

Introduction to Bootstrap

LEARNING OBJECTIVES

After completing this chapter, you will be able to understand:

- What is Bootstrap.
- How to setup Bootstrap library.
- Structure of a Bootstrap-enabled webpage.
- Various Bootstrap elements like grid, colors, images, etc.
- How to make your application responsive.

6.1 | Overview of Bootstrap



Bootstrap is one of the most prominent and leading front-end frameworks. Bootstrap brings out a whole new set of designs and functionalities in HTML, CSS, and even JavaScript components. Bootstrap can change anything on the webpage – buttons, text, tables, links, images, and other elements – while it introduces some of its built-in features which decrease the need of writing HTML and CSS from scratch.

Bootstrap was introduced in the beginning of 2010 when Jacob Thornton and Mark Otto from Twitter released Bootstrap as an open-source project. After three years, Bootstrap's success led it to become the top project on GitHub.

Most importantly, Bootstrap supported “responsiveness”: a contemporary website approach known as *responsive web design*. Traditionally, websites were created with the knowledge that users would open and interact with them on desktop PCs. Therefore, the imagination and creativity of website designers was only restricted to desktop PCs. However, the transformation of phones into “smartphones” in the second half of 2000s changed the web scene completely. With smartphones, tablets, smart watches, and other range of computing devices along with the emergence of Internet of Things, web designers had to improvise. The websites which were designed for desktops were simply not compatible on smaller screens. Therefore, user experience was affected badly.

Here, responsive design came up as a workable solution through which websites could automatically recalibrate their structure according to the device of the user. Bootstrap was one of the earlier tools to support this responsiveness and thus ultimately the word “responsiveness” became synonymous with Bootstrap.



What is the difference between jQuery and Bootstrap?

6.1.1 Prerequisites

Before beginning the chapter, it is important to note that Bootstrap requires a basic grasp of HTML and CSS. If you are unfamiliar with HTML and CSS, then please check our previous chapters on HTML and CSS.

6.1.2 Installation

In this chapter, we are going to use Bootstrap 4. You can either download it from <https://getbootstrap.com> or add it in your website via Content Delivery Network (CDN). In our chapter, we would adopt the latter approach from the MaxCDN. This strategy is applied because it provides quicker site speed.

**QUICK
CHALLENGE**

Review other CDN platforms and come up with a comparison chart that shows various features and functionalities.

6.2 | Structure of a Bootstrap-enabled Webpage

In this section, we will explore the structure of an HTML webpage to make it suitable for Bootstrap. Consider the following example to generate a basic Bootstrap-powered webpage.

1. In the beginning you must place the HTML5 doctype, the language attribute, and the appropriate character set as follows:

```
<!DOCTYPE html>
<html lang="fr">
  <head>
    <meta charset="utf-7">
  </head>
</html>
```

2. As we already know, Bootstrap was originally designed for smartphones. Therefore, it is common to find mobile-first styles in it. For incorporating the appropriate touch zooming and rendering, make sure to go inside the `<head>` element and add a `<meta>` tag:

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

When the page is initially loaded in a browser, the “`initial-scale=1`” sets the beginning zoom level. For setting the page’s width to correspond it with the device’s screen width, the “`width=device-width`” is used.

3. In Bootstrap, the contents of the website are encompassed in an element known as a container. Container has two classes:
 - `.container`
 - `.container-fluid`

To understand the difference between both classes, check the following two diagrams to determine their positioning of width.



`.container class`



`.container-fluid`

As you can see in the above pictures, `.container` class has fixed width which is applicable for all the screen sizes (xs, sm, md, and lg). Following are the details of the screen sizes:

- **xs:** Extra small devices (less than 768; e.g., smart phones).
- **sm:** Small screens (from 768 pixels and up; e.g., tablets).
- **md:** Medium screen (>= 992 pixels; e.g., desktops or laptops).
- **lg:** Large screens (>= 1200 pixels; e.g., large desktops).

On the other hand, `.container-fluid` expands to the fullest width of the page’s viewport. Hence, depending on the available viewport of the page, `.container` gives a specific width to the div tag. However, this line does not exist for `.container-fluid` as it changes according to the viewport width.



What are the two ways you can display Bootstrap code?

6.2.1 Container Example

Let us go through an example to understand the container element:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Container 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>This heading is placed in a container class.</h1>
    <p>This paragraph is placed in a container class.</p>
    <p>This paragraph is placed in a container class.</p>
</div>
</body>
</html>
```

As you execute the code, you would realize that output is exactly the same as an HTML webpage. So, what exactly did the `.container` class do since HTML's `div` element can apparently serve the same container property? Well, actually the container class is not a simple container; it provides responsiveness for the width of its contents. In the upcoming examples, you would begin to see a clearer picture and impact of Bootstrap on webpages.



What effect will Bootstrap have on page if we donot use container?

6.3 | Grids



Grid systems are one of the most prominent features of Bootstrap. Grid is created through a flexbox and can accept up to 12 columns in a webpage. The lesser the number of columns, the wider the columns are. Due to Bootstrap's responsiveness, this grid system rearranges the columns according to the screen size.



What is a Bootstrap container?

6.3.1 Classes

There are five types of classes in grids:

1. **.col:** This is used for smallest screens where the width of the screen falls under 576px.
2. **.col-sm:** This is used for small screens where the width of the screen exceeds 576px.
3. **.col-md:** This is used for medium screens where the width of the screen exceeds 768px.
4. **.col-lg:** This is used for large screens where the width of the screen exceeds 992px.
5. **.col-xl:** This is used for extra-large screens where the width of the screen exceeds 1200px.

To generate four columns of equal size, consider the following example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Columns 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>Four Columns</h1>
    <div class="row">
        <div class="col" style="background-color:red; border-style: dotted;">.col</div>
        <div class="col" style="background-color:red; border-style: dotted">.col</div>
        <div class="col" style="background-color:red; border-style: dotted">.col</div>
        <div class="col" style="background-color:red; border-style: dotted">.col</div>
    </div>
</div>
</body>
</html>
```

The above code produces the following output. In this, the following section of the code defines the grid we want to create. Outer div element start with “row” class and inner div starts with “col” class.

```
<div class="row">
    <div class="col" style="background-color:red; border-style: dotted;">.col</div>
    <div class="col" style="background-color:red; border-style: dotted">.col</div>
    <div class="col" style="background-color:red; border-style: dotted">.col</div>
    <div class="col" style="background-color:red; border-style: dotted">.col</div>
</div>
```

Four Columns



For practice, add more columns by repeating the *div* tag with “*col*” and you can see automatic readjustments of columns.

Now, check the following example in which we have generated four columns of equal widths. This column would display properly in PCs and tablets but for devices with less than 576px, the columns would readjust and sit on top of each other, like a stack of books. Try resizing the window and make it smaller to view the stack.

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Bootstrap 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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>Column Example</h1>
    <p>Resize the browser window to see the effect.</p>
    <p>The columns will automatically stack on top of each other when the screen is less than 576px wide.</p>
    <div class="row">
        <div class="col-sm-3" style="background-color:green;">First Column</div>
        <div class="col-sm-3" style="background-color:lightgreen;">Second Column</div>
        <div class="col-sm-3" style="background-color:green;">Third Column</div>
        <div class="col-sm-3" style="background-color:lightgreen;">Fourth Column</div>
    </div>
</div>
</body>
</html>

```

Let us see the above outputs which shows how the grid layout changes according to screen sizes.

On Laptop:

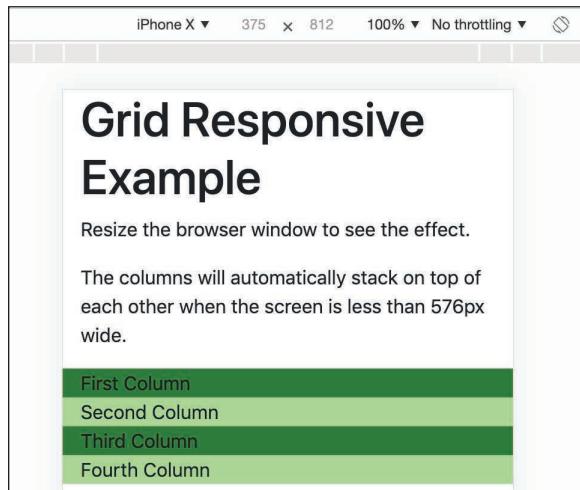
Grid Responsive Example

Resize the browser window to see the effect.

The columns will automatically stack on top of each other when the screen is less than 576px wide.



On iPhone:





What are the benefits of using grid as compared to table?

6.4 | Typography

Bootstrap supports various properties to format text properly for various device sizes. Some of the texts are rendered properly with default behavior, which means without even using any specific classes. By default, Bootstrap 4 assigns the default settings for text-related content (Table 6.1).

Table 6.1 Default settings for text-related content

Property	Default
<i>font-size</i>	16px
<i>line-height</i>	1.5
<i>font-family</i>	Helvetica Neue, Helvetica, Arial, Sans-serif
<i>margin-top for <p></i>	0
<i>margin-bottom for <p></i>	16px
<i>h1</i>	40px
<i>h2</i>	32px
<i>h3</i>	28px
<i>h4</i>	24px
<i>h5</i>	20px
<i>h6</i>	16px

Additionally, headings are bolder in Bootstrap 4.



Can you extend Bootstrap functionality with plugins like jQuery?

6.4.1 Display Headings

Bootstrap also offers another set of headings known as display headings. These headings are more prominent than HTML's headings. In total, there are four types of display headings, each distinguished by their number. They are distinguished due to their font-size and font-weight.

1. *.display-1*
2. *.display-2*
3. *.display-3*
4. *.display-4*

Let us execute the following display heading code:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Display Headings</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>This Is Our First Heading</h1>
    <h1 class="display-1">This Is Our First Display Heading!</h1>
    <h1 class="display-2">This Is Our Second Display Heading!</h1>
    <h1 class="display-3">This Is Our Third Display Heading!</h1>
    <h1 class="display-4">This Is Our Fourth Display Heading!</h1>
</div>
</body>
</html>
```

The above code produces the following result which shows various types of headings.

