

Lecture 12

Bootstrap 4 Tutorial

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Bootstrap 4 Get Started

What is Bootstrap?

- Bootstrap is a free front-end framework for faster and easier web development
- Bootstrap includes HTML and CSS based **design templates** for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins
- Bootstrap also gives you the ability to easily create **responsive** designs

What is Responsive Web Design?

Responsive web design is about creating web sites which **automatically adjust themselves to look good on all devices**, from small phones to large desktops.

Bootstrap 3 vs. Bootstrap 4

Bootstrap 4 is the newest version of Bootstrap; with new components, faster stylesheet and more responsiveness.

Bootstrap 4 supports the latest, stable releases of all major browsers and platforms. However, Internet Explorer 9 and down is not supported.

If you require IE8-9 support, use [Bootstrap 3](#). It is the most stable version of Bootstrap, and it is still supported by the team for critical bugfixes and documentation changes. However, no new features will be added to it.

Dropped icon support: Bootstrap 4 does not support BS3 Glyphicons. Use [Font-Awesome or other icon libraries instead](#).

Why Use Bootstrap?

Advantages of Bootstrap:

- **Easy to use:** Anybody with just basic knowledge of HTML and CSS can start using Bootstrap
- **Responsive features:** Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
- **Mobile-first approach:** In Bootstrap, mobile-first styles are part of the core framework
- **Browser compatibility:** Bootstrap 4 is compatible with all modern browsers (Chrome, Firefox, Internet Explorer 10+, Edge, Safari, and Opera)

Where to Get Bootstrap 4?

There are two ways to start using Bootstrap 4 on your own web site.

You can:

- Include Bootstrap 4 from a [CDN](#)
- Download Bootstrap 4 from [getbootstrap.com](#)

Bootstrap 4 CDN

If you don't want to download and host Bootstrap 4 yourself, you can include it from a CDN (Content Delivery Network).

MaxCDN provides CDN support for Bootstrap's CSS and JavaScript. You must also include jQuery:

MaxCDN:

```
<!-- Latest compiled and minified CSS -->
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.1.3/css/bootstrap.min.css">

<!-- jQuery library -->
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>

<!-- Popper JS -->
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.3/umd/popper.min.js"></script>

<!-- Latest compiled JavaScript -->
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.1.3/js/bootstrap.min.js"></script>
```

One advantage of using the Bootstrap 4 CDN:

Many users already have downloaded Bootstrap 4 from MaxCDN when visiting another site. As a result, it will be loaded **from cache** when they visit your site, which leads to faster loading time. Also, most CDN's will make sure that once a user requests a file from it, it will be served **from the server closest** to them, which also leads to faster loading time.

jQuery and Popper?

Bootstrap 4 use jQuery and Popper.js for JavaScript components (like modals, tooltips, popovers etc). However, if you just use the CSS part of Bootstrap, you don't need them.

Components that require jQuery >>

- Closable alerts
- Buttons and checkboxes/radio buttons for toggling states
- Carousel for slides, controls, and indicators
- Collapse for toggling content
- Dropdowns (also requires Popper.js for perfect positioning)
- Modals (open and close)
- Navbar (for collapsible menus)
- Tooltips and popovers (also requires Popper.js for perfect positioning)
- Scrollspy for scroll behavior and navigation updates

Create First Web Page With Bootstrap 4

1. Add the HTML5 doctype

Bootstrap 4 uses HTML elements and CSS properties that require the HTML5 doctype.

