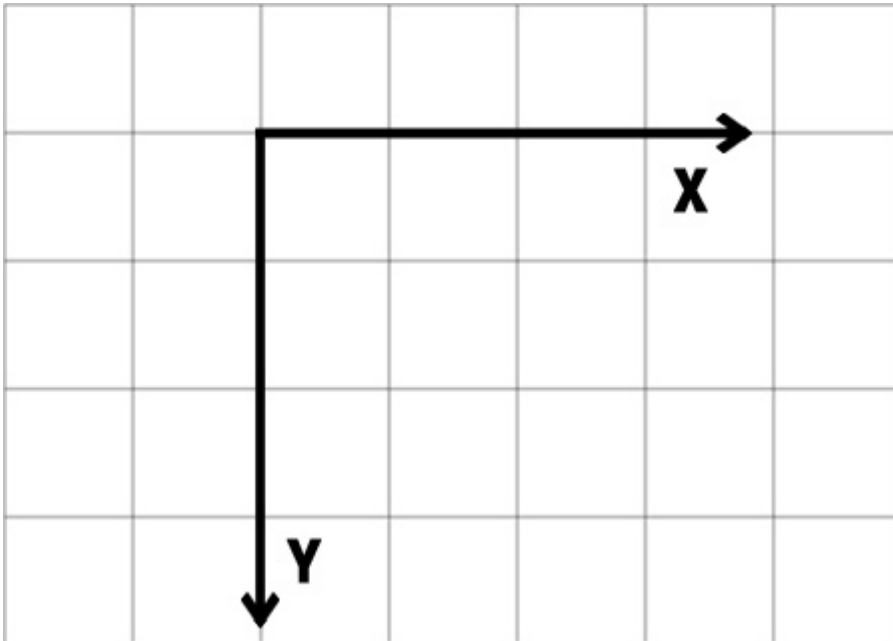
2: 2D

-
- : (<>)
-
- transform : translate (< > [, < >]?)
- transform : translateX (< >)
- transform : translateY (< >)
-
- : (<> [, <>]?)
- : skewX (<>)
- : skewY (<>)
-
- transform : scale (<scale-factor> [, <scale-factor>]?)
- transform : scaleX (<scale-factor>)
- transform : scaleY (<scale-factor>)
-
- transform : (<number> [, <number>] {5,5})

| / | |
|----------------|---|
| rotate(x) | Z . |
| translate(x,y) | X Y . |
| translateX(x) | X . |
| translateY(y) | Y . |
| scale(x,y) | X Y . |
| scaleX(x) | X . |
| scaleY(y) | Y . |
| skew(x,y) | |
| skewX(x) | |
| skewY(y) | |
| matrix() | 2D . |
| | (). (deg), (grad), (rad) (turn) . skew() . Y (0) . |
| | . translate() . Y (0) . |
| | . scale() scale-factor . Y . |

2D Coordiante

2D X / Y coordiante . X Y .



`translateY()` `translateX()` .

- IE `-ms-` IE9 . Edge .
- Firefox 3.5 15 `-moz-` .
- Chrome 4 34 `-webkit-` prefix .
- Safari 8 `-webkit-` .
- Opera 11.5 `-o-` 15 22 `-webkit-` .
- 2.1 4.4.4 `-webkit-` .

:

```
-webkit-transform: rotate(45deg);  
-ms-transform: rotate(45deg);  
transform: rotate(45deg);
```

Examples

HTML

```
<div class="rotate"></div>
```

CSS

```
.rotate {  
width: 100px;  
height: 100px;
```

```
background: teal;
transform: rotate(45deg);
}
```

div 45 . DIV 50% 50% .transform-origin .

```
transform-origin: 100% 50%;
```

.

HTML

```
<div class="scale"></div>
```

CSS

```
.scale {
  width: 100px;
  height: 100px;
  background: teal;
  transform: scale(0.5, 1.3);
}
```

div X $100\text{px} * 0.5 = 50\text{px}$, Y $100\text{px} * 1.3 = 130\text{px}$.

DIV 50% 50% .

HTML

```
<div class="translate"></div>
```

CSS

```
.translate {
  width: 100px;
  height: 100px;
  background: teal;
  transform: translate(200px, 50%);
}
```

div X 200 Y $100\text{px} * 50\% = 50\text{px}$.

.

X :

```
.translate {
  transform: translateX(200px);
}
```

Y :

```
.translate {
  transform: translateY(50%);
}
```

HTML

```
<div class="skew"></div>
```

CSS

```
.skew {
  width: 100px;
  height: 100px;
  background: teal;
  transform: skew(20deg, -30deg);
}
```

div X 20 Y -30 .

DIV 50% 50% .

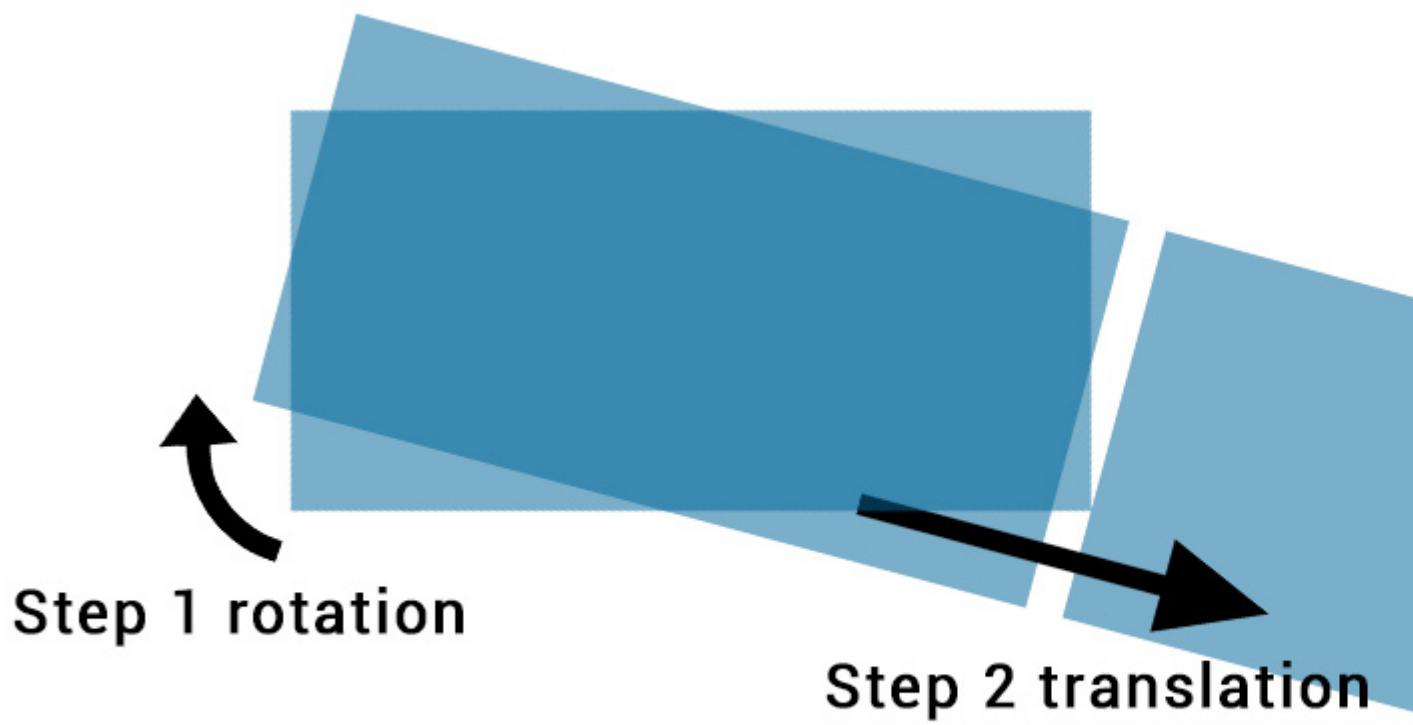
.

.

```
transform: rotate(15deg) translateX(200px);
```

15 200 .

., 15 .



```
transform: translateX(200px) rotate(15deg);
```

```
<div class="transform"></div>
```

```
.transform {  
  transform: rotate(15deg) translateX(200px);  
}
```



Step 1 translation

`transform-origin` .

2 `.transform-origin: XY;`

`div (.tl) transform-origin: 0 0; transform-origin: 0 0; (.tr) transform-origin: 100% 0`
`transform-origin: 100% 0. .`

HTML :

```
<div class="transform origin1"></div>
<div class="transform origin2"></div>
```

CSS :

```
.transform {
  display: inline-block;
  width: 200px;
  height: 100px;
  background: teal;
  transition: transform 1s;
}

.origin1 {
  transform-origin: 0 0;
}

.origin2 {
```

```
    transform-origin: 100% 0;
  }

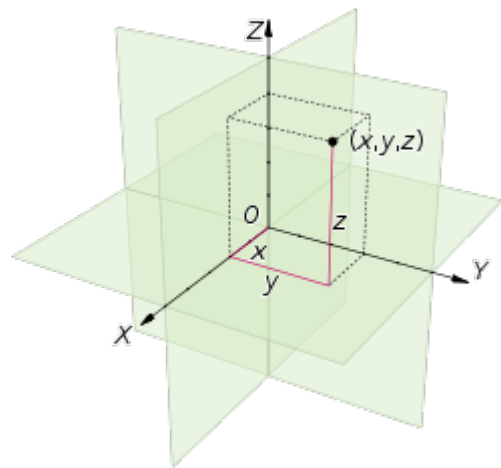
  .transform:hover {
    transform: rotate(30deg);
  }
```

50% 50% .

2D : <https://riptutorial.com/ko/css/topic/938/2d->

3: 3D

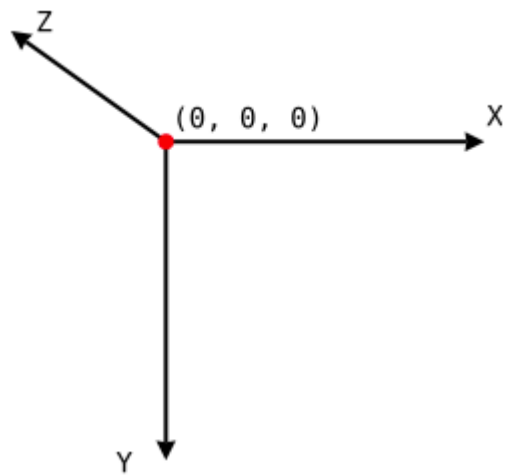
3D (x, y, z) .



CSS,

- x ()
- y ()
- z (/)

CSS :



Examples

3D

3D 3D . 3D CSS .

HTML :

```
<div class="cube">
  <div class="cubeFace"></div>
  <div class="cubeFace face2"></div>
</div>
```

CSS :

```
body {
  perspective-origin: 50% 100%;
  perspective: 1500px;
  overflow: hidden;
}
.cube {
  position: relative;
  padding-bottom: 20%;
  transform-style: preserve-3d;
  transform-origin: 50% 100%;
  transform: rotateY(45deg) rotateX(0);
}
.cubeFace {
  position: absolute;
  top: 0;
  left: 40%;
  width: 20%;
  height: 100%;
  margin: 0 auto;
  transform-style: inherit;
  background: #C52329;
  box-shadow: inset 0 0 0 5px #333;
  transform-origin: 50% 50%;
  transform: rotateX(90deg);
  backface-visibility: hidden;
}
.face2 {
  transform-origin: 50% 50%;
  transform: rotateZ(90deg) translateX(100%) rotateY(90deg);
}
.cubeFace:before, .cubeFace:after {
  content: '';
  position: absolute;
  width: 100%;
  height: 100%;
  transform-origin: 0 0;
  background: inherit;
  box-shadow: inherit;
  backface-visibility: inherit;
}
.cubeFace:before {
  top: 100%;
  left: 0;
  transform: rotateX(-90deg);
}
.cubeFace:after {
  top: 0;
  left: 100%;
  transform: rotateY(90deg);
}
```

6.

:

- 4 .
- .

backface-visibility 3D .

3D backface-visibility .

, .

JSFIDDLE

```
<div class="flip">Lorem ipsum</div>
<div class="flip back">Lorem ipsum</div>
```

```
.flip {
  -webkit-transform: rotateY(180deg);
  -moz-transform: rotateY(180deg);
  -ms-transform: rotateY(180deg);
  -webkit-backface-visibility: visible;
  -moz-backface-visibility: visible;
  -ms-backface-visibility: visible;
}

.flip.back {
  -webkit-backface-visibility: hidden;
  -moz-backface-visibility: hidden;
  -ms-backface-visibility: hidden;
}
```

Firefox 10+ IE 10+ backface-visibility . Opera, Chrome, Safari, iOS Android -webkit-backface-visibility -webkit-backface-visibility .

4 :

1. **visible** () - .
2. **hidden** - .
3. **inherit** - .
4. **initial** - . .

3D

CSS

```
div.needle {
  margin: 100px;
  height: 150px;
  width: 150px;
```

```

transform: rotateY(85deg) rotateZ(45deg);
/* presentational */
background-image: linear-gradient(to top left, #555 0%, #555 40%, #444 50%, #333 97%);
box-shadow: inset 6px 6px 22px 8px #272727;
}

```

HTML

```
<div class='needle'></div>
```

3D . rotate rotate Z . rotateY Y .Y- .

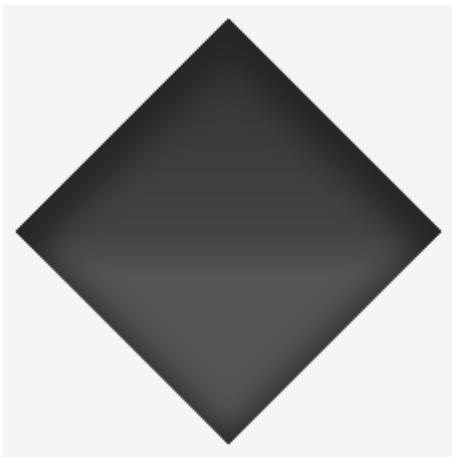
. Y X . transform rotateX(85deg) rotateZ(45deg); .

Safari .

:



2D :



3D :



3D

HTML :

```
<div id="title">
  <h1 data-content="HOVER">HOVER</h1>
</div>
```

CSS :

```
*{margin:0;padding:0;}
html,body{height:100%;width:100%;overflow:hidden;background:#0099CC;}
#title{
  position:absolute;
  top:50%; left:50%;
  transform:translate(-50%,-50%);
  perspective-origin:50% 50%;
  perspective:300px;
}
h1{
  text-align:center;
  font-size:12vmin;
  font-family: 'Open Sans', sans-serif;
  color:rgba(0,0,0,0.8);
  line-height:1em;
  transform:rotateY(50deg);
  perspective:150px;
  perspective-origin:0% 50%;
}
h1:after{
  content:attr(data-content);
  position:absolute;
  left:0;top:0;
  transform-origin:50% 100%;
  transform:rotateX(-90deg);
  color:#0099CC;
}
#title:before{
  content:'';
  position:absolute;
  top:-150%; left:-25%;
  width:180%; height:328%;
  background:rgba(255,255,255,0.7);
```



```
transform-origin: 0 100%;  
transform: translatez(-200px) rotate(40deg) skewX(35deg);  
border-radius:0 0 100% 0;  
}
```



```
.  
. data (H1) .  
"" #title . .
```

3D : <https://riptutorial.com/ko/css/topic/2446/3d->

4: CSS (CSSOM)

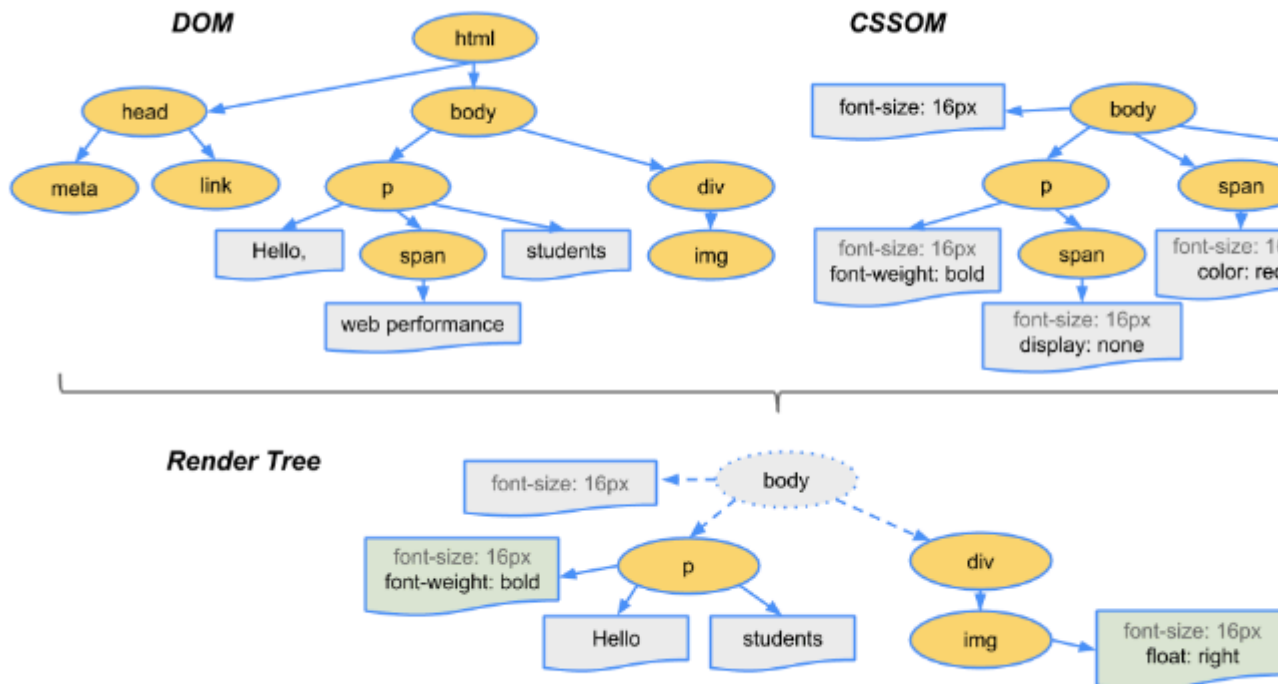
CSSOM (CSS Object Model) .

<https://www.w3.org/TR/cssom-1/> .

Examples

CSS Object Model.

1. HTML DOM (Document Object Model) .
2. CSS CSSOM (CSS Object Model) .
3. DOM CSSOM . .



CSSOM

CSSOM .

```
var stylesheet = document.styleSheets[0].cssRules;
```

```
var end = stylesheet.length - 1;
```

body .

```
stylesheet.insertRule("body { background-image:  
url('http://cdn.sstatic.net/Sites/stackoverflow/img/favicon.ico'); }", end);
```

CSS (CSSOM) : <https://riptutorial.com/ko/css/topic/4961/css---cssom->

5: CSS

```
p {  
  color: maroon;  
  font-size: 16px;  
}
```

```
p{  
  color: maroon;  
  font-size:16px }
```

```
p { color: maroon; font-size: 16px; }
```

Examples

CSS (:h1) ({}).

```
h1 {}
```

```
/* Two values in this property list */  
span {  
  text-shadow: yellow 0 0 3px, green 4px 4px 10px;  
}  
  
/* Alternate Formatting */  
span {  
  text-shadow:  
    yellow 0 0 3px,  
    green 4px 4px 10px;  
}
```

CSS

```
div, p { color: blue }
```

```
<div> <p> . <div> <p> .
```

.

```
p, .blue, #first, div span{ color : blue }
```

- .
- <p>
 - blue
 - **ID** first
 - <div>

CSS : <https://riptutorial.com/ko/css/topic/4313/css----->

6: CSS

BEM, OOCSS, SMACSS, CSS.

CSS.

CSS / .

.

- [BEM](#)
- [OOCSS](#)
- [SMACSS](#)

CSS . CSS / CSS / .

Examples

BEM

[BEM](#) Blocks, Elements and Modifiers . [Yandex](#) .

BEM HTML CSS .

- `: header, container, menu, checkbox, textbox`
- `: menu item, list item, checkbox, caption, header, title`
- `: disabled, highlighted, checked, fixed, size big, color yellow`

BEM CSS, . . .

- .
- `_ _`
- `blockname__elementname blockname__elementname`
- `blockname--modifiername blockname__elementname--modifiername`
-

BEM CSS .

```
.form { } // Block
.form--theme-xmas { } // Block + modifier
.form--simple { } // Block + modifier
.form__input { } // Block > element
.form__submit { } // Block > element
.form__submit--disabled { } // Block > element + modifier
```

HTML .

```
<form class="form form--theme-xmas form--simple">
  <input class="form__input" type="text" />
  <input class="form__submit form__submit--disabled" type="submit" />
</form>
```

CSS : <https://riptutorial.com/ko/css/topic/10823/css-->

7: CSS

- // background-position .
: url ("sprite-image.png");
: -20px 50px;
- //
: url ("sprite-image.png") -20px 50px;

SVG

Examples

?

.



, . HTTP

?

HTML

```
<div class="icon icon1"></div>
<div class="icon icon2"></div>
<div class="icon icon3"></div>
```

CSS

```
.icon {
  background: url("icons-sprite.png");
  display: inline-block;
  height: 20px;
  width: 20px;
}
.icon1 {
  background-position: 0px 0px;
}
```



```
.icon2 {  
    background-position: -20px 0px;  
}  
.icon3 {  
    background-position: -40px 0px;  
}
```

CSS (x y) CSS .

CSS : <https://riptutorial.com/ko/css/topic/3690/css-->

8: Internet Explorer

"" / . .

Examples

Internet Explorer 10

Internet Explorer 10+ Edge Microsoft " " -ms-high-contrast .

-ms-high-contrast selector active , black-on-white white-on-black 3 . IE10 + none Edge .

```
@media screen and (-ms-high-contrast: active), (-ms-high-contrast: black-on-white) {  
  .header{  
    background: #fff;  
    color: #000;  
  }  
}
```

black-on-white .

```
@media screen and (-ms-high-contrast: white-on-black) {  
  .header{  
    background: #000;  
    color: #fff;  
  }  
}
```

white-on-black .

:

-ms-high-contrast [Microsoft](#)

Internet Explorer 6 Internet Explorer 7

Internet Explorer 6 Internet Explorer 7 * .

```
.hide-on-ie6-and-ie7 {  
  *display : none; // This line is processed only on IE6 and IE7  
}
```

IE6 IE7 () property: value .

Internet Explorer 8

Internet Explorer 8 @media \0 screen { } .

```
@media \0 screen {  
  .hide-on-ie8 {  
    display : none;  
  }  
}
```

```
@media \0 screen { } @media \0 screen { } .
```

IE6 IE7

```
display: inline-block;
```

```
inline-block display Internet Explorer 6 7 . .
```

```
zoom: 1;  
*display: inline;
```

```
zoom hasLayout Internet Explorer .*display . .
```

Internet Explorer : <https://riptutorial.com/ko/css/topic/5056/internet-explorer->

9:

CSS HTML .

, :: first-letter .

- selector :: pseudo-element { : }

::after	
::before	
::first-letter	.
::first-line	.
::selection	.
::backdrop	.
::placeholder	().
::marker	()
::spelling-error	().
::grammar-error	().

- (::) (:). , 8 (:).

- . . .

- DOM :hover .

Examples

.

content . (: content: "").

```
div::after {
  content: 'after';
  color: red;
  border: 1px solid red;
}

div {
  color: black;
  border: 1px solid black;
}
```

```
padding: 1px;
}

div::before {
  content: 'before';
  color: green;
  border: 1px solid green;
}
```

(, ul).

.

```
ul {
  list-style-type: none;
}
```

.

```
li:before {
  content: "";
  display: inline-block;
  margin-right: 10px;
  height: 10px;
  width: 10px;
  background: linear-gradient (red, blue);
}
```

HTML

```
<ul>
  <li>Test I</li>
  <li>Test II</li>
</ul>
```

: <https://riptutorial.com/ko/css/topic/911/>

10:

object-fit object-position Internet Explorer .

Examples

object-fit . Object-fit 5 .

```
object-fit:fill;
```

original image



object-fit: fill;

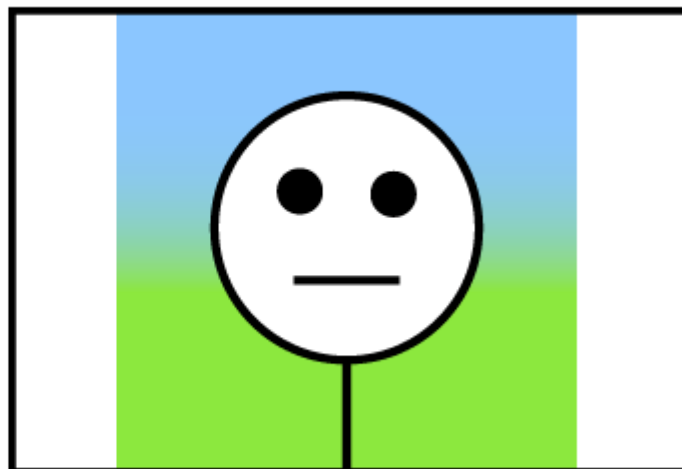


```
object-fit:contain;
```

original image



object-fit: contain;



```
object-fit:cover;
```

original image



object-fit: cover;



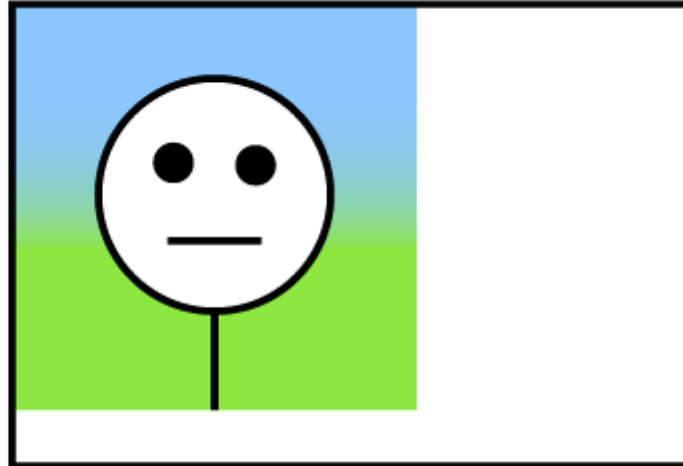
Cover . . .

```
object-fit:none;
```

original image



object-fit: none;



.

```
object-fit:scale-down;
```

Scale-down none none contain . . .

original image



object-fit: scale-down;



: <https://riptutorial.com/ko/css/topic/5520/--->

11:

-
- border : border-width border-color | | ;
- border-top : border-width border-color | | ;
- border-bottom : border-width border-color | | ;
- border-left : border-width border-color | | ;
- border-right : border-width border-color | | ;
-
- border-style : 1-4 none | | | | | | | | | | ;
- -
- border-radius : 1-4 | % / 1-4 | % | | ;
- border-top-left-radius : | % [| %] | | ;
- border-top-right-radius : | % [| %] | | ;
- border-bottom-left-radius : | % [| %] | | ;
- border-bottom-right-radius : | % [| %] | | ;
-
- border-image : border-image-source border-image-slice [[]] border-image-repeat
- border-image-source : none | ;
- border-image-slice : 1-4 | []
- border-image-repeat : 1-2 stretch | | |
-
- : | | |

:

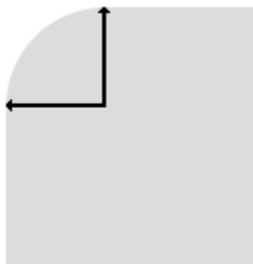
-
-
- - -

- border-bottom-left-radius
- border-bottom-right-radius
- border-bottom-style
- border-bottom-width
-
-
-
- border-image-repeat
- border-image-slice
- border-image-source
- border-image-width
- -
- - -
- - -
- border-left-width
- -
- -
- - -
- -
- border-right-width
-
-
-
- border-top-left-radius
- border-top-right-radius
-
- border-top-width
-

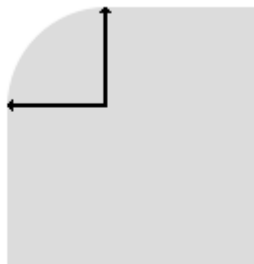
Examples

border-radius

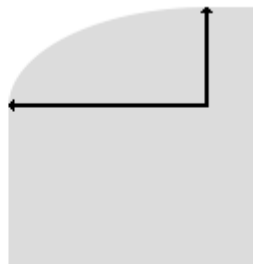
(8).



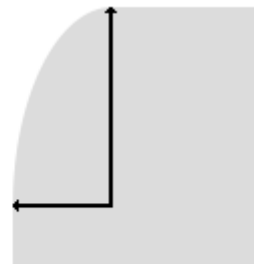
border-top-left-radius: 50px;



border-top-left-radius: 50px 50px;



border-top-left-radius: 100px 50px;



border-top-left-radius: 50px 100px;

'/'

```
border-radius: 10px 5% / 20px 25em 30px 35em;
```

10 10px . 5% . '/' , , .

CSS . 1 8 . .