This Is Our First Heading

This Is Our First Display Heading!

This Is Our Second Display Heading!

This Is Our Third Display Heading!

This Is Our Fourth Display Heading!

6.4.2 HTML Text Elements in Bootstrap

Many of HTML's elements offer a different result in Bootstrap. Consider the impact of following properties in Bootstrap:

1. The `<small>` element from HTML is used in Bootstrap 4 for a different purpose. Bootstrap uses it to generate a secondary text which displays a lighter tone.
2. The `<mark>` element is used for highlighting any piece of information with a little padding and a yellow color for its background.
3. When an abbreviation is written via `<abbr>` then Bootstrap 4 adds a dotted border at its bottom.
4. Instead of `<blockquote>` element in HTML, Bootstrap provides the “`.blockquote`” class for quotations.

Consider the following example which implements all these features in a webpage.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>HTML Text Elements</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>HTML Text Elements in Bootstrap</h1>
    <h1>h1 heading <small>Some <mark>information</mark></small></h1>
    <h2>h2 heading <small>Some information</small></h2>
    <h3>h3 heading <small>Some information</small></h3>
    <h4>h4 heading <small>Some information</small></h4>
    <h5>h5 heading <small>Some information</small></h5>
    <h6>h6 heading <small>Some information</small></h6>
    <p>The <abbr title="European Union">EU</abbr> has introduced the GDPR</p>
    <blockquote class="blockquote">
        <p>Europe's new data protection rules will be a reality tomorrow. Europeans' privacy will be better protected and companies benefit from a single set of rules across the EU. Strong data protection rules are the basis for a functioning Digital Single Market and for the online economy to prosper. The new rules ensure that citizens can trust in how their data is used and that the EU can make best of the opportunities of the data economy.
        Our new data protection rules were agreed for a reason: Two-thirds of Europeans are concerned about the way their data was being handled, feeling they have no control over information they give online. Companies need clarity to be able to safely extend operations across the EU. Recent data scandals confirmed that with stricter and clearer data protection rules we are doing the right thing in Europe.</p>
        <footer class="blockquote-footer">Andrus Ansip</footer>
    </blockquote>
</div>
</body>
</html>
```

The above code produces the following result, which shows various types of HTML elements in Bootstrap.

HTML Text Elements in Bootstrap

h1 heading Some information

h2 heading Some information

h3 heading Some information

h4 heading Some information

h5 heading Some information

h6 heading Some information

The EU has introduced the GDPR

Europe's new data protection rules will be a reality tomorrow. Europeans' privacy will be better protected and companies benefit from a single set of rules across the EU. Strong data protection rules are the basis for a functioning Digital Single Market and for the online economy to prosper. The new rules ensure that citizens can trust in how their data is used and that the EU can make best of the opportunities of the data economy. Our new data protection rules were agreed for a reason: Two-thirds of Europeans are concerned about the way their data was being handled, feeling they have no control over information they give online. Companies need clarity to be able to safely extend operations across the EU. Recent data scandals confirmed that with stricter and clearer data protection rules we are doing the right thing in Europe.

— Andrus Ansip

6.5 | Colors

Bootstrap provides several color classes for both the colors of font and their backgrounds.

6.5.1 Color Classes to Convey Meaning

Bootstrap offers quite a few classes which are used to show different colors to define different events. For example, to convey a warning, the `.text-danger` class is used. Table 6.2 explains all the color classes.

Table 6.2 The different color classes

Code	Color
<code>.text-primary</code>	This class shows the text color blue and specifies something significant.
<code>.text-secondary</code>	This class shows the text color grey and specifies something less significant.
<code>.text-success</code>	This class shows the text color green and shows some the sign of success.
<code>.text-danger</code>	This class shows the text color and specifies some danger.
<code>.text-warning</code>	This class shows the text color yellow/orange and specifies warning.
<code>.text-info</code>	This class shows the text color light blue and specifies information.
<code>.text-light</code>	This class shows the light grey text color.
<code>.text-dark</code>	This class shows the dark grey text color.
<code>.text-muted</code>	This class shows the grey text color.
<code>.text-white</code>	This class shows the white text color.

To understand the use of all these color classes, check the following example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Color Classes</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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">
    <h2>Color Classes</h2>
    <p>Whenever, you want to convey a specific meaning, use the the following classes:</p>
    <p class="text-muted">If text-muted is used, then the text looks like this line.</p>
    <p class="text-primary">If text-primary is used, then the text looks like this line.</p>
    <p class="text-success">If text-success is used, then the text looks like this line.</p>
    <p class="text-info">If text-info is used, then the text looks like this line.</p>
    <p class="text-warning">If text-warning is used, then the text looks like this line.</p>
    <p class="text-danger">If text-danger is used, then the text looks like this line.</p>
    <p class="text-secondary">If text-secondary is used, then the text looks like this line.</p>
    <p class="text-dark">If text-dark is used, then the text looks like this line.</p>
    <p class="text-body">If text-body is used, then the text looks like this line.</p>
    <p class="text-light">If text-light is used, then the text looks like this line.</p>
    <p class="text-white">If text-white is used, then the text looks like this line.</p>
</div>
</body>
</html>
```

The above code produces the following result, which shows various colors for the text.

Color Classes

Whenever, you want to convey a specific meaning, use the the following classes:

If text-muted is used, then the text looks like this line.

If text-primary is used, then the text looks like this line.

If text-success is used, then the text looks like this line.

If text-info is used, then the text looks like this line.

If text-warning is used, then the text looks like this line.

If text-danger is used, then the text looks like this line.

If text-secondary is used, then the text looks like this line.

If text-dark is used, then the text looks like this line.

If text-body is used, then the text looks like this line.

6.5.2 Background Colors

The background color of text can also be configured with Bootstrap's color classes. To check their effect, run the following code:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Bootstrap Web Page</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">
    <h2>Contextual Backgrounds</h2>
    <p class="bg-primary text-black">If you use the bg-primary class, then your text would look like this.</p>
    <p class="bg-success text-black">If you use the bg-success class, then your text would look like this.</p>
    <p class="bg-info text-black">If you use the bg-info class, then your text would look like this.</p>
    <p class="bg-warning text-black">If you use the bg-warning class, then your text would look like this.</p>
    <p class="bg-danger text-black">If you use the bg-danger class, then your text would look like this.</p>
    <p class="bg-secondary text-black">If you use the bg-secondary class, then your text would look like this.</p>
    <p class="bg-dark text-white">If you use the bg-dark class, then your text would look like this.</p>
    <p class="bg-light text-black">If you use the bg-light class, then your text would look like this.</p>
</div>
</body>
</html>
```

The above code produces the following result, which shows various background colors.

Contextual Backgrounds

If you use the `bg-primary` class, then your text would look like this.

If you use the `bg-success` class, then your text would look like this.

If you use the `bg-info` class, then your text would look like this.

If you use the `bg-warning` class, then your text would look like this.

If you use the `bg-danger` class, then your text would look like this.

If you use the `bg-secondary` class, then your text would look like this.

If you use the `bg-dark` class, then your text would look like this.

If you use the `bg-light` class, then your text would look like this.

6.6 | Images

Bootstrap also facilitates web designers to display their images in different styles. We will learn the following types of images in this section:

1. Rounded images
2. Circle images
3. Thumbnail images

6.6.1 Rounded Images

To display an image with rounder corners, the `.rounded` class is used. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Images in Bootstrap</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>Image Example</h1>
    
</div>
</body>
</html>
```

The above code produces the following result, which shows an image with rounded corners.

Rounded Image Example



6.6.2 Circle Images

To reshape the image's structure as a circle, the *.rounded-circle* class is used. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Images in Bootstrap</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>Image Example</h1>
    
</div>
</body>
</html>
```

The above code produces the following result, which shows an image in a circular form.

Circle Image Example



6.6.3 Thumbnail Image

To shape an image to a thumbnail, the *.img-thumbnail* is used. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Images in Bootstrap</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>Image Example</h1>
    
</div>
</body>
</html>
```

The above code produces the following result, which shows an image in a thumbnail form.

Thumbnail Image Example

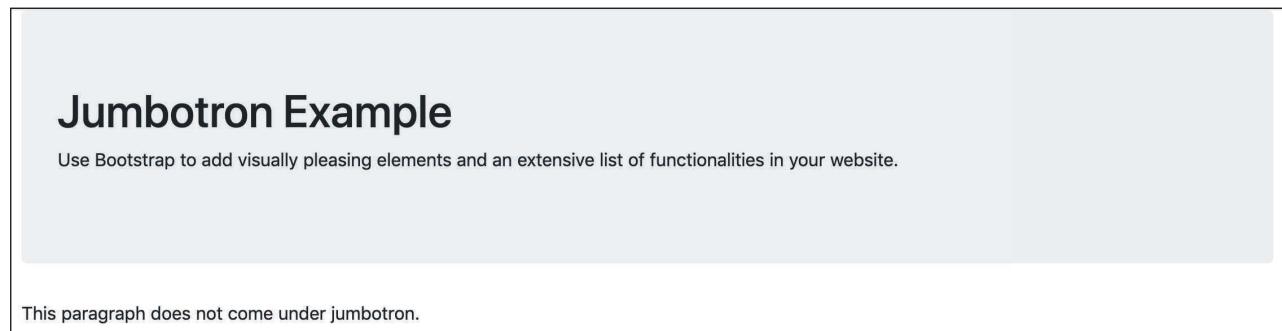


6.7 | Jumbotron

One of the most popular features of Bootstrap 4 is the “*jumbotron*”. It is basically a giant box with a gray background which is used to highlight importance of a piece of content. Jumbotron can accept other Bootstrap classes as well as majority of the HTML elements. To create a jumbotron, add a `<div>` element and place a `.jumbotron` class in it. Check the following example to generate a jumbotron:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Jumbotron</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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">
    <div class="jumbotron">
        <h1>Jumbotron Example</h1>
        <p>Use Bootstrap to add visually pleasing elements and an extensive list of functionalities in your website.</p>
    </div>
    <p>This paragraph does not come under jumbotron.</p>
</div>
</body>
</html>
```

The above code produces the following result, which shows the given text in a grey box.



To ensure that your jumbotron widens up to the complete width, use the `.jumbotron-fluid` class and add the container classes inside it. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Full-width Jumbotron</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.1.3/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="jumbotron jumbotron-fluid">
    <div class="container">
        <h1>Jumbotron Example</h1>
        <p>Use Bootstrap to add visually pleasing elements and an extensive list of functionalities in your website.</p>
    </div>
</div>
<div class="container">
    <h1>This heading does not come under jumbotron's content.</h1>
    <p>This paragraph does not come under jumbotron's content.</p>
</div>
</body>
</html>
```

The above code produces the following result, which shows the given text in a grey box which occupies the whole width of the viewport.

