

Frontend Framework

Bootstrap

What is Bootstrap?

- Frontend framework
 - CSS/JavaScript
- Supports building web pages/responsive web pages
 - Increase dev. Speed
 - Cross browser compatibility
- Current version: Bootstrap 5
 - Mobile first
- Was created at Twitter in 2010

Setting up

- Download from <https://getbootstrap.com/docs/5.0/getting-started/download/>
- CDN

```
<link  
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOmLASjC" crossorigin="anonymous">
```

```
<script  
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsP1UyJoMp4YLEuNSfAP+JcXn/tWtIaxVXM" crossorigin="anonymous"></script>
```

- Package managers
 - npm install bootstrap
 - yarn add bootstrap

or

Template

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Test Basic Bootstrap</title>
    <!-- Bootstrap CSS -->
    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet" integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTWFspD3yD65VohhpUuCOmLASjC" crossorigin="anonymous" >
  </head>
  <body>
    <h1>Hello World!!</h1>
    <!-- Bootstrap JS -->
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsP1UyJoMp4YLEuNSfAP+JcXn/tWtIaxVXM"
crossorigin="anonymous"></script>
  </body>
</html>
```

Layout

Grid system

- Container for Layout
- .container
 - Max width at each breakpoint
- .container-fluid
 - 100% width at all breakpoint
- .container-[breakpoint]
 - 100% width until specific breakpoint

Conclusion table for container

Classes Bootstrap Grid System	X-Small <576px	Small ≥576px	Medium ≥768px	Large ≥992px	X-Large ≥1200px	XX-Large ≥1400px
<code>.container</code>	100%	540px	720px	960px	1140px	1320px
<code>.container-sm</code>	100%	540px	720px	960px	1140px	1320px
<code>.container-md</code>	100%	100%	720px	960px	1140px	1320px
<code>.container-lg</code>	100%	100%	100%	960px	1140px	1320px
<code>.container-xl</code>	100%	100%	100%	100%	1140px	1320px
<code>.container-xxl</code>	100%	100%	100%	100%	100%	1320px
<code>.container-fluid</code>	100%	100%	100%	100%	100%	100%

Grid system

- 12 columns per row
- 6 default responsive tiers

Features	X-Small (xs)	Small (sm)	Medium (md)	Large (lg)	X-Large (xl)	XX-Large (xxl)
Bootstrap Grid System	<576px	≥576px	≥768px	≥992px	≥1200px	≥1400px
Container max-width	None (auto)	540px	720px	960px	1140px	1320px
Class prefix	.col-	.col-sm-	.col-md-	.col-lg-	.col-xl-	.col-xxl-
Number of columns	12					
Gutter width	1.5rem (.75rem on left and right)					
Custom gutters	Yes					
Nestable	Yes					
Column ordering	Yes					

Example:

```
<div class="container">
  <div class="row">
    <div class="col-6 border">left side</div>
    <div class="col-6 border">right side</div>
  </div>
</div>
```

This is heading

This is paragraph of text

left side

right side

Display 2 columns at any view port width

Example

```
<div class="container">
  <div class="row">
    <div class="col-md-6 border">left side</div>
    <div class="col-md-6 border">right side</div>
  </div>
</div>
```

This is heading

This is paragraph of text

View port width \geq 768px

left side

right side

This is heading

This is paragraph of text

left side

right side

View port width $<$ 768px

Auto layout

- .col

```
<div class="container">
  <div class="row">
    <div class="col border">left side</div>
    <div class="col border">middle</div>
    <div class="col border">right side</div>
  </div>
</div>
```

This is heading

This is paragraph of text

left side

middle

right side

Column wrapping

```
<div class="container">
  <div class="row">
    <div class="col-md-4 border">left side</div>
    <div class="col-md-8 border">middle</div>
    <div class="col-md-12 border">right side</div>
  </div>
</div>
```

View port width \geq 768px

This is heading

This is paragraph of text

left side

middle

right side

Responsive layout

```
<div class="container">
  <div class="row">
    <div class="col-sm-6 col-md-4 border">left side</div>
    <div class="col-sm-6 col-md-4 border">middle</div>
    <div class="col-sm-6 col-md-4 border">right side</div>
  </div>
</div>
```

View port width \geq 768px

This is heading

This is paragraph of text

left side

middle

right side

This is heading

This is paragraph of text

left side

middle

right side

View port width $<$ 768px

Responsive layout (cont.)

