

## **Unit 01: Introduction to Bootstrap**

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### **Objectives**

After studying this unit, you will be able to:

- Recognize front-end web framework
- Understand bootstrap
- Analyze UI development

### **Introduction**

There are several reasons to use Bootstrap but let me boil it down to a few of the key reasons I recommend it. If you're like me, you're constantly starting new web projects. One of the most frustrating parts of getting a project off the ground is to reinvent the base HTML, CSS, and JavaScript for each project. It makes much more sense to reuse the same base code and then build on top of it. Some developers may prefer to write their own framework, and in some cases, this may make sense. However, with most projects, it has been found that it is easier to just use an existing framework. On top of the components that Bootstrap provides out-of-the-box, there are hundreds of other third-party components you can integrate with, with a large community of other developers to help you.

In the startup environment, Bootstrap is also a potent prototype tool. You'll frequently want to evaluate a concept without devoting a lot of effort to it. With Bootstrap, you can quickly create a prototype to test your idea without spending a lot of time creating a front end that you might not use.

## 1.1 Bootstrap 4 Advantages

1. The first and foremost advantage of using Bootstrap is that it is very easy to use and implement. If a person has some basic knowledge of HTML and CSS, that user can easily use Bootstrap.
2. The fact that Bootstrap can adapt to the size of any phone, tablet, desktop and so on is also very interesting feature.
3. Bootstrap 4 is also useful because it is compatible with all modern browsers which include Google Chrome, Firefox, Internet Explorer 10+, Edge, Safari, and Opera.
4. It also produces less cross-browser bugs.
5. It is light weighted and consequently it can be widely used as a framework for creating responsive sites.
6. Lastly, Bootstrap 4 is a very simple and yet very effective grid system.

## 1.2 Applications of Bootstrap

- **Scaffolding:** Bootstrap provides a basic structure with Grid System, link styles, and background.
- **CSS:** Bootstrap comes with the feature of global CSS settings, fundamental HTML elements styled and enhanced with extensible classes, and an advanced grid system.
- **Components:** Bootstrap contains over a dozen reusable components built to provide iconography, dropdowns, navigation, alerts, pop-overs, and much more.

## 1.3 Where to Get Bootstrap?

Bootstrap is open-source software and it can be downloaded from [getbootstrap.com](https://getbootstrap.com)

If you want to download and host Bootstrap yourself, go to [getbootstrap.com](https://getbootstrap.com), and follow the instructions there.

OR:

Include Bootstrap from a CDN

- If you don't want to download and host Bootstrap yourself, you can include it from a CDN (Content Delivery Network).
- MaxCDN provides CDN support for Bootstrap's CSS and JavaScript. You must also include jQuery.

## 1.4 Bootstrap CDN

You must include the following Bootstrap's CSS, JavaScript, and jQuery from MaxCDN into your web page.

```
<!-- Latest compiled and minified Bootstrap CSS -->
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
```

```
<!-- Latest compiled Bootstrap JavaScript -->
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
```

```
<!-- latest jQuery library -->
<script src="https://code.jquery.com/jquery-latest.js"></script>
```

*Advantage of Using Bootstrap CDN*

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

### Create Web Page with Bootstrap

Add the HTML5 doctype

Bootstrap uses HTML elements and CSS properties that require the HTML5 doctype. Always include the HTML5 doctype at the beginning of the page, along with the lang attribute and the correct character set:

Bootstrap uses HTML elements and CSS properties that require the HTML5 doctype. Always include the HTML5 doctype at the beginning of the page, along with the lang attribute and the correct character set:

```
<!DOCTYPE html>

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

### Create Web Page with Bootstrap

Bootstrap 3 is designed to be responsive to mobile devices. Mobile-first styles are part of the core framework.

#### Bootstrap is mobile-first

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

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

#### Bootstrap is mobile-first

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

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

Containers

Bootstrap also requires a containing element to wrap site contents.

There are two container classes to choose from:

The .container class provides a responsive **fixed width container**.

The .container-fluid class provides a **full width container**, spanning the entire width of the viewport.



**Example:** Containers are not nestable (you cannot put a container inside another container).

### Bootstrap Grids

Bootstrap's grid system allows up to 12 columns across the page.

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

```
<div class="col-md-12">Span 12 columns</div>
```

```
<div class="col-md-6">Span 6</div><div class="col-md-6">Span 6</div>
<div class="col-md-4">Span 4</div><div class="col-md-8">Span 8</div>
<div class="col-md-4">Span 4</div><div class="col-md-4">Span 4</div><div class="col-md-4">Span 4</div>
```

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

### Grid Classes

The Bootstrap grid system has four classes:

- xs (for phones)
- sm (for tablets)
- md (for desktops)
- lg (for larger desktops)

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