Jumbotron Fluid Example

Use Bootstrap to add visually pleasing elements and an extensive list of functionalities in your website.

This heading does not come under jumbotron's content.

This paragraph does not come under jumbotron's content.

QUICK CHALLENGE

Think of a real-life use case where you can use Jumbotron and write a code for it.

6.8 | Alerts



Bootstrap provides numerous types of alert boxes (or simply alerts) to display a special meaning. Alerts begin with the `.alert` class and are followed by contextual classes. Table 6.3 explains these contextual classes.

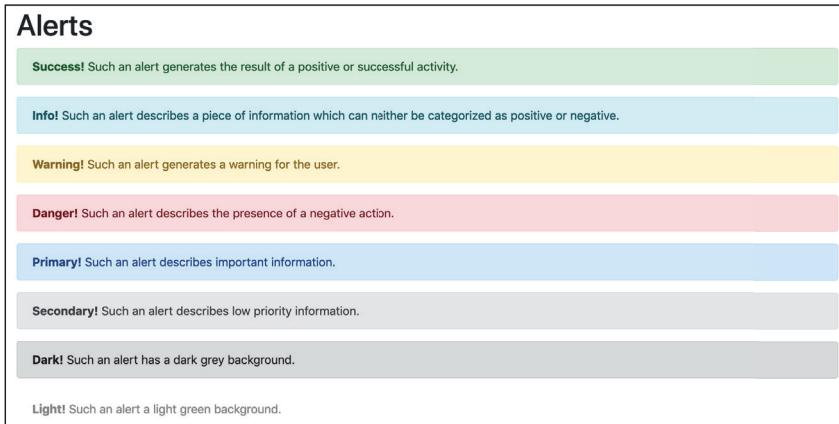
Table 6.3 Contextual classes

Code	Class
.alert-primary	It shows blue alert and specifies an important action.
.alert-secondary	It shows a grey alert and specifies a less important action.
.alert-success	It shows a green alert and specifies positive or successful action.
.alert-danger	It shows a red alert and specifies a potentially negative or dangerous action.
.alert-warning	It shows a yellow alert and specifies caution should be taken while dealing with this action.
.alert-info	It is a teal alert and it specifies a neutral action or informative change.
.alert-light	It is a light alert and it is shown by a light grey alert box.
.alert-dark	It is known as dark alert and it is represented by a dark grey alert box.

Consider the following example to check their use:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Bootstrap Alerts</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>Alerts</h1>
    <div class="alert alert-success">
        <strong>Success!</strong> Such an alert generates the result of a positive or
        successful activity.
    </div>
    <div class="alert alert-info">
        <strong>Info!</strong> Such an alert describes a piece of information which can
        neither be categorized as positive or negative.
    </div>
    <div class="alert alert-warning">
        <strong>Warning!</strong> Such an alert generates a warning for the user.
    </div>
    <div class="alert alert-danger">
        <strong>Danger!</strong> Such an alert describes the presence of a negative
        action.
    </div>
    <div class="alert alert-primary">
        <strong>Primary!</strong> Such an alert describes important information.
    </div>
    <div class="alert alert-secondary">
        <strong>Secondary!</strong> Such an alert describes low priority information.
    </div>
    <div class="alert alert-dark">
        <strong>Dark!</strong> Such an alert has a dark grey background.
    </div>
    <div class="alert alert-light">
        <strong>Light!</strong> Such an alert has a light green background.
    </div>
</div>
</body>
</html>
```

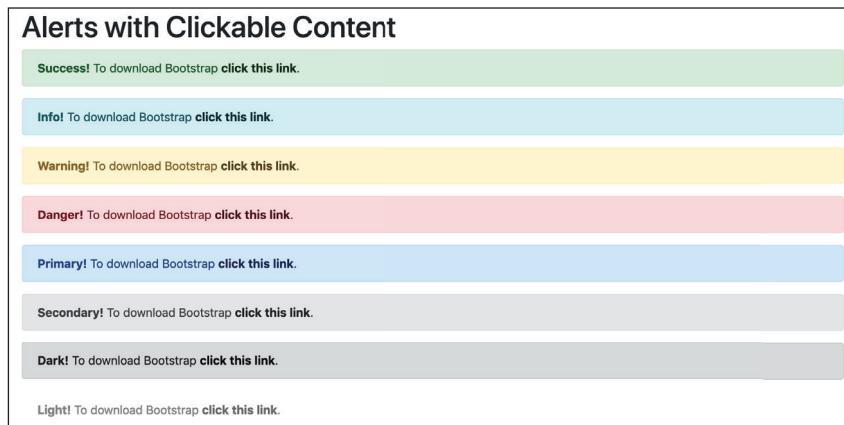
The above code produces the following result which shows various types of alert boxes.



It is also possible to add a link in alert boxes. This is done via the alert-link class. Consider the following example in which a link is added in each of the alert boxes.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Alert Links</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>Alerts with Clickable Content</h1>
    <div class="alert alert-success">
        <strong>Success!</strong> To download Bootstrap<a href="https://getbootstrap.com/" class="alert-link">click this link</a>.
    </div>
    <div class="alert alert-info">
        <strong>Info!</strong> To download Bootstrap<a href="https://getbootstrap.com/" class="alert-link">click this link</a>.
    </div>
    <div class="alert alert-warning">
        <strong>Warning!</strong> To download Bootstrap<a href="https://getbootstrap.com/" class="alert-link">click this link</a>.
    </div>
    <div class="alert alert-danger">
        <strong>Danger!</strong> To download Bootstrap<a href="https://getbootstrap.com/" class="alert-link">click this link</a>.
    </div>
    <div class="alert alert-primary">
        <strong>Primary!</strong> To download Bootstrap<a href="https://getbootstrap.com/" class="alert-link">click this link</a>.
    </div>
    <div class="alert alert-secondary">
        <strong>Secondary!</strong> To download Bootstrap<a href="https://getbootstrap.com/" class="alert-link">click this link</a>.
    </div>
    <div class="alert alert-dark">
        <strong>Dark!</strong> To download Bootstrap<a href="https://getbootstrap.com/" class="alert-link">click this link</a>.
    </div>
    <div class="alert alert-light">
        <strong>Light!</strong> To download Bootstrap<a href="https://getbootstrap.com/" class="alert-link">click this link</a>.
    </div>
</div>
</body>
</html>
```

The above code produces the following result which shows various types of alert boxes with links inside.

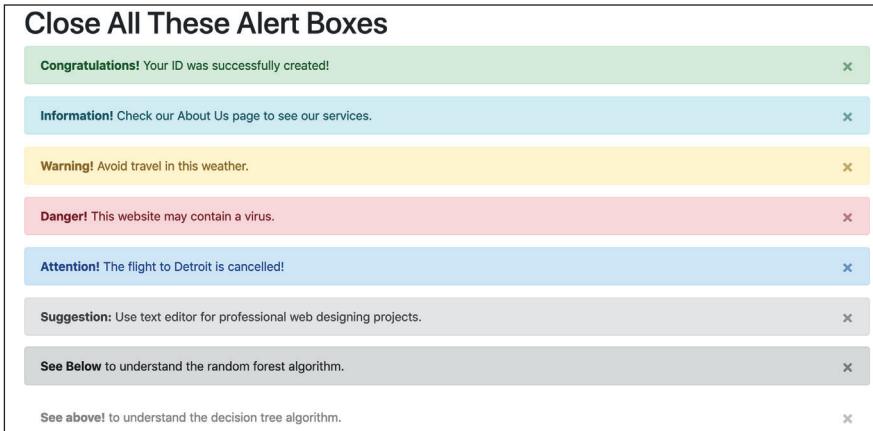


6.8.1 Closing Alerts

In order to display an alert which can be closed upon clicking, use the `.alert-dismissible` class in the container of the alert. Subsequently, place `class = "close"` and `data-dismiss = "alert"` on the content which you want to be disappear upon clicking. For example