```
<div class="container">
  <div class="row">
    <div class="col-sm-6 col-md-4 border">left side</div>
    <div class="col-sm-6 col-md-4 border">middle</div>
    <div class="col-sm-12 col-md-4 border">right side</div>
  </div>
</div>
```

View port width \geq 768px

This is heading

This is paragraph of text

left side

middle

right side

This is heading

This is paragraph of text

left side

middle

right side

View port width $<$ 768px

Nested

```
<div class="container">
  <div class="row">
    <div class="col-sm-6 col-md-4 border">left side</div>
    <div class="col-sm-6 col-md-4 border">middle</div>
    <div class="col-sm-12 col-md-4 border">right side
      <div class="row">
        <div class="col border">left</div>
        <div class="col border">right</div>
      </div>
    </div>
  </div>
</div>
```

View port width $\geq 768\text{px}$

This is heading

This is paragraph of text

left side

middle

right side

left

right

This is heading

This is paragraph of text

left side

middle

right side

left

right

View port width $< 768\text{px}$

Flexbox

- Class d-flex or d-inline-flex for container
 - d-xx-flex or d-xx-inline-flex (xx=sm,md,lg,..)
- Horizontal direction
 - .flex-row (default)
- Right-align horizontal direction
 - .flex-row-reverse
- Vertical direction
 - .flex-column
- Right-align vertical direction
 - .flex-column-reverse

Flexbox (cont.)

- Wrap item in flex container
 - .flex-wrap
 - .flex-wrap-reverse
 - .flex-nowrap (default)
- Align flex items (multirow)
 - .align-content-[option] (no effect on single row)
 - where [option] can be:
 - start (default)
 - end
 - center
 - around
 - stretch

Flexbox (cont.)

- Align flex item (single row)
 - .align-items-[option]
 - where [option] can be:
 - start (default)
 - end
 - center
 - around
 - stretch

Flexbox (cont.)

- Flexbox classes applied to the flex items
- `.flex-fill`
 - Equal width of items
- `.flex-grow-1`
 - To take up the rest of the space
- `.order-n`
 - Change visual order of items
 - n is number from 0 – 5, lower number – higher priority
- `.align-self-[option]`
 - Control vertical alignment of a specific flex item
 - Same [option] as align flex item

[Example: <https://getbootstrap.com/docs/4.0/utilities/flex/>]

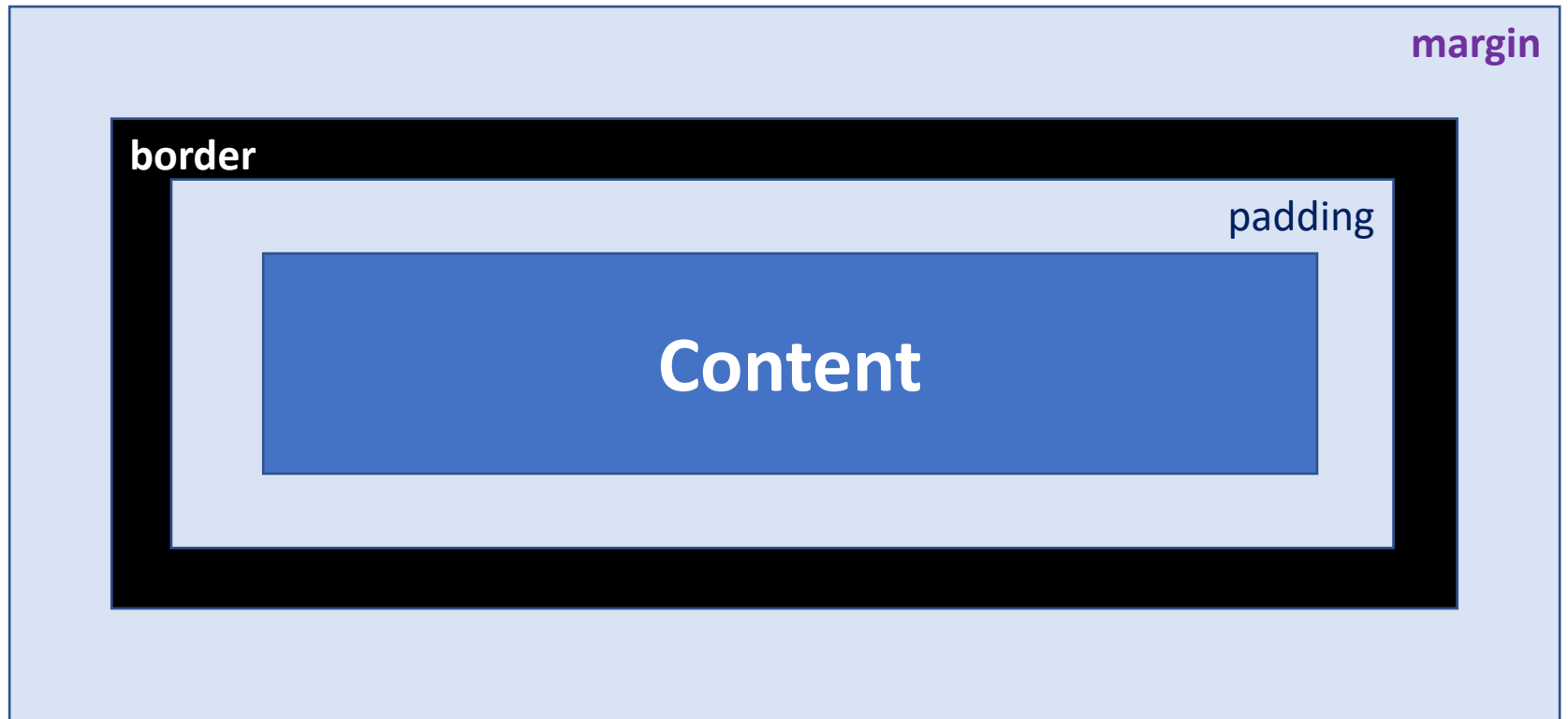
Display

- .d-inline
- .d-inline-block
- .d-block

[Example: <https://getbootstrap.com/docs/4.0/utilities/display/>]

Spacing

Box model



margin

- .m[side]-[size]
- Sides:
 - t = top
 - b = bottom
 - s = left (start)
 - e = right (end)
 - x = horizontal (both left and right)
 - y = vertical (both top and bottom)
- Sizes:
 - 0 – 5 and auto

padding

- .p[side]-[size]
- Sides:
 - t = top
 - b = bottom
 - s = left (start)
 - e = right (end)
 - x = horizontal (both left and right)