Always include the HTML5 doctype at the beginning of the page, along with the lang attribute and the correct character set:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
  </head>
</html>
```

2. Bootstrap 4 is mobile-first

Bootstrap 4 is designed to be responsive to mobile devices. Mobile-first styles are part of the core framework.

To ensure proper rendering and touch zooming, add the following `<meta>` tag inside the `<head>` element:

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

The `width=device-width` part sets the width of the page to follow the screen-width of the device (which will vary depending on the device).

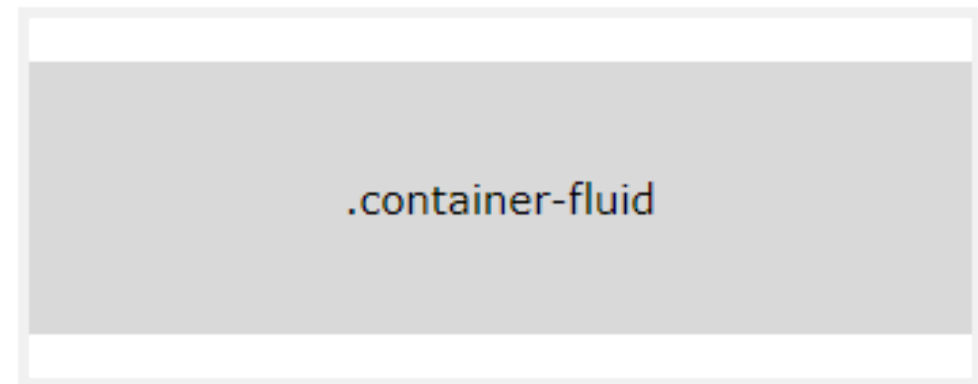
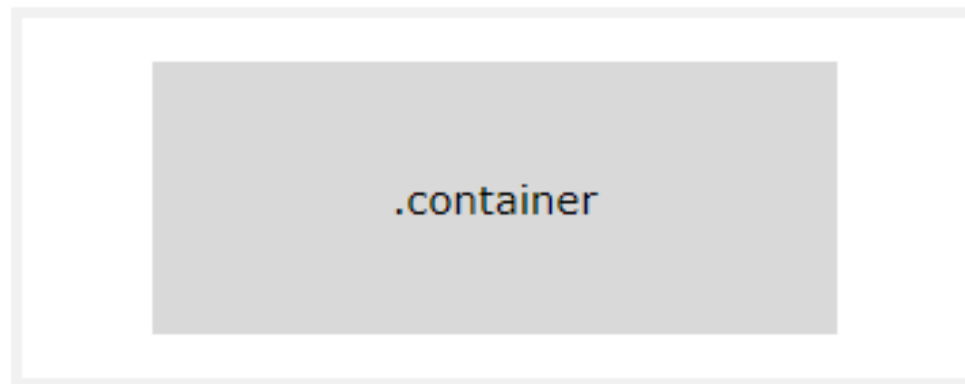
The `initial-scale=1` part sets the initial zoom level when the page is first loaded by the browser.

3. Containers

Bootstrap 4 also requires a containing element to wrap site contents.

There are two container classes to choose from:

1. The `.container` class provides a responsive fixed width container
2. The `.container-fluid` class provides a full width container, spanning the entire width of the viewport



Two Basic Bootstrap 4 Pages

The following example shows the code for a basic Bootstrap 4 page (with a responsive fixed width container):

Container Example

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap 4 Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.1.3/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.3/umd/popper.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.1.3/js/bootstrap.min.js"></script>
</head>
<body>

<div class="container">
  <h1>My First Bootstrap Page</h1>
  <p>This is some text.</p>
</div>

</body>
</html>
```

[1. Try it Yourself >>](#)

The following example shows the code for a basic Bootstrap 4 page (with a full width container):

Container Fluid Example

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap 4 Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.1.3/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.3/umd/popper.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.1.3/js/bootstrap.min.js"></script>
</head>
<body>

<div class="container-fluid">
  <h1>My First Bootstrap Page</h1>
  <p>This is some text.</p>
</div>

</body>
</html>
```

[2. Try it Yourself >>](#)

Bootstrap 4 Grids

Bootstrap 4 Grid System

Bootstrap's grid system is built with flexbox and allows up to 12 columns across the page.

If you do not want to use all 12 columns individually, you can group the columns together to create wider columns:

span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1
span 4				span 4				span 4			
span 4				span 8							
span 6						span 6					
span 12											

The grid system is responsive, and the columns will re-arrange automatically depending on the screen size.

Make sure that the sum adds up to 12 or fewer (it is not required that you use all 12 available columns).

Grid Classes

The Bootstrap 4 grid system has five classes:

.col- (extra small devices - screen width less than 576px)

.col-sm- (small devices - screen width equal to or greater than 576px)

.col-md- (medium devices - screen width equal to or greater than 768px)

.col-lg- (large devices - screen width equal to or greater than 992px)

.col-xl- (xlarge devices - screen width equal to or greater than 1200px)

The classes above can be combined to create more dynamic and flexible layouts.

Tip: Each class scales up, so if you wish to set the same widths for **sm** and **md**, you only need to specify **sm**.

Basic Structure of a Bootstrap 4 Grid

The following is a basic structure of a Bootstrap 4 grid:

```
<!-- Control the column width, and how they should appear on different devices -->
<div class="row">
  <div class="col-*-*"></div>
  <div class="col-*-*"></div>
</div>
<div class="row">
  <div class="col-*-*"></div>
  <div class="col-*-*"></div>
  <div class="col-*-*"></div>
</div>

<!-- Or let Bootstrap automatically handle the layout -->
<div class="row">
  <div class="col"></div>
  <div class="col"></div>
  <div class="col"></div>
</div>
```

create a row (`<div class="row">`). Then, add the desired number of columns (tags with appropriate `.col-*-*` classes). The first star (*) represents the responsiveness: sm, md, lg or xl, while the second star represents a number, which should add up to 12 for each row.

instead of adding a number to each `col`, let bootstrap handle the layout, to create equal width columns: two `"col"` elements = 50% width to each col. three cols = 33.33% width to each col. four cols = 25% width, etc. You can also use `.col-sm|md|lg|xl` to make the columns responsive.

Three Equal Columns

.col	.col	.col
------	------	------

The following example shows how to create three equal-width columns, on all devices and screen widths:

Example