HTML :

```
<div class='box'></div>
```

CSS :

```
.box {  
  width: 250px;  
  height: 250px;  
  background-color: black;  
  border-radius: 10px;  
}
```

.

```
.circle {  
  width: 200px;  
  height: 200px;  
  border-radius: 100px;  
}
```

border-radius border-radius 50 % .

```
.circle {
  width: 150px;
  height: 150px;
  border-radius: 50%;
}
```

width height .

:

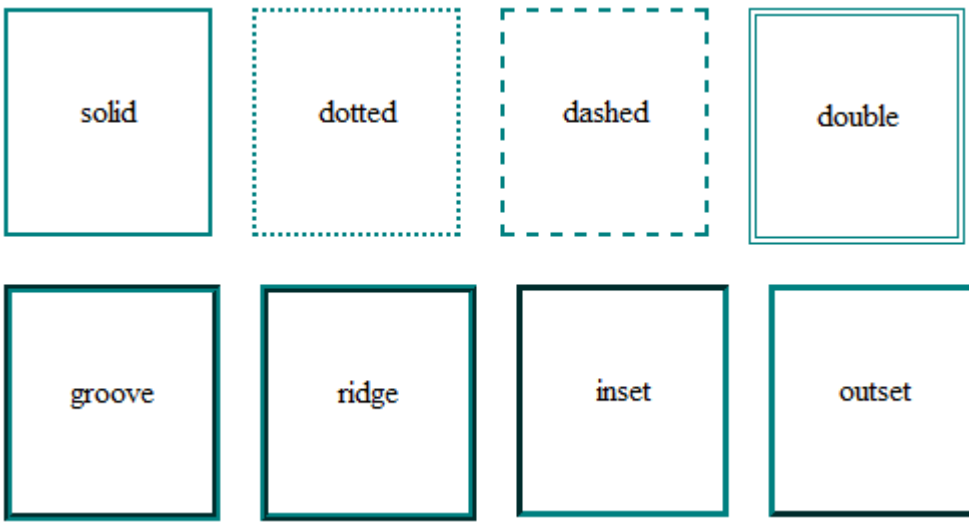
```
-webkit-border-top-right-radius: 4px;
-webkit-border-bottom-right-radius: 4px;
-webkit-border-bottom-left-radius: 0;
-webkit-border-top-left-radius: 0;
-moz-border-radius-topright: 4px;
-moz-border-radius-bottomright: 4px;
-moz-border-radius-bottomleft: 0;
-moz-border-radius-topleft: 0;
border-top-right-radius: 4px;
border-bottom-right-radius: 4px;
border-bottom-left-radius: 0;
border-top-left-radius: 0;
```

border-style . 14 ().

:

```
border-style: dotted;
```

```
border-style: dotted solid double dashed;
```



border-style none hidden .<table> hidden . <table> none () hidden ().

()

(border-width , border-style border-color) .

:

```
border-width: 1px;
border-style: solid;
border-color: #000;
```

.

```
border: 1px solid #000;
```

: border-top, border-left, border-right border-bottom . .

```
border-top: 2px double #aaaaaa;
```

border-image .

border-image

- border-image-source :
- border-image-slice : **9** (,) .
- border-image-repeat : .

wheras border.png 90x90 :

```
border-image: url("border.png") 30 stretch;
```

30x30 9 . . 30px / . .

border- [left | right | top | bottom]

border-[left|right|top|bottom] .

, .

```
#element {
  border-left: 1px solid black;
}
```

border-collapse table (display: table inline-table display: table) HTML .

```
table {
  border-collapse: separate; /* default */
  border-spacing: 2px; /* Only works if border-collapse is separate */
}
```

[Tables - border-collapse documentation](#) .

:

```
.div1{
```

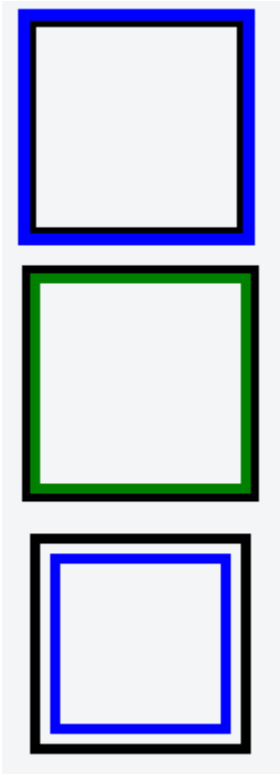
```
border: 3px solid black;
outline: 6px solid blue;
width: 100px;
height: 100px;
margin: 20px;
}
```

:

```
.div2{
  border: 5px solid green;
  box-shadow: 0px 0px 0px 4px #000;
  width: 100px;
  height: 100px;
  margin: 20px;
}
```

:

```
.div3 {
  position: relative;
  border: 5px solid #000;
  width: 100px;
  height: 100px;
  margin: 20px;
}
.div3:before {
  content: " ";
  position: absolute;
  border: 5px solid blue;
  z-index: -1;
  top: 5px;
  left: 5px;
  right: 5px;
  bottom: 5px;
}
```



<http://jsfiddle.net/MadalinaTn/bvqpcohm/2/>

border-image

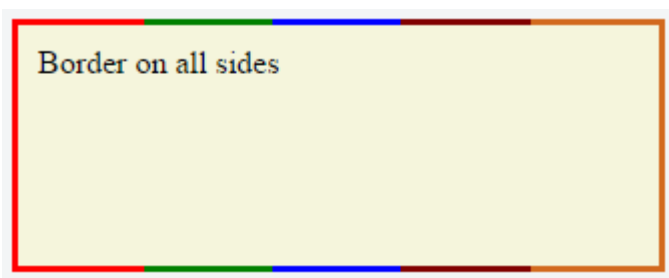
CSS

```
.bordered {  
  border-image: linear-gradient(to right, red 20%, green 20%, green 40%, blue 40%, blue 60%,  
  maroon 60%, maroon 80%, chocolate 80%); /* gradient with required colors */  
  border-image-slice: 1;  
}
```

HTML

```
<div class='bordered'>Border on all sides</div>
```

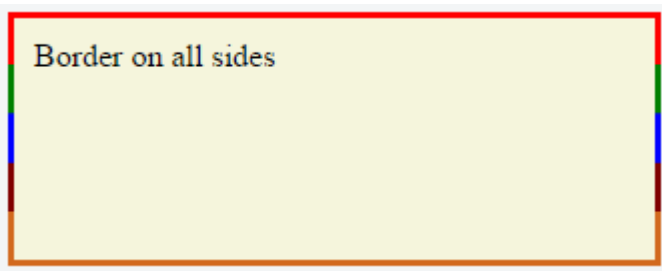
5 . linear-gradient ().border-image-slice border-image .



(: .)

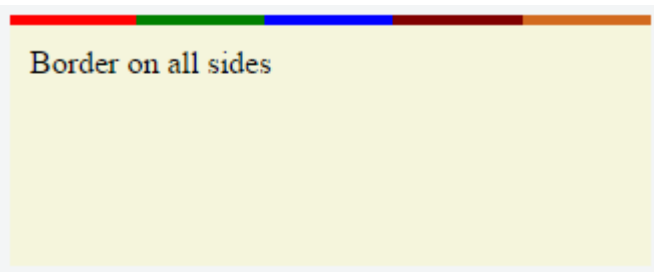
() () . . .

. to right . to bottom . **a** to bottom **5** .



border-width . .

```
border-width: 5px 0px 0px 0px;
```



border-image border-radius (,). .

('').

: <https://riptutorial.com/ko/css/topic/2160/>

12:

CSS .

Examples

CSS . CSS .

CSS

.

1. ()
2. ()
3. (/)
 - .css
 - HTML <style>
4. (HTML style)

.

?

CSS .

Specificity .

1 -

```
.mystyle { color: blue; } /* specificity: 0, 0, 1, 0 */  
div { color: red; } /* specificity: 0, 0, 0, 1 */
```

```
<div class="mystyle">Hello World</div>
```

? ()

"".

2 -

CSS

```
.class {
```

```
background: #FFF;
}
```

CSS (HTML)

```
<style>
.class {
  background: #000;
}
</style>
```

"" .

3 -

```
body > .mystyle { background-color: blue; } /* specificity: 0, 0, 1, 1 */
.otherstyle > div { background-color: red; } /* specificity: 0, 0, 1, 1 */
```

```
<body class="otherstyle">
  <div class="mystyle">Hello World</div>
</body>
```

?

. .cssotherstyle > div "wins".

- .
- .
- .

!

!important . :property : value !important;

```
#mydiv {
  font-weight: bold !important; /* This property won't be overridden
                                by the rule below */
}

#outerdiv #mydiv {
  font-weight: normal; /* #mydiv font-weight won't be set to normal
                        even if it has a higher specificity because
                        of the !important declaration above */
}
```

!important . CSS . , !important .

!important :

- html style .
- !important .

- inspect .

:

- [W3C - 6](#) , [- 6.4.2!](#)

CSS . . A, B C . . .

ID	#foo
	.bar [title], [colspan="2"] :hover, :nth-child(2)
	div, li ::before ::first-letter

A C B, .

(*) (> ~) .

1 :

```
#foo #baz {} /* a=2, b=0, c=0 */
#foo.bar {} /* a=1, b=1, c=0 */
#foo {} /* a=1, b=0, c=0 */
.bar:hover {} /* a=0, b=2, c=0 */
div.bar {} /* a=0, b=1, c=1 */
:hover {} /* a=0, b=1, c=0 */
[title] {} /* a=0, b=1, c=0 */
.bar {} /* a=0, b=1, c=0 */
div ul + li {} /* a=0, b=0, c=3 */
p::after {} /* a=0, b=0, c=2 */
*::before {} /* a=0, b=0, c=1 */
::before {} /* a=0, b=0, c=1 */
div {} /* a=0, b=0, c=1 */
* {} /* a=0, b=0, c=0 */
```

2 :

CSS .

```
#foo {
  color: blue;
}

.bar {
  color: red;
  background: black;
}
```

color **ID** color , background .

ID #foo .bar .**ID** **A** **B** .**ID** . color:blue; #foo background:black; .bar .**ID** .bar color .

CSS .

```
.bar {
  color: red;
  background: black;
}

.baz {
  background: white;
}
```

. color background , background .

.bar .baz , .bar .baz **B** .**CSS** .baz .bar , color .bar , background .baz .

3:

2 .baz .bar color .

```
.bar {} /* a=0, b=1, c=0 */
.baz {} /* a=0, b=1, c=0 */
```

.bar . .bar span .bar **selector** span.bar . .baz .baz **C** .baz .

```
span.bar {} /* a=0, b=1, c=1 */
.baz {} /* a=0, b=1, c=0 */
```

.bar . **CSS** . .bar .bar.bar ([Selectors](#) , [W3C](#)). .bar **B** .bar .

```
.bar.bar {} /* a=0, b=2, c=0 */
.baz {} /* a=0, b=1, c=0 */
```

!important

!important **HTML** style style . ., **!important** , .

, !important . . CSS !important !important .

!important !important, .hidden .background-yellow ., . CSS CSS !important .

CSS A, B C (a=1, b=5, c=1 => 151). . B C 20 A B . . .

CSS . . .

```
body.page header.container nav div#main-nav li a {}
```

CSS .

```
div {
  font-size: 7px;
  border: 3px dotted pink;
  background-color: yellow;
  color: purple;
}

body.mystyle > div.myotherstyle {
  font-size: 11px;
  background-color: green;
}

#elmnt1 {
  font-size: 24px;
  border-color: red;
}

.mystyle .myotherstyle {
  font-size: 16px;
  background-color: black;
  color: red;
}
```

```
<body class="mystyle">
  <div id="elmnt1" class="myotherstyle">
    Hello, world!
  </div>
</body>
```

, ?

:

font-size: 24px; #elmnt1 <div> #elmnt1 .

:

border: 3px dotted red; . red #elmnt1 #elmnt1, ., div .

:

```
background-color: green; .background-color div , body.mystyle > div.myotherstyle
.mystyle .myotherstyle . (0, 0, 1) (0, 2, 2) (0, 2, 0) ""
```

:

```
color: red; . div .mystyle .myotherstyle . (0, 2, 0) "" .
```

: <https://riptutorial.com/ko/css/topic/450/-->

13:

- ::;

Examples

CSS . .

font , color , text-align , line-height .

.

```
#myContainer {
  color: red;
  padding: 5px;
}
```

<div> <h3> <p> color: red . padding .

```
<div id="myContainer">
  <h3>Some header</h3>
  <p>Some paragraph</p>
</div>
```

. () . margin , padding , background , display .

. inherit inherit .inherit CSS HTML applied .

.

```
#myContainer {
  color: red;
  padding: 5px;
}
#myContainer p {
  padding: inherit;
}
```

color <h3> <p> color: red . <p> 'padding .

```
<div id="myContainer">
  <h3>Some header</h3>
  <p>Some paragraph</p>
</div>
```

: <https://riptutorial.com/ko/css/topic/3586/>

14:

Examples

CSS 60fps .



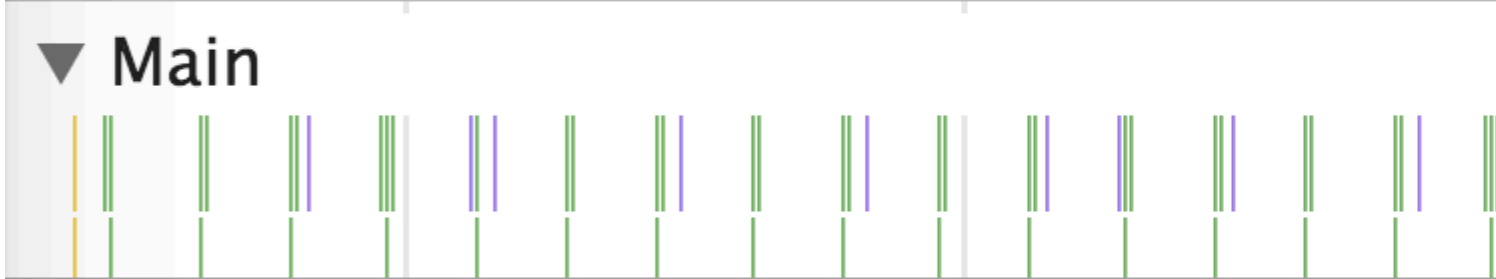
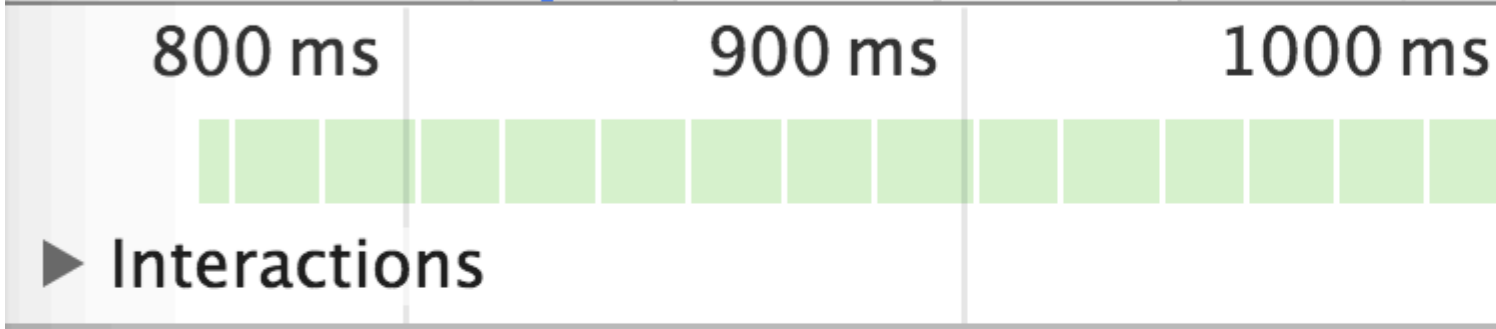
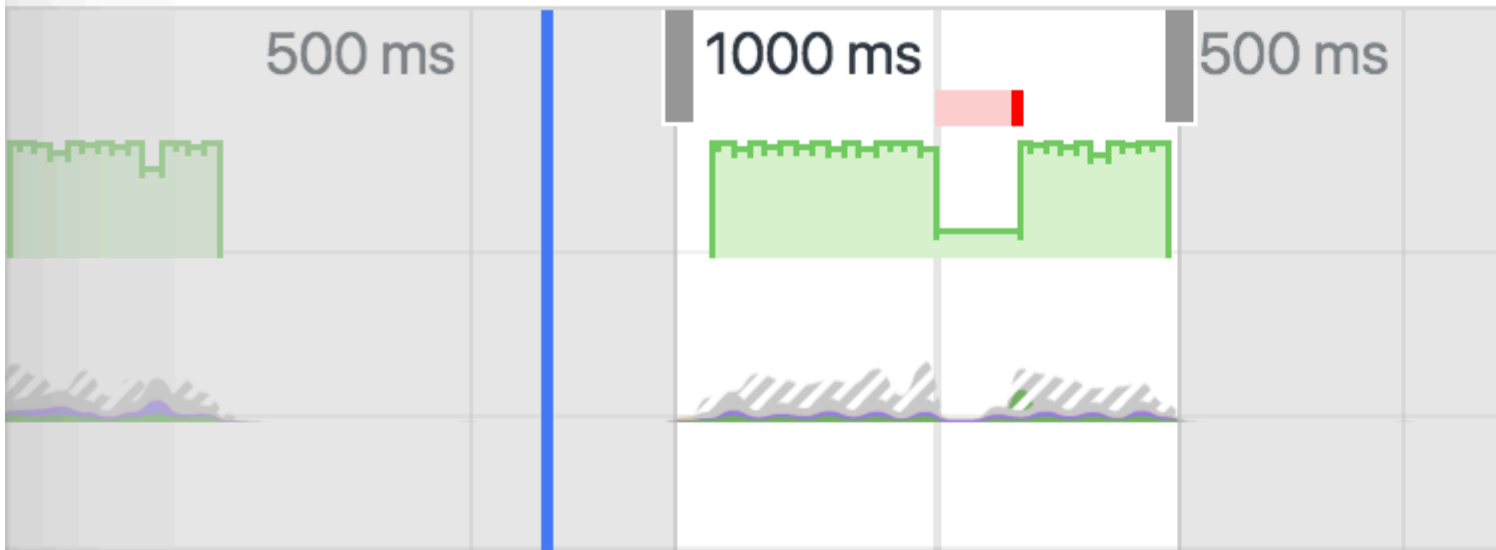
left top .

```
#box {
  left: 0;
  top: 0;
  transition: left 0.5s, top 0.5s;
  position: absolute;
  width: 50px;
  height: 50px;
  background-color: gray;
}

#box.active {
  left: 100px;
  top: 100px;
}
```

, **9.8ms 11.7ms**

● | Capture: Network JS Pro



Summary Bottom-Up Call Tree Event Log

Group by Category ▼

Self Time		Total Time		Activ
11.7 ms	54.2 %	11.7 ms	54.2 %	▼
4.2 ms	19.5 %	4.2 ms	19.5 %	
3.9 ms	18.2 %	3.9 ms	18.2 %	
1.8 ms	8.3 %	1.8 ms	8.3 %	

15:

- : || || || ||;

Overflow	
visible	.
scroll	.
hidden	.
auto	scroll .
inherit	.

overflow .

?

overflow overflow-x overflow-y

overflow-wrap word-wrap .

: visible overflow .

Examples

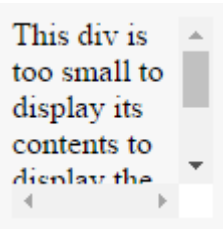
:

HTML

```
<div>
  This div is too small to display its contents to display the effects of the overflow
  property.
</div>
```

CSS

```
div {
  width:100px;
  height:100px;
  overflow:scroll;
}
```



100x100 .

. . .

overflow-wrap . . .

CSS

```
div {
  width:100px;
  outline: 1px dashed #bbb;
}

#div1 {
  overflow-wrap:normal;
}

#div2 {
  overflow-wrap:break-word;
}
```

HTML

```
<div id="div1">
  <strong>#div1</strong>: Small words are displayed normally, but a long word like <span
style="red;">supercalifragilisticexpialidocious</span> is too long so it will overflow past
the edge of the line-break
</div>

<div id="div2">
  <strong>#div2</strong>: Small words are displayed normally, but a long word like <span
style="red;">supercalifragilisticexpialidocious</span> will be split at the line break and
continue on the next line.
</div>
```

#div1: Small words are displayed normally, but a long word like **supercalifragilisticexpialidoc:** is too long so it will overflow past the edge of the line-break

#div2: Small words are displayed normally, but a long word like **supercalifragilisticexpialidocious** will be split at the line break and continue on the next line.

<code>overflow-wrap -</code>	
<code>normal</code>	<code>.</code>
<code>break-word</code>	<code>.</code>
<code>inherit</code>	<code>.</code>

:

HTML

```
<div>  
  Even if this div is too small to display its contents, the content is not clipped.  
</div>
```

CSS

```
div {  
  width:50px;  
  height:50px;  
  overflow:visible;  
}
```

Even if this div is too small to display its contents, the content is not clipped.

visible overflow . .

CSS

```
img {
  float:left;
  margin-right: 10px;
}
div {
  overflow:hidden; /* creates block formatting context */
}
```

HTML

```

<div>
  <p>Lorem ipsum dolor sit amet, cum no paulo mollis pertinacia.</p>
  <p>Ad case omnis nam, mutat deseruisse persequeris eos ad, in tollit debitis sea.</p>
</div>
```

100*100

The containing div of this text does not have overflow set

Lorem ipsum dolor sit amet, cum no paulo mollis pertinacia. Eam in velit graecis, sea mucius insolens ne. Amet doming at has, omnis errem an cum. Eu vim appareat persecuti, ea putant definitionem has, vis ea legendos expetenda. No eros graeci minimum nam, justo augue instructor usu ne. At ludus suscipit disputationi vel.

Ad case omnis nam, mutat deseruisse persequeris eos ad, in tollit debitis sea. Cu eos munere virtute vituperata. Exerci bonorum sed id, id nec tantas praesent complectitur. Vel cu legendos mediocritatem. Enim liberavisse ei sea.

100*100

The containing div of this text has overflow:hidden

Lorem ipsum dolor sit amet, cum no paulo mollis pertinacia. Eam in velit graecis, sea mucius insolens ne. Amet doming at has, omnis errem an cum. Eu vim appareat persecuti, ea putant definitionem has, vis ea legendos expetenda. No eros graeci minimum nam, justo augue instructor usu ne. At ludus suscipit disputationi vel.

Ad case omnis nam, mutat deseruisse persequeris eos ad, in tollit debitis sea. Cu eos munere virtute vituperata. Exerci bonorum sed id, id nec tantas praesent complectitur. Vel cu legendos mediocritatem. Enim liberavisse ei sea.

overflow **div** .

overflow-x overflow-y

overflow .overflow-x **X** .overflow-y **Y** - .

HTML

```

<div id="div-x">
  If this div is too small to display its contents,
  the content to the left and right will be clipped.
</div>

<div id="div-y">
  If this div is too small to display its contents,
  the content to the top and bottom will be clipped.
</div>

```

CSS

```

div {
  width: 200px;
  height: 200px;
}

#div-x {
  overflow-x: hidden;
}

#div-y {
  overflow-y: hidden;
}

```

: <https://riptutorial.com/ko/css/topic/4947/>

16:

CSS .

CSS 1 2016 9 9 W3C . (<https://www.w3.org/Style/CSS/current-work>) .

2017 7 3 Microsoft Internet Explorer 10 11 Edge .

Examples



CSS Grid . .

.

```
<section class="container">
  <div class="item1">item1</div>
  <div class="item2">item2</div>
  <div class="item3">item3</div>
  <div class="item4">item4</div>
</section>
```

display: grid .

```
.container {
  display: grid;
}
```

. . .

.container grid-columns grid-rows ();

```
.container {
  display: grid;
  grid-columns: 50px 50px 50px;
  grid-rows: 50px 50px;
}
```

. grid-row grid-column grid-row :

```
.container .item1 {
  grid-column: 1;
  grid-row: 1;
}
.container .item2 {
  grid-column: 2;
  grid-row: 1;
}
```

```
.container .item3 {  
  grid-column: 1;  
  grid-row: 2;  
}  
.container .item4 {  
  grid-column: 2;  
  grid-row: 2;  
}
```

.
[JSFiddle](#) . IE10, IE11 Edge . (`-ms-`) , , Firefox . .

: <https://riptutorial.com/ko/css/topic/2152/>

17:

- color : #rgb
- color : #rrggbb
- : rgb [a] (<>, <>, <> [, <>])
- color : hsl [a] (<>, < %>, < %> [, <>])
- color : **colorkeyword** / * , , , , ..etc * /












Examples






















. , color blue .

```
.some-class {  
  color: blue;  
}
```






















CSS . blue , Blue BLUE #0000FF .



























	16	RGB	
	# F0F8FF	rgb (240,248,255)	
AntiqueWhite	# FAEBD7	rgb (250,235,215)	
	# 00FFFF	rgb (0,255,255)	
	# 7FFFD4	rgb (127,255,212)	
	# F0FFFF	rgb (240,255,255)	
	# F5F5DC	rgb (245,245,220)	
	# FFE4C4	rgb (255,228,196)	
	# 000000	rgb (0,0,0)	
BlanchedAlmond	#FFEBCD	rgb (255,235,205)	
	# 0000FF	rgb (0,0,255)	
	# 8A2BE2	rgb (138,43,226)	






















	16	RGB	
	# A52A2A	rgb (165,42,42)	
BurlyWood	# DEB887	rgb (222,184,135)	
	# 5F9EA0	rgb (95,158,160)	
	# 7FFF00	rgb (127,255,0)	
	# D2691E	rgb (210,105,30)	
	# FF7F50	rgb (255,127,80)	
CornflowerBlue	# 6495ED	rgb (100,149,237)	
	# FFF8DC	rgb (255,248,220)	
	# DC143C	rgb (220,20,60)	
	# 00FFFF	rgb (0,255,255)	
	# 00008B	rgb (0,0,139)	
	# 008B8B	rgb (0,139,139)	
DarkGoldenRod	# B8860B	rgb (184,134,11)	
	# A9A9A9	rgb (169,169,169)	
	# A9A9A9	rgb (169,169,169)	
	# 006400	rgb (0,100,0)	
	# BDB76B	rgb (189,183,107)	
	# 8B008B	rgb (139,0,139)	
DarkOliveGreen	# 556B2F	rgb (85,107,47)	
	# FF8C00	rgb (255,140,0)	
DarkOrchid	# 9932CC	rgb (153,50,204)	












	16	RGB	
DarkRed	# 8B0000	rgb (139,0,0)	
	# E9967A	rgb (233,150,122)	
DarkSeaGreen	# 8FBC8F	rgb (143,188,143)	
DarkSlateBlue	# 483D8B	rgb (72,61,139)	
DarkSlateGray	# 2F4F4F	rgb (47,79,79)	
DarkSlateGrey	# 2F4F4F	rgb (47,79,79)	
	# 00CED1	rgb (0,206,209)	
	# 9400D3	rgb (148,0,211)	
DeepPink	# FF1493	rgb (255,20,147)	
DeepSkyBlue	# 00BFFF	rgb (0,191,255)	
	# 696969	rgb (105,105,105)	
	# 696969	rgb (105,105,105)	
	# 1E90FF	rgb (30,144,255)	
	# B22222	rgb (178,34,34)	
FloralWhite	# FFFAF0	rgb (255,250,240)	
ForestGreen	# 228B22	rgb (34,139,34)	
	# FF00FF	rgb (255,0,255)	
	#DCDCDC	rgb (220,220,220)	
	# F8F8FF	rgb (248,248,255)	
	# FFD700	rgb (255,215,0)	
	# DAA520	rgb (218,165,32)	

	16	RGB	
	# 808080	rgb (128,128,128)	
	# 808080	rgb (128,128,128)	
	# 008000	rgb (0,128,0)	
GreenYellow	# ADFF2F	rgb (173,255,47)	
	# F0FFF0	rgb (240,255,240)	
	# FF69B4	rgb (255,105,180)	
IndianRed	# CD5C5C	rgb (205,92,92)	
	# 4B0082	rgb (75,0,130)	
	# FFFFF0	rgb (255,255,240)	
	# F0E68C	rgb (240,230,140)	
	# E6E6FA	rgb (230,230,250)	
LavenderBlush	# FFF0F5	rgb (255,240,245)	
	# 7CFC00	rgb (124,252,0)	
	#FFFACD	rgb (255,250,205)	
	# ADD8E6	rgb (173,216,230)	
	# F08080	rgb (240,128,128)	
	# E0FFFF	rgb (224,255,255)	
LightGoldenRodYellow	# FAFAD2	rgb (250,250,210)	
	# D3D3D3	rgb (211,211,211)	
	# D3D3D3	rgb (211,211,211)	
	# 90EE90	rgb (144,238,144)	

	16	RGB	
LightPink	# FFB6C1	rgb (255,182,193)	
LightSalmon	# FFA07A	rgb (255,160,122)	
LightSeaGreen	# 20B2AA	rgb (32,178,170)	
LightSkyBlue	# 87CEFA	rgb (135,206,250)	
LightSlateGray	# 778899	rgb (119,136,153)	
LightSlateGrey	# 778899	rgb (119,136,153)	
LightSteelBlue	# B0C4DE	rgb (176,196,222)	
	# FFFFE0	rgb (255,255,224)	
	# 00FF00	rgb (0,255,0)	
LimeGreen	# 32CD32	rgb (50,205,50)	
	# FAF0E6	rgb (250,240,230)	
	# FF00FF	rgb (255,0,255)	
	# 800000	rgb (128,0,0)	
	# 66CDAA	rgb (102,205,170)	
	# 0000CD	rgb (0,0,205)	
MediumOrchid	# BA55D3	rgb (186,85,211)	
	# 9370DB	rgb (147,112,219)	
	# 3CB371	rgb (60,179,113)	
MediumSlateBlue	# 7B68EE	rgb (123,104,238)	
MediumSpringGreen	# 00FA9A	rgb (0,250,154)	
	# 48D1CC	rgb (72,209,204)	

	16	RGB	
MediumVioletRed	# C71585	rgb (199,21,133)	
	# 191970	rgb (25,25,112)	
	# F5FFFA	rgb (245,255,250)	
	# FFE4E1	rgb (255,228,225)	
	# FFE4B5	rgb (255,228,181)	
	#FFDEAD	rgb (255,222,173)	
	# 000080	rgb (0,0,128)	
	# FDF5E6	rgb (253,245,230)	
	# 808000	rgb (128,128,0)	
	# 6B8E23	rgb (107,142,35)	
	# FFA500	rgb (255,165,0)	
	# FF4500	rgb (255,69,0)	
	# DA70D6	rgb (218,112,214)	
PaleGoldenRod	# EEE8AA	rgb (238,232,170)	
	# 98FB98	rgb (152,251,152)	
	#AFEEEE	rgb (175,238,238)	
PaleVioletRed	# DB7093	rgb (219,112,147)	
	# FFEFD5	rgb (255,239,213)	
PeachPuff	# FFDAB9	rgb (255,218,185)	
	# CD853F	rgb (205,133,63)	
	# FFC0CB	rgb (255,192,203)	

	16	RGB	
	# DDA0DD	rgb (221,160,221)	
	# B0E0E6	rgb (176,224,230)	
	# 800080	rgb (128,0,128)	
	# 663399	rgb (102,51,153)	
	# FF0000	rgb (255,0,0)	
RosyBrown	# BC8F8F	rgb (188,143,143)	
	# 4169E1	rgb (65,105,225)	
	# 8B4513	rgb (139,69,19)	
	# FA8072	rgb (250,128,114)	
SandyBrown	# F4A460	rgb (244,164,96)	
	# 2E8B57	rgb (46,139,87)	
	# FFF5EE	rgb (255,245,238)	
	# A0522D	rgb (160,82,45)	
	# C0C0C0	rgb (192,192,192)	
	# 87CEEB	rgb (135,206,235)	
	# 6A5ACD	rgb (106,90,205)	
	# 708090	rgb (112,128,144)	
	# 708090	rgb (112,128,144)	
	# FFFAFA	rgb (255,250,250)	
SpringGreen	# 00FF7F	rgb (0,255,127)	
	# 4682B4	rgb (70,130,180)	

	16	RGB	
	# D2B48C	rgb (210,180,140)	
	# 008080	rgb (0,128,128)	
	# D8BFD8	rgb (216,191,216)	
	# FF6347	rgb (255,99,71)	
	# 40E0D0	rgb (64,224,208)	
	# EE82EE	rgb (238,130,238)	
	# F5DEB3	rgb (245,222,179)	
	#FFFFFF	rgb (255,255,255)	
WhiteSmoke	# F5F5F5	rgb (245,245,245)	
	# FFFF00	rgb (255,255,0)	
	# 9ACD32	rgb (154,205,50)	

transparent . rgba (0,0,0,0)

16

CSS , 16 . 10 00 - FF 0 - 255 . / Hexidecimal (: #3fc = #3FC = #3ffcc). #369 #336699 . #306090 .