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Closing Alerts</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>Close All These Alert Boxes</h1>
    <div class="alert alert-success alert-dismissible">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Congratulations!</strong> Your ID was successfully created!
    </div>
    <div class="alert alert-info alert-dismissible">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Information!</strong> Check our About Us page to see our services.
    </div>
    <div class="alert alert-warning alert-dismissible">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Warning!</strong> Avoid travel in this weather.
    </div>
    <div class="alert alert-danger alert-dismissible">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Danger!</strong> This website may contain a virus.
    </div>
    <div class="alert alert-primary alert-dismissible">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Attention!</strong> The flight to Detroit is cancelled!
    </div>
    <div class="alert alert-secondary alert-dismissible">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Suggestion:</strong> Use text editor for professional web designing projects.
    </div>
    <div class="alert alert-dark alert-dismissible">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>See Below</strong> to understand the random forest algorithm.
    </div>
    <div class="alert alert-light alert-dismissible">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>See above!</strong> to understand the decision tree algorithm.
    </div>
</div></body>
</html>
```

The above code produces the following result, which shows all types of alerts with close buttons.

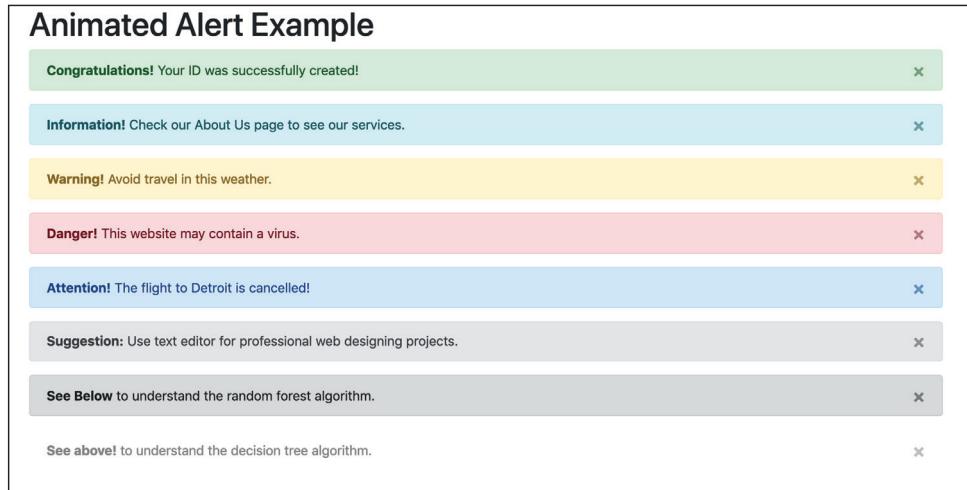


6.8.2 Animated Alerts

Bootstrap also allows us to add a little animation effect to the alert boxes. It provides two classes – `.fade` and `.show`. These will add fading effect when closing the pop-up. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Animated Alerts</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>Animated Alert Examples</h1>
    <div class="alert alert-success alert-dismissible fade show">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Congratulations!</strong> Your ID was successfully created!
    </div>
    <div class="alert alert-info alert-dismissible fade show">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Information!</strong> Check our About Us page to see our services.
    </div>
    <div class="alert alert-warning alert-dismissible fade show">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Warning!</strong> Avoid travel in this weather.
    </div>
    <div class="alert alert-danger alert-dismissible fade show">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Danger!</strong> This website may contain a virus.
    </div>
    <div class="alert alert-primary alert-dismissible fade show">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Attention!</strong> The flight to Detroit is cancelled!
    </div>
    <div class="alert alert-secondary alert-dismissible fade show">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>Suggestion:</strong> Use text editor for professional web designing projects.
    </div>
    <div class="alert alert-dark alert-dismissible fade show">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>See Below</strong> to understand the random forest algorithm.
    </div>
    <div class="alert alert-light alert-dismissible fade show">
        <button type="button" class="close" data-dismiss="alert">&times;</button>
        <strong>See above!</strong> to understand the decision tree algorithm.
    </div>
</div>
</body>
</html>
```

The above program produces the following result. Upon clicking on the close button (x), the popup will disappear slowly.



How are these alerts better than plain JavaScript alert?

6.9 | Buttons

One of the most popular design elements of Bootstrap is its buttons; each of these buttons represents a certain type of action. In the following example we will explain how to create buttons:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Buttons</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://cdn.jsdelivr.net/npm/popper.js@1.14.3/dist/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>Types of Button in Bootstrap</h1>
    <button type="button" class="btn">Simple Button</button>
    <button type="button" class="btn btn-success">Success Button</button>
    <button type="button" class="btn btn-warning">Warning Button</button>
    <button type="button" class="btn btn-danger">Danger Button</button>
    <button type="button" class="btn btn-primary">Primary </button>
    <button type="button" class="btn btn-secondary">Secondary Button</button>
    <button type="button" class="btn btn-link">Link Button</button>
    <button type="button" class="btn btn-dark">Dark Button</button>
    <button type="button" class="btn btn-info">Info Button</button>
    <button type="button" class="btn btn-light">Light Button</button>
</div>
</body>
</html>
```

The above code produces the following result, which shows all types of buttons that Bootstrap provides.



6.9.1 Outline and Size

Bootstrap 4 supports eight outline buttons and three basic sizes for buttons. Table 6.4 explains these eight outline buttons and three basis sizes.

Heading?	Heading?
.btn-outline-success	It is a grey bordered button and it specifies a positive or successful action.
.btn-outline-warning	It is an orange button and it represents a negative action or a warning.
.btn-outline-danger	It is a red bordered button and specifies a negative action or a danger.
.btn-outline-primary	It is a blue bordered button and specifies an important action.
.btn-outline-secondary	It is grey bordered button and specifies a less important action.
.btn-outline-dark	It is a dark grey bordered button
.btn-outline-info	It is a teal bordered button and it stands for a neutral action or informative change.
.btn-outline-light	It is a light grey bordered button.
.btn-lg	It is a large button. The "lg" stands for large.
.btn-md	It is a medium sized button. The "md" stands for medium.
.btn-sm	It is a small button. The "sm" stands for small.

Consider the following example to see all eight outline buttons and three basic sizes in action:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Buttons in Bootstrap</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h2>Button Outline and Size</h2>
    <button type="button" class="btn btn-outline-success btn-lg">Success Button</button>
    <button type="button" class="btn btn-outline-warning btn-md">Warning Button</button>
    <button type="button" class="btn btn-outline-danger btn-sm">Danger Button</button>
    <button type="button" class="btn btn-outline-primary">Primary </button>
    <button type="button" class="btn btn-outline-secondary">Secondary Button</button>
    <button type="button" class="btn btn-outline-dark">Dark Button</button>
    <button type="button" class="btn btn-outline-info">Info Button</button>
    <button type="button" class="btn btn-outline-light">Light Button</button>
</div>
</body>
</html>
```

The above code produces the following result, which shows different button sizes with outline.

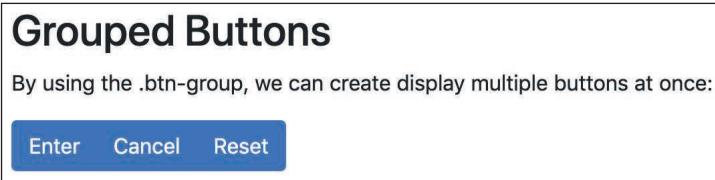


6.10 | Button Groups

Sometimes, there is a need for multiple buttons on a webpage. In such instances, it is unwise to create each button separately. Bootstrap 4 offers button groups through which multiple buttons can be created at once. This is done via the ".btn-group" in the <div> element. Consider the following example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Button Groups</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/@popperjs/core@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h2>Grouped Buttons</h2>
    <p>By using the .btn-group, we can create display multiple buttons at once:</p>
    <div class="btn-group">
        <button type="button" class="btn btn-primary">Enter</button>
        <button type="button" class="btn btn-primary">Cancel</button>
        <button type="button" class="btn btn-primary">Reset</button>
    </div>
</div>
</body>
</html>
```

The above code produces the following result, which shows buttons in a group.



To adjust the size of buttons, you can use the following classes.

1. .btn-group-lg
2. .btn-group-md
3. .btn-group-sm

See the below example, which shows the group sizes in large, medium, and small.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Button Groups Sizes</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h2>Grouped Buttons Sizes</h2>
    <h4>By using the .btn-group, we can create display multiple buttons at once:</h4><br/>
    <p>With btn-group-lg in large size:</p>
    <div class="btn-group btn-group-lg">
        <button type="button" class="btn btn-primary">Enter</button>
        <button type="button" class="btn btn-primary">Cancel</button>
        <button type="button" class="btn btn-primary">Reset</button>
    </div>
    <p>With btn-group-md in medium size:</p>
    <div class="btn-group btn-group-md">
        <button type="button" class="btn btn-primary">Enter</button>
        <button type="button" class="btn btn-primary">Cancel</button>
        <button type="button" class="btn btn-primary">Reset</button>
    </div>
    <p>With btn-group-md in small size:</p>
    <div class="btn-group btn-group-sm">
        <button type="button" class="btn btn-primary">Enter</button>
        <button type="button" class="btn btn-primary">Cancel</button>
        <button type="button" class="btn btn-primary">Reset</button>
    </div>
</div>
</body>
</html>
```

The above code produces the following result, which shows various groups with different sizes like large, medium, and small.