 - y = vertical (both top and bottom)
- Sizes:
 - 0 – 5 and auto

Border

- `.border`
 - Draw border line (all sides)
- `.border-[option]`
 - `[option]` can be
 - top, bottom, left, right
- `.rounded`
 - Rounded corner
- `.rounded-[option]`
 - Same `[option]` as `.border`
 - circle

[Example: <https://www.tutorialrepublic.com/twitter-bootstrap-4-tutorial/bootstrap-helper-classes.php>]

Sizing

Sizing

- Width
 - .w-[option]
 - Where [option] can be:
 - 25, 50, 75, 100 (in %)
 - Auto
- Height
 - .h-[option]
 - The same [option] as .width

Typography

Heading

- Heading
 - `<h1>` - `<h6>`
 - `.h1` - `.h6` classes
- Customizing heading
 - `<small>` + `.text-muted`
- Display heading with lighter font weight
 - `.display-n`
 - $n \Rightarrow 1 - 6$

Paragraph

- Make a paragraph stands out
 - .lead
- Text-alignment
 - .text-start (align left)
 - .text-center (align center)
 - .text-end (align right)
- Text formatting
 - HTML text formatting tags
 - Ex. , <i>, <small>, , , <code>
- Text transformation
 - .text-lowercase
 - .text-uppercase
 - .text-capitalize

Paragraph (cont.)

- Text coloring
 - .text-primary
 - .text-secondary
 - .text-success
 - etc. (for more, check out <https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-helper-classes.php>)
- Blockquotes
 - <blockquote>
 - .blockquote
 - .blockquote-footer

[Example: <https://www.tutorialrepublic.com/twitter-bootstrap-4-tutorial/bootstrap-typography.php>]

Forms

Creating form

- Classes

- .form-control
- .form-label
- .form-check-input (checkbox, radio)
- .btn (button)
 - .btn-[option] (button color)
 - .btn-outline-[option] (outline button and color)
 - [option] can be primary, secondary, success, danger, warning, info, light, dark
 - .btn-lg or .btn-sm (button size)
 - .btn-block (button with full width of a parent)

Form (cont.)

- Lay out
 - .form-row instead of .row in gr
 - Check boxes or radios on the same row
 - .form-check-inline

[Example: <https://www.tutorialrepublic.com/twitter-bootstrap-4-tutorial/bootstrap-forms.php>]

Navigation

Basic navigation

- Navigation container class: nav
- .nav modifier
 - .nav alignment
 - .justify-content-center
 - .justify-content-end
 - Column Nav.
 - .flex-column
 - Tab display
 - .nav-tabs
 - Pills display
 - .nav-pills
 - Can be used together with .flex-column

Basic navigation (cont.)

- Navigation items class: nav-item
 - Groups link, text, image of the same menu item together
- .nav-link represent link element of the menu item

[Example: <https://www.tutorialrepublic.com/twitter-bootstrap-4-tutorial/bootstrap-navs.php>]

References

- <https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/>
- <https://getbootstrap.com/docs/5.0/getting-started/introduction/>
- <https://www.w3schools.com/bootstrap5/index.php>