16 256 ^ 3 16,777,216.

```
color: #rrggbb;
color: #rgb
```

rr	00 - FF
gg	00 - FF
bb	00 - FF


```

.some-class {
  /* This is equivalent to using the color keyword 'blue' */
  color: #0000FF;
}

.also-blue {
  /* If you want to specify each range value with a single number, you can!
  This is equivalent to '#0000FF' (and 'blue') */
  color: #00F;
}

```

16 W3C ' ' RGB .

16 (16) .

" hex color palette " " hex color picker " !

16 (#) 6 ., / .#FFC125 #ffc125 .

rgb ()

RGB, . RGB 16 10 .16 00-FF 0-255 0% -100%.

```

.some-class {
  /* Scalar RGB, equivalent to 'blue'*/
  color: rgb(0, 0, 255);
}

.also-blue {
  /* Percentile RGB values*/
  color: rgb(0%, 0%, 100%);
}

```

rgb(<red>, <green>, <blue>)

<red>	0 - 255 0 - 100 %
<green>	0 - 255 0 - 100 %
<blue>	0 - 255 0 - 100 %

hsl ()

HSL (""), ("") ("").

0 ° 360 ° () .

```

p {
  color: hsl(240, 100%, 50%); /* Blue */
}

```

```
color: hsl(<hue>, <saturation>%, <lightness>%);
```

<hue>	0 ° , 60 ° , 120 ° , 180 ° , 240 ° , 300 ° , 360 ° ().
<saturation>	0 % () 100 % ()
<lightness>	0 % 100 %

- 0 % . .
- 0 % 100 % . .

currentColor

currentColor .

currentColor color red red .

```
div {
  color: red;
  border: 5px solid currentColor;
  box-shadow: 0 0 5px currentColor;
}
```

currentColor . border currentColor .

```
div {
  color: blue;
  border: 3px solid currentColor;
  color: green;
}
```

■
. currentColor 'blue' .

```
.parent-class {
  color: blue;
}

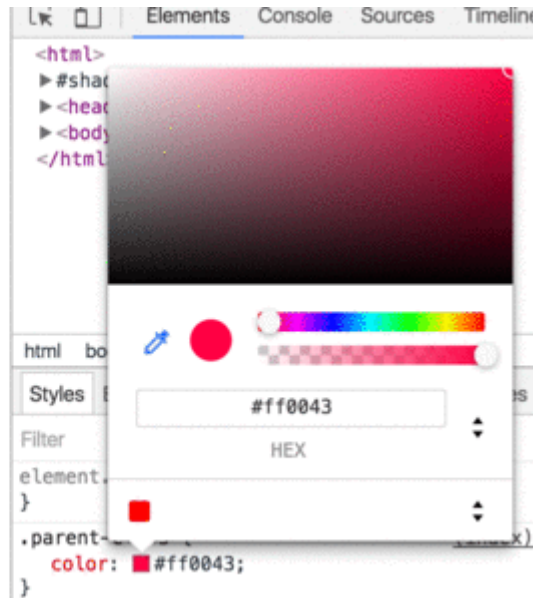
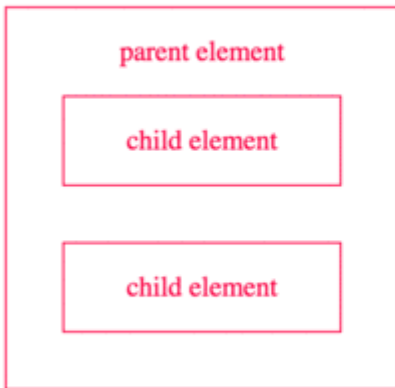
.parent-class .child-class {
  border-color: currentColor;
}
```

currentColor background-color color . :

```
.parent-class {
  color: blue;
}

.parent-class .child-class {
  background-color: currentColor;
}
```

:



rgba ()

rgb () () .

```
.red {
  /* Opaque red */
  color: rgba(255, 0, 0, 1);
}

.red-50p {
  /* Half-translucent red. */
  color: rgba(255, 0, 0, .5);
}
```

rgba(<red>, <green>, <blue>, <alpha>);

<red>	0 - 255	0 - 100 %
<green>	0 - 255	0 - 100 %
<blue>	0 - 255	0 - 100 %
<alpha>	0 ~ 1	0.0 , 1.0

hsla ()

hsl () .

```
hsla(240, 100%, 50%, 0)    /* transparent */  
hsla(240, 100%, 50%, 0.5) /* half-translucent blue */  
hsla(240, 100%, 50%, 1)   /* fully opaque blue */
```

```
hsla(<hue>, <saturation>%, <lightness>%, <alpha>);
```

<hue>	0 ° , 60 ° , 120 ° , 180 ° , 240 ° , 300 ° , 360 ° ().
<saturation>	0 % () 100 % ()
<lightness>	0 % 100 %
<alpha>	0 1 0 - 1

: <https://riptutorial.com/ko/css/topic/644/>-

18:

- `@supports [] { /* CSS */ }`

(property: value)	CSS true . .
and	true true .
not	.
or	true true .
(...)	

`@supports` Edge, Chrome, Firefox, Opera Safari 9 .

Examples

@

```
@supports (display: flex) {  
  /* Flexbox is available, so use it */  
  .my-container {  
    display: flex;  
  }  
}
```

`@supports @media @supports CSS .`

`@supports (flex) @supports (display: flex) .`

and .

```
@supports (transform: translateZ(1px)) and (transform-style: preserve-3d) and (perspective:  
1px) {  
  /* Probably do some fancy 3d stuff here */  
}
```

or not .

```
@supports (display: flex) or (display: table-cell) {  
  /* Will be used if the browser supports flexbox or display: table-cell */  
}  
@supports not (-webkit-transform: translate(0, 0, 0)) {  
  /* Will *not* be used if the browser supports -webkit-transform: translate(...) */  
}
```

`@supports .`

```
@supports ((display: block) and (zoom: 1)) or ((display: flex) and (not (display: table-cell))) or (transform: translateX(1px)) {  
  /* ... */  
}
```

1. display: block display: block zoom: 1 ,
2. display: flex display: flex **AND NOT** display: table-cell
3. transform: translateX(1px) transform: translateX(1px) .

: <https://riptutorial.com/ko/css/topic/5024/>

19:

- `<calc()> = calc(<calc-sum>)`
- `<calc-sum> = <calc-product> [['+' | '-'] <calc-product>]*`
- `<calc-product> = <calc-value> ['*' <calc-value> | '/' <number>]*`
- `<calc-value> = <number> | <dimension> | <percentage> | (<calc-sum>)`

`calc() " - " + " " * " " / " .`

Examples

calc ()

`(: px) .`

`+, -, / *`

`calc() div .`

```
#div1 {
  position: absolute;
  left: 50px;
  width: calc(100% - 100px);
  border: 1px solid black;
  background-color: yellow;
  padding: 5px;
  text-align: center;
}
```

`calc() .`

```
background-position: calc(50% + 17px) calc(50% + 10px), 50% 50%;
```

`calc() .`

```
height: calc(100% - 20px);
```

attr ()

CSS `data-*` `blockquote (:::before ::after)`.

```
<blockquote data-mark=""></blockquote>
```

CSS .

```
blockquote[data-mark]::before,  
blockquote[data-mark]::after {  
  content: attr(data-mark);  
}
```

- ()

.

```
linear-gradient( 0deg, red, yellow 50%, blue);
```

. 50%, .

()

.

```
radial-gradient(red, orange, yellow) /*A gradient coming out from the middle of the  
gradient, red at the center, then orange, until it is finally yellow at the edges*/
```

var ()

var () CSS .

```
/* set a variable */  
:root {  
  --primary-color: blue;  
}  
  
/* access variable */  
selector {  
  color: var(--primary-color);  
}
```

. caniuse.com .

: <https://riptutorial.com/ko/css/topic/2214/>

20:

CSS (px, em, pc, in ...)

CSS

-
- 1em

%	
	(2em 2)
rem	
	1 % *
VH	1 % *
vmin	* 1 %
vmax	* 1 %
mm	
...	(1 = 96 = 2.54cm)
	(1px = 1 / 96th of 1in)
	(1pt = 1 / 72 in 1in)
pc	(1pc = 12pt)
	()
ms	()
	x
ch	(0) .
fr	(CSS)

- . 0 .
- CSS .

Examples

Rem

CSS3 "root em" `rem` . rem .

em rem .

- **em** : . . .
- **rem** : `<html>` . , `html` rem .

rem . 16px rem .

- 10 = 0.625rem
- 12px = 0.75rem
- 14px = 0.875rem
- 16px = 1rem ()
- 18px = 1.125rem
- 20px = 1.25rem
- 24px = 1.5rem
- 30px = 1.875rem
- 32px = 2rem

:

```
html {
  font-size: 16px;
}

h1 {
  font-size: 2rem;          /* 32px */
}

p {
  font-size: 1rem;         /* 16px */
}

li {
  font-size: 1.5em;       /* 24px */
}
```

rem em

`html font-size rem font-size rem em font-size .`

HTML :

```
<input type="button" value="Button">
<input type="range">
<input type="text" value="Text">
```

CSS :

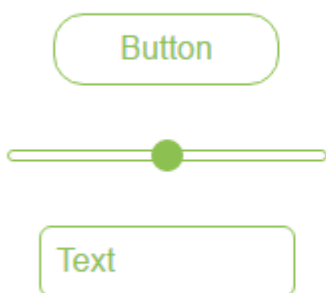
```
html {
  font-size: 16px;
}

input[type="button"] {
  font-size: 1rem;
  padding: 0.5em 2em;
}

input[type="range"] {
  font-size: 1rem;
  width: 10em;
}

input[type="text"] {
  font-size: 1rem;
  padding: 0.5em;
}
```

:



vh vw

CSS3 .

- viewport height vh viewport height 1 % .
- viewport width vw viewport width 1 % .

```
div {
  width: 20vw;
  height: 20vh;
}
```

div 20 % .

vmin vmax

- **vmin** : 1 %
- **vmax** : 1 %

, 1 vmin 1 vh 1 vw .

1 vmax 1 vh 1 vw .

: vmax .

- Internet Explorer
- 6.1 Safari

% %

.

.

:

() * ((%)) =

:

50 % 100px .

, *Child* (50 %) **50px** .

HTML

```
<div class="parent">
  PARENT
  <div class="child">
    CHILD
  </div>
</div>
```

CSS

```
<style>

*{
  color: #CCC;
}

.parent{
  background-color: blue;
  width: 100px;
}

.child{
  background-color: green;
  width: 50%;
}
```

```
</style>
```

PARENT
CHILD

div.child | 50 x 18

: [https://riptutorial.com/ko/css/topic/864/-](https://riptutorial.com/ko/css/topic/864/)

21:

Examples

. width height 100 .



```
<div class="square"></div>
```

```
.square {  
  width: 100px;  
  height: 100px;  
  background: rgb(246, 156, 85);  
}
```

CSS 0 . . 0 4 (,,,) . / 0 4 .



. . .



,, . 50x50 .

-



```
<div class="triangle-up"></div>
```

```
.triangle-up {  
  width: 0;  
  height: 0;  
  border-left: 25px solid transparent;  
  border-right: 25px solid transparent;  
  border-bottom: 50px solid rgb(246, 156, 85);  
}
```

-



```
<div class="triangle-down"></div>
```

```
.triangle-down {  
  width: 0;  
  height: 0;  
  border-left: 25px solid transparent;  
  border-right: 25px solid transparent;  
  border-top: 50px solid rgb(246, 156, 85);  
}
```

-



```
<div class="triangle-right"></div>
```

```
.triangle-right {  
  width: 0;  
  height: 0;  
  border-top: 25px solid transparent;  
  border-bottom: 25px solid transparent;  
  border-left: 50px solid rgb(246, 156, 85);  
}
```

```
}
```

-



```
<div class="triangle-left"></div>
```

```
.triangle-left {  
  width: 0;  
  height: 0;  
  border-top: 25px solid transparent;  
  border-bottom: 25px solid transparent;  
  border-right: 50px solid rgb(246, 156, 85);  
}
```

- /



```
<div class="triangle-up-right"></div>
```

```
.triangle-up-right {  
  width: 0;  
  height: 0;  
  border-top: 50px solid rgb(246, 156, 85);  
  border-left: 50px solid transparent;  
}
```

- /



```
<div class="triangle-up-left"></div>
```

```
.triangle-up-left {  
  width: 0;
```



```
height: 0;
border-top: 50px solid rgb(246, 156, 85);
border-right: 50px solid transparent;
}
```

- /



```
<div class="triangle-down-right"></div>
```

```
.triangle-down-right {
width: 0;
height: 0;
border-bottom: 50px solid rgb(246, 156, 85);
border-left: 50px solid transparent;
}
```

- /



```
<div class="triangle-down-left"></div>
```

```
.triangle-down-left {
width: 0;
height: 0;
border-bottom: 50px solid rgb(246, 156, 85);
border-right: 50px solid transparent;
}
```

(burst) . .

::before ::after psuedo-elements .

8

8 2 . :before . 20°, 135° .



```
<div class="burst-8"></div>

.burst-8 {
  background: rgb(246, 156, 85);
  width: 40px;
  height: 40px;
  position: relative;
  text-align: center;
  -ms-transform: rotate(20deg);
  transform: rotate(20deg);
}

.burst-8::before {
  content: "";
  position: absolute;
  top: 0;
  left: 0;
  height: 40px;
  width: 40px;
  background: rgb(246, 156, 85);
  -ms-transform: rotate(135deg);
  transform: rotate(135deg);
}
```

12

12 3 . squares :before :after . 0 ° , 30 ° 60 ° .



```
<div class="burst-12"></div>

.burst-12 {
  width: 40px;
  height: 40px;
  position: relative;
  text-align: center;
  background: rgb(246, 156, 85);
}

.burst-12::before, .burst-12::after {
  content: "";
  position: absolute;
  top: 0;
  left: 0;
  height: 40px;
}
```

```
width: 40px;
background: rgb(246, 156, 85);
}

.burst-12::before {
-ms-transform: rotate(30deg);
transform: rotate(30deg);
}

.burst-12::after {
-ms-transform: rotate(60deg);
transform: rotate(60deg);
}
```

width height () border-radius 50% .



HTML

```
<div class="circle"></div>
```

CSS

```
.circle {
width: 50px;
height: 50px;
background: rgb(246, 156, 85);
border-radius: 50%;
}
```

width height .



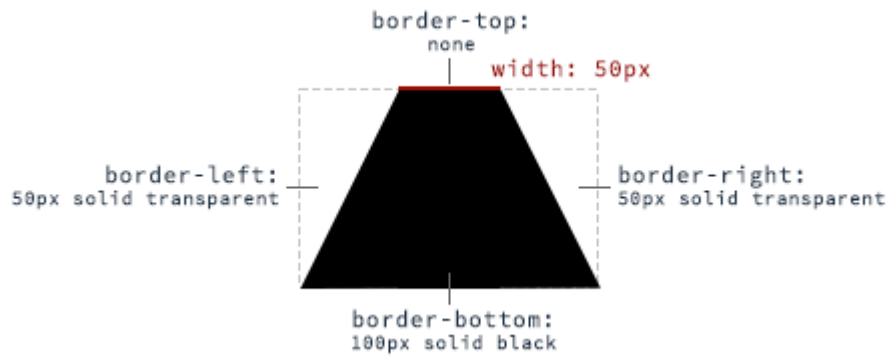
HTML

```
<div class="oval"></div>
```

CSS

```
.oval {
  width: 50px;
  height: 80px;
  background: rgb(246, 156, 85);
  border-radius: 50%;
}
```

0px (0px) 0 .



HTML :

```
<div class="trapezoid"></div>
```

CSS :

```
.trapezoid {
  width: 50px;
  height: 0;
  border-left: 50px solid transparent;
  border-right: 50px solid transparent;
  border-bottom: 100px solid black;
}
```

2D skewX() skewY() .



HTML :

```
<div class="cube"></div>
```

CSS :

```
.cube {
  background: #dc2e2e;
  width: 100px;
  height: 100px;
  position: relative;
  margin: 50px;
}

.cube::before {
  content: '';
  display: inline-block;
  background: #f15757;
  width: 100px;
  height: 20px;
  transform: skewX(-40deg);
  position: absolute;
  top: -20px;
  left: 8px;
}

.cube::after {
  content: '';
  display: inline-block;
  background: #9e1515;
  width: 16px;
  height: 100px;
  transform: skewY(-50deg);
  position: absolute;
  top: -10px;
  left: 100%;
}
```

2D skewY() rotate() .



HTML :

```
<div class="pyramid"></div>
```

CSS :

```
.pyramid {
  width: 100px;
  height: 200px;
```

```
position: relative;
margin: 50px;
}

.pyramid::before, .pyramid::after {
  content: '';
  display: inline-block;
  width: 0;
  height: 0;
  border: 50px solid;
  position: absolute;
}

.pyramid::before {
  border-color: transparent transparent #ff5656 transparent;
  transform: scaleY(2) skewY(-40deg) rotate(45deg);
}

.pyramid::after {
  border-color: transparent transparent #d64444 transparent;
  transform: scaleY(2) skewY(40deg) rotate(-45deg);
}
```

: <https://riptutorial.com/ko/css/topic/2862/-->

22:

- : | | | | | | | | | | - | | | | | - | | | | | | | | | ;

none	.
block	100% .
inline	, , .
inline-block	.
inline-flex	.
inline-table	.
grid	.
flex	flexbox .
inherit	.
initial	HTML / .
table	HTML table table .
table-cell	<td> .
table-column	<col> .
table-row	<tr> .
list-item	 .

Examples

display CSS HTML . block inline display ().

inline . .

```
<span>This is some <b>bolded</b> text!</span>
```

This is some bolded text!

inline () .

block ' . inline .

```
<div>Hello world!</div><div>This is an example!</div>
```

Hello world!
This is an example!

div block inline .

inline-block . padding , margin , height inline .

text-align text-align . .

```
<!--Inline: unordered list-->
<style>
li {
  display : inline;
  background : lightblue;
  padding:10px;

  border-width:2px;
  border-color:black;
  border-style:solid;
}
</style>

<ul>
<li>First Element </li>
<li>Second Element </li>
<li>Third Element </li>
</ul>
```

First Element

Second Element

Third Element

```
<!--block: unordered list-->
<style>
li {
  display : block;
  background : lightblue;
  padding:10px;

  border-width:2px;
  border-color:black;
  border-style:solid;
}
</style>

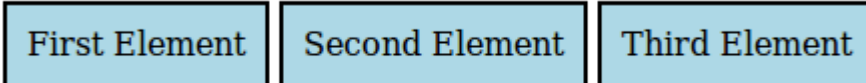
<ul>
<li>First Element </li>
<li>Second Element </li>
<li>Third Element </li>
</ul>
```




```
<!--Inline-block: unordered list-->
<style>
li {
  display : inline-block;
  background : lightblue;
  padding:10px;

  border-width:2px;
  border-color:black;
  border-style:solid;
  }
</style>

<ul>
<li>First Element </li>
<li>Second Element </li>
<li>Third Element </li>
</ul>
```



display none .

myDiv ID div .

```
<div id="myDiv"></div>
```

CSS .

```
#myDiv {
  display: none;
}
```

display:none; (position float) . html .

visibility hidden .visibility: hidden; visibility: hidden; . .

display none JavaScript .

div

HTML .

```
<style>
  table {
    width: 100%;
  }
</style>

<table>
  <tr>
    <td>
      I'm a table
    </td>
  </tr>
</table>
```

```
<style>
  .table-div {
    display: table;
  }
  .table-row-div {
    display: table-row;
  }
  .table-cell-div {
    display: table-cell;
  }
</style>

<div class="table-div">
  <div class="table-row-div">
    <div class="table-cell-div">
      I behave like a table now
    </div>
  </div>
</div>
```

: <https://riptutorial.com/ko/css/topic/1473/>-

23:

- @media [not | only] mediatype () { /* CSS */ }

mediatype	() . screen all .
not	() CSS .
media feature	CSS . .
aspect-ratio	.
color	. 0.
color-index	.
grid	.
height	.
max-width	CSS .
min-width	CSS .
max-height	CSS .
min-height	CSS .
monochrome	() .
orientation	CSS . .
resolution	() .
scan	.
width	(:) .
device-aspect-ratio	Deprecated CSS / . deprecated .
max-device-width	Deprecated max-width .
min-device-width	Deprecated min-width .
max-device-height	Deprecated max-height .
min-device-height	Deprecated min-height .

orientation . ().

.

.

.

. head .

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

Examples

```
@media screen and (min-width: 720px) {  
  body {  
    background-color: skyblue;  
  }  
}
```

.

1. (,).
2. 720 .

.

. CSS . CSS .

720 720 .

```
<link rel="stylesheet" media="min-width: 600px" href="example.css" />
```

600px .

mediatype mediatype . @media (@media mediatype) . .

```
@media print {  
  html {  
    background-color: white;  
  }  
}
```

CSS DOM HTML .

mediatype not only MediaType . print .

```
@media not print {
  html {
    background-color: green;
  }
}
```

```
@media only screen {
  .fadeInEffects {
    display: block;
  }
}
```

mediatype .

all	
screen	
print	. .
handheld	PDA,
projection	,
aural	
braille	
embossed	
tv	
tty	., .

CSS . CSS .

```
@media only screen and (min-width: 300px) and (max-width: 767px) {
  .site-title {
    font-size: 80%;
  }

  /* Styles in this block are only applied if the screen size is atleast 300px wide, but no
  more than 767px */
}

@media only screen and (min-width: 768px) and (max-width: 1023px) {
  .site-title {
    font-size: 90%;
  }

  /* Styles in this block are only applied if the screen size is atleast 768px wide, but no
  more than 1023px */
}
```

```
@media only screen and (min-width: 1024px) {
  .site-title {
    font-size: 120%;
  }

  /* Styles in this block are only applied if the screen size is over 1024px wide. */
}
```

```
""" . <head> .
```

```
<meta name="viewport" content="width=device-width,initial-scale=1">
```

?

MDN ""

```
(: ).
```

?

View-port . 1280 x 720 "1280 ".

. iPhone 6 Plus 1242 x 2208 . 414 x 736. , 1 3 .

meta () .

Retina Non Retina

WebKit .

```
/* ----- Non-Retina Screens ----- */
@media screen
  and (min-width: 1200px)
  and (max-width: 1600px)
  and (-webkit-min-device-pixel-ratio: 1) {
}

/* ----- Retina Screens ----- */
@media screen
  and (min-width: 1200px)
  and (max-width: 1600px)
  and (-webkit-min-device-pixel-ratio: 2)
  and (min-resolution: 192dpi) {
}
```

. . . . MacBook Pro Retina, iPhone 4 2.

WebKit .

- -webkit- .
- WebKit Blink .

/ () CSS , .

```
@media [...] {  
    /* One or more CSS rules to apply when the query is satisfied */  
}
```

```
@media print {  
    /* One or more CSS rules to apply when the query is satisfied */  
}
```

```
@media screen and (max-width: 600px) {  
    /* One or more CSS rules to apply when the query is satisfied */  
}
```

("all")

```
@media (orientation: portrait) {  
    /* One or more CSS rules to apply when the query is satisfied */  
}
```

IE8

IE8 .

IE8 JS . IE8 .

```
<!--[if lt IE 9]>  
<script  
    src="respond.min.js">  
</script>  
<![endif]-->
```

CSS Mediaqueries . HTML .

```
<!--[if lt IE 9]>  
<script  
    src="css3-mediaqueries.js">  
</script>  
<![endif]-->
```

JS IE <9 IE <9 . HTML .

```
<!--[if lt IE 9]>
<link rel="stylesheet" type="text/css" media="all" href="style-ielt9.css"/>
<![endif]-->
```

:

IE **CSS** . IE <9 , . CSS . CSS .

: [https://riptutorial.com/ko/css/topic/317/-](https://riptutorial.com/ko/css/topic/317/)

24:

- : ;

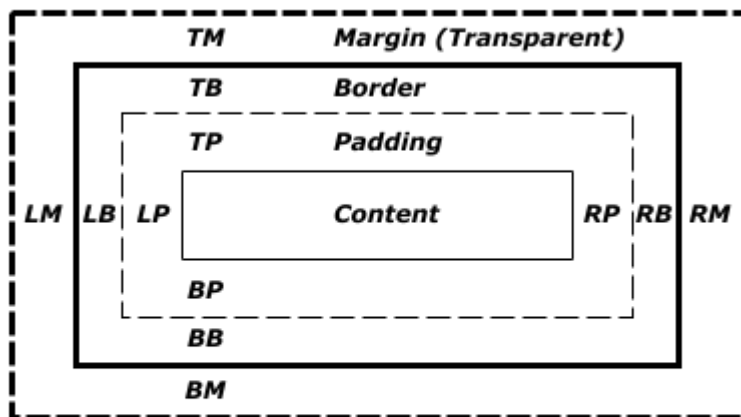
content-box	.
padding-box	.
border-box	, .
initial	.
inherit	.

Firefox . Firefox 50.0 .

Examples

Box Model ?

HTML . , .



