

# 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

<b>Classes</b> Bootstrap Grid System	<b>X-Small</b> <576px	<b>Small</b> ≥576px	<b>Medium</b> ≥768px	<b>Large</b> ≥992px	<b>X-Large</b> ≥1200px	<b>XX-Large</b> ≥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/> ]

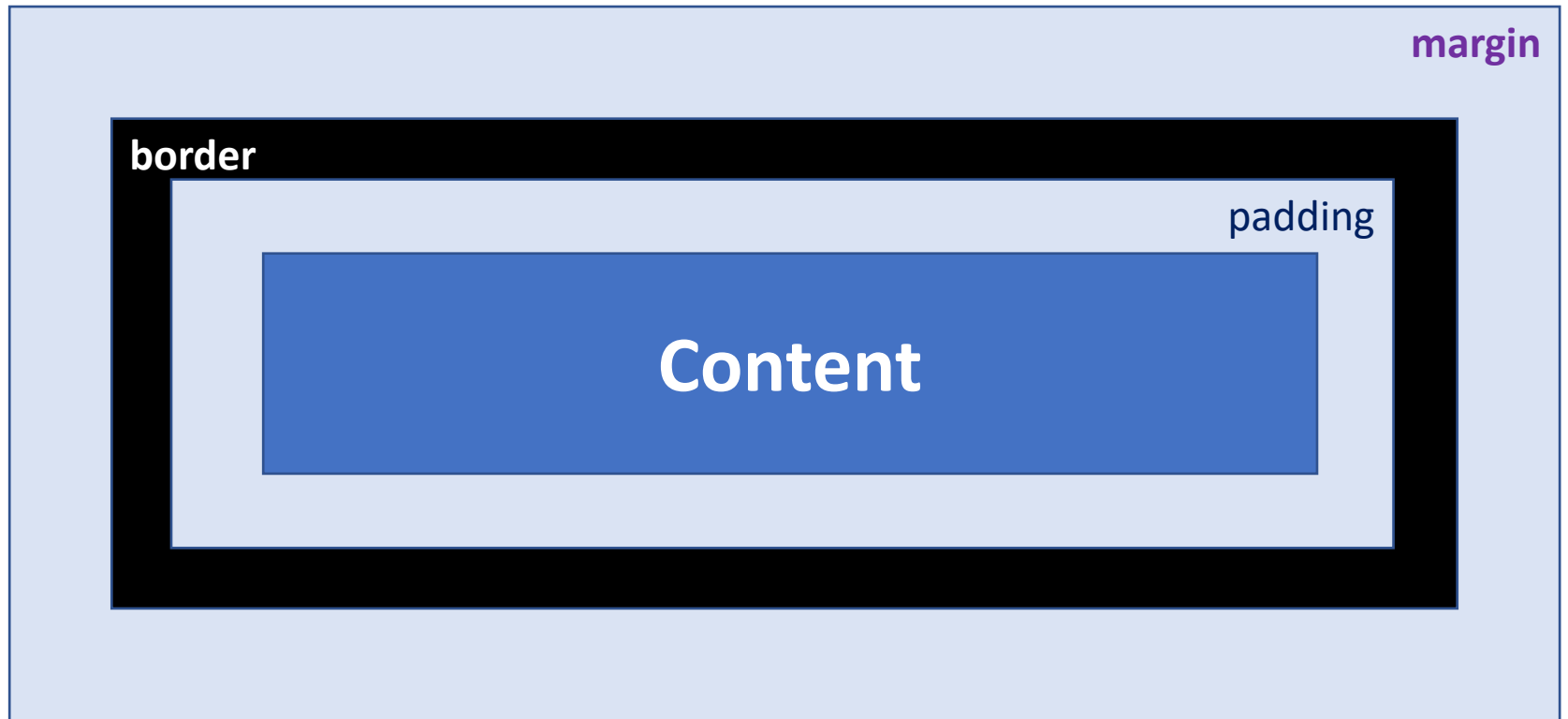
# Display

- .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 => 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. <strong>, <i>, <small>, <b>, <em>, <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>