```
<!DOCTYPE html>
<html lang="en">
<head><meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
<title>Any title</title>
</head>
<body>
//write code
</body>
</html>
```

Add the HTML 5 doctype:

Bootstrap uses HTML elements and CSS properties, so you have to add the HTML 5 doctype at the beginning of the page with lang attribute and correct character set.

- Bootstrap 3 is designed to be responsive to mobile devices.
- Mobile-first styles are part of the core framework of Bootstrap. You have to add the following <meta> tag inside the <head> element for proper rendering and touch zooming:



**Note:** The "width=device-width" part is used to set the width of the page to follow the screen-width of the device (vary according to the devices).

The initial-scale=1 part is used to set the initial zoom level when the page is first loaded by the browser.

### *Bootstrap is mobile friendly*

Bootstrap 3 is designed to be responsive to mobile devices. Mobile-first styles are part of the core framework of Bootstrap. You have to add the following <meta> tag inside the <head> element for proper rendering and touch zooming:

The "width=device-width" part is used to set the width of the page to follow the screen-width of the device (vary according to the devices). The initial-scale=1 part is used to set the initial zoom level when the page is first loaded by the browser.

### *Bootstrap Navigation bar*

- A navigation bar is like a navigation header that is placed at the top of the page. You can collapse or extend it according to the screen size.



### Basic Navbar Example

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

Creating a standard navigation bar at the top of the page with:

`<NAV CLASS="NAVBAR NAVBAR-DEFAULT">`.

### *Bootstrap Inverted Navigation Bar*

- Inverted navigation bar provides an alternative black navbar. It can be used to style the default navigation bar by changing. navbar-**default class** into. navbar-**inverse class**.



### Inverted Navbar

An inverted navbar is black instead of gray.

## 1.5 Web Design,Grid System,Header Section

### *Typography*

Bootstrap's global default font size is 14px, with a line height of 1.428. This is applied to the `<body>` element and all paragraphs (`<p>`). In addition, all `<p>` elements have a bottom margin that equals half their computed line-height (10px by default).

<code>.font-weight-bold</code>	<b>Bold text</b>
<code>.font-weight-bolder</code>	<b>Bolder text</b>
<code>.font-italic</code>	<i>Italic text</i>
<code>.lead</code>	Makes a paragraph stand out
<code>.text-uppercase</code>	Indicates uppercased text
<code>.text-left</code>	Indicates left-aligned text

### Background Colors

The classes for background colors are

- `bg-primary`,
- `.bg-success`,
- `.bg-info`, `.bg-warning`,
- `.bg-danger`,
- `.bg-secondary`,
- `.bg-dark` and
- `.bg-light`.

The classes for text colors are:

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

## 1.6 Bootstrap Forms

In Bootstrap, there are three types of form layouts:

- Vertical form (this is default)
- Horizontal form
- Inline form

There are three standard rules for these 3 form layouts:

Always use `<form role="form">` (helps improve accessibility for people using screen readers)

Wrap labels and form controls in `<div class="form-group">` (needed for optimum spacing)

Add class `.form-control` to all textual `<input>`, `<textarea>`, and `<select>` elements

## Vertical Form Example

Email address

Password

### Bootstrap Inline Form

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

Note: This only applies to forms within viewports that are at least 768px wide!

Additional rule for an inline form:

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

A horizontal form means that the labels are aligned next to the input field (horizontal) on large and medium screens. On small screens (767px and below), it will transform to a vertical form (labels are placed on top of each input).

### Horizontal form

Additional rules for a horizontal form:

Add class `.form-horizontal` to the `<form>` element

Add class `.control-label` to all `<label>` elements

Tip: Use Bootstrap's predefined grid classes to align labels and groups of form controls in a horizontal layout.

### Bootstrap Badges and Labels

Badges are numerical indicators of how many items are associated with a link:



The numbers (5, 10, and 2) are the badges. Use the `badge` class within `<span>` elements to create badges. Badges can also be used inside other elements, such as buttons:



### Labels

Labels are used to provide additional information about something:

Use the `label` class, followed by one of the six contextual classes: `label-default`, `label-primary`, `label-success`, `label-info`, `label-warning` or `label-danger`, within a `<span>` element to create a label:

## 1.7 Bootstrap Modals and Bootstrap Carousel

A carousel in Bootstrap 4 can be defined as a slideshow that is used for the purpose to slideshow through a series of content to show the audience the content and to enhance the website. A carousel can also be called as slideshow or image slider.

It can be regarded as one of the best ways of displaying the large number of contents inside a small space on a web page.

A carousel can be created in four main ways, which are

- Using slides only
- Using controls
- With the indicators
- With the captions

This carousel only contains slides. The class `carousel-inner` is used to add different slides to the carousel. In this, two little arrows will be added to the slides which can help a user to manually switch to any slide in the carousel.

**.carousel-control-prev class** - It inserts a left or previous button to the carousel, that will give access to the user to go back between the slides.

**.carousel-control-next class** - It inserts a right or next button to the carousel that will give access to the user to go forward between the slides.

**.carousel-control-prev-icon class** - It can be used along with the `.carousel-control-prev` in order to create a previous button.

**.carousel-control-next-icon class** - It can be used along with the `.carousel-control-next` to create a "next" button

### *Indicators*

The `.carousel-indicators` is the class that can be used to add indicators for the carousel. The indicators in this class are used to indicate how many slides are in the carousel, and which slide the user is currently viewing.

### *Captions*

A user can also add captions to their slides in Bootstrap 4. A caption can be easily used to convey to the audience of the website that what exactly is happening in the carousel. For the purpose of adding captions, a user has to add elements inside `<div class="carousel-caption">` within each `<div class="carousel-item">` in order to create a caption for every slide.

## 1.8 Bootstrap 4 Modal

The Modal component is a dialog box/popup window that is displayed on top of the current page

### *Creating a modal*