- Margin edge
- Border edge
- - - Padding edge
- Content edge

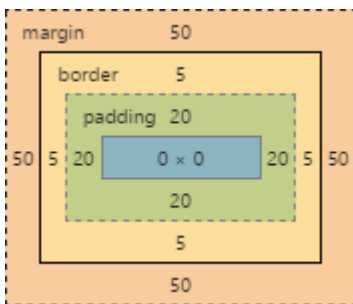
CSS2.2

. . .

- (,) .
- padding .padding .
- border .border , .
- margin .margin .

```
div {
  border: 5px solid red;
  margin: 50px;
  padding: 20px;
}
```

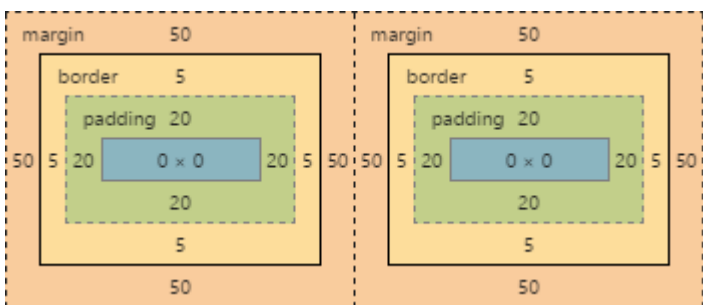
CSS div 5px ,, 5px . 50px ,, . 20px ,, . .



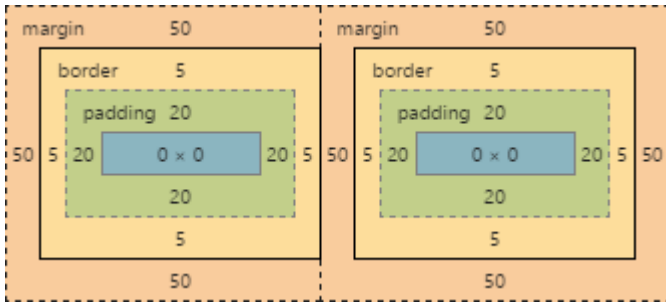
Chrome

- () (0px x 0px).
- , 20 padding (40 x 40).
- 5px border (50x50) .
- margin (margin 150px 150px) .

Box Model



150 .



padding border width/height (content-box) .

content-box .

```

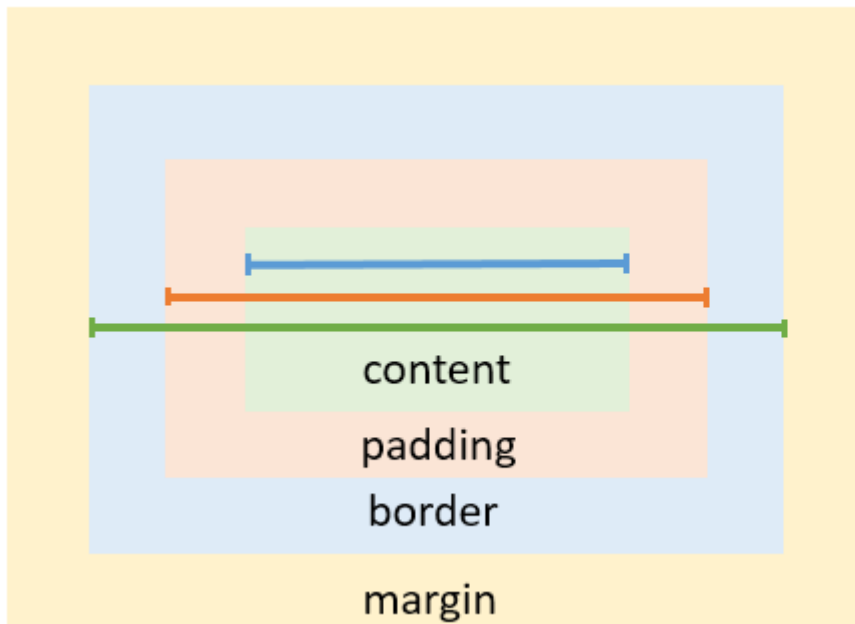
textarea {
  width: 100%;
  padding: 3px;
  box-sizing: content-box; /* default value */
}

```

100% .

CSS box-sizing . .

- content-box : - .
- padding-box : .
- border-box : , border-box .



width

- **content-box:** content
- **padding-box:** content + padding
- **border-box:** content + padding + border

textarea box-sizing padding-box border-box .border-box .

```

textarea {
  width: 100%;
  padding: 3px;
}

```

```
    box-sizing: border-box;
}
```

.

```
html {
    box-sizing: border-box;
}

*, *:before, *:after {
    box-sizing: inherit;
}
```

```
box-sizing: border-box; * .
```

[: https://riptutorial.com/ko/css/topic/646/-](https://riptutorial.com/ko/css/topic/646/)

25:

CSS , .

, , .

- : | | | ;
 - background-image : url | | | ;
 - ::;
 - background-size : <bg-size> [<bg-size>]
 - <bg-size> : | | | | | ;
 - : | -x | -y | | | ;
 - background-origin : | border-box | | | ;
 - background-clip : | | | | ;
 - background-attachment : | | | | ;
 - : bg-color bg-image / bg-size bg-repeat bg-origin bg-clip bg-attachment | ;
-
- CSS3 Internet Explorer 10 .

Examples

background-color transparent , inherit initial .

- , . . .
- .
- **initial** : .

::first-letter / ::first-line .

CSS .

CSS

```
div {  
  background-color: red; /* red */  
}
```

HTML

```
<div>This will have a red background</div>
```

- CSS .

16

16 16 16 RGB . , # ff0000 , 256 (ff) 0 (00).

3 RGB (R, G B) 3 () . #ff0000 #f00 , #ffffff #fff #fff .

16 .

```
body {
  background-color: #de1205; /* red */
}

.main {
  background-color: #00f; /* blue */
}
```

RGB / RGBa

RGB RGBa .

RGB Red, Green Blue , , 0 255 .

RGBa 0.0 1.0 .

```
header {
  background-color: rgb(0, 0, 0); /* black */
}

footer {
  background-color: rgba(0, 0, 0, 0.5); /* black with 50% opacity */
}
```

HSL / HSLa

HSL HSLa RGB RGBa .

HSL , HLS.

- (0 360).
- 0 % 100 % .
- 0 % 100 % .

HSLa 0.0 1.0 .

```
li a {
  background-color: hsl(120, 100%, 50%); /* green */
}

#p1 {
```

```
background-color: hsla(120, 100%, 50%, .3); /* green with 30% opacity */
}
```

```
body {
  background: red;
  background-image: url(partiallytransparentimage.png);
}
```

```
body {
  background-color: red;
  background-image: url(partiallytransparentimage.png);
}
```

```
body {
  background-image: url(partiallytransparentimage.png);
  background-color: red;
}
```

```
body {
  background: red url(partiallytransparentimage.png);
}
```

(background-repeat).

```
body {
  background-image: url(partiallytransparentimage.png);
  background: red;
}
```

background background background-image .

background .

background-image . .

```
.myClass {
  background-image: url('/path/to/image.jpg');
}
```

background-image url() .

```
.myClass {
  background-image: url('/path/to/image.jpg'),
                  url('/path/to/image2.jpg');
}
```

url('/path/to/image.jpg')	URI ()
none	
initial	
inherit	

CSS

.

```
background-size:    xpx ypx | x% y%;
background-repeat: no-repeat | repeat | repeat-x | repeat-y;
background-position: left offset (px/%) right offset (px/%) | center center | left top | right bottom;
```

CSS3 . [background-image](#) background .

.

- linear-gradient()
- repeating-linear-gradient()
- radial-gradient()
- repeating-radial-gradient()

- ()

linear-gradient .

```
background: linear-gradient( <direction>?, <color-stop-1>, <color-stop-2>, ...);
```

<direction>	to top, to bottom, to right to left . 0deg, 90deg deg , grad , rad turn . . .
<color-stop-list>	(). , yellow 10% , rgba(0,0,0,.5) 40px , #fff 100% ...

,

```
.linear-gradient {
  background: linear-gradient(to left, red, blue); /* you can also use 270deg */
}
```

diagonal .

```
.diagonal-linear-gradient {
  background: linear-gradient(to left top, red, yellow 10%);
}
```



```
.linear-gradient-rainbow {
  background: linear-gradient(to left, red, orange, yellow, green, blue, indigo, violet)
}
```



```
.radial-gradient-simple {
  background: radial-gradient(red, blue);
}

.radial-gradient {
  background: radial-gradient(circle farthest-corner at top left, red, blue);
}
```

circle	. circle ellipse ellipse .
farthest-corner	. closest-side , farthest-side , closest-corner , farthest-corner
top left	background-position .

```
.bullseye {
  background: repeating-radial-gradient(red, red 10%, white 10%, white 20%);
}

.warning {
  background: repeating-linear-gradient(-45deg, yellow, yellow 10%, black 10%, black 20% );
}
```

-45deg	. . deg , grad , rad turn .
to left	, to bottom . :to [y-axis(top OR bottom)] [x-axis(left OR right)] to top right
yellow 10%	. .

HEX, RGB, RGBA, HSL HSLa . . . MDN .

background .

		CSS
background-image		1+

		CSS
background-color		1+
background-position		1+
background-size		3+
background-repeat		1+
background-origin	(background-attachment fixed)	3+
background-clip	content-box , border-box padding-box border-box	3+
background-attachment		1+
initial	.	3+
inherit	.	2+

```
background: [<background-image>] [<background-color>] [<background-position>]/[<background-size>] [<background-repeat>] [<background-origin>] [<background-clip>] [<background-attachment>] [<initial|inherit>];
```

```
background: red;
```

red background-color .

```
background: border-box red;
```

background-clip background-color .

```
background: no-repeat center url("somepng.jpg");
```

background-repeat background-repeat , background-origin , background-image background-image .

```
background: url('pattern.png') green;
```

background-color green pattern.png , . pattern.png green .

```
background: #000000 url("picture.png") top left / 600px auto no-repeat;
```

'picture.png' . / . 600px auto . .

: . longhand .

background-position

```
.myClass {
  background-image: url('path/to/image.jpg');
  background-position: 50% 50%;
}
```

X Y CSS .

% %	(-) . (-) background-size background-size .
px px	.

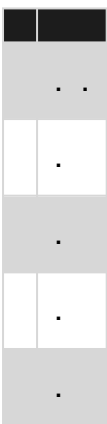
CSS ().

background-position-x background-position-y . X y .

: Firefox (31-48) 2 . 2016 9 Firefox 49 ., (Stack Overflow) .

background-attachment

```
body {
  background-image: url('img.jpg');
  background-attachment: fixed;
}
```



:

.

```
body {
```

```
background-image: url('image.jpg');
background-attachment: scroll;
}
```

;

:

```
body {
  background-image: url('image.jpg');
  background-attachment: fixed;
}
```

;

div div .

```
div {
  background-image: url('image.jpg');
  background-attachment: local;
}
```

background-repeat / .

.

```
div {
  background-image: url("img.jpg");
  background-repeat: repeat-y;
}
```

background-repeat: repeat-y .



opacity . RGBA . 0.6 .

```
/* Fallback for web browsers that don't support RGBA */
background-color: rgb(0, 0, 0);

/* RGBA with 0.6 opacity */
background-color: rgba(0, 0, 0, 0.6);

/* For IE 5.5 - 7*/
filter: progid:DXImageTransform.Microsoft.gradient(startColorstr=#99000000,
endColorstr=#99000000);

/* For IE 8*/
-ms-filter: "progid:DXImageTransform.Microsoft.gradient(startColorstr=#99000000,
endColorstr=#99000000)";
```

CSS3 .

```
#mydiv {
  background-image: url(img_1.png), /* top image */
                  url(img_2.png), /* middle image */
                  url(img_3.png); /* bottom image */
  background-position: right bottom,
                    left top,
                    right top;
  background-repeat: no-repeat,
                  repeat,
```

```
        no-repeat;
    }
```

```
.img_1 img_2 img_3 .
```

```
:
```

```
#mydiv {
    background: url(img_1.png) right bottom no-repeat,
                url(img_2.png) left top repeat,
                url(img_3.png) right top no-repeat;
}
```

```
.
```

```
#mydiv {
    background: url(image.png) right bottom no-repeat,
                linear-gradient(to bottom, #fff 0%,#000 100%);
}
```

-

background-origin .

```
:background-attachment fixed .
```

```
:padding-box
```

```
:
```

- padding-box - .
- border-box - .
- content-box - .
- initial
- inherit

CSS

```
.example {
    width: 300px;
    border: 20px solid black;
    padding: 50px;
    background: url(https://static.pexels.com/photos/6440/magazines-desk-work-workspace-
medium.jpg);
    background-repeat: no-repeat;
}
```

```
.example1 {}
```

```
.example2 { background-origin: border-box; }
```

```
.example3 { background-origin: content-box; }
```

HTML

```
<p>No background-origin (padding-box is default):</p>
```

```
<div class="example example1">
```

```
  <h2>Lorem Ipsum Dolor</h2>
```

```
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.</p>
```

```
  <p>Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.</p>
```

```
</div>
```

```
<p>background-origin: border-box:</p>
```

```
<div class="example example2">
```

```
  <h2>Lorem Ipsum Dolor</h2>
```

```
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.</p>
```

```
  <p>Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.</p>
```

```
</div>
```

```
<p>background-origin: content-box:</p>
```

```
<div class="example example3">
```

```
  <h2>Lorem Ipsum Dolor</h2>
```

```
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.</p>
```

```
  <p>Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.</p>
```

```
</div>
```

:

No background-origin (padding-box is default):



background-origin: border-box:



background-origin: content-box:



- padding-box .
- content-box .
- inherit .

CSS

```
.example {
  width: 300px;
  border: 20px solid black;
  padding: 50px;
  background: url(https://static.pexels.com/photos/6440/magazines-desk-work-workspace-medium.jpg);
  background-repeat: no-repeat;
}

.example1 {}

.example2 { background-origin: border-box; }

.example3 { background-origin: content-box; }
```

HTML

```
<p>No background-origin (padding-box is default):</p>

<div class="example example1">
  <h2>Lorem Ipsum Dolor</h2>
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.</p>
  <p>Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.</p>
</div>

<p>background-origin: border-box:</p>
<div class="example example2">
  <h2>Lorem Ipsum Dolor</h2>
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.</p>
  <p>Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.</p>
</div>

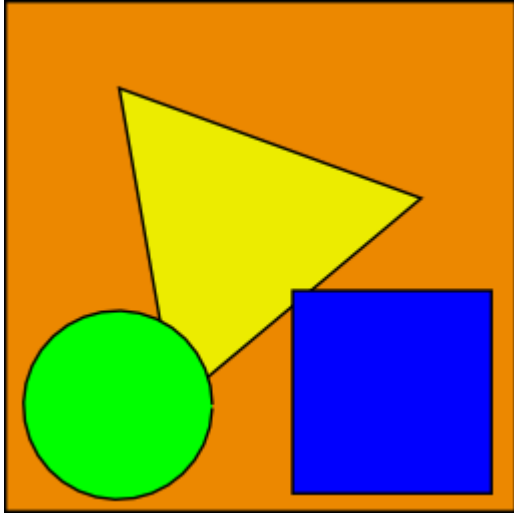
<p>background-origin: content-box:</p>
<div class="example example3">
  <h2>Lorem Ipsum Dolor</h2>
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.</p>
  <p>Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.</p>
</div>
```

`background-size` `background-image` . 2 , / / . , width height auto .

auto . auto . 256px x 256px `background-size` 50 .

```
background-size: 50px;  
background-size: 50px auto; /* same as above */  
background-size: auto 50px;  
background-size: 50px 50px;
```

(256px x 256px),

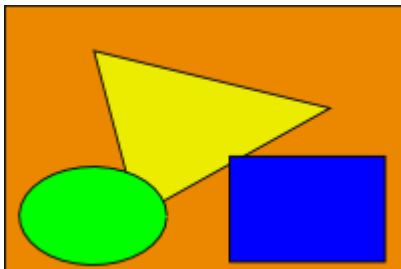


50 x 50 .



. 200 x 133 .

```
#withbackground {  
  background-image: url(to/some/background.png);  
  
  background-size: 100% 66%;  
  
  width: 200px;  
  height: 200px;  
  
  padding: 0;  
  margin: 0;  
}
```



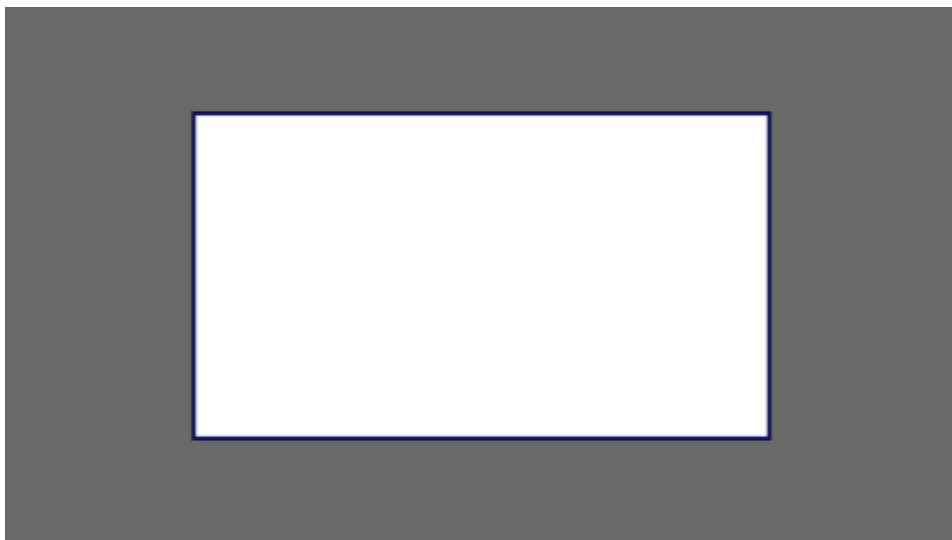
[background-origin](#) .

[previos](#) . , , .

```
.auto . ( ) contain , contain cover .
```

```
contain cover
```

Biswarup Ganguly . , . 16 x 9 .



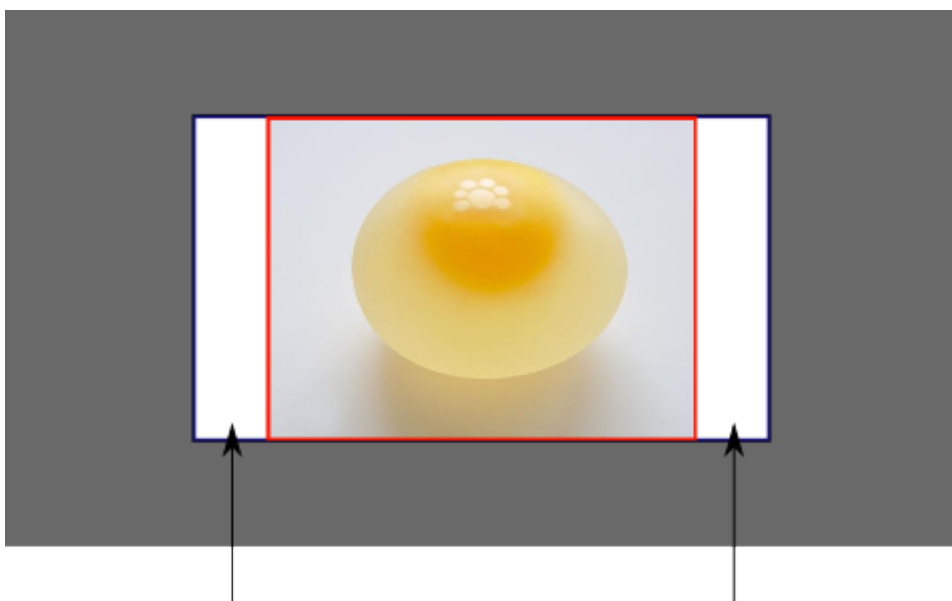
```
. 4x3 .background-size contain cover . body / .
```

```
contain
```

```
contain
```

```
( ) .
```

```
, background-color .
```

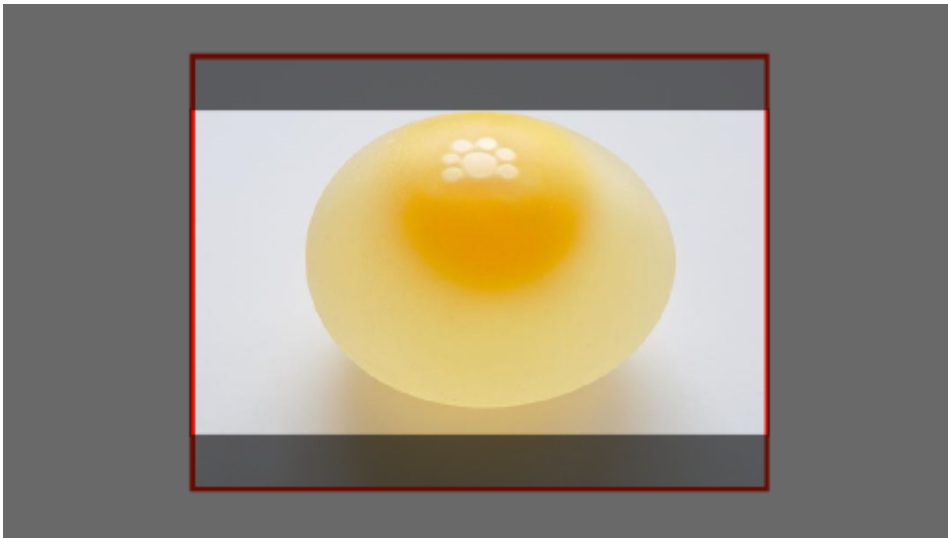


```
cover
```

```
cover
```

```
() .
```

```
. background-color .
```

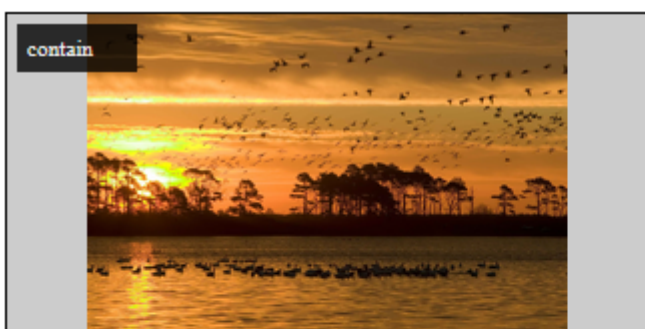


```
div > div {
  background-image: url(http://i.stack.imgur.com/r5CAq.jpg);
  background-repeat: no-repeat;
  background-position: center center;
  background-color: #ccc;
  border: 1px solid;
  width: 20em;
  height: 10em;
}
div.contain {
  background-size: contain;
}
div.cover {
  background-size: cover;
}
/*****
Additional styles for the explanation boxes
*****/

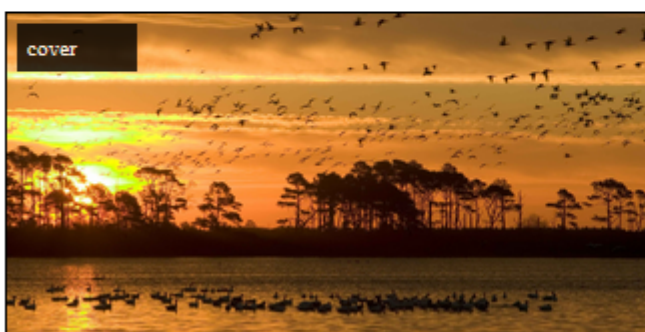
div > div {
  margin: 0 1ex 1ex 0;
  float: left;
}
div + div {
  clear: both;
  border-top: 1px dashed silver;
  padding-top: 1ex;
}
div > div::after {
  background-color: #000;
  color: #fefefe;
  margin: 1ex;
  padding: 1ex;
  opacity: 0.8;
  display: block;
```

```
width: 10ex;
font-size: 0.7em;
content: attr(class);
}
```

```
<div>
  <div class="contain"></div>
  <p>Note the grey background. The image does not cover the whole region, but it's fully
  <em>contained</em>.
  </p>
</div>
<div>
  <div class="cover"></div>
  <p>Note the ducks/geese at the bottom of the image. Most of the water is cut, as well as a
  part of the sky. You don't see the complete image anymore, but neither do you see any
  background color; the image <em>covers</em> all of the <code>&lt;div&gt;</code>.</p>
</div>
```



Note the grey background. The image does not cover the whole region, but it's fully *contained*.



Note the ducks/geese at the bottom of the image. Most of the water is cut, as well as a part of the sky. You don't see the complete image anymore, but neither do you see any background color; the image *covers* all of the `<div>`.

background-blend-mode

```
.my-div {
  width: 300px;
  height: 200px;
  background-size: 100%;
  background-repeat: no-repeat;
  background-image: linear-gradient(to right, black 0%,white 100%),
  url('https://static.pexels.com/photos/54624/strawberry-fruit-red-sweet-54624-medium.jpeg');
  background-blend-mode:saturation;
}
```

```
<div class="my-div">Lorem ipsum</div>
```

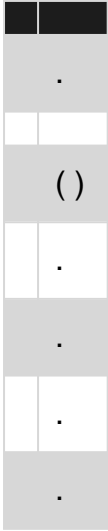
: <https://jsfiddle.net/MadalinaTn/y69d28Lb/>

CSS : background-blend-mode : normal | | | | | | | | ;

: <https://riptutorial.com/ko/css/topic/296/>

26:

- `page-break-after` : | | | | | ;
- `page-break-before` : | | | | | ;
- `page-break-inside` : | | | ;



CSS page-break .3 (, ,).

: orphans , widows .

Examples

```
@media print {  
  p {  
    page-break-inside: avoid;  
  }  
  h1 {  
    page-break-before: always;  
  }  
  h2 {  
    page-break-after: avoid;  
  }  
}
```

- `p` .
- `h1` - - ., `h1` .
- `h2` .

: <https://riptutorial.com/ko/css/topic/4316/>

27:

• : (* 0 1) | | | ;

: rgba (255, 255, 255, 0.6);

- MDN : <https://developer.mozilla.org/en/docs/Web/CSS/opacity> ;
- W3C : 'opacity' : <https://www.w3.org/TR/css3-color/#transparency>
- : <http://caniuse.com/#feat=css-opacity>

Examples

opacity . 0.0 () 1.0 () .

```
<div style="opacity:0.8;">  
  This is a partially transparent element  
</div>
```

opacity: 1.0;	
opacity: 0.75;	25 % (75 %)
opacity: 0.5;	50 % (50 %)
opacity: 0.25;	75 % (25 %)
opacity: 0.0;	

`opacity` IE

IE opacity .

```
.transparent-element {  
  /* for IE 8 & 9 */  
  -ms-filter:"progid:DXImageTransform.Microsoft.Alpha(Opacity=60)"; // IE8  
  /* works in IE 8 & 9 too, but also 5, 6, 7 */  
  filter: alpha(opacity=60); // IE 5-7  
  /* Modern Browsers */  
  opacity: 0.6;  
}
```

: <https://riptutorial.com/ko/css/topic/2864/>

28:

CSS . HTML . .

Meyer 's Reset . ()., - . .

Examples

normalize.css

CSS . . .

.

[normalize.css](#) . .

?

- CSS .
- .
- .
- .
- .

normalize.css .

reset.css

reset.css . ?

normalize.css reset.css . , . .

CSS . Eric Meyer Reset CSS . . (v2.0 | 20110126) CSS .

```
html, body, div, span, applet, object, iframe,
h1, h2, h3, h4, h5, h6, p, blockquote, pre,
a, abbr, acronym, address, big, cite, code,
del, dfn, em, img, ins, kbd, q, s, samp,
small, strike, strong, sub, sup, tt, var,
b, u, i, center,
dl, dt, dd, ol, ul, li,
fieldset, form, label, legend,
table, caption, tbody, tfoot, thead, tr, th, td,
article, aside, canvas, details, embed,
figure, figcaption, footer, header, hgroup,
menu, nav, output, ruby, section, summary,
time, mark, audio, video {
  margin: 0;
```

```
padding: 0;
border: 0;
font-size: 100%;
font: inherit;
vertical-align: baseline;
}
```

Eric Meyer CSS

CSS CSS . (v4.2.0).

```
/**
 * 1. Change the default font family in all browsers (opinionated).
 * 2. Correct the line height in all browsers.
 * 3. Prevent adjustments of font size after orientation changes in IE and iOS.
 */

/* Document
===== */

html {
  font-family: sans-serif; /* 1 */
  line-height: 1.15; /* 2 */
  -ms-text-size-adjust: 100%; /* 3 */
  -webkit-text-size-adjust: 100%; /* 3 */
}

/* Sections
===== */

/**
 * Remove the margin in all browsers (opinionated).
 */

body {
  margin: 0;
}

/**
 * Add the correct display in IE 9-.
 */

article,
aside,
footer,
header,
nav,
section {
  display: block;
}

/**
 * Correct the font size and margin on `h1` elements within `section` and
 * `article` contexts in Chrome, Firefox, and Safari.
 */

h1 {
  font-size: 2em;
  margin: 0.67em 0;
}
```

CSS

: <https://riptutorial.com/ko/css/topic/1211/-->

29:

-webkit-	Chrome, Safari, Opera 12 , Android, Blackberry UC
-moz-	
-ms-	Internet Explorer, Edge
-o- , -xv-	12
-khtml-	Konquerer

CSS

- -
 -
 -
- JavaScript

Examples

```
div {  
  -webkit-transition: all 4s ease;  
  -moz-transition: all 4s ease;  
  -o-transition: all 4s ease;  
  transition: all 4s ease;  
}
```

```
div {  
  -webkit-transform: rotate(45deg);  
  -moz-transform: rotate(45deg);  
  -ms-transform: rotate(45deg);  
  -o-transform: rotate(45deg);  
  transform: rotate(45deg);  
}
```

: <https://riptutorial.com/ko/css/topic/1138/--->

30: ()

CSS CSS .