```
<div class="row">  
  <div class="col">.col</div>  
  <div class="col">.col</div>  
  <div class="col">.col</div>  
</div>
```

[3. Try it Yourself >>](#)

Responsive Columns

.col-sm-3	.col-sm-3	.col-sm-3	.col-sm-3
-----------	-----------	-----------	-----------

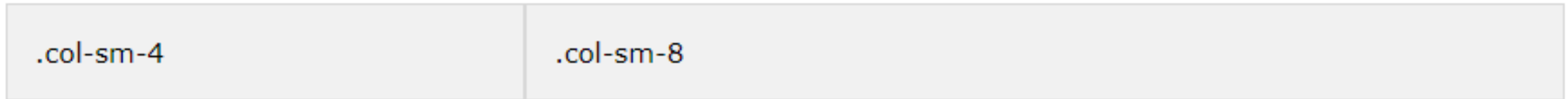
The following example shows how to create four equal-width columns starting at tablets and scaling to extra large desktops. **On mobile phones or screens that are less than 576px wide, the columns will automatically stack on top of each other:**

Example

```
<div class="row">
  <div class="col-sm-3">.col-sm-3</div>
  <div class="col-sm-3">.col-sm-3</div>
  <div class="col-sm-3">.col-sm-3</div>
  <div class="col-sm-3">.col-sm-3</div>
</div>
```

[4. Try it Yourself >>](#)

Two Unequal Responsive Columns



The following example shows how to get two various-width columns starting at tablets and scaling to large extra desktops:

Example

```
<div class="row">  
  <div class="col-sm-4">.col-sm-4</div>  
  <div class="col-sm-8">.col-sm-8</div>  
</div>
```

[5. Try it Yourself >>](#)

Bootstrap 4 Text/Typography

Bootstrap 4 Default Settings

Bootstrap 4 uses a default **font-size** of 16px, and its **line-height** is 1.5.

The default **font-family** is "Helvetica Neue", Helvetica, Arial, sans-serif.

In addition, all **<p>** elements have **margin-top: 0** and **margin-bottom: 1rem** (16px by default).

<h1> - <h6>

Bootstrap 4 styles HTML headings (<h1> to <h6>) with a bolder font-weight and an increased font-size:

Example

h1 Bootstrap heading (2.5rem = 40px)

h2 Bootstrap heading (2rem = 32px)

h3 Bootstrap heading (1.75rem = 28px)

h4 Bootstrap heading (1.5rem = 24px)

h5 Bootstrap heading (1.25rem = 20px)

h6 Bootstrap heading (1rem = 16px)

[6. Try it Yourself >>](#)

Display Headings

Display headings are used to stand out more than normal headings (larger font-size and lighter font-weight), and there are four classes to choose from: `.display-1`, `.display-2`, `.display-3`, `.display-4`

Example

Display 1

Display 2

Display 3

Display 4

[7. Try it Yourself >>](#)

<small>

In Bootstrap 4 the HTML `<small>` element is used to create a lighter, secondary text in any heading:

Example

h1 heading secondary text

h2 heading secondary text

h3 heading secondary text

h4 heading secondary text

h5 heading secondary text

h6 heading secondary text

[8. Try it Yourself >>](#)

<mark>

Bootstrap 4 will style the HTML `<mark>` element with a yellow background color and some padding:

Example

Use the mark element to highlight text.

```
<div class="container">
  <h1>Highlight Text</h1>
  <p>Use the mark element to <mark>highlight</mark> text.</p>
</div>
```

[9. Try it Yourself >>](#)

<abbr>

Bootstrap 4 will style the HTML `<abbr>` element with a dotted border bottom:

Example

The WHO was founded in 1948.

```
<div class="container">
  <h1>Abbreviations</h1>
  <p>The abbr element is used to mark up an abbreviation or acronym:</p>
  <p>The <abbr title="World Health Organization">WHO</abbr> was founded in 1948.</p>
</div>
```

[10. Try it Yourself >>](#)

<blockquote>

Add the `.blockquote` class to a `<blockquote>` when quoting blocks of content from another source:

Example

For 50 years, WWF has been protecting the future of nature. The world's leading conservation organization, WWF works in 100 countries and is supported by 1.2 million members in the United States and close to 5 million globally.

— From WWF's website

[11. Try it Yourself >>](#)

<dl>

Bootstrap 4 will style the HTML `<dl>` element in the following way:

Example

Coffee

- black hot drink

Milk

- white cold drink

[12. Try it Yourself >>](#)

<code>

Bootstrap 4 will style the HTML `<code>` element in the following way:

Example

The following HTML elements: `span`, `section`, and `div` defines a section in a document.

[13. Try it Yourself >>](#)

<kbd>

Bootstrap 4 will style the HTML `<kbd>` element in the following way:

Use `ctrl + p` to open the Print dialog box.

14. Try it Yourself >>

<pre>

Bootstrap 4 will style the HTML `<pre>` element in the following way:

Example