Grouped Buttons Sizes

By using the .btn-group, we can create display multiple buttons at once:

With btn-group-lg in large size:

Enter Cancel Reset

With btn-group-md in medium size:

Enter Cancel Reset

With btn-group-md in small size:

Enter Cancel Reset

6.10.1 Vertical

What if you want to display buttons in a vertical format? For that, you can use the `.btn-group vertical` class. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
<title>Bootstrap Button Classes</title>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
</script>
<script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
</script>
</head>
<body>
<div class="container">
<h2>Button Listed Vertically</h2>
<p>The .btn-group-vertical class is used to generate a vertical button group:</p>
<div class="btn-group-vertical">
<button type="button" class="btn btn-primary">HTML</button>
<button type="button" class="btn btn-primary">CSS</button>
<button type="button" class="btn btn-primary">Bootstrap</button>
</div>
</div>
</body>
</html>
```

The above code produces the following result, which shows buttons in vertical format.

Button Listed Vertically

The `.btn-group-vertical` class is used to generate a vertical button group:



HTML
CSS
Bootstrap

6.10.2 Dropdown Menus

You can nest button groups (add one group into another) to generate a dropdown menu. Button groups are inherently “inline”, which means that multiple button groups would appear side by side.

To click a button which opens the menu, go into its body and add the “`dropdown-toggle`”, which creates the dropdown on it and then add ‘`data-toggle="dropdown"`’ so it can open. For example:

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Dropdown Menus</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h2>Dropdown Menus</h2>
    <p>To create a dropdown menu add one button group inside another:</p>
    <div class="btn-group">
        <button type="button" class="btn btn-primary">Cybersecurity</button>
        <button type="button" class="btn btn-primary">Mobile App Development</button>
        <div class="btn-group">
            <button type="button" class="btn btn-primary dropdown-toggle" data-toggle="dropdown">
                Website Development
            </button>
            <div class="dropdown-menu">
                <a class="dropdown-item" href="#">HTML</a>
                <a class="dropdown-item" href="#">CSS</a>
                <a class="dropdown-item" href="#">Bootstrap</a>
            </div>
        </div>
    </div>
</div>
</body>
</html>

```

The above code produces the following result, which shows a dropdown menu.

Dropdown Menus

To create a dropdown menu add one button group inside another:

Cybersecurity
Mobile App Development
Website Development ▾

HTML
CSS
Bootstrap

6.11 | Progress Bars



Progress bars are used to display the remaining portion of an online activity. They can be created by using the `.progress` class in the container after which the `".progress-bar"` class is placed in the element of the container. In order to define the “*progress*” of the bar, apply a percentage through the CSS width property. For a simple progress bar use the following code:

```
<!DOCTYPE html>
<html lang="en">
<head>
<title>Progress Bar</title>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/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/1.14.6/umd/popper.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
<h2>A Simple Progress Bar</h2>
<div class="progress">
    <div class="progress-bar" style="width:50%"></div>
</div>
</div>
</body></html>
```

The above code produces the following result, which shows a progress bar.

A Simple Progress Bar



6.11.1 Height and Label

It is possible to resize the height of a progress bar. To do this, use the “*height*” property. Note that this height must be set same for two elements: container and the progress bar. To show the percentage of the bar, simply add the value of the width in its *<div>* tag. Check the following example:

```
<!DOCTYPE html>
<html lang="en">
<head>
<title>Progress Bar</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">
<h2>Adjusting the Height of the Progress Bar!</h2>
<div class="progress" style="height:50px">
    <div class="progress-bar" style="width:80%;height:50px">80%</div>
</div>
<br>
<div class="progress" style="height:25px">
    <div class="progress-bar" style="width:60%;height:25px">60%</div>
</div>
<br>
<div class="progress" style="height:10px">
    <div class="progress-bar" style="width:40%;height:10px">40%</div>
</div>
</div>
</body></html>
```

The above code produces the following result, which shows a progress bar with height and label.

Adjusting the Height of the Progress Bar!



6.11.2 Adding Colors to Progress Bar

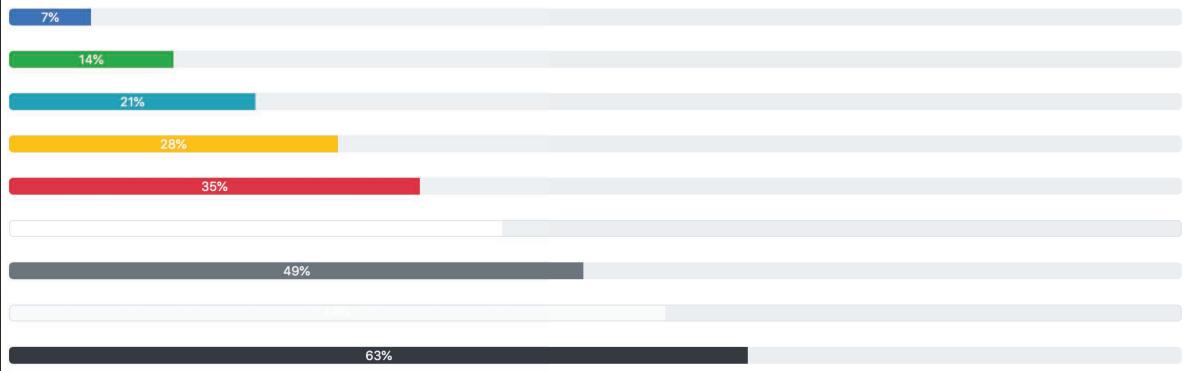
By default, Bootstrap's progress bar is primary. However, it can be modified to accept any of the color contextual classes. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Progress Bars</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h2>Adding Colors in the Progress Bars</h2>
    <p>Contextual color classes can be used with the progress bars:</p>
    <div class="progress">
        <div class="progress-bar" style="width:7%">7%</div>
    </div><br>
    <div class="progress">
        <div class="progress-bar bg-success" style="width:14%">14%</div>
    </div><br>
    <div class="progress">
        <div class="progress-bar bg-info" style="width:21%">21%</div>
    </div><br>
    <div class="progress">
        <div class="progress-bar bg-warning" style="width:28%">28%</div>
    </div><br>
    <div class="progress">
        <div class="progress-bar bg-danger" style="width:35%">35%</div>
    </div><br>
    <div class="progress border">
        <div class="progress-bar bg-white" style="width:42%">42%</div>
    </div><br>
    <div class="progress">
        <div class="progress-bar bg-secondary" style="width:49%">49%</div>
    </div><br>
    <div class="progress border">
        <div class="progress-bar bg-light" style="width:56%">56%</div>
    </div><br>
    <div class="progress">
        <div class="progress-bar bg-dark" style="width:63%">63%</div>
    </div>
</div>
</body>
</html>
```

The above code produces the following result, which shows a progress bar with colors.

Adding Colors in the Progress Bars

Contextual color classes can be used with the progress bars:



6.11.3 Adding Stripes to Progress Bars

By utilizing the “`.progress-bar-striped`” class, it is possible to incorporate stripes in your progress bars. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Striped Progress Bars</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>Progress Bars with Stripes</h1>
    <div class="progress">
        <div class="progress-bar progress-bar-striped" style="width:10%">10%</div>
    </div>
    <br>
    <div class="progress">
        <div class="progress-bar bg-success progress-bar-striped" style="width:20%">20%</div>
    </div>
    <br>
    <div class="progress">
        <div class="progress-bar bg-info progress-bar-striped" style="width:30%">30%</div>
    </div>
    <br>
    <div class="progress">
        <div class="progress-bar bg-warning progress-bar-striped" style="width:40%">40%</div>
    </div>
    <br>
    <div class="progress">
        <div class="progress-bar bg-danger progress-bar-striped" style="width:40%">40%</div>
    </div>
</div>
</body></html>
```

The above code produces the following result, which shows a progress bar with stripes.

Progress Bars with Stripes



6.11.4 Adding Animations to the Progress Bar

You must have seen that “lively” animated progress in many websites. To replicate it use the “*.progress-bar-animated*” class. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Animated Progress Bar</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h2>Lively Progress Bar</h2>
    <div class="progress">
        <div class="progress-bar progress-bar-striped progress-bar-animated" style="width:90%">Loading</div>
    </div>
</div>
</body>
</html>
```

The above code produces the following result, which shows a progress with animation.

Lively Progress Bar

A screenshot showing a single horizontal progress bar with the word "Loading" in the center. The bar has a blue striped pattern.



6.12 | Pagination

When the number of webpages in a website increases, pagination can be implemented using Bootstrap. To apply pagination, the `.pagination` class is used in an unordered list while the `.page-item` and `.page-link` classes are used with the list items. For example,

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Pagination</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Pagination Example</h1>
    <ul class="pagination">
        <li class="page-item" ><a class="page-link" href="#">Last</a></li>
        <li class="page-item" ><a class="page-link" href="#">1</a></li>
        <li class="page-item" ><a class="page-link" href="#">2</a></li>
        <li class="page-item" ><a class="page-link" href="#">3</a></li>
        <li class="page-item" ><a class="page-link" href="#">4</a></li>
        <li class="page-item" ><a class="page-link" href="#">5</a></li>
        <li class="page-item" ><a class="page-link" href="#">Next</a></li>
    </ul>
</div>
</body>
</html>
```

The above code produces the following result, which shows pagination.