CSS .CSS .CSS . CSS .

- `:root { /* */`
- `- : ; /* */`
- `var (- variable-name, default-value) / * fallback */`

CSS .

/

Firefox : 31 (: Enabled)

Chrome : 49 (:)

experimental Web Platform Chrome 48 . chrome://flags/ ."

IE : .

Edge :

Safari : 9.1

Examples

```
:root {
  --red: #b00;
  --blue: #4679bd;
  --grey: #ddd;
}
.Bx1 {
  color: var(--red);
  background: var(--grey);
  border: 1px solid var(--red);
}
```

```
:root {
  --W200: 200px;
  --W10: 10px;
}
.Bx2 {
  width: var(--W200);
  height: var(--W200);
  margin: var(--W10);
}
```

CSS

HTML :

```
<a class="button">Button Green</a>
<a class="button button_red">Button Red</a>
<a class="button">Button Hovered On</a>
```

CSS

```
.button {
  --color: green;
  padding: .5rem;
  border: 1px solid var(--color);
  color: var(--color);
}

.button:hover {
  --color: blue;
}

.button_red {
  --color: red;
}
```

:



/

CSS CSS (: , -moz) (-)

```
//These are Invalids variable names
--123color: blue;
--#color: red;
--bg_color: yellow
--$width: 100px;

//Valid variable names
--color: red;
--bg-color: yellow
--width: 100px;
```

CSS

```
/* The variable names below are all different variables */
--pcolor: ;
--Pcolor: ;
--pColor: ;
```

```
/* Invalid */
--color;;

/* Valid */
--color: ; /* space is assigned */
```

```
/* Invalid - CSS doesn't support concatenation*/
.logo{
  --logo-url: 'logo';
  background: url('assets/img/' var(--logo-url) '.png');
}

/* Invalid - CSS bug */
.logo{
  --logo-url: 'assets/img/logo.png';
  background: url(var(--logo-url));
}

/* Valid */
.logo{
  --logo-url: url('assets/img/logo.png');
  background: var(--logo-url);
}
```

```
/* Invalid */
--width: 10;
width: var(--width)px;

/* Valid */
--width: 10px;
width: var(--width);

/* Valid */
--width: 10;
width: calc(1px * var(--width)); /* multiply by 1 unit to convert */
width: calc(1em * var(--width));
```

HTML

```
<div></div>
<div></div>
<div></div>
<div></div>
```

CSS

```
:root{
  --width: 25%;
  --content: 'This is desktop';
```

```
}
@media only screen and (max-width: 767px){
  :root{
    --width:50%;
    --content: 'This is mobile';
  }
}
@media only screen and (max-width: 480px){
  :root{
    --width:100%;
  }
}

div{
  width: calc(var(--width) - 20px);
  height: 100px;
}
div:before{
  content: var(--content);
}

/* Other Styles */
body {
  padding: 10px;
}

div{
  display: flex;
  align-items: center;
  justify-content: center;
  font-weight:bold;
  float:left;
  margin: 10px;
  border: 4px solid black;
  background: red;
}
```

[CodePen](#) .

:



This is desktop

This is desktop

This is desktop

This is desktop

() : <https://riptutorial.com/ko/css/topic/1755/----->

31:

- `box-shadow` : none | h-shadow v-shadow | inset | initial | ;

	. inset / .
-	
	-y
	0. . .
	0. . .
	color , 16 , rgb() , rgba() , hsl() , hsla() .

:

- Chrome 10.0
- IE 9.0
- Firefox 4.0 3.5 -moz
- 5.1 3.1 - -
- Opera 10.5

Examples

JSFiddle : <https://jsfiddle.net/UnsungHero97/80qod7aL/>

HTML

```
<div class="box_shadow"></div>
```

CSS

```
.box_shadow {  
  -webkit-box-shadow: 0px 0px 10px -1px #444444;  
  -moz-box-shadow: 0px 0px 10px -1px #444444;  
  box-shadow: 0px 0px 10px -1px #444444;  
}
```

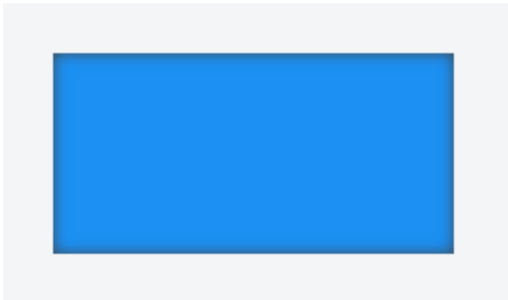
HTML

```
<div class="box_shadow"></div>
```

CSS

```
.box_shadow {
  background-color: #1C90F3;
  width: 200px;
  height: 100px;
  margin: 50px;
  -webkit-box-shadow: inset 0px 0px 10px 0px #444444;
  -moz-box-shadow: inset 0px 0px 10px 0px #444444;
  box-shadow: inset 0px 0px 10px 0px #444444;
}
```

:



JSFiddle : <https://jsfiddle.net/UnsungHero97/80qod7aL/1/>

JSFiddle : <https://jsfiddle.net/UnsungHero97/80qod7aL/2/>

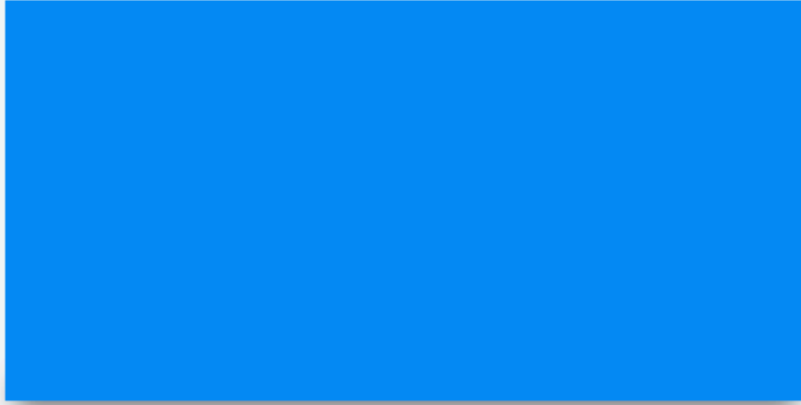
HTML

```
<div class="box_shadow"></div>
```

CSS

```
.box_shadow {
  background-color: #1C90F3;
  width: 200px;
  height: 100px;
  margin: 50px;
}

.box_shadow:after {
  content: "";
  width: 190px;
  height: 1px;
  margin-top: 98px;
  margin-left: 5px;
  display: block;
  position: absolute;
  z-index: -1;
  -webkit-box-shadow: 0px 0px 8px 2px #444444;
  -moz-box-shadow: 0px 0px 8px 2px #444444;
  box-shadow: 0px 0px 8px 2px #444444;
}
```



JSFiddle : <https://jsfiddle.net/UnsungHero97/80qod7aL/5/>

HTML

```
<div class="box_shadow"></div>
```

CSS

```
.box_shadow {  
  width: 100px;  
  height: 100px;  
  margin: 100px;  
  box-shadow:  
    -52px -52px 0px 0px #f65314,  
    52px -52px 0px 0px #7cbb00,  
    -52px 52px 0px 0px #00a1f1,  
    52px 52px 0px 0px #ffbb00;  
}
```



: <https://riptutorial.com/ko/css/topic/1746/>

32:

Examples

CSS

CSS 50% 50% .

. .

HTML

```
<div class="container">
  <div class="element"></div>
</div>
```

CSS

```
.container {
  position: relative;
}

.element {
  position: absolute;
  top: 50%;
  left: 50%;
  transform: translate(-50%, -50%);
}
```

JSFiddle

transform . Chrome <= 35, Safari <= 8, Opera <= 22, Android <= 4.4.4 IE9 . CSS IE8 .

.

```
-webkit-transform: translate(-50%, -50%); /* Chrome, Safari, Opera, Android */
-ms-transform: translate(-50%, -50%); /* IE 9 */
transform: translate(-50%, -50%);
```

canluse .

- (position: relative, absolute fixed) . .
- left: 50% transform: translateX(-50%) . . top: 50% top: 50% transform: translateY(-50%) .
- / . margin-right: -50%; margin-bottom: -50%; . .

Flexbox

HTML :

```
<div class="container">
  
</div>
```

CSS :

```
html, body, .container {
  height: 100%;
}
.container {
  display: flex;
  justify-content: center; /* horizontal center */
}
img {
  align-self: center; /* vertical center */
}
```

HTML :

```

```

CSS :

```
html, body {
  height: 100%;
}
body {
  display: flex;
  justify-content: center; /* horizontal center */
  align-items: center; /* vertical center */
}
```

[flexbox](#) [Flexbox Dynamic Vertical and Horizontal Centering](#) .

[Flexbox 10 IE](#) .

[Safari 8 IE10](#) .

[Autoprefixer](#) .

[\(: IE 8 9\) Polyfill](#) .

[flexbox](#) .

:

[\(IE >= 8\)](#)

[left right top bottom 0](#) .

HTML

```
<div class="parent">
  
</div>
```

CSS

```
.parent {
  position: relative;
  height: 500px;
}

.center {
  position: absolute;
  margin: auto;
  top: 0;
  right: 0;
  bottom: 0;
  left: 0;
}
```

.

: [CSS](#)

(Michał Czernow 's hack)

.

```
100 %      ""  vertical-align: middle vertical-align: middle vertical-align: middle .
```

CSS

```
/* This parent can be any width and height */
.block {
  text-align: center;

  /* May want to do this if there is risk the container may be narrower than the element
  inside */
  white-space: nowrap;
}

/* The ghost element */
.block:before {
  content: '';
  display: inline-block;
  height: 100%;
  vertical-align: middle;

  /* There is a gap between ghost element and .centered,
  caused by space character rendered. Could be eliminated by
  nudging .centered (nudge distance depends on font family),
  or by zeroing font-size in .parent and resetting it back
  (probably to 1rem) in .centered. */
  margin-right: -0.25em;
}
```



```

}

/* The element to be centered, can also be of any width and height */
.centered {
  display: inline-block;
  vertical-align: middle;
  width: 300px;
  white-space: normal; /* Resetting inherited nowrap behavior */
}

```

HTML

```

<div class="block">
  <div class="centered"></div>
</div>

```

.CSS text-align: center .

HTML

```

<p>Lorem ipsum</p>

```

CSS

```

p {
  text-align: center;
}

```

.text-align .

text-align .

.

: IE8 +, .

HTML

```

<div class="content">
  <div class="position-container">
    <div class="thumb">
      
    </div>
    <div class="details">
      <p class="banner-title">text 1</p>
      <p class="banner-text">content content content content content content content
content content content content content</p>
      <button class="btn">button</button>
    </div>
  </div>
</div>

```

CSS

```

.content * {
  box-sizing: border-box;
}
.content .position-container {
  display: table;
}
.content .details {
  display: table-cell;
  vertical-align: middle;
  width: 33.333333%;
  padding: 30px;
  font-size: 17px;
  text-align: center;
}
.content .thumb {
  width: 100%;
}
.content .thumb img {
  width: 100%;
}

```

JSFiddle

3 .thumb, .details .position-container .

- .position-container display: table display: table .
- .details width: width: display: table-cell, vertical-align: middle .
- .thumb width: 100% . .details .
- .thumb () width: 100% .thumb width: 100% .

3

IE11 +

. div / image .

CSS

```

div.vertical {
  position: relative;
  top: 50%;
  transform: translateY(-50%);
}

```

HTML

```
<div class="vertical">Vertical aligned text!</div>
```

div

HTML

```
<div class="wrap">
  
</div>
```

CSS

```
.wrap {
  height: 50px; /* max image height */
  width: 100px;
  border: 1px solid blue;
  text-align: center;
}
.wrap:before {
  content: "";
  display: inline-block;
  height: 100%;
  vertical-align: middle;
  width: 1px;
}
img {
  vertical-align: middle;
}
```

table .

HTML

```
<div class="wrapper">
  <div class="parent">
    <div class="child"></div>
  </div>
</div>
```

CSS

```
.wrapper {
  display: table;
  vertical-align: center;
  width: 200px;
  height: 200px;
  background-color: #9e9e9e;
}
.parent {
  display: table-cell;
  vertical-align: middle;
  text-align: center;
}
.child {
  display: inline-block;
  vertical-align: middle;
  text-align: center;
  width: 100px;
  height: 100px;
  background-color: teal;
}
```

calc ()

calc () , / CSS3 . :- , calc(100% - 80px) .

CSS

```
.center {
  position: absolute;
  height: 50px;
  width: 50px;
  background: red;
  top: calc(50% - 50px / 2); /* height divided by 2*/
  left: calc(50% - 50px / 2); /* width divided by 2*/
}
```

HTML

```
<div class="center"></div>
```

CSS

- vertical-align:middle .
- margin-top:auto margin-bottom:auto 0.
- margin-top:-50% .

HTML

```
<div class="vcenter--container">
  <div class="vcenter--helper">
    <div class="vcenter--content">
      <!--stuff-->
    </div>
  </div>
</div>
```

CSS

```
.vcenter--container {
  display: table;
  height: 100%;
  position: absolute;
  overflow: hidden;
  width: 100%;
}
.vcenter--helper {
  display: table-cell;
  vertical-align: middle;
}
.vcenter--content {
  margin: 0 auto;
  width: 200px;
}
```

[jsfiddle](#) .

- .
- .
- .

line-height .

CSS

```
div {  
  height: 200px;  
  line-height: 200px;  
}
```

<input /> .line-height . .

HTML

- display: table; display: table;
- display: table-cell; display: table-cell;
- vertical-align: middle; vertical-align: middle;
- text-align: center;
- display: inline-block; display: inline-block;
- .text-align: left; text-align: right;

HTML

```
<div class="outer-container">  
  <div class="inner-container">  
    <div class="centered-content">  
      You can put anything here!  
    </div>  
  </div>  
</div>
```

CSS

```
body {  
  margin : 0;  
}  
  
.outer-container {  
  position : absolute;  
  display: table;  
  width: 100%; /* This could be ANY width */  
  height: 100%; /* This could be ANY height */  
  background: #ccc;  
}  
  
.inner-container {
```

```
display: table-cell;
vertical-align: middle;
text-align: center;
}

.centered-content {
display: inline-block;
text-align: left;
background: #fff;
padding: 20px;
border: 1px solid #000;
}
```

!

margin 50 % .

HTML

```
<div class="center">
  Center vertically and horizontally
</div>
```

CSS

```
.center {
position: absolute;
background: #ccc;

left: 50%;
width: 150px;
margin-left: -75px; /* width * -0.5 */

top: 50%;
height: 200px;
margin-top: -100px; /* height * -0.5 */
}
```

.

HTML

```
<div class="center">
  Center only horizontally
</div>
```

CSS

```
.center {
position: absolute;
background: #ccc;

left: 50%;
width: 150px;
```

```
margin-left: -75px; /* width * -0.5 */
}
```

HTML

```
<div class="center">
  Center only vertically
</div>
```

CSS

```
.center {
  position: absolute;
  background: #ccc;

  top: 50%;
  height: 200px;
  margin-top: -100px; /* width * -0.5 */
}
```

: 0;

margin: 0 auto; margin: 0 auto;

HTML

```
<div class="containerDiv">
  <div id="centeredDiv"></div>
</div>

<div class="containerDiv">
  <p id="centeredParagraph">This is a centered paragraph.</p>
</div>

<div class="containerDiv">
  
</div>
```

CSS

```
.containerDiv {
  width: 100%;
  height: 100px;
  padding-bottom: 40px;
}

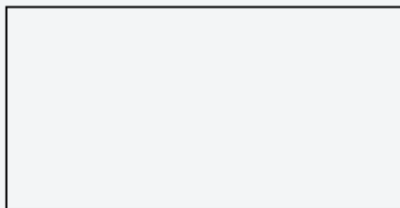
#centeredDiv {
  margin: 0 auto;
  width: 200px;
  height: 100px;
}
```

```
border: 1px solid #000;
}

#centeredParagraph {
width: 200px;
margin: 0 auto;
}

#centeredImage {
display: block;
width: 200px;
margin: 0 auto;
}
```

:



This is a centered paragraph.



JSFiddle : [: 0 auto;](#)

: <https://riptutorial.com/ko/css/topic/299/>

33:

CSS HTML CSS . CSS HTML . , , ID, CSS 50 .

- # id
- .
- : pseudo-classname
- :: pseudo-elementname
- [attr] / * attr . * /
- [attr = " value "] / * attr " value " . * /
- [attr ~ = " value "] / * attr , " value " . * /
- [attr | = " value "] / * attr " value " " value - " . * /
- [attr ^ = " value "] / * attr " value " . * /
- [attr \$ = " value "] / * attr " value " . * /
- [attr * = " value "] / * attr " value " . * /
- *
- (::) (:) .
- (, 8 :) .
- () (W3C) .

Examples

(1)		...	CSS
[attr]	<div attr>	attr	2
[attr='val']	<div attr="val">	attr val	2
[attr~='val']	<div attr="val val2 val3">	val () attr	2
[attr^='val']	<div attr="val1 val2">	attr val	
[attr\$='val']	<div attr="sth aval">	attr val	
[attr*='val']	<div attr="somevalhere">	attr val	
[attr ='val']	<div attr="val-sth etc">	attr val , val - (U + 002D)	2
[attr='val' i]	<div attr="val">	attr val ,	4 (2)

(1)		...	CSS
		val .	

:

1.. CSS .

2. CSS4 . " 4" . .

[attribute]

.

```
div[data-color] {
  color: red;
}
```

```
<div data-color="red">This will be red</div>
<div data-color="green">This will be red</div>
<div data-background="red">This will NOT be red</div>
```

JSBin

[attribute="value"]

.

```
div[data-color="red"] {
  color: red;
}
```

```
<div data-color="red">This will be red</div>
<div data-color="green">This will NOT be red</div>
<div data-color="blue">This will NOT be red</div>
```

JSBin

[attribute*="value"]

(.).

```
[class*="foo"] {
  color: red;
}
```

```
<div class="foo-123">This will be red</div>
<div class="foo123">This will be red</div>
<div class="bar123foo">This will be red</div>
<div class="barfoo123">This will be red</div>
```

```
<div class="barfo0">This will NOT be red</div>
```

JSBin

[attribute~="value"]

, .

```
[class~="color-red"] {  
  color: red;  
}
```

```
<div class="color-red foo-bar the-div">This will be red</div>  
<div class="color-blue foo-bar the-div">This will NOT be red</div>
```

JSBin

[attribute^="value"]

.

```
[class^="foo-"] {  
  color: red;  
}
```

```
<div class="foo-123">This will be red</div>  
<div class="foo-234">This will be red</div>  
<div class="bar-123">This will NOT be red</div>
```

JSBin

[attribute\$="value"]

, .

```
[class$="file"] {  
  color: red;  
}
```

```
<div class="foobar-file">This will be red</div>  
<div class="foobar-file">This will be red</div>  
<div class="foobar-input">This will NOT be red</div>
```

JSBin

[attribute|="value"]

. , , - (U + 002D)

```
[lang|="EN"] {
```

```
color: red;
}
```

```
<div lang="EN-us">This will be red</div>
<div lang="EN-gb">This will be red</div>
<div lang="PT-pt">This will NOT be red</div>
```

JSBin

[attribute="value" i]

Value , VALUE , vAlUe .

```
[lang="EN" i] {
  color: red;
}
```

```
<div lang="EN">This will be red</div>
<div lang="en">This will be red</div>
<div lang="PT">This will NOT be red</div>
```

JSBin

0-1-0

```
*[type=checkbox] // 0-1-0
```

, ID . [id="my-ID"] #my-ID .

.

div span	(<div>)
div > span	(<div> <div>)
a ~ span	(<a>)
a + span	(<a>)

: . CSS () . flex order .

■ selector selector

() . ().

```
div p {
  color:red;
}
```

```
<div>
  <p>My text is red</p>
  <section>
    <p>My text is red</p>
  </section>
</div>

<p>My text is not red</p>
```

JSBin

<p> <div> <p> .

■ selector > selector

(>), .

```
div > p {
  color:red;
}
```

```
<div>
  <p>My text is red</p>
  <section>
    <p>My text is not red</p>
  </section>
</div>
```

JSBin

CSS <p> . <div> .

<p> <div> .

■ selector + selector

(+) .

```
p + p {
  color:red;
}
```

```
<p>My text is not red</p>
<p>My text is red</p>
<p>My text is red</p>
<hr>
<p>My text is not red</p>
```

JSBin

```
<p> <p> .
```

- selector ~ selector

(~) .

```
p ~ p {
  color:red;
}
```

```
<p>My text is not red</p>
<p>My text is red</p>
<hr>
<h1>And now a title</h1>
<p>My text is red</p>
```

JSBin

```
<p> <p> .
```

```
. .warning <div> .
```

```
<div class="warning">
  <p>This would be some warning copy.</p>
</div>
```

. .

CSS

```
.important {
  color: orange;
}
.warning {
  color: blue;
}
.warning.important {
  color: red;
}
```

HTML

```

<div class="warning">
  <p>This would be some warning copy.</p>
</div>

<div class="important warning">
  <p class="important">This is some really important warning copy.</p>
</div>

```

.warning .important .important .warning .

CSS .warning.important ., class warning important . .

CSS .warning .important .

ID

ID ID DOM .CSS ID # .

, HTML div ...

```

<div id="exampleID">
  <p>Example</p>
</div>

```

... CSS #exampleID .

```

#exampleID {
  width: 20px;
}

```

:HTML ID .

. (), (), (negation pseudo-class) (lang pseudo-class) . (:visited), (:hover) , (:checked) .

```

selector:pseudo-class {
  property: value;
}

```

:

<code>:active</code>	(,) .
<code>:any</code>	. . .
<code>:target</code>	#news (URL).)

<code>:checked</code>	<code>' .</code> <code>"" .</code>
<code>:default</code>	<code>.</code> <code>.</code>
<code>:disabled</code>	UI .
<code>:empty</code>	<code>.</code>
<code>:enabled</code>	UI .
<code>:first</code>	@page <code>.</code>
<code>:first-child</code>	<code>.</code>
<code>:first-of-type</code>	<code>.</code> <code>.</code> .
<code>:focus</code>	<code>.</code> <code>,</code> .
<code>:focus-within</code>	<code>.: focus</code> .
<code>:full-screen</code>	<code>.</code> . <code>.</code>
<code>:hover</code>	<code>.</code>
<code>:indeterminate</code>	UI . <code>.</code> DOM
<code>:in-range</code>	<code>:in-range</code> CSS . value <code>.</code> <code>.</code>
<code>:invalid</code>	<code><input></code> . type= type=
<code>:lang</code>	<code><body></code> . lang= . 2 ~ 3 .
<code>:last-child</code>	<code>.</code>
<code>:last-of-type</code>	<code>.</code>

	. .
:left	@page .
:link	.
:not()	. (:not(p) :not(.class-name) , . . :not .
:nth-child	n . n , (:n+3) odd even .
:nth-of-type	n . (n), (:n+3) odd even .
:only-child	:only-child CSS . . :first-child:last-child :nth-child(1):nth-last-child(1) , .
:optional	:optional CSS . . .
:out-of-range	:out-of-range CSS . . .
:placeholder-shown	. .
:read-only	.
:read-write	<input> .
:right	@page .
:root	.
:scope	CSS . .
:target	#news (URL).)

```
:visited .
```

```
:visited . .
```

*	()
div	(<div>)
.blue	(blue)
.blue.red	blue red (Compound selector)
#headline	ID ("id" headline)
:pseudo-class	
::pseudo-element	
:lang(en)	: lang (:
div > p	

```
: ID . ID HTML .
```

CSS 3 .

HTML

```
<input type="range"></input>
```

CSS

	input[type=range]::-webkit-slider-thumb, input[type=range]::-moz-range-thumb, input[type=range]::-ms-thumb
	input[type=range]::-webkit-slider-runnable-track, input[type=range]::-moz-range-track, input[type=range]::-ms-track
OnFocus	input[type=range]:focus
	input[type=range]::-moz-range-progress, input[type=range]::-ms-fill-lower (- JS)

```
: ~ ( )
```

~ selector JavaScript .



boolean

id hidden

```
<input type="checkbox" id="sidebarShown" hidden />
<input type="checkbox" id="darkThemeUsed" hidden />

<!-- here begins actual content, for example: -->
<div id="container">
  <div id="sidebar">
    <!-- Menu, Search, ... -->
  </div>

  <!-- Some more content ... -->
</div>

<div id="footer">
  <!-- ... -->
</div>
```

for label

```
<label for="sidebarShown">Show/Hide the sidebar!</label>
```

CSS

(:color-red) .true/false

```
/* true: */
<checkbox>:checked ~ [sibling of checkbox & parent of target] <target>

/* false: */
<checkbox>:not(:checked) ~ [sibling of checkbox & parent of target] <target>
```

<checkbox>, [sibling ...] <target> . [sibling ...] () * .

HTML

```
#sidebarShown:checked ~ #container #sidebar {
  margin-left: 300px;
}

#darkThemeUsed:checked ~ #container,
#darkThemeUsed:checked ~ #footer {
  background: #333;
}
```

CSS3 :

```

<style>
input:in-range {
  border: 1px solid blue;
}
</style>

<input type="number" min="10" max="20" value="15">
<p>The border for this value will be blue</p>

```

:in-range CSS value . [1]

": nth-child (an + b) CSS + b-1 n" 0 . - MDN : nth-child

	1	2	3	4	5	6	7	8	9	10
:first-child	✓									
:nth-child(3)			✓							
:nth-child(n+3)			✓	✓	✓	✓	✓	✓	✓	✓
:nth-child(3n)			✓			✓			✓	
:nth-child(3n+1)	✓			✓			✓			✓
:nth-child(-n+3)	✓	✓	✓							
:nth-child(odd)	✓		✓		✓		✓		✓	
:nth-child(even)		✓		✓		✓		✓		✓
:last-child										✓
:nth-last-child(3)								✓		

ID ID

ID ID .

HTML :

```
<div id="element">...</div>
```

CSS

```
#element { ... } /* High specificity will override many selectors */  
[id="element"] { ... } /* Low specificity, can be overridden easily */
```

A. : pseudo-class . & B : focus - CSS

A. .

HTML `<input> .example .example :`

HTML :

```
<form>  
  Phone: <input type="tel" class="example">  
  E-mail: <input type="email" disabled="disabled">  
  Password: <input type="password">  
</form>
```

CSS :

```
input:not([disabled]):not(.example){  
  background-color: #ccc;  
}
```

:not() 4 :

CSS :

```
input:not([disabled], .example){  
  background-color: #ccc;  
}
```

JSBin

B. the : focus-within CSS

HTML :

```
<h3>Background is blue if the input is focused .</p>  
<div>  
  <input type="text">  
</div>
```

CSS :

```
div {
  height: 80px;
}
input {
  margin: 30px;
}
div:focus-within {
  background-color: #1565C0;
}
```

```
div {
  height: 80px;
}
input {
  margin: 30px;
}
div:focus-within {
  background-color: #1565C0;
}
```

Background is blue if the input is focused .



:focus-within CSS pseudo-class UNOFF

The **:focus-within** pseudo-class matches elements that either themselves match **:focus** or that have descendants which match **:focus**.

Current aligned Usage relative Date relative Show all

IE	Edge *	Firefox	Chrome	Safari	Op
		52	49		
	14	53	58		4
11	15	54	59 ¹	10.1	4 ¹
	16	55	60	11	4 ¹
		56	61	TP	4 ¹
		57	62		

Notes Known issues (0) Resources (11) Feedback

¹ Can be enabled via the "Experimental Web Platform Features" flag

The :only-child

:only-child CSS .

HTML :

```
<div>
  <p>This paragraph is the only child of the div, it will have the color blue</p>
</div>

<div>
  <p>This paragraph is one of the two children of the div</p>
  <p>This paragraph is one of the two children of its parent</p>
</div>
```

CSS :

```
p:only-child {
  color: blue;
}
```

<p> . <div> .

JSBin

the last-of-type selector

:last-of-type . CSS h1 .

```
p:last-of-type {
  background: #C5CAE9;
}
h1:last-of-type {
  background: #CDDC39;
}
```

```
<div class="container">
  <p>First paragraph</p>
  <p>Second paragraph</p>
  <p>Last paragraph</p>
  <h1>Heading 1</h1>
  <h2>First heading 2</h2>
  <h2>Last heading 2</h2>
</div>
```

First paragraph
Second paragraph
Last paragraph
Heading 1
First heading 2
Last heading 2

jsFiddle

: <https://riptutorial.com/ko/css/topic/611/>

34:

- clear : none | | | | - ;
- float : | | | | - ;

float [1]

[1] : <https://developer.mozilla.org/en-US/docs/Web/CSS/float> MDN

Examples

float . .float float .