```
Text in a pre element  
is displayed in a fixed-width  
font, and it preserves  
both      spaces and  
line breaks.
```

[15. Try it Yourself >>](#)

Bootstrap 4 Colors

Text Colors

Bootstrap 4 has some contextual classes that can be used to provide "meaning through colors".

The classes for text colors are: `.text-muted`, `.text-primary`, `.text-success`, `.text-info`, `.text-warning`, `.text-danger`, `.text-secondary`, `.text-white`, `.text-dark`, `.text-body` (default body color/often black) and `.text-light`:

This text is muted.

This text is important.

This text indicates success.

This text represents some information.

This text represents a warning.

This text represents danger.

Secondary text.

Dark grey text.

Body text.

[16. Try it Yourself >>](#)

Background Colors

The classes for background colors are: `.bg-primary`, `.bg-success`, `.bg-info`, `.bg-warning`, `.bg-danger`, `.bg-secondary`, `.bg-dark` and `.bg-light`.

Note that background colors do not set the text color, so in some cases you'll want to use them together with a `.text-*` class.

This text is important.

This text indicates success.

This text represents some information.

This text represents a warning.

This text represents danger.

Secondary background color.

Dark grey background color.

Light grey background color.

[17. Try it Yourself >>](#)

Bootstrap 4 Tables

Bootstrap 4 Basic Table

A basic Bootstrap 4 table has a light padding and horizontal dividers.
The `.table` class adds basic styling to a table:

Firstname	Lastname	Email
John	Doe	john@example.com
Mary	Moe	mary@example.com
July	Dooley	july@example.com

[18. Try it Yourself >>](#)

Striped Rows

The `.table-striped` class adds zebra-stripes to a table:

Firstname	Lastname	Email
John	Doe	john@example.com
Mary	Moe	mary@example.com
July	Dooley	july@example.com

[19. Try it Yourself >>](#)

Bordered Table

The `.table-bordered` class adds borders on all sides of the table and cells:

Firstname	Lastname	Email
John	Doe	john@example.com
Mary	Moe	mary@example.com
July	Dooley	july@example.com

[20. Try it Yourself >>](#)

Hover Rows

The `.table-hover` class adds a hover effect (grey background color) on table rows:

Firstname	Lastname	Email
John	Doe	john@example.com
Mary	Moe	mary@example.com
July	Dooley	july@example.com

[21. Try it Yourself >>](#)

Black/Dark Table

The `.table-dark` class adds a black background to the table:

Firstname	Lastname	Email
John	Doe	john@example.com
Mary	Moe	mary@example.com
July	Dooley	july@example.com

[22. Try it Yourself >>](#)

Dark Striped Table

Combine `.table-dark` and `.table-striped` to create a dark, striped table:

Firstname	Lastname	Email
John	Doe	john@example.com
Mary	Moe	mary@example.com
July	Dooley	july@example.com

[23. Try it Yourself >>](#)

Contextual Classes

Contextual classes can be used to color the whole table (`<table>`), the table rows (`<tr>`) or table cells (`<td>`).

Firstname	Lastname	Email
Default	Defaultson	def@somemail.com
Primary	Joe	joe@example.com
Success	Doe	john@example.com
Danger	Moe	mary@example.com
Info	Dooley	july@example.com
Warning	Refs	bo@example.com
Active	Activeson	act@example.com
Secondary	Secondson	sec@example.com
Light	Angie	angie@example.com
Dark	Bo	bo@example.com

[24. Try it Yourself >>](#)

Bootstrap 4 Images

Rounded Corners

The `.rounded` class adds rounded corners to an image:

```

```

[25. Try it Yourself >>](#)

Circle

The `.rounded-circle` class shapes the image to a circle:

```

```

[26. Try it Yourself >>](#)

Thumbnail

The `.img-thumbnail` class shapes the image to a thumbnail (bordered):

```

```

[27. Try it Yourself >>](#)

Responsive Images

Images come in all sizes. So do screens. Responsive images automatically adjust to fit the size of the screen.

Create responsive images by adding an `.img-fluid` class to the `` tag. The image will then scale nicely to the parent element.

The `.img-fluid` class applies `max-width: 100%;` and `height: auto;` to the image:

```

```

[28. Try it Yourself >>](#)

Bootstrap 4 Jumbotron

Bootstrap 4 Jumbotron

A jumbotron indicates a **big grey box** for calling extra attention to some special content or information.

Tip: Inside a jumbotron you can put nearly any valid HTML, including other Bootstrap elements/classes.

Bootstrap Tutorial

Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile-first projects on the web.

Use a `<div>` element with class `.jumbotron` to create a jumbotron:

```
<div class="jumbotron">
  <h1>Bootstrap Tutorial</h1>
  <p>Bootstrap is the most popular HTML, CSS...</p>
</div>
```

[29. Try it Yourself >>](#)

Full-width Jumbotron

If you want a full-width jumbotron without rounded borders, add the `.jumbotron-fluid` class and a `.container` or `.container-fluid` inside of it:

```
<div class="jumbotron jumbotron-fluid">
  <div class="container">
    <h1>Bootstrap Tutorial</h1>
    <p>Bootstrap is the most popular HTML, CSS...</p>
  </div>
</div>
```

[30. Try it Yourself >>](#)

Bootstrap 4 Alerts

Bootstrap 4 Alerts

Bootstrap 4 provides an easy way to create **predefined** alert messages:

Success! This alert box indicates a successful or positive action.



Info! This alert box indicates a neutral informative change or action.



Warning! This alert box indicates a warning that might need attention.



Alerts are created with the **.alert** class, followed by one of the contextual classes **.alert-success**, **.alert-info**, **.alert-warning**, **.alert-danger**, **.alert-primary**, **.alert-secondary**, **.alert-light** or **.alert-dark**:

[31. Try it Yourself >>](#)

Alert Links

Add the **alert-link** class to any links inside the alert box to create "matching colored links":

Success! You should **read this message.**

Info! You should **read this message.**

Warning! You should **read this message.**

```
<div class="alert alert-success">
  <strong>Success!</strong> You should <a href="#" class="alert-link">read this
message</a>.
</div>
```

[32. Try it Yourself >>](#)

Closing Alerts

To close the alert message, add a `.alert-dismissible` class to the alert container. Then add `class="close"` and `data-dismiss="alert"` to a link or a button element (when you click on this the alert box will disappear).

```
<div class="alert alert-success alert-dismissible">
  <button type="button" class="close" data-dismiss="alert">&times;</button>
  <strong>Success!</strong> Indicates a successful or positive action.
</div>
```

[33. Try it Yourself >>](#)

Animated Alerts

The `.fade` and `.show` classes adds a fading effect when closing the alert message:

```
<div class="alert alert-danger alert-dismissible fade show">
```

[34. Try it Yourself >>](#)

Bootstrap 4 Buttons

Button Styles

Bootstrap 4 provides different styles of buttons:

```
<button type="button" class="btn">Basic</button>  
<button type="button" class="btn btn-primary">Primary</button>  
<button type="button" class="btn btn-secondary">Secondary</button>  
<button type="button" class="btn btn-success">Success</button>  
<button type="button" class="btn btn-info">Info</button>  
<button type="button" class="btn btn-warning">Warning</button>  
<button type="button" class="btn btn-danger">Danger</button>  
<button type="button" class="btn btn-dark">Dark</button>  
<button type="button" class="btn btn-light">Light</button>  
<button type="button" class="btn btn-link">Link</button>
```

[35. Try it Yourself >>](#)

Button Outline

Bootstrap 4 provides eight outline/bordered buttons:

```
<button type="button" class="btn btn-outline-primary">Primary</button>  
<button type="button" class="btn btn-outline-secondary">Secondary</button>  
<button type="button" class="btn btn-outline-success">Success</button>  
<button type="button" class="btn btn-outline-info">Info</button>  
<button type="button" class="btn btn-outline-warning">Warning</button>  
<button type="button" class="btn btn-outline-danger">Danger</button>  
<button type="button" class="btn btn-outline-dark">Dark</button>  
<button type="button" class="btn btn-outline-light text-dark">Light</button>
```

[36. Try it Yourself >>](#)

Bootstrap 4 Button Groups

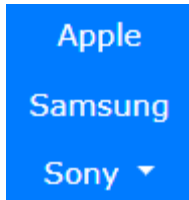
Button Groups

Bootstrap 4 allows you to group a series of buttons together (on a single line) in a button group: Use a `<div>` element with class `.btn-group` to create a button group:

```
<div class="btn-group">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <button type="button" class="btn btn-primary">Sony</button>
</div>
```

[37. Try it Yourself >>](#)

Vertical Button Group w/ Dropdown



```
<div class="btn-group-vertical">
  <button type="button" class="btn btn-primary">Apple</button>
  <button type="button" class="btn btn-primary">Samsung</button>
  <div class="btn-group">
    <button type="button" class="btn btn-primary dropdown-toggle" data-
toggle="dropdown">
      Sony
    </button>
    <div class="dropdown-menu">
      <a class="dropdown-item" href="#">Tablet</a>
      <a class="dropdown-item" href="#">Smartphone</a>
    </div>
  </div>
</div>
```

38. Try it Yourself >>

Bootstrap 4 Badges

Example heading

Badges are used to add additional information to any content. Use the `.badge` class together with a contextual class (like `.badge-secondary`) within `` elements to create rectangular badges. Note that badges scale to match the size of the parent element (if any):