Pagination Example

Last	1	2	3	4	5	Next
------	---	---	---	---	---	------

To show the current page, an active class can be used. To modify the size, simply add “*pagination-lg*”, “*pagination-md*” or “*pagination-sm*”. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Pagination 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/4.2.1/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/1.14.6/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Active State and Size in Pagination</h1>
    <h3>Pagination in Large Size:</h3>
    <ul class="pagination pagination-lg">
        <li class="page-item"><a class="page-link" href="#">Last</a></li>
        <li class="page-item"><a class="page-link" href="#">1</a></li>
        <li class="page-item active"><a class="page-link" href="#">2</a></li>
        <li class="page-item"><a class="page-link" href="#">3</a></li>
        <li class="page-item"><a class="page-link" href="#">4</a></li>
        <li class="page-item"><a class="page-link" href="#">5</a></li>
        <li class="page-item"><a class="page-link" href="#">Next</a></li>
    </ul>
    <br />
    <h3>Pagination in Medium Size:</h3>
    <ul class="pagination pagination-md">
        <li class="page-item"><a class="page-link" href="#">Last</a></li>
        <li class="page-item"><a class="page-link" href="#">1</a></li>
        <li class="page-item active"><a class="page-link" href="#">2</a></li>
        <li class="page-item"><a class="page-link" href="#">3</a></li>
        <li class="page-item"><a class="page-link" href="#">4</a></li>
        <li class="page-item"><a class="page-link" href="#">5</a></li>
        <li class="page-item"><a class="page-link" href="#">Next</a></li>
    </ul>
    <br />
    <h3>Pagination in Small Size:</h3>
    <ul class="pagination pagination-sm">
        <li class="page-item"><a class="page-link" href="#">Last</a></li>
        <li class="page-item"><a class="page-link" href="#">1</a></li>
        <li class="page-item active"><a class="page-link" href="#">2</a></li>
        <li class="page-item"><a class="page-link" href="#">3</a></li>
        <li class="page-item"><a class="page-link" href="#">4</a></li>
        <li class="page-item"><a class="page-link" href="#">5</a></li>
        <li class="page-item"><a class="page-link" href="#">Next</a></li>
    </ul>
</div>
</body>
</html>
```

The above code produces the following result, which shows pagination with state like current page and sizes.

Active State and Size in Pagination

Pagination in Large Size:

Last	1	2	3	4	5	Next
------	---	---	---	---	---	------

Pagination in Medium Size:

Last	1	2	3	4	5	Next
------	---	---	---	---	---	------

Pagination in Small Size:

Last	1	2	3	4	5	Next
------	---	---	---	---	---	------

6.13 | Cards



Bootstrap's card is a box which is covered by some padding and borders. It can contain content, colors, headers, and footers. It is generated by using the ".class" class while its contents are specified by using the ".card-body" class. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Cards</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
<h1>A Simple Example</h1>
<div class="card">
    <div class="card-body">First Card</div>
</div>
<div class="card">
    <div class="card-body">Second Card</div>
</div>
</div>
</body>
</html>
```

The above code produces the following result, which shows cards.

A Simple Card Example

First Card

Second Card

Headers and footers can be placed in the card through the use of “*.card-header*” and “*.card-footer*” classes, respectively.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Cards</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Card with Header and Footer Example</h1>
    <div class="card">
        <div class="card-header">Header</div>
        <div class="card-body">Body</div>
        <div class="card-footer">Footer</div>
    </div>
</div>
</body>
</html>
```

The above code produces the following result, which shows cards with header and footer.

Card with Header and Footer Example

Header

Body

Footer

6.14 | Navigation Menus

To generate a standard navigation menu which is horizontal in nature, use the “*.nav*” class in an unordered list along with “*.nav-item*” and “*.nav-link*” classes in its contents (list items). For example:



```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Nav Menus</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/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/1.14.6/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Nav Menu Example</h1>
    <ul class="nav">
        <li class="nav-item">
            <a class="nav-link" href="#">First Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Second Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Third Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Fourth Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Fifth Item</a>
        </li>
    </ul>
</div>
</body>
</html>

```

The above code produces the following result, which shows a page with navigation menu.

Nav Menu Example

First Item	Second Item	Third Item	Fourth Item	Fifth Item
----------------------------	-----------------------------	----------------------------	-----------------------------	----------------------------

6.14.1 Vertical Nav Menus

To convert the above-mentioned horizontal menu in a vertical navigation menu, simply add “*flex column*” ahead of the “*nav*” class. For example:

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Nav Menus</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/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/1.14.6/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Nav Menu Example</h1>
    <ul class="nav flex-column">
        <li class="nav-item">
            <a class="nav-link" href="#">First Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Second Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Third Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Fourth Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Fifth Item</a>
        </li>
    </ul>
</div>
</body>
</html>

```

The above code produces the following result, which shows a page with vertical navigation menu.

Vertical Nav Menu Example

- [First Item](#)
- [Second Item](#)
- [Third Item](#)
- [Fourth Item](#)
- [Fifth Item](#)

Navigation menu can be used to create a main menu or submenus for easy navigation.

6.14.2 Tabs

Now in order to change the navigation menu into one which has tabs, you can use the “`.nav-tabs`” class. For instance

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Nav Menus</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Nav Menu Example</h1>
    <ul class="nav nav-tabs">
        <li class="nav-item">
            <a class="nav-link active" href="#">First Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Second Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Third Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Fourth Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Fifth Item</a>
        </li>
    </ul>
</div>
</body>
</html>
```

The above code produces the following result, which shows a page with tabs menu.

Nav Tabs Example

First Item	Second Item	Third Item	Fourth Item	Fifth Item
------------	-------------	------------	-------------	------------

6.14.3 Pills

Similarly, you can use the “`.nav-pills`” class to add pills in the navigation menu. Pills are simple navigation components which offers various different layouts to enable faster navigation between options.

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Nav Menus</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Nav Menu Example</h1>
    <ul class="nav nav-pills">
        <li class="nav-item">
            <a class="nav-link active" href="#">First Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Second Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Third Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Fourth Item</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Fifth Item</a>
        </li>
    </ul>
</div>
</body>
</html>

```

The above code produces the following result, which shows a page with navigation pills menu.

Navigation Pills Example

[First Item](#) [Second Item](#) [Third Item](#) [Fourth Item](#) [Fifth Item](#)

6.15 | Navigation Bar

A navigation bar consists of a header which is positioned on the top of a webpage. In Bootstrap, the functionality of such navigation bars relies on the size of user screens – it can extend or collapse accordingly.

To create a navigation bar, use the `.navbar` class while the `responsiveness` can be configured through the `".navbar-expand-xl|lg|md|sm"` class. For example:

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Navigation Bars</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<nav class="navbar navbar-expand-sm bg-secondary">
    <ul class="navbar-nav">
        <li class="nav-item">
            <a class="nav-link" href="#">Home</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">About</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Services</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Careers</a>
        </li>
    </ul>
</nav>
<br>
<div class="container-fluid">
</div>
</body>
</html>

```

The above code produces the following result, which shows a page with navigation bar menu.

Navigation Bar Example

[Home](#) [About](#) [Services](#) [Careers](#)

To generate a vertical navigation bar, simply eliminate the “`.navbar-expand-xl|lg|md|sm`” class. For getting your navigation bar in the middle of the page, use the “`justify-content-center`” class.

6.15.1 Colorful Navigation Bars

All the background color classes can be used to modify the navigation bar’s background colors. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Colorful Navigation Bars</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Navigation Bars</h1>
</div>
<nav class="navbar navbar-expand-sm bg-light navbar-light justify-content-center">
    <ul class="navbar-nav">
        <li class="nav-item active">
            <a class="nav-link" href="#">Home</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Vision</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Services</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Careers</a>
        </li>
    </ul>
</nav>
<nav class="navbar navbar-expand-sm bg-secondary navbar-dark">
    <ul class="navbar-nav">
        <li class="nav-item active">
            <a class="nav-link" href="#">Home</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Vision</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Services</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Careers</a>
        </li>
    </ul>
</nav>
<nav class="navbar navbar-expand-sm bg-primary navbar-dark">
    <ul class="navbar-nav">
        <li class="nav-item active">
            <a class="nav-link" href="#">Home</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Vision</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Services</a>
        </li>
    </ul>
</nav>
```

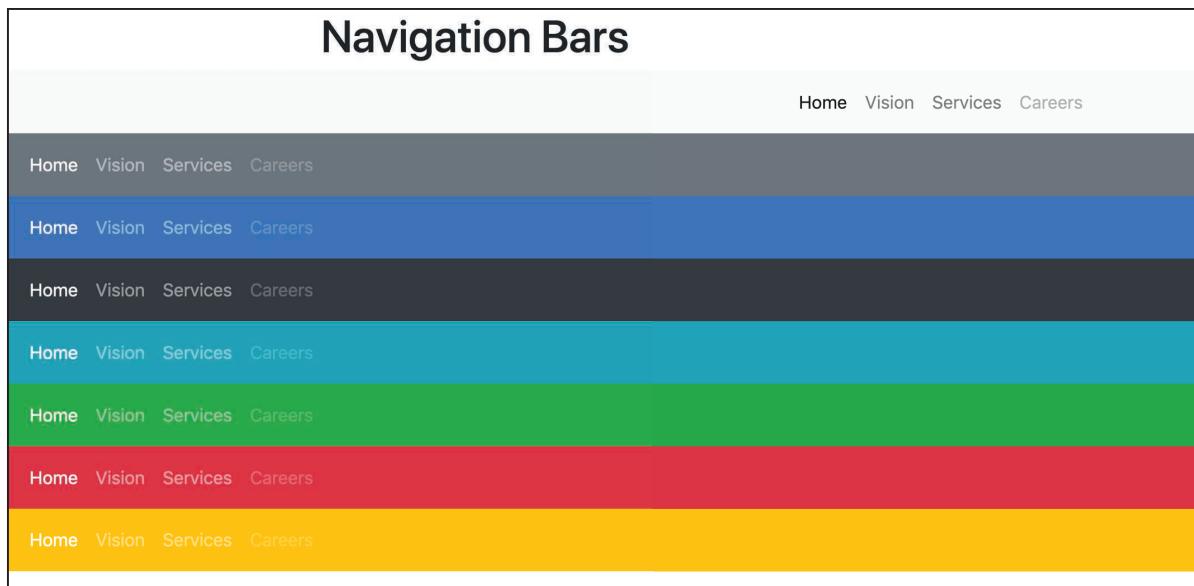
```
<li class="nav-item">
    <a class="nav-link disabled" href="#">Careers</a>
</li>
</ul>
</nav>
<nav class="navbar navbar-expand-sm bg-dark navbar-dark">
    <ul class="navbar-nav">
        <li class="nav-item active">
            <a class="nav-link" href="#">Home</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Vision</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Services</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Careers</a>
        </li>
    </ul>
</nav>
<nav class="navbar navbar-expand-sm bg-info navbar-dark">
    <ul class="navbar-nav">
        <li class="nav-item active">
            <a class="nav-link" href="#">Home</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Vision</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Services</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Careers</a>
        </li>
    </ul>
</nav>
<nav class="navbar navbar-expand-sm bg-success navbar-dark">
    <ul class="navbar-nav">
        <li class="nav-item active">
            <a class="nav-link" href="#">Home</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Vision</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Services</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Careers</a>
        </li>
    </ul>
</nav>
<nav class="navbar navbar-expand-sm bg-danger navbar-dark">
    <ul class="navbar-nav">
        <li class="nav-item active">
            <a class="nav-link" href="#">Home</a>
        </li>
```

```

<li class="nav-item">
    <a class="nav-link" href="#">Vision</a>
</li>
<li class="nav-item">
    <a class="nav-link" href="#">Services</a>
</li>
<li class="nav-item">
    <a class="nav-link disabled" href="#">Careers</a>
</li>
</ul>
</nav>
<nav class="navbar navbar-expand-sm bg-warning navbar-dark">
    <ul class="navbar-nav">
        <li class="nav-item active">
            <a class="nav-link" href="#">Home</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Vision</a>
        </li>
        <li class="nav-item">
            <a class="nav-link" href="#">Services</a>
        </li>
        <li class="nav-item">
            <a class="nav-link disabled" href="#">Careers</a>
        </li>
    </ul>
</nav>
</body>
</html>

```

The above code produces the following result, which shows a page with colorful navigation bar.