HTML :

```
<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer nec odio. Praesent libero. Sed cursus ante dapibus diam. Sed nisi. Nulla quis sem at nibh elementum imperdiet. Duis sagittis ipsum. Praesent mauris. Fusce nec tellus sed augue semper porta. Mauris massa. Vestibulum lacinia arcu eget nulla. </p>
```

```

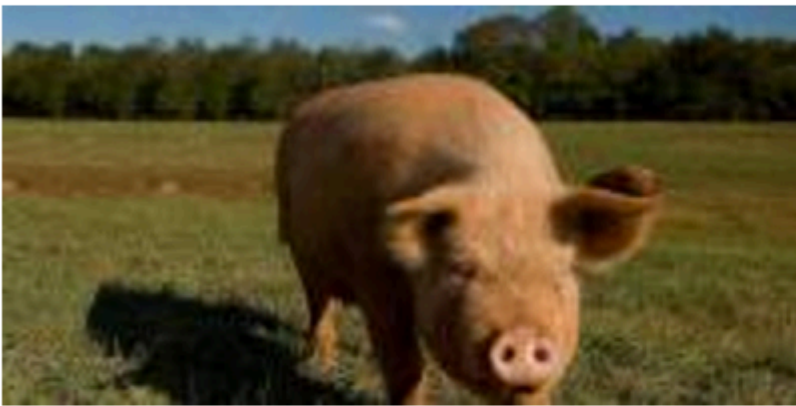
```

```
<p>Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos. Curabitur sodales ligula in libero. Sed dignissim lacinia nunc. Curabitur tortor. Pellentesque nibh. Aenean quam. In scelerisque sem at dolor. Maecenas mattis. Sed convallis tristique sem. Proin ut ligula vel nunc egestas porttitor. Morbi lectus risus, iaculis vel, suscipit quis, luctus non, massa. Fusce ac turpis quis ligula lacinia aliquet. </p>
```

CSS :

```
img {  
  float:left;  
  margin-right:1rem;  
}
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer nec odio. Praesent libero. Sed cursus ante dapibus diam. Sed nisi. Nulla quis sem at nibh elementum imperdiet. Duis sagittis ipsum. Praesent mauris. Fusce nec tellus sed augue semper porta. Mauris massa. Vestibulum lacinia arcu eget nulla.



Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos. Curabitur sodales ligula in libero.

Sed dignissim lacinia nunc. Curabitur tortor. Pellentesque nibh. Aenean quam. In scelerisque sem at dolor. Maecenas mattis. Sed convallis tristique sem. Proin ut ligula vel nunc egestas porttitor. Morbi lectus risus, iaculis vel, suscipit quis, luctus non, massa. Fusce ac turpis quis ligula lacinia aliquet.

2

HTML :

```
<div class="wrapper">

<div class="sidebar">
  <h2>Sidebar</h2>

  <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer nec odio.</p>
</div>
```

```

<div class="content">
  <h1>Content</h1>

  <p>Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos
himenaeos. Curabitur sodales ligula in libero. Sed dignissim lacinia nunc. Curabitur tortor.
Pellentesque nibh. Aenean quam. In scelerisque sem at dolor. Maecenas mattis. Sed convallis
tristique sem. Proin ut ligula vel nunc egestas porttitor. Morbi lectus risus, iaculis vel,
suscipit quis, luctus non, massa. Fusce ac turpis quis ligula lacinia aliquet. </p>
</div>

</div>

```

CSS :

```

.wrapper {
  width:600px;
  padding:20px;
  background-color:pink;

  /* Floated elements don't use any height. Adding "overflow:hidden;" forces the
  parent element to expand to contain its floated children. */
  overflow:hidden;
}

.sidebar {
  width:150px;
  float:left;
  background-color:blue;
}

.content {
  width:450px;
  float:right;
  background-color:yellow;
}

```

HTML :

```

<div class="wrapper">
  <div class="left-sidebar">
    <h1>Left Sidebar</h1>
    <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. </p>
  </div>
  <div class="content">
    <h1>Content</h1>
    <p>Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos
himenaeos. Curabitur sodales ligula in libero. Sed dignissim lacinia nunc. Curabitur tortor.
Pellentesque nibh. Aenean quam. In scelerisque sem at dolor. Maecenas mattis. Sed convallis
tristique sem. Proin ut ligula vel nunc egestas porttitor. Morbi lectus risus, iaculis vel,
suscipit quis, luctus non, massa. </p>
  </div>
  <div class="right-sidebar">
    <h1>Right Sidebar</h1>
    <p>Fusce ac turpis quis ligula lacinia aliquet.</p>
  </div>
</div>

```

CSS :

```

.wrapper {
  width:600px;
  background-color:pink;
  padding:20px;

  /* Floated elements don't use any height. Adding "overflow:hidden;" forces the
     parent element to expand to contain its floated children. */
  overflow:hidden;
}

.left-sidebar {
  width:150px;
  background-color:blue;
  float:left;
}

.content {
  width:300px;
  background-color:yellow;
  float:left;
}

.right-sidebar {
  width:150px;
  background-color:green;
  float:right;
}

```

2 /

2 . "" "shrink-wrapped". " " .

HTML :

```

<div class="sidebar">
<h1>Sidebar</h1>

</div>

<div class="content">
<h1>Content</h1>
<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer nec odio. Praesent libero. Sed cursus ante dapibus diam. Sed nisi. Nulla quis sem at nibh elementum imperdiet. Duis sagittis ipsum. Praesent mauris. Fusce nec tellus sed augue semper porta. Mauris massa. Vestibulum lacinia arcu eget nulla. </p>
<p>Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos. Curabitur sodales ligula in libero. Sed dignissim lacinia nunc. Curabitur tortor. Pellentesque nibh. Aenean quam. In scelerisque sem at dolor. Maecenas mattis. Sed convallis tristique sem. Proin ut ligula vel nunc egestas porttitor. Morbi lectus risus, iaculis vel, suscipit quis, luctus non, massa. Fusce ac turpis quis ligula lacinia aliquet. Mauris ipsum. Nulla metus metus, ullamcorper vel, tincidunt sed, euismod in, nibh. </p>
</div>

```

CSS :

```

.sidebar {
  /* `display:table;` shrink-wraps the column */

```

```

display:table;
float:left;
background-color:blue;
}

.content {
/* `overflow:hidden;` prevents `.content` from flowing under `.sidebar` */
overflow:hidden;
background-color:yellow;
}

```

. :

- none - . . .
- -
- right - .
- - .
- initial - . . .
- inherit - . . .

```

<html>
<head>
<style>
img {
    float: left;
}

p.clear {
    clear: both;
}
</style>
</head>
<body>


<p>Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum
Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum </p>
<p class="clear">Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum
Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum Lorem ipsum </p>

</body>
</html>

```

clearfix (N. Gallagher aka @necolas)

clear , clearfix (,). float () .cf .clearfix .

3 (: clearfix N. clearfix TJ Koblentz)

Clearfix ()

```

.cf:after {
    content: "";
}

```

```
    display: table;
}

.cf:after {
    clear: both;
}
```

Clearfix

```
/**
 * For modern browsers
 * 1. The space content is one way to avoid an Opera bug when the
 *    contenteditable attribute is included anywhere else in the document.
 *    Otherwise it causes space to appear at the top and bottom of elements
 *    that are clearfixed.
 * 2. The use of `table` rather than `block` is only necessary if using
 *    `:before` to contain the top-margins of child elements.
 */
.cf:before,
.cf:after {
    content: " "; /* 1 */
    display: table; /* 2 */
}

.cf:after {
    clear: both;
}
```

IE6 IE7 Clearfix

```
.cf:before,
.cf:after {
    content: " ";
    display: table;
}

.cf:after {
    clear: both;
}

/**
 * For IE 6/7 only
 * Include this rule to trigger hasLayout and contain floats.
 */
.cf {
    *zoom: 1;
}
```

[clearfix](#) [Codepen](#)

: [clearfix](#) (clearfix BFC - , hasLayout IE6 .7)

DIV

div ., .

```
<div>
  <p>This is DIV 1</p>
</div>
<div>
  <p>This is DIV 2</p>
</div>
```

.



This is DIV 1



This is DIV 2

div float CSS .

HTML :

```
<div class="outer-div">
```

```
<div class="inner-div1">
  <p>This is DIV 1</p>
</div>
<div class="inner-div2">
  <p>This is DIV 2</p>
</div>
</div>
```

CSS

```
.inner-div1 {
  width: 50%;
  margin-right:0px;
  float:left;
  background : #337ab7;
  padding:50px 0px;
}

.inner-div2 {
  width: 50%;
  margin-right:0px;
  float:left;
  background : #dd2c00;
  padding:50px 0px;
}

p {
  text-align:center;
}
```

This is DIV 1

overflow hidden , auto scroll .

⚠ overflow:scroll overflow:scroll overflow:scroll .

🔗 <https://riptutorial.com/ko/css/topic/405/>

35:

- : | [<> || <>] | <>
- shape-margin : <> | <percentage>
- shape-image-threshold : <>

none	float	(float)	none	.	/	.
inset(), circle(), ellipse() polygon() . .							
margin-box, border-box, padding-box, content-box . <shape-box> (<basic-shape>) . <>							
.							
.							

CSS Shapes .

/ Chrome v37 Opera 24 . Safari v7.1 + -webkit- -webkit- .

IE, Edge Firefox .

Examples

- ()

shape-outside CSS .

CSS

```
img:nth-of-type(1) {
  shape-outside: circle(80px at 50% 50%);
  float: left;
  width: 200px;
}
img:nth-of-type(2) {
  shape-outside: circle(80px at 50% 50%);
  float: right;
  width: 200px;
}
p {
  text-align: center;
  line-height: 30px; /* purely for demo */
}
```

HTML

```

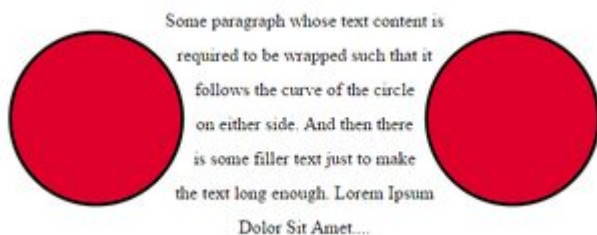

<p>Some paragraph whose text content is required to be wrapped such that it follows the curve
of the circle on either side. And then there is some filler text just to make the text long
enough. Lorem Ipsum Dolor Sit Amet....</p>
```

shape-outside . . shape-outside shape-outside .

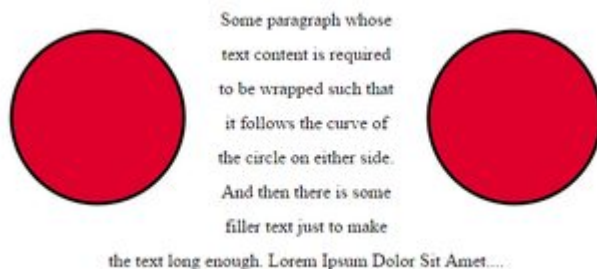
float - 80px .

shape-outside .

shape-outside



shape-outside shape-outside



shape-margin CSS shape-outside .

CSS

```
img:nth-of-type(1) {
  shape-outside: circle(80px at 50% 50%);
  shape-margin: 10px;
  float: left;
  width: 200px;
}
img:nth-of-type(2) {
  shape-outside: circle(80px at 50% 50%);
  shape-margin: 10px;
  float: right;
  width: 200px;
}
p {
  text-align: center;
  line-height: 30px; /* purely for demo */
}
```

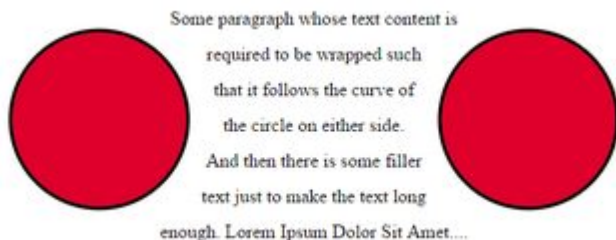
HTML

```


<p>Some paragraph whose text content is required to be wrapped such that it follows the curve
of the circle on either side. And then there is some filler text just to make the text long
enough. Lorem Ipsum Dolor Sit Amet....</p>
```

, 10px shape-margin . .

:



: <https://riptutorial.com/ko/css/topic/2034/>

36:

(width height) .

Flexbox .

Examples

:

HTML :

```
<div class="wrapper">
  <div class="outer">
    <div class="inner">
      centered
    </div>
  </div>
</div>
```

CSS :

```
.wrapper {
  height: 600px;
  text-align: center;
}
.outer {
  display: table;
  height: 100%;
  width: 100%;
}
.outer .inner {
  display: table-cell;
  text-align: center;
  vertical-align: middle;
}
```

HTML :

```
<div class="wrapper">
  <div class="centered">
    centered
  </div>
</div>
```

CSS :

```
.wrapper {
  position: relative;
  height: 600px;
}
```

```
.centered {
  position: absolute;
  z-index: 999;
  transform: translate(-50%, -50%);
  top: 50%;
  left: 50%;
}
```

Flexbox

HTML :

```
<div class="container">
  <div class="child"></div>
</div>
```

CSS :

```
.container {
  height: 500px;
  width: 500px;
  display: flex;           // Use Flexbox
  align-items: center;     // This centers children vertically in the parent.
  justify-content: center; // This centers children horizontally.
  background: white;
}

.child {
  width: 100px;
  height: 100px;
  background: blue;
}
```

HTML :

```
<div class="container">
  <span>vertically centered</span>
</div>
```

CSS :

```
.container{
  height: 50px;           /* set height */
  line-height: 50px;     /* set line-height equal to the height */
  vertical-align: middle; /* works without this rule, but it is good having it explicitly
set */
}
```

: . 2 .

:

HTML :

```
<div class="wrapper">
  
</div>
```

CSS :

```
.wrapper{
  position:relative;
  height: 600px;
}
.wrapper img {
  position: absolute;
  top: 0;
  left: 0;
  right: 0;
  bottom: 0;
  margin: auto;
}
```

HTML :

```
<div class="wrapper">
  <div class="child">
    make me center
  </div>
</div>
```

CSS :

```
.wrapper{
  position:relative;
  height: 600px;
}
.wrapper .child {
  position: absolute;
  top: 0;
  left: 0;
  right: 0;
  bottom: 0;
  margin: auto;
  width: 200px;
  height: 30px;
  border: 1px solid #f00;
}
```

HTML :

```
<div class="wrapper">
  <div class="content"></div>
</div>
```

CSS :

```
.wrapper{
  min-height: 600px;
}

.wrapper:before{
  content: "";
  display: inline-block;
  height: 100%;
  vertical-align: middle;
}

.content {
  display: inline-block;
  height: 80px;
  vertical-align: middle;
}
```

.content .wrapper .wrapper .content .wrapper **min-height** .wrapper .wrapper .

: <https://riptutorial.com/ko/css/topic/5070/-->

37:

- `list-style : list-style-type | - - | list-style-image | | ;`



`list-style-type` (``) (`` ``) . . .

Examples

`() :`

```
list-style: disc;           /* A filled circle (default) */
list-style: circle;        /* A hollow circle */
list-style: square;        /* A filled square */
list-style: '-';           /* any string */
```

`() :`

```
list-style: decimal;        /* Decimal numbers beginning with 1 (default) */
list-style: decimal-leading-zero; /* Decimal numbers padded by initial zeros (01, 02, 03, ... 10) */
list-style: lower-roman;    /* Lowercase roman numerals (i., ii., iii., iv., ...) */
list-style: upper-roman;    /* Uppercase roman numerals (I., II., III., IV., ...) */
list-style-type: lower-greek; /* Lowercase roman letters (α., β., γ., δ., ...) */
list-style-type: lower-alpha; /* Lowercase letters (a., b., c., d., ...) */
list-style-type: lower-latin; /* Lowercase letters (a., b., c., d., ...) */
list-style-type: upper-alpha; /* Uppercase letters (A., B., C., D., ...) */
list-style-type: upper-latin; /* Uppercase letters (A., B., C., D., ...) */
```

:

```
list-style: none;           /* No visible list marker */
list-style: inherit;        /* Inherits from parent */
```

` ()`

'' . .

```
list-style-position: inside;
```



```
<li> .
```

```
list-style-position: outside;
```

```
<li> . .
```

```
inside outside :jsfiddle
```

```
/
```

```
. .
```

```
<ul>
  <li>first item</li>
  <li>second item</li>
</ul>
```

CSS

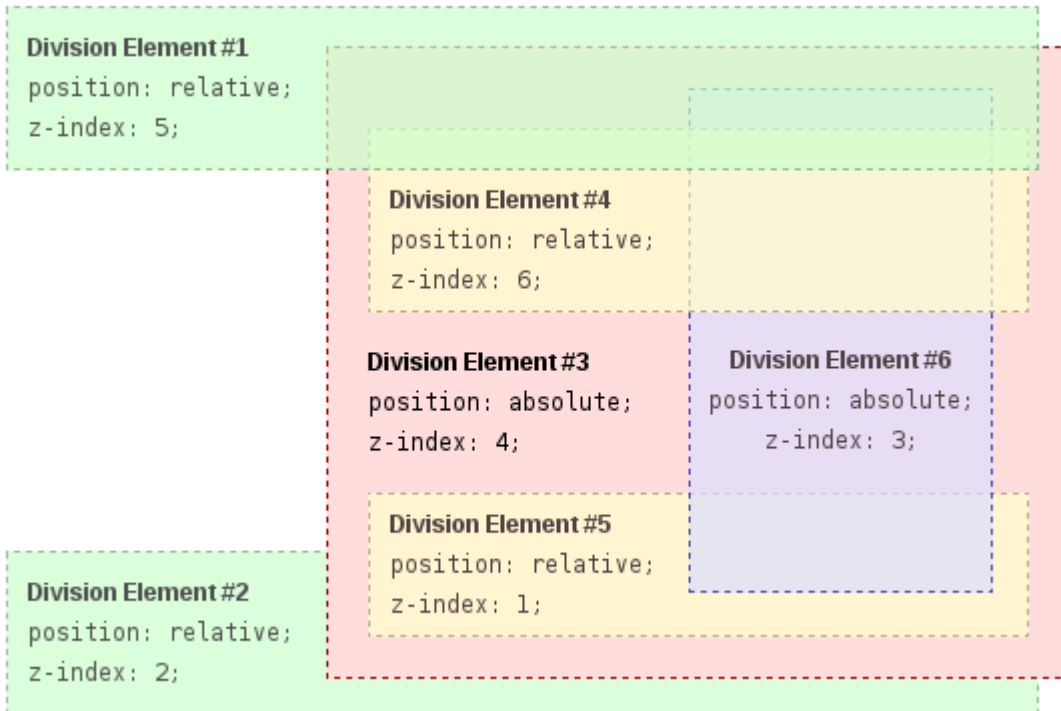
```
ul {
  list-style-type: none;
}
li {
  margin: 0;
  padding: 0;
}
```

: <https://riptutorial.com/ko/css/topic/4215/>

38:

Examples

Z- . . .



- - DIV # 1
 - DIV # 2
 - DIV # 3
 - DIV # 4
 - DIV # 5
 - DIV # 6

DIV # 4, DIV # 5 DIV # 6 DIV # 3 DIV # 3 . DIV # 3 DIV # 3 DIV .

HTML :

```
<div id="div1">
  <h1>Division Element #1</h1>
  <code>position: relative;<br/>
  z-index: 5;</code>
</div>
<div id="div2">
  <h1>Division Element #2</h1>
  <code>position: relative;<br/>
  z-index: 2;</code>
</div>
<div id="div3">
  <div id="div4">
    <h1>Division Element #4</h1>
    <code>position: relative;<br/>
```

```

    z-index: 6;</code>
</div>
<h1>Division Element #3</h1>
<code>position: absolute;<br/>
z-index: 4;</code>
<div id="div5">
  <h1>Division Element #5</h1>
  <code>position: relative;<br/>
  z-index: 1;</code>
</div>
<div id="div6">
  <h1>Division Element #6</h1>
  <code>position: absolute;<br/>
  z-index: 3;</code>
</div>
</div>

```

CSS :

```

* {
  margin: 0;
}
html {
  padding: 20px;
  font: 12px/20px Arial, sans-serif;
}
div {
  opacity: 0.7;
  position: relative;
}
h1 {
  font: inherit;
  font-weight: bold;
}
#div1,
#div2 {
  border: 1px dashed #696;
  padding: 10px;
  background-color: #cfc;
}
#div1 {
  z-index: 5;
  margin-bottom: 190px;
}
#div2 {
  z-index: 2;
}
#div3 {
  z-index: 4;
  opacity: 1;
  position: absolute;
  top: 40px;
  left: 180px;
  width: 330px;
  border: 1px dashed #900;
  background-color: #fdd;
  padding: 40px 20px 20px;
}
#div4,
#div5 {

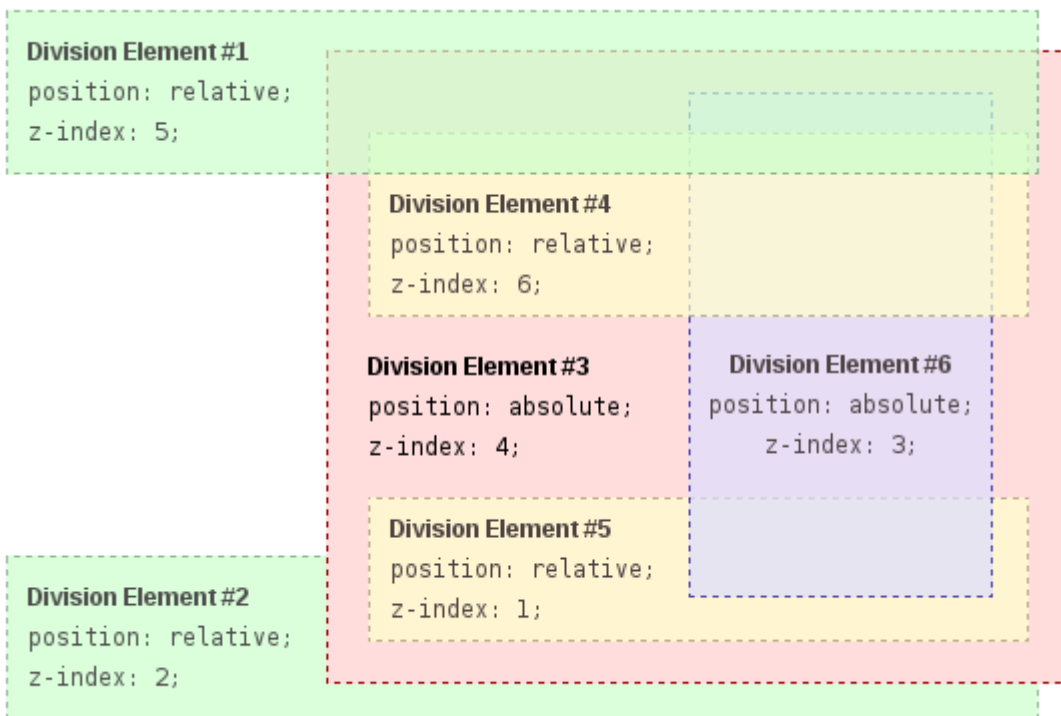
```

```

border: 1px dashed #996;
background-color: #ffc;
}
#div4 {
z-index: 6;
margin-bottom: 15px;
padding: 25px 10px 5px;
}
#div5 {
z-index: 1;
margin-top: 15px;
padding: 5px 10px;
}
#div6 {
z-index: 3;
position: absolute;
top: 20px;
left: 180px;
width: 150px;
height: 125px;
border: 1px dashed #009;
padding-top: 125px;
background-color: #ddf;
text-align: center;
}

```

:



: https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_Positioning/Understanding_z_index/The_stacking_context .

: <https://riptutorial.com/ko/css/topic/5037/->

39:

- `: | | | ;`
- `padding-top : | | | ;`
- `: | | | ;`
- `padding-bottom : | | | ;`
- `padding-left : | | | ;`

[padding](#) . . .

1 : <https://developer.mozilla.org/en/docs/Web/CSS/padding> MDN

"CSS ?" . . .

[The Box Model](#) . / .

:

.

Examples

[padding](#) . . .

.

- `padding-top`
- `padding-right`
- `padding-bottom`
- `padding-left`

`div 5px` .

```
<style>
.myClass {
  padding-top: 5px;
}
</style>

<div class="myClass"></div>
```

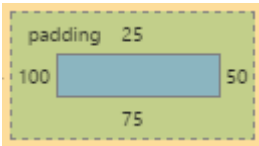
[padding](#) . . .

(`padding-top` , `padding-left`) .

:

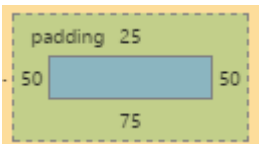
```
<style>
.myDiv {
  padding: 25px 50px 75px 100px; /* top right bottom left; */
}
```

```
    }  
</style>  
<div class="myDiv"></div>
```



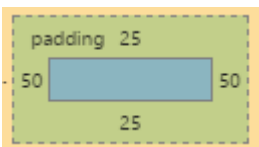
:

```
<style>  
  .myDiv {  
    padding: 25px 50px 75px; /* top left/right bottom */  
  }  
</style>  
<div class="myDiv"></div>
```



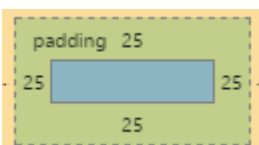
:

```
<style>  
  .myDiv {  
    padding: 25px 50px; /* top/bottom left/right */  
  }  
</style>  
<div class="myDiv"></div>
```



:

```
<style>  
  .myDiv {  
    padding: 25px; /* top/right/bottom/left */  
  }  
</style>  
<div class="myDiv"></div>
```



: <https://riptutorial.com/ko/css/topic/1255/>

40:

- `transition: <property> <duration> <timing-function> <delay>;`
- `@keyframes <identifier>`
- `[[from | to | <percentage>] [, from | to | <percentage>]* block]*`

	CSS all .
	().
	. ease , linear step-end . .
	().
@	
[from ~ <percentage>]	(:10%, 20%) .
block	CSS .

Examples

CSS transition CSS .

```
.Example{
  height: 100px;
  background: #fff;
}

.Example:hover{
  height: 120px;
  background: #ff0000;
}
```

.Example 120px (#ff0000).

transition .

```
.Example{
  ...
  transition: all 400ms ease;
}
```

all () . (:height top) .

400ms . 400 .

, ease . ease , , . linear , ease-out ease-in .

transition IE 9 . Firefox Webkit .

```
.Example{
  transition:          all 400ms ease;
  -moz-transition:    all 400ms ease;
  -webkit-transition: all 400ms ease;
}
```

:transition .100px 50vh . 100 100px auto .

`will-change`

GPU will-change .

CSS transition GPU . GPU . GPU () .will-change .

will-change . , .

```
.Example{
  ...
  will-change: transform, opacity;
}
```

: will-change will-change . will-change GPU .

CSS CSS @keyframes . .

```
@keyframes rainbow-background {
  0%      { background-color: #ff0000; }
  8.333%  { background-color: #ff8000; }
  16.667% { background-color: #ffff00; }
  25.000% { background-color: #80ff00; }
  33.333% { background-color: #00ff00; }
  41.667% { background-color: #00ff80; }
  50.000% { background-color: #00ffff; }
  58.333% { background-color: #0080ff; }
  66.667% { background-color: #0000ff; }
  75.000% { background-color: #8000ff; }
  83.333% { background-color: #ff00ff; }
  91.667% { background-color: #ff0080; }
  100.00% { background-color: #ff0000; }
}
```



```
.RainbowBackground {
  animation: rainbow-background 5s infinite;
}
```

```
. @keyframes .
```

```
@keyframes rainbow-background{
```

```
rainbow-background .
```

```
0% { background-color: #ff0000; }
```

```
. ( 0% .0% 0% .
```

```
. 8.333% 8.333 % .
```

```
.RainbowBackground {
  animation: rainbow-background 5s infinite;
}
```

```
.RainbowBackground .
```

```
.
```

- **animation-name** : . rainbow-background
- **animation-duration** : . 5 .
- **animation-iteration-count** () : . , . .
- **animation-delay** () : . 0 . , -2s 2 .
- **animation-timing-function** () : . ease . .

```
0% 100% { background-color: #ff0000; } . . 0% 100% .
```

```
0%, 100% { background-color: #ff0000; }
```

```
WebKit @keyframes animation .
```

```
@-webkit-keyframes{
```

```
-webkit-animation: ...
```

```
/ .
```

```
animation: 3s ease-in 1s 2 reverse both
paused slidein;
/* duration | timing-function | delay | iteration-count | direction | fill-mode |
play-state | name */
```

```
, .
```

```
animation: 3s linear 1s slidein;
/* duration | timing-function | delay | name */
```

. animation-name animation-duration .