```
<h1>Example heading <span class="badge badge-secondary">New</span></h1>
<h2>Example heading <span class="badge badge-secondary">New</span></h2>
<h3>Example heading <span class="badge badge-secondary">New</span></h3>
<h4>Example heading <span class="badge badge-secondary">New</span></h4>
<h5>Example heading <span class="badge badge-secondary">New</span></h5>
<h6>Example heading <span class="badge badge-secondary">New</span></h6>
```

[39. Try it Yourself >>](#)

Contextual Badges

Use any of the contextual classes (`.badge-*`) to change the color of a badge:

```
<span class="badge badge-primary">Primary</span>  
<span class="badge badge-secondary">Secondary</span>  
<span class="badge badge-success">Success</span>  
<span class="badge badge-danger">Danger</span>  
<span class="badge badge-warning">Warning</span>  
<span class="badge badge-info">Info</span>  
<span class="badge badge-light">Light</span>  
<span class="badge badge-dark">Dark</span>
```

[40. Try it Yourself >>](#)

Badge inside an Element

An example of using a badge inside a button:

```
<button type="button" class="btn btn-primary">  
  Messages <span class="badge badge-light">4</span>  
</button>
```

[41. Try it Yourself >>](#)

Bootstrap 4 Dropdowns

Basic Dropdown

A dropdown menu is a toggleable menu that allows the user to choose one value from a predefined list:

```
<div class="dropdown">
  <button type="button" class="btn btn-primary dropdown-toggle" data-
toggle="dropdown">
    Dropdown button
  </button>
  <div class="dropdown-menu">
    <a class="dropdown-item" href="#">Link 1</a>
    <a class="dropdown-item" href="#">Link 2</a>
    <a class="dropdown-item" href="#">Link 3</a>
  </div>
</div>
```

[42. Try it Yourself >>](#)

Dropdown Divider

The `.dropdown-divider` class is used to separate links inside the dropdown menu with a thin horizontal border:

```
<div class="dropdown-divider"></div>
```

[43. Try it Yourself >>](#)

Disable and Active items

Highlight a specific dropdown item with the `.active` class (adds a blue background color).

To disable an item in the dropdown menu, use the `.disabled` class (gets a light-grey text color and a "no-parking-sign" icon on hover):

```
<a class="dropdown-item active" href="#">Active</a>  
<a class="dropdown-item disabled" href="#">Disabled</a>
```

[44. Try it Yourself >>](#)

Split Button Dropdowns



```
<div class="btn-group">
  <button type="button" class="btn btn-primary">Sony</button>
  <button type="button" class="btn btn-primary dropdown-toggle dropdown-toggle-split" data-toggle="dropdown">
    </button>
  <div class="dropdown-menu">
    <a class="dropdown-item" href="#">Tablet</a>
    <a class="dropdown-item" href="#">Smartphone</a>
  </div>
</div>
```

[45. Try it Yourself >>](#)

Bootstrap 4 Navs

Nav Menus

If you want to create a simple horizontal menu, add the `.nav` class to a `` element, followed by `.nav-item` for each `` and add the `.nav-link` class to their links:

```
<ul class="nav">
  <li class="nav-item">
    <a class="nav-link" href="#">Link</a>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="#">Link</a>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="#">Link</a>
  </li>
  <li class="nav-item">
    <a class="nav-link disabled" href="#">Disabled</a>
  </li>
</ul>
```

[46. Try it Yourself >>](#)

Aligned Nav

Add the `.justify-content-center` class to center the nav, and the `.justify-content-end` class to right-align the nav.

```
<!-- Centered nav -->
<ul class="nav justify-content-center">

<!-- Right-aligned nav -->
<ul class="nav justify-content-end">
```

[47. Try it Yourself >>](#)

Tabs

Turn the nav menu into navigation tabs with the `.nav-tabs` class. Add the active class to the active/current link. If you want the tabs to be togglable, see the last example on this page.

```
<ul class="nav nav-tabs">
  <li class="nav-item">
    <a class="nav-link active" href="#">Active</a>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="#">Link</a>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="#">Link</a>
  </li>
  <li class="nav-item">
    <a class="nav-link disabled" href="#">Disabled</a>
  </li>
</ul>
```

[48. Try it Yourself >>](#)

Pills

Turn the nav menu into navigation pills with the `.nav-pills` class. If you want the pills to be togglable, see the last example on this page.