6.16 | Forms

Bootstrap offers two types of layouts for forms. First, we have a form with full width which is referred to as the stacked form. Second is an inline form.



6.16.1 Stacked Form

To generate a stacked form which contains two fields for input and a checkbox and submit buttons each, we can make use of the “*form-group*” class. For example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Stacked Forms</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>How to Create Stacked Form</h1>
    <form action="/action_page.php">
        <div class="form-group">
            <label for="email">Email Address</label>
            <input type="email" class="form-control" id="email" placeholder="Type Your Email Address" name="email">
        </div>
        <div class="form-group">
            <label for="pwd">Password</label>
            <input type="password" class="form-control" id="pwd" placeholder="Type Your Password" name="password">
        </div>
        <div class="form-group form-check">
            <label class="form-check-label">
                <input class="form-check-input" type="checkbox" name="Logged in"> Logged in
            </label>
        </div>
        <button type="submit" class="btn btn-primary">Proceed</button>
    </form>
</div>
</body>
</html>
```

The above code produces the following result, which shows a page with stacked form.

6.16.2 Bootstrap Inline Form

An inline form is one in which all the form elements are aligned on the left side along with being “*inline*” by default. In the following example, we generate an inline form:

```

<!DOCTYPE html>
<html lang="en">
<head>
<title>Inline Form</title>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/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/1.14.6/umd/popper.min.js">
</script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
</script>
</head>
<body>
<div class="container">
    <h1>How to Create an Inline Form in Bootstrap</h1>
    <form class="form-inline" action="/action_page.php">
        <label for="email">Email Address</label>
        <input type="email" class="form-control" id="email" placeholder="Type Your Email Address" name="email address">
        <label for="pwd">Password</label>
        <input type="password" class="form-control" id="pw" placeholder="Type Your Password" name="password">
        <div class="form-check">
            <label class="form-check-label">
                <input class="form-check-input" type="checkbox" name="logged in" checked="checked" /> Logged In
            </label>
        </div>
        <button type="submit" class="btn btn-primary">Proceed</button>
    </form>
</div>
</body>
</html>

```

The above code produces the following result, which shows a page with inline form.

How to Create an Inline Form in Bootstrap

Email Address Password Logged In

6.17 | Carousel



Have you ever seen those images on websites which rotate one-by-one as a slideshow? If you are aiming to add such functionality in your website, then Bootstrap's highly powerful carousel class is the way to go.

Bootstrap's carousel is often used in website as a slideshow for checking multiple elements. While creating the carousel, you have to first set the number of “*indicators*” which would require going through the images in the slideshow. For example, in the example below we used 4. This is done by using the “*carousel-indicators*” class which is placed in an unordered list. For the list items, the “*data-target*” class is used.

Afterward, the images in the slideshow have to be specified by using the “*carousel-inner*” class in a *div* tag. Images are set through the “*carousel-item*” class.

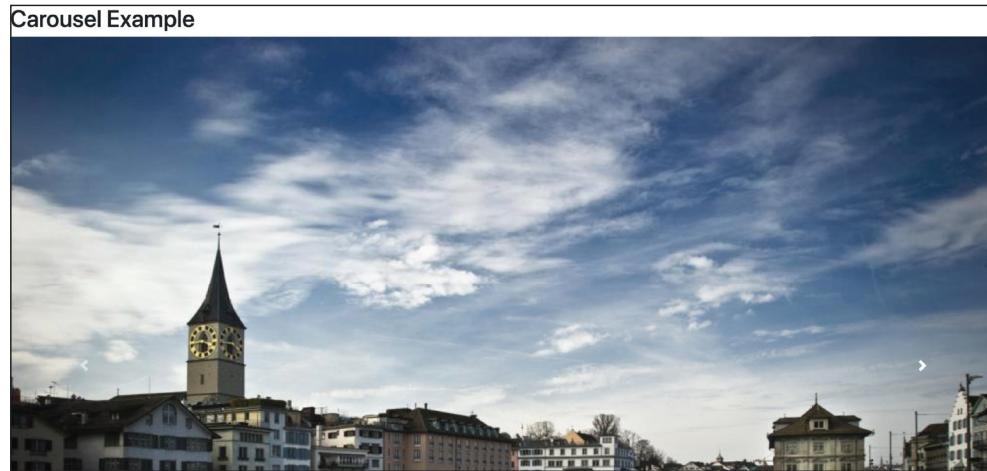
In the end, controls are added through “*carousel-control-prev*” and “*carousel-control-next*” class. As their name suggests, they are used to go back and forth in the slideshow. Note that by default the slideshow would run itself. To understand carousel, consider the following example:

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Carousel 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/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
    <style>
        .carousel-inner img {
            width: 100%;
            height: 100%;
        }
    </style>
</head>
<body>
<div id="demo" class="carousel slide" data-ride="carousel">
    <ul class="carousel-indicators">
        <li data-target="#demo" data-slide-to="0" class="active"></li>
        <li data-target="#demo" data-slide-to="1"></li>
        <li data-target="#demo" data-slide-to="2"></li>
        <li data-target="#demo" data-slide-to="3"></li>
    </ul>
    <div class="carousel-inner">
        <div class="carousel-item active">
            
        </div>
        <div class="carousel-item">
            
        </div>
        <div class="carousel-item">
            
        </div>
        <div class="carousel-item">
            
        </div>
        <div class="carousel-item">
        </div>
        <a class="carousel-control-prev" href="#demo" data-slide="prev">
            <span class="carousel-control-prev-icon"></span>
        </a>
        <a class="carousel-control-next" href="#demo" data-slide="next">
            <span class="carousel-control-next-icon"></span>
        </a>
    </div>
</body>
</html>

```

The above code produces the following result, which shows a page with carousel like sliding images. It also has two buttons to go to previous or next image.



It is also possible to add captions inside the slideshow by using the “`<div class = "carousel-caption">`” class. For example:

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Carousel With Caption 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/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
    <style>
        .carousel-inner img {
            width: 100%;
            height: 100%;
        }
    </style>
</head>
<body>
<div id="demo" class="carousel slide" data-ride="carousel">
    <h1>Carousel With Caption Example</h1>
    <ul class="carousel-indicators">
        <li data-target="#demo" data-slide-to="0" class="active"></li>
        <li data-target="#demo" data-slide-to="1"></li>
        <li data-target="#demo" data-slide-to="2"></li>
        <li data-target="#demo" data-slide-to="3"></li>
    </ul>
    <div class="carousel-inner">
        <div class="carousel-item active">
            
            <div class="carousel-caption">
                <h3>London</h3>
                <p>London is quite expensive but it is worth it!</p>
            </div>
        </div>
        <div class="carousel-item">
            
        </div>
    </div>
</div>

```

```

<div class="carousel-caption">
    <h3>Berlin</h3>
    <p>Berlin is one of the biggest tech hubs in the world.</p>
</div>
</div>
<div class="carousel-item">
    
    <div class="carousel-caption">
        <h3>Zurich</h3>
        <p>Zurich is the center of banking and finance.</p>
    </div>
</div>
<div class="carousel-item">
    
    <div class="carousel-caption">
        <h3>Venice</h3>
        <p>Few cities can claim to match Venice in beauty.</p>
    </div>
</div>
<div class="carousel-item">
    <a class="carousel-control-prev" href="#demo" data-slide="prev">
        <span class="carousel-control-prev-icon"></span>
    </a>
    <a class="carousel-control-next" href="#demo" data-slide="next">
        <span class="carousel-control-next-icon"></span>
    </a>
</div>
</body>
</html>

```

The above code produces the following result, which shows a page with carousel like sliding images with caption at the bottom. It also has two buttons to go to previous or next image.





6.18 | Media Objects

Bootstrap is known for providing a simple method to align media objects such as images or videos along with content. These objects could be used for various types of components like blog comments, tweets, etc. They can feature a left- or right-aligned image along with the textual content. The media makes it simpler to construct complex and repetitive components where some type of media is placed along with content that does not wrap around the mentioned media. The main aim of the object is to keep the code for building these blocks of information very short.

.media: This class makes it possible to float a media object (e.g., video, image, or audio) to the left or right side of a content block.

See the following simple media object example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Media Object 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/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Media Object Example</h1>
    <div class="media">
        
        <div class="media-body">
            <h5 class="mt-0">Mayur Ramgir</h5>
            Every "Failure" brings new "Opportunity"
            Every "Darkness" brings new "Light"
            Every "Blindness" brings new "Vision"
            Every "No" brings new "Yes"
            Every "Closed Door" opens up a new door
            There is no such thing called "End of the World". Keep fighting the good fight my friend. One day would be yours, if not today, it will be tomorrow.
        </div>
    </div>
</div>
</body>
</html>
```

The above code produces the following result, which shows a page with media object.