```
animation: 3s slidein;
/* duration | name */
```

. .

, :

```
animation-duration: 3s;
animation-timing-function: ease-in;
animation-delay: 1s;
animation-iteration-count: 2;
animation-direction: reverse;
animation-fill-mode: both;
animation-play-state: paused;
animation-name: slidein;
```

: <https://riptutorial.com/ko/css/topic/590/>

41:

CSS .

[CSS 1](#) 2011 4 12 W3C . . .

2017 7 3 Microsoft Internet Explorer 10 11 Edge .

Examples

HTML .

```
<section>
  <p>Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor
  invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et
  justo duo dolores et ea rebum.</p>
  <p> Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem
  ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut
  labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo
  dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor
  sit amet.</p>
  <p>Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor
  invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et
  justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem
  ipsum dolor sit amet.</p>
</section>
```

CSS .

```
section {
  columns: 3;
  column-gap: 40px;
  column-rule: 2px solid gray;
}
```

[JSFiddle](#) .

```
<div class="content">
  Lorem ipsum dolor sit amet, consetetur adipiscing elit, sed diam nonummy nibh
  euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim
  ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl
  ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in
  hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu
  feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui
  blandit praesent luptatum zzril delenit augue dui dolore te feugait nulla
  facilisi. Nam liber tempor cum soluta nobis eleifend option congue nihil
  imperdiet doming id quod mazim placerat facer possim assum.
</div>
```

CSS

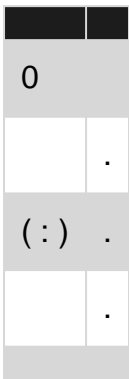
```
.content {
```

```
-webkit-column-count: 3; /* Chrome, Safari, Opera */  
-moz-column-count: 3; /* Firefox */  
column-count: 3;  
}
```

: [https://riptutorial.com/ko/css/topic/10688/-](https://riptutorial.com/ko/css/topic/10688/)

42:

- margin : < & & & >;
- margin : <top> , <left & right> , <bottom> ;
- margin : <top & bottom> , <left & right> ;
- margin : <top> , <right> , <bottom> , <left> ;
- margin-top : <top> ;
- margin-right : <right> ;
- margin-bottom : <bottom> ;
- margin-left : <> ;



" " .

Examples

.

CSS . .

- margin-left
- margin-right
- margin-top
- margin-bottom

div 30 .

HTML

```
<div id="myDiv"></div>
```

CSS

```
#myDiv {  
  margin-left: 30px;  
  height: 40px;  
  width: 40px;  
}
```

```
background-color: red;
}
```

margin-left	.
30px	.

margin . .

```
margin: <top> <right> <bottom> <left>;
```

div 10 , 50 , 100 .

HTML

```
<div id="myDiv"></div>
```

CSS

```
#myDiv {
  margin: 0 10px 50px 100px;
  height: 40px;
  width: 40px;
  background-color: red;
}
```

. .

:

.

```
div{
  margin: 10px;
}
```

```
<div>
  some content
</div>
<div>
  some more content
</div>
```

10px . .

:

.

```
span{
  margin: 10px;
}
```

```
<span>some</span><span>content</span>
```

20px . .

```
.top{
  margin: 10px;
}
.bottom{
  margin: 15px;
}
```

```
<div class="top">
  some content
</div>
<div class="bottom">
  some more content
</div>
```

15 . .

```
.outer-top{
  margin: 10px;
}
.inner-top{
  margin: 15px;
}
.outer-bottom{
  margin: 20px;
}
.inner-bottom{
  margin: 25px;
}
```

```
<div class="outer-top">
  <div class="inner-top">
    some content
  </div>
</div>
<div class="outer-bottom">
  <div class="inner-bottom">
    some more content
  </div>
</div>
```

? ()

25.4 4 .

?

```
div{
  border: 1px solid red;
}
```

? ()

59px! . . 1px + 10px + 1px + 15px + 20px + 1px + 25px + 1px. (1 ...)

:

HTML :

```
<h1>Title</h1>
<div>
  <p>Paragraph</p>
</div>
```

CSS

```
h1 {
  margin: 0;
  background: #cff;
}
div {
  margin: 50px 0 0 0;
  background: #cfc;
}
p {
  margin: 25px 0 0 0;
  background: #cf9;
}
```

. h1 60px (div - 40px p 20px).

.

margin auto .

```
#myDiv {
  width:80%;
  margin:0 auto;
}
```

shorthand margin 0 () auto .

#myDiv 80 % 20 % . .

$(100 \% - 80 \%) / 2 = 10 \%$

```
p {
  margin:1px; /* 1px margin in all directions */
  /*equals to:*/
```



```

margin:1px 1px;

/*equals to:*/

margin:1px 1px 1px;

/*equals to:*/

margin:1px 1px 1px 1px;
}

```

exapmle :

```

p{
margin:10px 15px;          /* 10px margin-top & bottom And 15px margin-right & left*/

/*equals to:*/

margin:10px 15px 10px 15px;

/*equals to:*/

margin:10px 15px 10px;
/* margin left will be calculated from the margin right value (=15px) */
}

```

CSS . .

```

div{
display: inline;
}

#over{
margin-left: -20px;
}

<div>Base div</div>
<div id="over">Overlapping div</div>

```

1 :

margin-left margin-right margin parent .

```

.parent {
width : 500px;
height: 300px;
}

.child {
width : 100px;
height: 100px;
margin-left: 10%; /* (parentWidth * 10/100) => 50px */
}

```

margin-top margin-bottom margin-bottom . .

```
,  
  
.parent {  
  width : 500px;  
  height: 300px;  
}  
  
.child {  
  width : 100px;  
  height: 100px;  
  margin-left: 10%; /* (parentWidth * 10/100) => 50px */  
  margin-top: 20%; /* (parentWidth * 20/100) => 100px */  
}
```

: <https://riptutorial.com/ko/css/topic/305/>

43:

- `: | | | | ;`
- `column-width : | ;`
- `column : [column-width] | [column-count];`
- `column-span : none | all | | initial | unset;`
- `column-gap : normal | length | | initial | unset;`
- `column-fill : auto | balance | | initial | unset;`
- `column-rule-color : color | | initial | unset;`
- `column-rule-style : none | hidden | dotted | dashed | solid | double | groove | ridge | inset | outset | | initial | unset;`
- `column-rule-width : thin | medium | thick | length | | initial | unset;`
- `column-rule : [column-rule-width] | [column-rule-style] | [column-rule-color];`
- `break-after : auto | always | left | right | recto | verso | page | column | region | avoid | avoid-page | avoid-column | avoid-region;`
- `break-before : auto | always | left | right | recto | verso | page | column | region | avoid | avoid-page | avoid-column | avoid-region;`
- `break-inside : auto | avoid | avoid-page | avoid-column | avoid-region;`

Examples

()

CSS

```
<div id="multi-columns">Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum</div>
```

```
.multi-columns {  
  -moz-column-count: 2;  
  -webkit-column-count: 2;  
  column-count: 2;  
}
```

Stack Overflow is a privately held website, the flagship site of the Stack Exchange Network,[4][5][6] created in 2008 by Jeff Atwood and Joel Spolsky. [7][8] It was created to be a more open alternative to earlier Q&A sites such as Experts-Exchange. The name for the website was chosen by voting in April 2008 by readers of Coding Horror, Atwood's popular programming blog.

The website serves as a platform for users to ask and answer questions, and, through membership and active participation, to vote questions and

answers and answers wiki or Di Overflow "badges" awarded receiving given to a badges fo [14] which gamificat or forum. licensed Attribute-

column-width .column-count .

:

```
<div id="multi-columns">
  Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt
  ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco
  laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in
  voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat
  non proident, sunt in culpa qui officia deserunt mollit anim id est laborum
</div>
```

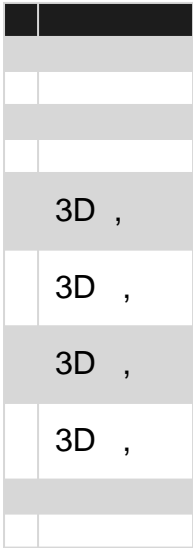
```
.multi-columns {
  -moz-column-width: 100px;
  -webkit-column-width: 100px;
  column-width: 100px;
}
```

Stack Overflow is a privately held website, the flagship site of the Stack Exchange Network,[4][5][6] created in 2008 by Jeff Atwood and Joel Spolsky. [7][8] It was created to be a more open alternative to earlier Q&A sites such as Experts-	Exchange. The name for the website was chosen by voting in April 2008 by readers of Coding Horror, Atwood's popular programming blog. The website serves as a platform for users to ask and answer	questions, and, through membership and active participation, to vote questions and answers up or down and edit questions and answers in a fashion similar to a wiki or Digg.[13] Users of Stack Overflow can earn reputation	points and "badges"; for example, a person is awarded 10 reputation points for receiving an "up" vote on an answer given to a question, and can receive badges for their valued contributions, [14] which represents a kind of	gamification of the traditional Q&A site or forum. All user-generated content is licensed under a Creative Commons Attribute-ShareAlike license.
--	--	--	--	--

: <https://riptutorial.com/ko/css/topic/3042/>

44:

- `: - - - | |`;
- `- : | | | | |`;
- `outline-style : none | | | | | | | | | |`;



outline [Basic UI](#) , CSS 3 (REC CSS2.1) .

`:focus` `:focus` .
<http://outlinenone.com> .

?

Tab () "" . . . (...)

:

- [Firefox](#) ?

Examples

`.border` . . .

`.font-size span outline` . . .

`outline outline outline-color, outline-style outline-width` .

.

. . .

```
outline: 1px solid black;
```

outline-style .

```
p {  
  border: 1px solid black;  
  outline-color:blue;  
  line-height:30px;  
}  
.p1{  
  outline-style: dotted;  
}  
.p2{  
  outline-style: dashed;  
}  
.p3{  
  outline-style: solid;  
}  
.p4{  
  outline-style: double;  
}  
.p5{  
  outline-style: groove;  
}  
.p6{  
  outline-style: ridge;  
}  
.p7{  
  outline-style: inset;  
}  
.p8{  
  outline-style: outset;  
}
```

HTML

```
<p class="p1">A dotted outline</p>  
<p class="p2">A dashed outline</p>  
<p class="p3">A solid outline</p>  
<p class="p4">A double outline</p>  
<p class="p5">A groove outline</p>  
<p class="p6">A ridge outline</p>  
<p class="p7">An inset outline</p>  
<p class="p8">An outset outline</p>
```

A dotted outline

A dashed outline

A solid outline

A double outline

A groove outline

A ridge outline

An inset outline

An outset outline

: <https://riptutorial.com/ko/css/topic/4258/>

45: (Flexbox)

Flexible Box 'flexbox'

- ::;
- : | - | | - ;
- : nowrap | | - ;
- : <' '> || <'flex-wrap'>
- justify-content : | | | | ;
- align-items : | | | | ;
- align-content : | | | | | ;
- : <>;
- : <>; /* 0 */
- : <number>; /* 1 */
- : <> | ; /* */
- flex : | [<'flex-grow'> <'flex-shrink'>? || <'flex-basis'>]
- align-self : auto | | | | | ;

Vender Prefixes

- display : -webkit-box; /* Chrome <20 */
- display : -webkit-flex; /* Chrome 20 */
- display : -moz-box; /* Firefox */
- : -ms-flexbox; /* IE */
- : ; /* */

-
- [Flexbox](#)
 - [Flexbox](#)
 - [Flexbox ?!](#)
 - [5](#)
 -

Examples

. . .

HTML :

```
<div class="header">
  <h2>Header</h2>
</div>

<div class="content">
  <h1>Content</h1>
```

```

    <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer nec odio. Praesent libero. Sed cursus ante dapibus diam. Sed nisi. Nulla quis sem at nibh elementum imperdiet. Duis sagittis ipsum. Praesent mauris. Fusce nec tellus sed augue semper porta. Mauris massa. Vestibulum lacinia arcu eget nulla. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos. Curabitur sodales ligula in libero. </p>
</div>

<div class="footer">
  <h4>Footer</h4>
</div>

```

CSS :

```

html, body {
  height: 100%;
}

body {
  display: flex;
  flex-direction: column;
}

.content {
  /* Include `0 auto` for best browser compatibility. */
  flex: 1 0 auto;
}

.header, .footer {
  background-color: grey;
  color: white;
  flex: none;
}

```

Flexbox

3 . sidenav, (). CSS Flexbox .

HTML :

```

<div class="container">
  <header class="header">Header</header>
  <div class="content-body">
    <main class="content">Content</main>
    <nav class="sidenav">Nav</nav>
    <aside class="ads">Ads</aside>
  </div>
  <footer class="footer">Footer</footer>
</div>

```

CSS :

```

body {
  margin: 0;
  padding: 0;
}

```

```
.container {
  display: flex;
  flex-direction: column;
  height: 100vh;
}

.header {
  flex: 0 0 50px;
}

.content-body {
  flex: 1 1 auto;

  display: flex;
  flex-direction: row;
}

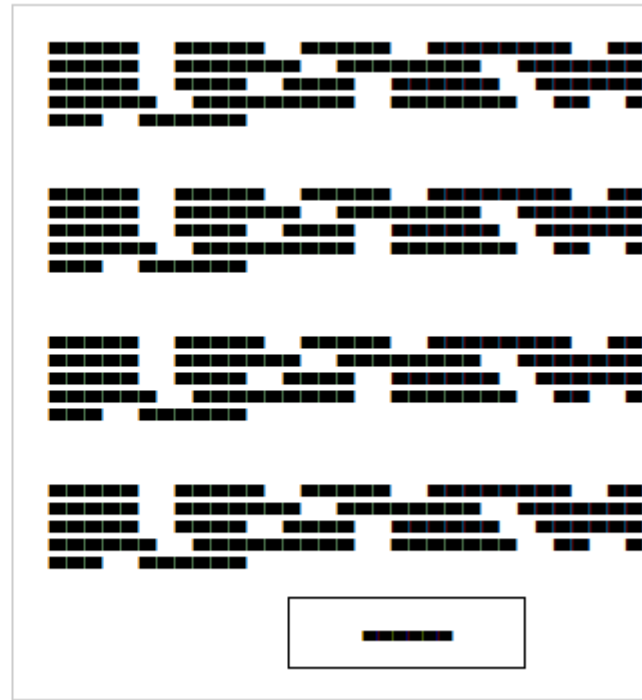
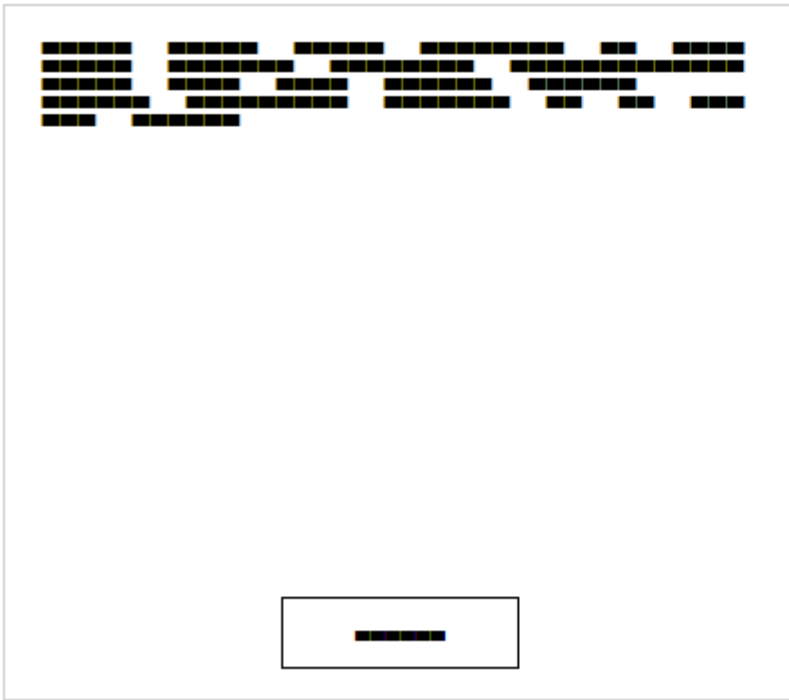
.content-body .content {
  flex: 1 1 auto;
  overflow: auto;
}

.content-body .sidenav {
  order: -1;
  flex: 0 0 100px;
  overflow: auto;
}

.content-body .ads {
  flex: 0 0 100px;
  overflow: auto;
}

.footer {
  flex: 0 0 50px;
}
```

Flexbox



flexbox .

HTML

```
<div class="cards">
  <div class="card">
    <p>Lorem ipsum Magna proident ex anim dolor ullamco pariatur reprehenderit culpa esse enim mollit labore dolore voluptate ullamco et ut sed qui minim.</p>
    <p><button>Action</button></p>
  </div>
  <div class="card">
    <p>Lorem ipsum Magna proident ex anim dolor ullamco pariatur reprehenderit culpa esse enim mollit labore dolore voluptate ullamco et ut sed qui minim.</p>
    <p>Lorem ipsum Magna proident ex anim dolor ullamco pariatur reprehenderit culpa esse enim mollit labore dolore voluptate ullamco et ut sed qui minim.</p>
    <p>Lorem ipsum Magna proident ex anim dolor ullamco pariatur reprehenderit culpa esse enim mollit labore dolore voluptate ullamco et ut sed qui minim.</p>
    <p>Lorem ipsum Magna proident ex anim dolor ullamco pariatur reprehenderit culpa esse enim mollit labore dolore voluptate ullamco et ut sed qui minim.</p>
    <p><button>Action</button></p>
  </div>
</div>
```

, CSS display: flex; display: flex; .

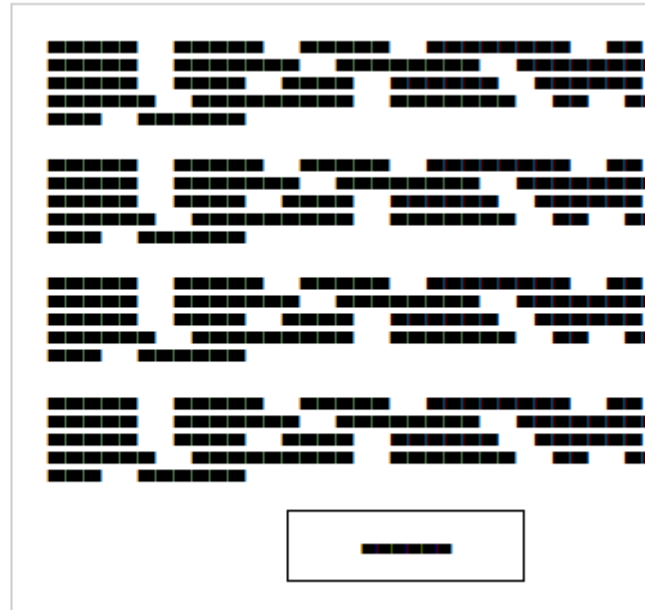
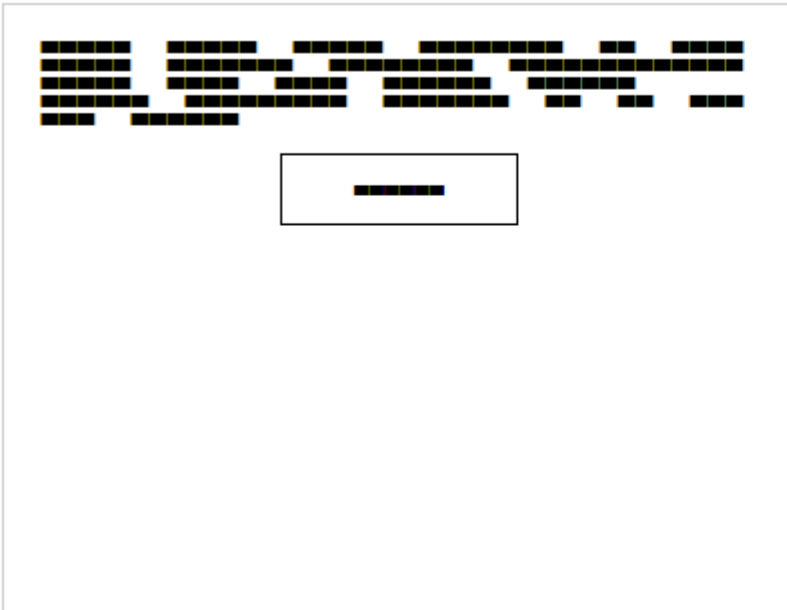
CSS

```
.cards {
  display: flex;
}
.card {
  border: 1px solid #ccc;
  margin: 10px 10px;
  padding: 0 20px;
}
```

```

}
button {
  height: 40px;
  background: #fff;
  padding: 0 40px;
  border: 1px solid #000;
}
p:last-child {
  text-align: center;
}

```



```
display: flex; display: flex; column margin-top auto. .
```

CSS :

```

.cards {
  display: flex;
}
.card {
  border: 1px solid #ccc;
  margin: 10px 10px;
  padding: 0 20px;
  display: flex;
  flex-direction: column;
}
button {
  height: 40px;
  background: #fff;
  padding: 0 40px;
  border: 1px solid #000;
}
p:last-child {
  text-align: center;
  margin-top: auto;
}

```

(,)

()

HTML

```
<div class="aligner">
  <div class="aligner-item">...</div>
</div>
```

CSS

```
.aligner {
  display: flex;
  align-items: center;
  justify-content: center;
}

.aligner-item {
  max-width: 50%; /*for demo. Use actual width instead.*/
}
```

align-items	center	flex-direction	., flexbox	flexbox centering.
justify-content	center	flex-direction	flex-direction ., (flex-direction: row) flex-direction: row , flex-direction: column (flex-direction: column)	flex-direction: column .

```
<div id="container">
  <div></div>
  <div></div>
  <div></div>
</div>
```

#container flex-box .

justify-content: center **flexbox** justify-content: center

CSS :

```
div#container {  
  display: flex;  
  flex-direction: row;  
  justify-content: center;  
}
```

:



.

```
▪ justify-content: center    justify-content: center
```

CSS :

```
div#container {  
  display: flex;  
  flex-direction: column;
```

```
justify-content: center;
}
```

:



.

⌘ align-content: center **flexbox** align-content: center

CSS :

```
div#container {
  display: flex;
  flex-direction: row;
  align-items: center;
}
```

:



```
align-content: center align-content: center
```

CSS :

```
div#container {  
  display: flex;  
  flex-direction: column;  
  align-items: center;  
}
```

```
:
```



: flexbox

```
div#container {  
  display: flex;  
  flex-direction: row;  
  justify-content: center;  
  align-items: center;  
}
```

:



```
div#container {  
  display: flex;  
  flex-direction: column;  
  justify-content: center;  
  align-items: center;  
}
```



.

. parent div . : <https://jsfiddle.net/3wwh7ewp/>

align-items stretch .

HTML

```
<div class="container">
  <div style="background-color: red">
    Some <br />
    data <br />
    to make<br />
    a height <br />
  </div>
  <div style="background-color: blue">
    Fewer <br />
    lines <br />
  </div>
</div>
```

CSS

```
.container {  
  display: flex;  
  align-items: stretch; // Default value  
}
```

: 10 IE .

.

flexbox .

.

HTML :

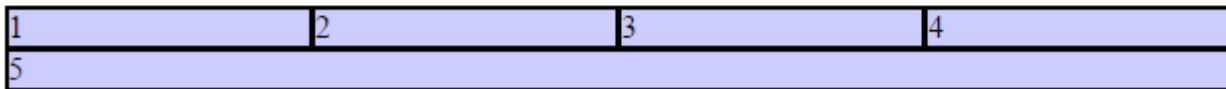
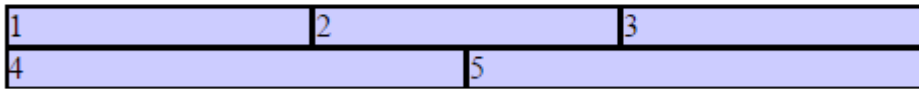
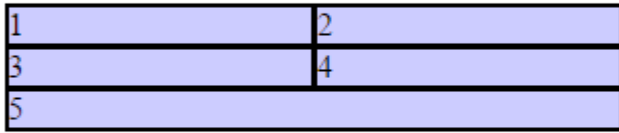
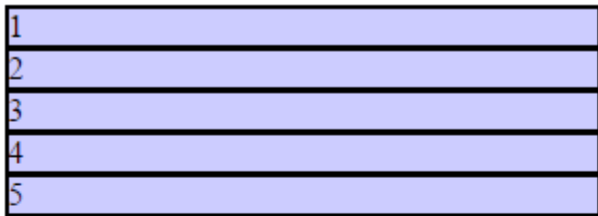
```
<div class="flex-container">  
  <div class="flex-item">1</div>  
  <div class="flex-item">2</div>  
  <div class="flex-item">3</div>  
  <div class="flex-item">4</div>  
  <div class="flex-item">5</div>  
</div>
```

CSS :

```
.flex-container {  
  background-color: #000;  
  height: 100%;  
  display: flex;  
  flex-direction: row;  
  flex-wrap: wrap;  
  justify-content: flex-start;  
  align-content: stretch;  
  align-items: stretch;  
}  
  
.flex-item {  
  background-color: #ccf;  
  margin: 0.1em;  
  flex-grow: 1;  
  flex-shrink: 0;  
  flex-basis: 200px; /* or % could be used to ensure a specific layout */  
}
```

:

.



(Flexbox) : <https://riptutorial.com/ko/css/topic/445/----flexbox->

46:

Examples

() . () () . .

HTML

```
<nav>
  <ul>
    <li>abc</li>
    <li>abcdefghijkl</li>
    <li>abcdef</li>
  </ul>
</nav>
```

CSS

```
nav {
  width: 100%;
  line-height: 1.4em;
}
ul {
  list-style: none;
  display: block;
  width: 100%;
  margin: 0;
  padding: 0;
  text-align: justify;
  margin-bottom: -1.4em;
}
ul:after {
  content: "";
  display: inline-block;
  width: 100%;
}
li {
  display: inline-block;
}
```

- nav, ul li '()' . .
- :after ul 'line' , , . margin-bottom , line-height ().
- () . .

: <https://riptutorial.com/ko/css/topic/3308/-->

47:

- `transition : [transition-property] [transition-duration] [transition-timing-function] [transition-delay];`

<code>all CSS (all).</code>
<code>(() s) (ms).</code>
<code>. ease , ease-in , ease-out , ease-in-out , linear , cubic-bezier() , steps() . W3C .</code>
<code>. (s) (ms)</code>

`transition transition .`

- `-webkit` : Chrome 25, Safari 6, iOS 6.1 Safari Chrome, Android 4.3- , Blackberry 7, UC 9.9, Android .
- `-moz` : Firefox 15 -.
- `-o` : 11.5, 12.

:

```
-webkit-transition: all 1s;  
-moz-transition: all 1s;  
-o-transition: all 1s;  
transition: all 1s;
```

Examples

CSS

```
div{  
  width: 150px;  
  height:150px;  
  background-color: red;  
  transition: background-color 1s;  
}  
div:hover{  
  background-color: green;  
}
```

HTML

```
<div></div>
```

`div . 1 .`

()

CSS

```
div {  
  height: 100px;  
  width: 100px;  
  border: 1px solid;  
  transition-property: height, width;  
  transition-duration: 1s, 500ms;  
  transition-timing-function: linear;  
  transition-delay: 0s, 1s;  
}  
div:hover {  
  height: 200px;  
  width: 200px;  
}
```

HTML

```
<div></div>
```

- **transition-property** : CSS . div .
- **transition-duration** : . 1 500 .
- **transition-timing-function** : . . .
- **transition-delay** : . , 1 .

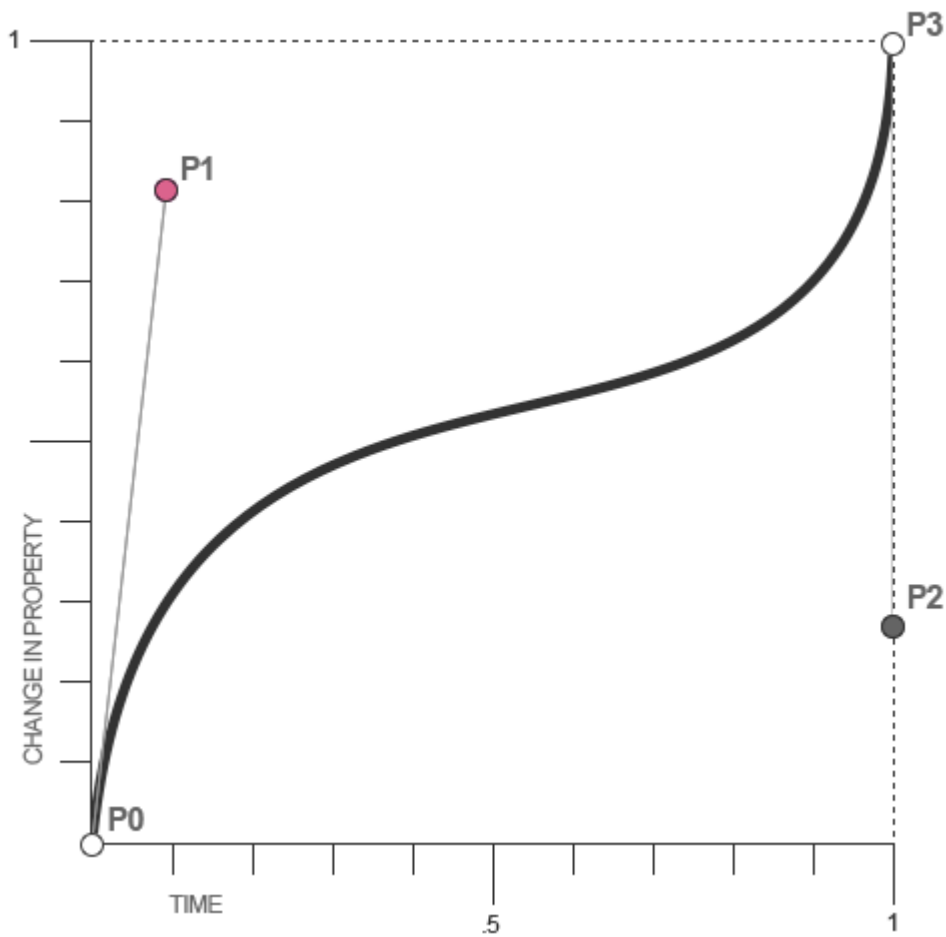
cubic-bezier (cubic-bezier .

transition-timing-function: cubic-bezier(0.1, 0.7, 1.0, 0.1);

.

cubic-bezier(P1_x, P1_y, P2_x, P2_y)

The diagram shows the function `cubic-bezier(x, y, x, y)`. A blue bracket above the first two parameters `(x, y)` is labeled P_1 . A red bracket below the last two parameters `(x, y)` is labeled P_2 .



CSS P0 P3 .cubic-bezier 0 1 P0 (0,0) P3 (1,1) .

linear .

cubic-bezier CSS cubic-bezier .

linear : cubic-bezier(0,0,1,1)

ease-in cubic-bezier(0.42, 0.0, 1.0, 1.0)

ease-out : cubic-bezier(0.0, 0.0, 0.58, 1.0)

ease-in-out cubic-bezier(0.42, 0.0, 0.58, 1.0)

: <https://riptutorial.com/ko/css/topic/751/>

48:

- :[<> <>?] + |
- :[< > <>?] + |
- :[<counter-name> <integer>?] + |
- (<counter-name> [, <counter-style>]?)
- (<counter-name>, <connector-string> [, <counter-style>])?