```
<ul class="nav nav-pills">
  <li class="nav-item">
    <a class="nav-link active" href="#">Active</a>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="#">Link</a>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="#">Link</a>
  </li>
  <li class="nav-item">
    <a class="nav-link disabled" href="#">Disabled</a>
  </li>
</ul>
```

[49. Try it Yourself >>](#)

Tabs with Dropdown

```
<ul class="nav nav-tabs">
  <li class="nav-item">
    <a class="nav-link active" href="#">Active</a>
  </li>
  <li class="nav-item dropdown">
    <a class="nav-link dropdown-toggle" data-toggle="dropdown" href="#">Dropdown</a>
    <div class="dropdown-menu">
      <a class="dropdown-item" href="#">Link 1</a>
      <a class="dropdown-item" href="#">Link 2</a>
      <a class="dropdown-item" href="#">Link 3</a>
    </div>
  </li>
  <li class="nav-item">
    <a class="nav-link" href="#">Link</a>
  </li>
  <li class="nav-item">
    <a class="nav-link disabled" href="#">Disabled</a>
  </li>
</ul>
```

[50. Try it Yourself >>](#)

Bootstrap 4 Navigation Bar

Navigation Bars

A navigation bar is a navigation header that is placed at the top of the page:



Basic Navbar

With Bootstrap, a navigation bar can extend or collapse, depending on the screen size.

A standard navigation bar is created with the `.navbar` class, followed by a responsive collapsing class: `.navbar-expand-xl|lg|md|sm` (stacks the navbar vertically on extra large, large, medium or small screens).

To add links inside the navbar, use a `` element with `class="navbar-nav"`. Then add `` elements with a `.nav-item` class followed by an `<a>` element with a `.nav-link` class:

```
<!-- A grey horizontal navbar that becomes vertical on small screens -->
<nav class="navbar navbar-expand-sm bg-light">

  <!-- Links -->
  <ul class="navbar-nav">
    <li class="nav-item">
      <a class="nav-link" href="#">Link 1</a>
    </li>
    <li class="nav-item">
      <a class="nav-link" href="#">Link 2</a>
    </li>
    <li class="nav-item">
      <a class="nav-link" href="#">Link 3</a>
    </li>
  </ul>

</nav>
```

[51. Try it Yourself >>](#)

Vertical Navbar

Remove the `.navbar-expand-xl|lg|md|sm` class to create a vertical navigation bar:

```
<!-- A vertical navbar -->
<nav class="navbar bg-light">

  <!-- Links -->
  <ul class="navbar-nav">
    <li class="nav-item">
      <a class="nav-link" href="#">Link 1</a>
    </li>
    <li class="nav-item">
      <a class="nav-link" href="#">Link 2</a>
    </li>
    <li class="nav-item">
      <a class="nav-link" href="#">Link 3</a>
    </li>
  </ul>

</nav>
```

[52. Try it Yourself >>](#)

Centered Navbar

Add the `.justify-content-center` class to center the navigation bar.

The following example will center the navigation bar on medium, large and extra large screens. On small screens it will be displayed vertically and left-aligned (because of the `.navbar-expand-sm` class):

```
<nav class="navbar navbar-expand-sm bg-light justify-content-center">  
  <a class="navbar-brand" href="#">Logo</a>  
  ...  
</nav>
```

[53. Try it Yourself >>](#)

Brand / Logo

The `.navbar-brand` class is used to highlight the brand/logo/project name of your page:

```
<nav class="navbar navbar-expand-sm bg-dark navbar-dark">  
  <a class="navbar-brand" href="#">Logo</a>  
  ...  
</nav>
```

[54. Try it Yourself >>](#)

When using the `.navbar-brand` class on images, Bootstrap 4 will automatically style the image to fit the navbar vertically.



```
<nav class="navbar navbar-expand-sm bg-dark navbar-dark">
  <a class="navbar-brand" href="#">
    
  </a>
  ...
</nav>
```

[55. Try it Yourself >>](#)

Collapsing The Navigation Bar

Very often, especially on small screens, you want to hide the navigation links and replace them with a button that should reveal them when clicked on.

To create a collapsible navigation bar, use a button with `class="navbar-toggler"`, `data-toggle="collapse"` and `data-target="#thetarget"`. Then wrap the navbar content (links, etc) inside a div element with `class="collapse navbar-collapse"`, followed by an id that matches the `data-target` of the button: `"thetarget"`.

```
<nav class="navbar navbar-expand-md bg-dark navbar-dark">
  <!-- Brand -->
  <a class="navbar-brand" href="#">Navbar</a>

  <!-- Toggler/collapsible Button -->
  <button class="navbar-toggler" type="button" data-toggle="collapse" data-
```

[56. Try it Yourself >>](#)

Navbar With Dropdown

Navbars can also hold dropdown menus:

```
<nav class="navbar navbar-expand-sm bg-dark navbar-dark">
  <!-- Brand -->
  <a class="navbar-brand" href="#">Logo</a>

  <!-- Links -->
  <ul class="navbar-nav">
    <li class="nav-item">
      <a class="nav-link" href="#">Link 1</a>
    </li>
```

[57. Try it Yourself >>](#)

Bootstrap 4 Forms

Bootstrap 4's Default Settings

Form controls automatically receive some global styling with Bootstrap:

All textual `<input>`, `<textarea>`, and `<select>` elements with class `.form-control` have a width of 100%.

Bootstrap 4 Form Layouts

Bootstrap provides two types of form layouts:

- Stacked (full-width) form
- Inline form

Bootstrap 4 Stacked Form

The following example creates a stacked form with two input fields, one checkbox, and a submit button.

Add a wrapper element with `.form-group`, around each form control, to ensure proper margins:

```
<form action="/action_page.php">
  <div class="form-group">
    <label for="email">Email address:</label>
    <input type="email" class="form-control" id="email">
  </div>
  <div class="form-group">
    <label for="pwd">Password:</label>
    <input type="password" class="form-control" id="pwd">
  </div>
  <div class="form-group form-check">
    <label class="form-check-label">
      <input class="form-check-input" type="checkbox"> Remember me
    </label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

[58. Try it Yourself >>](#)

Bootstrap Inline Form

In an inline form, all of the elements are inline and left-aligned.

Note: This only applies to forms within viewports that are at least 576px wide. On screens smaller than 576px, it will stack horizontally.

Additional rule for an inline form:

- Add class .form-inline to the <form> element

The following example creates an inline form with two input fields, one checkbox, and one submit button:

```
<form class="form-inline" action="/action_page.php">
  <label for="email">Email address:</label>
  <input type="email" class="form-control" id="email">
  <label for="pwd">Password:</label>
  <input type="password" class="form-control" id="pwd">
```

[59. Try it Yourself >>](#)

action_page.php가 없으므로 W3Schools
사이트에서 실행한 결과를 제출해도 됨!

Bootstrap 4 Form Inputs

Supported Form Controls

Bootstrap supports the following form controls:

- input
- textarea
- checkbox
- radio
- select

Bootstrap Input

Bootstrap supports all the HTML5 input types: text, password, datetime, datetime-local, date, month, time, week, number, email, url, search, tel, and color.

The following example contains two input elements; one of `type="text"` and one of `type="password"`. As we mentioned in the Forms chapter, we use the `.form-control` class to style inputs with full-width and proper padding, etc:

```
<div class="form-group">
  <label for="usr">Name:</label>
  <input type="text" class="form-control" id="usr">
</div>
<div class="form-group">
  <label for="pwd">Password:</label>
  <input type="password" class="form-control" id="pwd">
</div>
```

[60. Try it Yourself >>](#)

Bootstrap Textarea

The following example contains a textarea:

```
<div class="form-group">  
  <label for="comment">Comment:</label>  
  <textarea class="form-control" rows="5" id="comment"></textarea>  
</div>
```

[61. Try it Yourself >>](#)

Bootstrap Checkboxes

Checkboxes are used if you want the user to select any number of options from a list of preset options.

The following example contains three checkboxes. The last option is disabled:

```
<div class="form-check">
  <label class="form-check-label">
    <input type="checkbox" class="form-check-input" value="">Option 1
  </label>
</div>
<div class="form-check">
  <label class="form-check-label">
    <input type="checkbox" class="form-check-input" value="">Option 2
  </label>
</div>
<div class="form-check disabled">
  <label class="form-check-label">
    <input type="checkbox" class="form-check-input" value="" disabled>Option 3
  </label>
</div>
```

[62. Try it Yourself >>](#)

Inline Checkboxes

Use the `.form-check-inline` class if you want the checkboxes to appear on the same line:

```
<div class="form-check-inline">
  <label class="form-check-label">
    <input type="checkbox" class="form-check-input" value="">Option 1
  </label>
</div>
<div class="form-check-inline">
  <label class="form-check-label">
    <input type="checkbox" class="form-check-input" value="">Option 2
  </label>
</div>
<div class="form-check-inline disabled">
  <label class="form-check-label">
    <input type="checkbox" class="form-check-input" value="" disabled>Option 3
  </label>
</div>
```

[63. Try it Yourself >>](#)

Bootstrap Radio Buttons

Radio buttons are used if you want to limit the user to just one selection from a list of preset options.

The following example contains three radio buttons. The last option is disabled:

```
<div class="form-check">
  <label class="form-check-label">
    <input type="radio" class="form-check-input" name="optradio">Option 1
  </label>
</div>
<div class="form-check">
  <label class="form-check-label">
    <input type="radio" class="form-check-input" name="optradio">Option 2
  </label>
</div>
<div class="form-check disabled">
  <label class="form-check-label">
    <input type="radio" class="form-check-input" name="optradio" disabled>Option 3
  </label>
</div>
```

[64. Try it Yourself >>](#)

실습과제 12-1

본문에 나오는 1~64번의 "Try it Yourself >>"를 자신의 웹 서버(dothome)에 업로드하여 실행하시오.

- 학번이 홀수인 경우 홀수번만 풀이 (1, 3, ..., 63번)
- 학번이 짝수인 경우 짝수번만 풀이 (2, 4, ..., 64번)

실습과제 12-2

[실습과제 10-4] 'Mighty Gumball Sales'를 Bootstrap 기반으로 구현하시오.