Media Object Example



Mayur Ramgir

Every "Failure" brings new "Opportunity" Every "Darkness" brings new "Light" Every "Blindness" brings new "Vision" Every "No" brings new "Yes" Every "Closed Door" opens up a new door There is no such thing called "End of the World". Keep fighting the good fight my friend. One day would be yours, if not today, it will be tomorrow.

Building nested media objects: you can also nest media objects inside other media objects. It can be used for creating comment threads in a blog post. See the following example:

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title>Media Object Nested 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/4.2.1/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/1.14.6/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Media Object Nested Example</h1>
    <ul class = "media-list">
        <li class = "media">
            <a class = "pull-left" href = "#">
                
            </a>
            <div class = "media-body">
                <h4 class = "media-heading">Mayur Ramgir</h4>
                <p>
                    Trust is the most important element. By con you can win once and lose forever but with honesty you can win over and over again.
                </p>
                <div class = "media">
                    <a class = "pull-left" href = "#">
                        
                    </a>
                    <div class = "media-body">
                        <h4 class = "media-heading">Mayur Ramgir</h4>
                        World is so beautiful when you look beyond your self-interest.
                        Success and self do not work together. Rise up the ordinary.
                    <div class = "media">
                        <a class = "pull-left" href = "#">
                            
                        </a>
                        <div class = "media-body">
                            <h4 class = "media-heading">Mayur Ramgir</h4>
                            The greatest thing in the world is not in dying rich but leaving the richness behind for the world to treasure.
                        </div>
                    </div>
                </div>
            </div>
        <div class = "media">
            <a class = "pull-left" href = "#">
                
            </a>
            <div class = "media-body">
                <h4 class = "media-heading">Mayur Ramgir</h4>
                Dreams are dreams until you make them a reality. And that won't happen until you give up your sleep, Wake Up.
            </div>
        </div>
    </li>
</ul>
</div>
</body>
</html>

```

The above code produces the following result, which shows a page with nested media objects.

Media Object Nested Example

Mayur Ramgir
Trust is the most important element. By con you can win once and lose forever but with honesty you can win over and over again.

Mayur Ramgir
World is so beautiful when you look beyond your self-interest. Success and self do not work together. Rise up the ordinary.

Mayur Ramgir
The greatest thing in the world is not in dying rich but leaving the richness behind for the world to treasure.

Mayur Ramgir
Dreams are dreams until you make them a reality. And that won't happen until you give up your sleep, Wake Up.

The alignment of media objects: By simply tweaking the HTML code itself, we can easily change the horizontal alignment media and content. Apart from this, you can also align images or other media files at the centre or bottom of the content block by utilizing the flexbox utility classes.

See the following example which shows alignment of media objects:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Media Object Alignment 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/4.2.1/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/1.14.6/umd/popper.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Media Object Alignment Example</h1>
    <div class="media">
        
        <div class="media-body">
            <h5 class="mt-0">Mayur Ramgir</h5>
            Don't waste your time competing with someone. Instead focus on competing with yourself. Leaders don't compete, followers do.
        </div>
    </div>
    <br /><br />
    <div class="media">
        
        <div class="media-body">
            <h5 class="mt-0">Mayur Ramgir</h5>
            Spread your wings, become a role model for others to follow so that they can match you step for step in their own quest to achieve success.
        </div>
    </div>
    <br /><br />
    <div class="media">
        
        <div class="media-body">
            <h5 class="mt-0">Mayur Ramgir</h5>
            Opportunity to help others is the opportunity to help yourself in disguise.
        </div>
    </div>
</div>
</body>
</html>
```

The above code produces the following result, which shows various alignment of media objects.

Media Object Alignment Example

 Mayur Ramgir

Don't waste your time competing with someone. Instead focus on competing with yourself. Leaders don't compete, followers do.

 Mayur Ramgir

Spread your wings, become a role model for others to follow so that they can match you step by step in their own quest to achieve success.

 Mayur Ramgir

Opportunity to help others is the opportunity to help yourself in disguise.

Creating a media list: We can create a media list by using the media object classes and HTML list elements. This can also be done by placing media objects inside a list. These lists are very resourceful in the representation of user comment threads, lists, articles, etc.

See the following a simple media object list example:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Media Object List 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/4.2.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.14.6/dist/umd/popper.min.js">
    </script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.2.1/js/bootstrap.min.js">
    </script>
</head>
<body>
<div class="container">
    <h1>Media Object List Example</h1>
    <ul class = "media-list">
        <li class = "media">
            <a class = "pull-left" href = "#">
                
            </a>
            <div class = "media-body">
                <h4 class = "media-heading">Mayur Ramgir</h4>
                <p>
                    Fools are those who do not understand, every action has an equal and opposite reaction. Take your actions carefully to avoid unwanted results.
                </p>
            </div>
        </li>
        <li class = "media">
            <a class = "pull-left" href = "#">
                
            </a>
            <div class = "media-body">
                <h4 class = "media-heading">Mayur Ramgir</h4>
```

```

<p>
    Experience every failure closely because each failure is taking you
    closer to your goal and preparing you to be the unbeatable.
</p>
</div>
</li>
<li class = "media">
    <a class = "pull-left" href = "#">
        
    </a>
    <div class = "media-body">
        <h4 class = "media-heading">Mayur Ramgir</h4>
        <p>
            Explore new avenues and look for ways to have a greater, much more
            influential impact on the world around you.
        </p>
    </div>
</li>
</ul>
</div>
</body>
</html>

```

The above code produces the following result, which shows a page with media object list.

Media Object List Example



Mayur Ramgir

Fools are those who do not understand, every action has an equal and opposite reaction. Take your actions carefully to avoid unwanted results.



Mayur Ramgir

Experience every failure closely because each failure is taking you closer to your goal and preparing you to be the unbeatable.



Mayur Ramgir

Explore new avenues and look for ways to have a greater, much more influential impact on the world around you.



What is media object and what is its use?

Summary

In a short period of time, Bootstrap has become one of the leading front-end web technologies out there. In this chapter, we presented and practiced the most common and useful features of Bootstrap. This chapter would not only facilitate you in creating more elegant and sleek websites, but it can also serve as a basis for you to learn more complex front-end technologies.

In this chapter, we have learned the following concepts:

1. Bootstrap and its use to render content properly on all the screens.
2. Container and types of containers.
3. Grid and its use.
4. Various elements such as tables, forms, etc. and how to make sure they render properly.
5. Visually appealing features such as progress bar, navigation bar, etc.

In the Chapter 7, we will learn how to build HTML pages for the project idea we have defined in Chapter 2. We will also discuss how to create pages based on the designs and flow chart we have created.

Multiple-Choice Questions

1. What is the global default line-height in Bootstrap?
 - (a) 1.8
 - (b) 1.428
 - (c) 1.228
 - (d) 1.128
2. The main use of Glyphicons is _____.
 - (a) Graphic images
 - (b) Providing different icons
 - (c) Animation
 - (d) Slideshow
3. What kind of layout in Bootstrap is used for providing 100% width?
 - (a) Fixed layout
 - (b) Fluid layout
4. Which one of the given classes can make a thumbnail image?
 - (a) .img-thumbnail-image
 - (b) .img-thumb
 - (c) .img-thumbnail
 - (d) .img-tmbnail
5. Which one of the following plugins is utilized to create a modal window?
 - (a) window
 - (b) popup
 - (c) dialogbox
 - (d) modal

Review Questions

1. What is the use of Bootstrap?
2. What are the prerequisites for using Bootstrap?
3. How can you use the Bootstrap navbar?
4. What are Bootstrap Cards?
5. How can you use Form?
6. How can you use progress bar and set colors?
7. What is Jumbotron and how can one use it?
8. How can you use alerts?
9. What is pagination and how can you use it?
10. What are the key components of Bootstrap?

Exercises

1. Create a page and add table. Make sure the table is responsive and renders nicely on all types of screen sizes.
2. Create a registration page and add fields like name, address, etc. to capture data. Also add alerts if user is going to close the window.
3. Create a page and add file upload functionality. Then add a progress bar so that you can show the progress of file upload.
4. Create a page to show data in a graphical form. Use bar and pie charts to show the last 7 days weather data.
5. Create a page and add Grid to show stock prices data of Apple.

Project Ideas

Project 1: Take the dictionary project idea from Chapter 5 and make sure all the pages that we have created so far are rendering properly on all types of screen sizes. Add Bootstrap to this code to make it responsive. Also add additional features like progress bar, alerts, etc. to make sure the elements look good.

Add a new page where users can search for a particular word. Make sure we have nice effects and animation for this search feature.

Project 2: Create your own resume page in HTML, CSS, and Bootstrap. Add your photo and all the courses you have taken so far in schools/colleges/universities. Use different colors, different font styles, and most importantly make sure the page looks good on various different devices.

Recommended Readings

1. Benjamin Jakobus. 2018. *Mastering Bootstrap 4: Master the latest version of Bootstrap 4 to build highly customized responsive web apps, Second Edition*. Packt Publishing Ltd: Birmingham
2. Eduonix Learning Solutions. 2018. *Learning Bootstrap 4 by Building Projects: Develop 5 real-world Bootstrap 4.x projects from scratch*. Packt Publishing Ltd: Birmingham
3. Jacob D Lett. 2018. *Bootstrap 4 Quick Start: A Beginner's Guide to Building Responsive Layouts with Bootstrap 4*. Bootstrap Creative: Michigan
4. Bootstrap – <https://getbootstrap.com/>
5. W3School Bootstrap 3 – <https://www.w3schools.com/bootstrap/>
6. W3School Bootstrap 4 – <https://www.w3schools.com/bootstrap4/>