```
.item {
  counter-reset: item;
}

.item {
  counter-increment: item;
}

.item:before {
  content: counter(item, upper-roman) ". "; /* by specifying the upper-roman as style
the output would be in roman numbers */
}
```

CSS .CSS 2 (1) .

IE6 IE7 CSS .

Examples

CSS

```
body {
  counter-reset: item-counter;
}

.item {
  counter-increment: item-counter;
}

.item:before {
  content: counter(item-counter, upper-roman) ". "; /* by specifying the upper-roman as style
the output would be in roman numbers */
}
```

HTML

```
<div class='item'>Item No: 1</div>
<div class='item'>Item No: 2</div>
<div class='item'>Item No: 3</div>
```

1, 2, 3 I, II, III ().

CSS

CSS

```
body {
  counter-reset: item-counter; /* create the counter */
}
.item {
  counter-increment: item-counter; /* increment the counter every time an element with class
"item" is encountered */
}
.item-header:before {
  content: counter(item-counter) ". "; /* print the value of the counter before the header and
append a "." to it */
}

/* just for demo */

.item {
  border: 1px solid;
  height: 100px;
  margin-bottom: 10px;
}
.item-header {
  border-bottom: 1px solid;
  height: 40px;
  line-height: 40px;
  padding: 5px;
}
.item-content {
  padding: 8px;
}
```

HTML

```
<div class='item'>
  <div class='item-header'>Item 1 Header</div>
  <div class='item-content'>Lorem Ipsum Dolor Sit Amet....</div>
</div>
<div class='item'>
  <div class='item-header'>Item 2 Header</div>
  <div class='item-content'>Lorem Ipsum Dolor Sit Amet....</div>
</div>
<div class='item'>
  <div class='item-header'>Item 3 Header</div>
  <div class='item-content'>Lorem Ipsum Dolor Sit Amet....</div>
</div>
```

"item" .item-header (.item-header :before content).

CSS

CSS

```
ul {
  list-style: none;
  counter-reset: list-item-number; /* self nesting counter as name is same for all levels */
}
li {
  counter-increment: list-item-number;
}
li:before {
  content: counters(list-item-number, ".") " "; /* usage of counters() function means value of
counters at all higher levels are combined before printing */
}
```

HTML

```
<ul>
  <li>Level 1
    <ul>
      <li>Level 1.1
        <ul>
          <li>Level 1.1.1</li>
        </ul>
      </li>
    </ul>
  </li>
  <li>Level 2
    <ul>
      <li>Level 2.1
        <ul>
          <li>Level 2.1.1</li>
          <li>Level 2.1.2</li>
        </ul>
      </li>
    </ul>
  </li>
  <li>Level 3</li>
</ul>
```

CSS . . . , 2 ul list-item-number list-item-number (li) list-item-number[1] () list-item-number[0] () . .

counters() counter() counters() () .

: <https://riptutorial.com/ko/css/topic/2575/>

'none' HTML [1] , .

HTML .

- ;
- .

1. <https://css-tricks.com/almanac/properties/p/pointer-events/>

- :
- <https://developer.mozilla.org/en-US/docs/Web/CSS/pointer-events>
 - <https://davidwalsh.name/pointer-events>

CSS .

HTML

```
<input id="example" />
```

CSS

```
#example {  
  caret-color: red;  
}
```

- :
- <https://developer.mozilla.org/en-US/docs/Web/CSS/caret-color>

: <https://riptutorial.com/ko/css/topic/1742/>

50:

[CSS . .][1]

[1]: https://developer.mozilla.org/en-US/docs/Web/Guide/CSS/Block_formatting_context MDN

Examples

visible

```
img{
  float:left;
  width:100px;
  margin:0 10px;
}
.div1{
  background:#f1f1f1;
  /* does not create block formatting context */
}
.div2{
  background:#f1f1f1;
  overflow:hidden;
  /* creates block formatting context */
}
```



```


1 
2 <div class=div1>
3 <p>Lorem ipsum dolor sit amet, cum no paulo mollis pertinacia. Eam in velit graecis, sea mucius insolens ne. Amet doming at has, omnis errem an cum. Eu vim appareat persecuti, ea putant definitionem has, vis ea legendos expetenda. No eros graeci minimum nam, justo augue instructor usu ne. At ludus suscipit disputationi vel.</p>
4
5 <p>Ad case omnis nam, mutat deseruisse persequeris eos ad, in tollit debitis sea. Cu eos munere virtute vituperata. Exerci bonorum sed id, id nec tantas praesent complectitur. Vel cu legendos mediocritatem. Enim liberavisse ei sea.</p>
6 </div>
7
8 
9 <div class=div2>
10 <p>Lorem ipsum dolor sit amet, cum no paulo mollis pertinacia. Eam in velit graecis, sea mucius insolens ne. Amet doming at has, omnis errem an cum. Eu vim appareat persecuti, ea putant definitionem has, vis ea legendos expetenda. No eros graeci minimum nam, justo augue instructor usu ne. At ludus suscipit disputationi vel.</p>
11
12 <p>Ad case omnis nam, mutat deseruisse persequeris eos ad, in tollit debitis sea. Cu eos munere virtute vituperata. Exerci bonorum sed id, id nec tantas praesent complectitur. Vel cu legendos mediocritatem. Enim liberavisse ei sea.</p>
13 </div>

```

```


1 img{
2   float:left;
3   width:100px;
4   margin:0 10px;
5 }
6 .div1{
7   background:#f1f1f1;
8 }
9 .div2{
10  background:#f1f1f1;
11  overflow:hidden;
12  /* creates block formatting c
13 }

```



Lorem ipsum dolor doming at has, omni expetenda. No eros

Ad case omnis nam, mutat deseruisse p sed id, id nec tantas praesent complecti



Lorem ipsum dolor doming at has, omni expetenda. No eros

Ad case omnis nam, Exerci bonorum sed sea.

<https://jsfiddle.net/MadalinaTn/qkwmmu6m/2/>

[overflow visible \(\)](#) . . .

[css-tricks.com](#) .

2 : <https://developer.mozilla.org/en-US/docs/Web/CSS/overflow> MDN

: <https://riptutorial.com/ko/css/topic/5069/--->

51:

- `/* Comment */`
- `CSS /* */ .`
- `.`

Examples

```
/* This is a CSS comment */  
div {  
  color: red; /* This is a CSS comment */  
}
```

```
/*  
  This  
  is  
  a  
  CSS  
  comment  
*/  
div {  
  color: red;  
}
```

: <https://riptutorial.com/ko/css/topic/1625/>

52:

-
- clip-path : <> | [<> || <clip-geometry-box>] |
-
- - : [none | <>] #
- : [<mask-mode>] #
- : [<] #
- : [<position>] #
- : [<geometry-box> |] #
- : [<geometry-box>] #
- : [<bg-size>] #
- : [<compositing-operator>] #
- : [<> <>? || <position> [/ <bg-size>]? || <> || <> || [<> |] || <compositing-operator>] #

	SVG () SVG URL.
	inset() , circle() , ellipse() polygon() . for Floats .
- -	content-box , padding-box , border-box , margin-box , fill-box , stroke-box view-box . <basic-shape> . <> .
	none URL.
	X Y . repeat-x , repeat-y , repeat , space , round , no-repeat .
	alpha luminance auto . URL () .
	background-position . 1 (: top , 10%) 2 (: top right , 50% 50%) .
	() () . content-box , padding-box , border-box , margin-box , fill-box , stroke-box , view-box . W3C .
bg	background-size background-size . , .
	add , subtract , exclude , multiply . W3C .

CSS



(7 '16) Chrome, Safari Opera -webkit- .

Firefox SVG mask . SVG mask mask: url(#msk) SVG mask mask: url('yourfilepath/yourfilename.svg#msk') . #msk mask id . Firefox mask mask mask-reference

Internet Explorer (Edge) .

mask-mode .



(7 '16) Chrome, Safari, Opera (circle , polygon) url(#clipper) SVG clip-path . SVG .
-webkit .

Firefox clip-path url() Internet Explorer (Edge) .

Examples

()

CSS :

```
div{
  width:200px;
  height:200px;
  background:teal;
  clip-path: polygon(0 0, 0 100%, 100% 50%); /* refer remarks before usage */
}
```

HTML :

```
<div></div>
```

(200x200) . . (, 0 0) 0 0 - 0 100%. 0 100% - 100% 50% . (,). .

.

:



()

CSS :

```
div{  
  width: 200px;  
  height: 200px;  
  background: teal;  
  clip-path: circle(30% at 50% 50%); /* refer remarks before usage */  
}
```

HTML

```
<div></div>
```

div . 30 % . <clip-geometry-box> (,) border-box .

(x,y) .

```
circle(radius at x y)
```

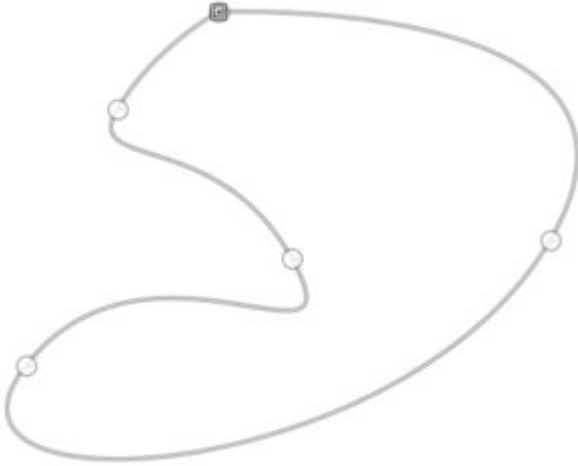
:



:

. HTML .

. clip-path . SVG . : circle() , polygon() ellipse() .



```
clip-path: circle(100px at center);
```

100px .

. , .

Luminance Mask : .

Alpha Mask : .



.

mask .

```
mask: url(masks.svg#rectangle) luminance;
```

masks.svg rectangle .

CSS

```
div {  
  height: 200px;  
  width: 200px;  
  background: url(http://lorempixel.com/200/200/nature/1);  
  mask-image: linear-gradient(to right, white, transparent);  
}
```

HTML

```
<div></div>
```

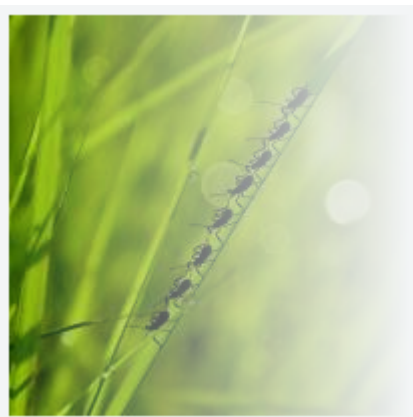
.CSS

() () linear-gradient . .

:



:



: -webkit Chrome, Safari Opera . (linear-gradient) Firefox .

·

CSS

```
div {  
  width: 200px;  
  height: 200px;  
  background: url(http://lorempixel.com/200/200/abstract/6);  
  mask-image: radial-gradient(circle farthest-side at center, transparent 49%, white 50%); /*  
  check remarks before using */  
}
```

HTML

radial-gradient .

:



:



CSS

```
div { /* check remarks before usage */  
  height: 200px;  
  width: 400px;  
  background-image: url(http://lorempixel.com/400/200/nature/4);
```



```
mask-image: linear-gradient(to top right, transparent 49.5%, white 50.5%), linear-  
gradient(to top left, transparent 49.5%, white 50.5%), linear-gradient(white, white);  
mask-size: 75% 25%, 25% 25%, 100% 75%;  
mask-position: bottom left, bottom right, top left;  
mask-repeat: no-repeat;  
}
```

HTML

```
<div></div>
```

3 linear-gradient (100 % x 100 %) .

:



:



: <https://riptutorial.com/ko/css/topic/3721/-->

53:

- : [*font-style*] [*font-variant*] [*font-weight*] [/ *line-height*] *font-family* ;
- :
- :
- font-weight : *font-weight* ;
- font-size : *font-size* ;
- line-height : *line-height* ;
- font-family : *font-family* ;
- : ;
- : *none* | *string* | *initial* | ;
- font-stretch : *font-stretch* ;
- : ;
- : | | ;
- : | | | | ;
- text-transform : *none* | | | | | ;
- : *h-* *v-* | *none* | *initial* | ;
- font-size-adjust : *number* | *none* | *initial* | ;
- : | | | | | | | | | ;
- : | | ;
- tab-size : *number* | *length* | *initial* | ;
- letter-spacing : | | | ;
- : *normal* | *length* | *initial* | ;

italics oblique
normal small-caps
normal , bold 100 900 .
% , px , em CSS
% , px , em CSS
.
red , #00FF00 , hsl (240, 100%, 50%) CSS
. normal , ultra-condensed , extra-condensed , condensed , semi-condensed , semi-expanded , expanded , ultra-expanded extra-expanded ultra-expanded
start , end , left , right , center , right justify , match-parent
none , underline , overline , line-through , initial , inherit ;

- text-shadow

Examples

HTML :

```
<div id="element-one">Hello I am some text.</div>  
<div id="element-two">Hello I am some smaller text.</div>
```

CSS :

```
#element-one {  
    font-size: 30px;  
}  
  
#element-two {  
    font-size: 10px;  
}
```

#element-one 30px #element-two 10px .

:

```
element {  
    font: [font-style] [font-variant] [font-weight] [font-size/line-height] [font-family];  
}
```

font .font .

p 20px Arial .

```
p {  
    font-weight: bold;  
    font-size: 20px;  
    font-family: Arial, sans-serif;  
}
```

.

```
p {  
    font: bold 20px Arial, sans-serif;  
}
```

: font-style , font-variant , font-weight line-height . . font-size font-family .

.

:

- font-style: normal;
- font-variant: normal;
- font-weight: normal;

- font-stretch: normal;
- font-size: medium;
- line-height: normal;
- font-family -

```
font-family: 'Segoe UI', Tahoma, sans-serif;
```

"Segoe UI" . Tahoma sans-serif . "Segoe UI" .

```
font-family: Consolas, 'Courier New', monospace;
```

"Consolas" . "Courier New" .

```
h2 {
  /* adds a 1px space horizontally between each letter;
  also known as tracking */
  letter-spacing: 1px;
}
```

letter-spacing .

! letter-spacing .

```
p {
  letter-spacing: -1px;
}
```

: <https://developer.mozilla.org/en-US/docs/Web/CSS/letter-spacing>

text-transform . uppercase , capitalize , lowercase , initial , inherit none

CSS :

```
.example1 {
  text-transform: uppercase;
}
.example2 {
  text-transform: capitalize;
}
.example3 {
  text-transform: lowercase;
}
```

HTML

```
<p class="example1">
  all letters in uppercase <!-- "ALL LETTERS IN UPPERCASE" -->
</p>
<p class="example2">
  all letters in capitalize <!-- "All Letters In Capitalize (Sentence Case)" -->
</p>
```

```
<p class="example3">
  all letters in lowercase <!-- "all letters in lowercase" -->
</p>
```

```
p {
  text-indent: 50px;
}
```

text-indent .

:

- ?
- <https://www.w3.org/TR/CSS21/text.html#propdef-text-indent>
- <https://developer.mozilla.org/en-US/docs/Web/CSS/text-indent>

text-decoration text-decoration .

```
h1 { text-decoration: none; }
h2 { text-decoration: overline; }
h3 { text-decoration: line-through; }
h4 { text-decoration: underline; }
```

.

```
.title { text-decoration: underline dotted blue; }
```

```
.title {
  text-decoration-style: dotted;
  text-decoration-line: underline;
  text-decoration-color: blue;
}
```

Firefox .

-
-
-
-

text-overflow . ellipsis .

```
.text {
  overflow: hidden;
  text-overflow: ellipsis;
}
```

text-overflow: ellipsis . CSS flexbox .

```
.giveMeEllipsis {
  overflow: hidden;
}
```

```
text-overflow: ellipsis;
display: -webkit-box;
-webkit-box-orient: vertical;
-webkit-line-clamp: N; /* number of lines to show */
line-height: X;        /* fallback */
max-height: X*N;       /* fallback */
}
```

(Chrome Safari) :

<http://jsfiddle.net/csYjC/1131/>

:

<https://www.w3.org/TR/2012/WD-css3-ui-20120117/#text-overflow0>

word-spacing .

- (em px vh cm) (%)
- normal .
- inherit .

CSS

```
.normal { word-spacing: normal; }
.narrow { word-spacing: -3px; }
.extensive { word-spacing: 10px; }
```

HTML

```
<p>
  <span class="normal">This is an example, showing the effect of "word-spacing".</span><br>
  <span class="narrow">This is an example, showing the effect of "word-spacing".</span><br>
  <span class="extensive">This is an example, showing the effect of "word-spacing".</span><br>
</p>
```

:

- - [MDN](#)
- - [w3.org](#)

```
div {
  direction: ltr; /* Default, text read from left-to-right */
}
.ex {
  direction: rtl; /* text read from right-to-left */
}
.horizontal-tb {
  writing-mode: horizontal-tb; /* Default, text read from left-to-right and top-to-bottom.
*/
}
.vertical-rtl {
  writing-mode: vertical-rl; /* text read from right-to-left and top-to-bottom */
}
```

```
.vertical-ltr {
  writing-mode: vertical-rl; /* text read from left-to-right and top to bottom */
}
```

direction .

```
:direction: ltr | rtl | initial | inherit;
```

writing-mode .

```
:direction: horizontal-tb | vertical-rl | vertical-lr;
```

:

.

.

CSS :

```
.smallcaps{
  font-variant: small-caps;
}
```

HTML :

```
<p class="smallcaps">
  Documentation about CSS Fonts
  <br>
  aNd ExAmPLe
</p>
```

:

DOCUMENTATION ABOUT CSS FONTS
AND EXAMPLE

: font-variant font-variant-caps, font-variant-numeric, font-variant-alternates, font-variant-ligatures
font-variant-east-asian .

quotes <q> .

```
q {
  quotes: "«" "»";
}
```

text-shadow . .

```
text-shadow: horizontal-offset vertical-offset blur color;
```

```
h1 {  
  text-shadow: 2px 2px #0000FF;  
}
```

.

blur radius .

```
h1 {  
  text-shadow: 2px 2px 10px #0000FF;  
}
```

```
h1 {  
  text-shadow: 0 0 3px #FF0000, 0 0 5px #0000FF;  
}
```

: <https://riptutorial.com/ko/css/topic/427/>

54:

- : |;
- : |;
- border-spacing : <> | <> <>;
- : |;
- : |;

<table> (*) display: table display: inline-table display: inline-table HTML display: inline-table

(*) <table> UA / display: table display: table

HTML . . CSS .

Examples

table-layout table-layout .

width: 150px :

First name	Last name	Homeworld
Luke	Skywalker	Tatooine
Leia	Organa	Alderaan

First name	Last name	Homeworld
Luke	Skywalker	Tatooine
Leia	Organa	Alderaan

table-layout: auto , table-layout: fixed . (150px 210px) . 150 .

First name	Last name	Homeworld
Luke	Skywalker	Tatooine
Leia	Organa	Alderaan

border-collapse .

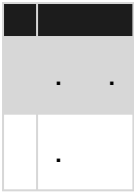
border-collapse .

First name	Last name	Homeworld
Luke	Skywalker	Tatooine
Leia	Organa	Alderaan

First name	Last name	Homeworld
Luke	Skywalker	Tatooine
Leia	Organa	Alderaan

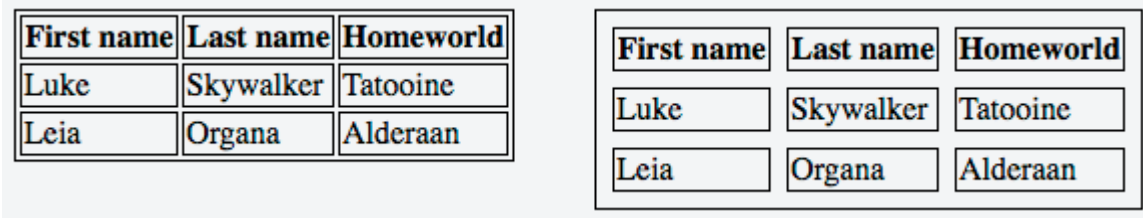
border-collapse: separate border-collapse: separate border-collapse: separate border-collapse: collapse .





`border-spacing` `.border-collapse` `separate` `.`

`border-spacing` `.`



`border-spacing: 2px` `border-spacing: 2px ()` `border-spacing: 8px` `.`

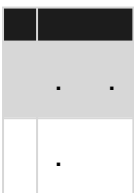


`empty-cells` `.border-collapse` `separate` `.`

`empty-cells` `.`



`empty-cells: show` `empty-cells: hide` `empty-cells: hide` `empty-cells: show` `empty-cells: hide` `.`



:

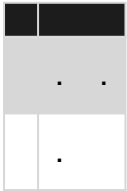
- <https://www.w3.org/TR/CSS21/tables.html#empty-cells>
- <https://developer.mozilla.org/en-US/docs/Web/CSS/empty-cells>
- <http://codepen.io/SitePoint/pen/yfhtq>
- <https://css-tricks.com/almanac/properties/e/empty-cells/>

`caption-side` `<caption>` `.` `.`

`caption-side` `.`

Star Wars figures		
First name	Last name	Homeworld
Luke	Skywalker	Tatooine
Leia	Organa	Alderaan

caption-side: top caption-side: bottom .



: <https://riptutorial.com/ko/css/topic/1074/>

55:

- : | | | | | | | ;
- Z- : | *number* | initial | ;

. Z- .	
left:20px	20 20 left:20px
.	
() .	
.	
.	
. position: static position: fixed .	
. .	

1..

Examples

. .

```
#stickyDiv {  
  position:fixed;  
  top:10px;  
  left:10px;  
}
```

Z-

(position relative , absolute fixed) z-index .

Z- Z .

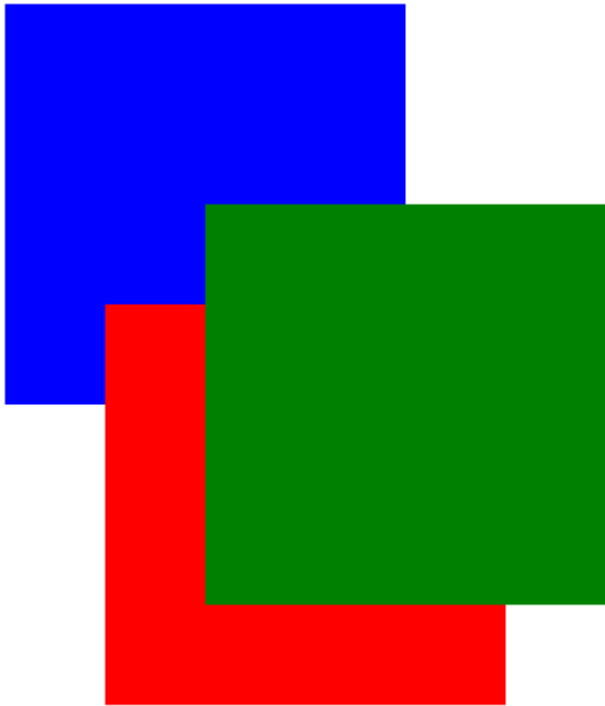
Z- 3 Z- 2 Z- 1 .

HTML

```
<div id="div1"></div>
<div id="div2"></div>
<div id="div3"></div>
```

CSS

```
div {
  position: absolute;
  height: 200px;
  width: 200px;
}
div#div1 {
  z-index: 1;
  left: 0px;
  top: 0px;
  background-color: blue;
}
div#div2 {
  z-index: 3;
  left: 100px;
  top: 100px;
  background-color: green;
}
div#div3 {
  z-index: 2;
  left: 50px;
  top: 150px;
  background-color: red;
}
```



[JSFiddle](#) .

```
z-index: [ number ] | auto;
```

number	. z-index	. 0 . .
--------	-----------	---------

auto	. ()
------	-------

[z-index](#) [z-index](#) [CSS 3D](#) [. z-index](#) ([: Z-](#) [?](#)). [static](#) .

[Mozilla](#) [CSS](#) [z-](#) .

. :

- 1.
- 2.
- 3.
- 4.

```
.relpos{
  position:relative;
  top:20px;
  left:30px;
}
```

class = "relpos" 20px 30px .

. :

- 1.
- 2.
- 3.
- 4.

.

```
.abspos{  
  position:absolute;  
  top:0px;  
  left:500px;  
}
```

class="abspos" 0px 500px .

static . [MDN](#) .

., ., ., ., Z- .

```
.element{  
  position:static;  
}
```

: <https://riptutorial.com/ko/css/topic/935/>

56:

- : ()
- filter : (none);
- : ();
- : blur (px)
- : (| %)
- : (| %)
- : (xx xp px -)
- : (| %)
- : hue-rotate (deg)
- : (| %)
- : (| %)
- : (| %)
- : (| %)

(x)	x .
(x)	1.0 100 % . .
(x)	1.0 100 % . . .
(h, v, x, y, z)	. h v . x, y z .
(x)	1.0 100 %.
- (x)	.
(x)	1.0 100 % .
(x)	/ 1.0 100 % .
(x)	1.0 100 % . . .
(x)	1.0 100 % .

1. -webkit . .
2. . .
3. filter: drop-shadow() box-shadow . filter: opacity() opacity .
4. / jQuery . Javascript object.style.WebkitFilter .
5. [W3Schools](#) [MDN](#) .
6. W3Schools .

Examples

()

HTML

```
<p>My shadow always follows me.</p>
```

CSS

```
p {  
  -webkit-filter: drop-shadow(10px 10px 1px green);  
  filter: drop-shadow(10px 10px 1px green);  
}
```

My shadow always follows me.
My shadow always follows me.

HTML

```
<img src='donald-duck.png' alt='Donald Duck' title='Donald Duck' />
```

CSS

```
img {  
  -webkit-filter: brightness(200%) grayscale(100%) sepia(100%) invert(100%);  
  filter: brightness(200%) grayscale(100%) sepia(100%) invert(100%);  
}
```



HTML

```
<img src='donald-duck.png' alt='Donald Duck' title='Donald Duck' />
```

CSS

```
img {  
  -webkit-filter: hue-rotate(120deg);  
  filter: hue-rotate(120deg);  
}
```



HTML

```
<div></div>
```

CSS

```
div {  
  width: 100px;  
  height: 100px;  
  background-color: white;  
  -webkit-filter: invert(100%);  
  filter: invert(100%);  
}
```



HTML

```
<img src='donald-duck.png' alt='Donald Duck' title='Donald Duck' />
```

CSS

```
img {  
  -webkit-filter: blur(1px);  
  filter: blur(1px);  
}
```



[: https://riptutorial.com/ko/css/topic/1567/-](https://riptutorial.com/ko/css/topic/1567/)

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