```
<!-- The Modal -->
<div class="modal" id="myModal">
  <div class="modal-dialog">
    <div class="modal-content">
      <!-- Modal Header -->
      <div class="modal-header">
        <h4 class="modal-title">Modal Heading</h4>
        <button type="button" class="close" data-dismiss="modal">&times;</button>
      </div>
      <!-- Modal body -->
```



```

<div class="modal-body">
    Modal body..
</div>
<!-- Modal footer -->
<div class="modal-footer">
<button type="button" class="btn btn-danger" data-dismiss="modal">Close</button>
</div>

```

### Grid

Furthermore, Bootstrap provides a grid system, which creates a page layout through a series of rows and columns that can place the content. There is no Grid system in CSS.

### Designing Classes

Also, Bootstrap contains already designed classes. The programmer can use them in his program to add styling to the elements without writing code from the beginning. On the other hand, in CSS, the programmer should write the code from scratch.

Considering the usage, the Bootstrap helps to create responsive designs that are more presentable while CSS helps to create presentable webpages. Bootstrap and CSS help to build presentable user interfaces. The basic difference between Bootstrap and CSS is that the Bootstrap is a front-end framework while CSS is a style sheet language. They help to add background and borders, text effects, 2D, 3D animations etc. to web pages.

### Bootstrap Auto-layout Columns

Creating equal width columns for all devices (x-small, small, medium, large, x-large, and xx-large) through simply using the class .col, without specifying any column number.

```

<div class="container">
<!--Row with two equal columns-->
<div class="row">
<div class="col">Column one</div>
<div class="col">Column two</div></div>
<!--Row with three equal columns-->
<div class="row">
<div class="col">Column one</div>
<div class="col">Column two</div>
<div class="col">Column three</div>
</div>
</div>

```

### Summary

- Bootstrap is a free front-end framework for faster and easier web development. It also gives you the ability to easily create responsive designs.
- Content delivery network (CDN) is a system of distributed servers (network) that deliver webpages and other Web content to a user based on the geographic locations of the user, the origin of the webpage and a content delivery server.
- A caption can be easily used to convey to the audience of the website that what exactly is happening in the carousel

- Bootstrap provides a grid system, which creates a page layout through a series of rows and columns that can place the content. There is no Grid system in CSS.
- Bootstrap's global default font-size is 14px, with a line-height of 1.428. This is applied to the `<body>` element and all paragraphs (`<p>`).
- Bootstrap 4 is designed to be responsive to mobile devices. Mobile-first styles are part of the core framework of Bootstrap. You have to add the following `<meta>` tag inside the `<head>` element for proper rendering and touch zooming:

## **Keywords**

**Bootstrap:** Bootstrap is a free front-end framework for faster and easier web development. It also gives you the ability to easily create responsive designs.

**Carousel** -A carousel in Bootstrap 4 can be defined as a slideshow that is used for the purpose to slideshow through a series of content to show the audience the content and to enhance the website

**CSS-** Bootstrap comes with the feature of global CSS settings, fundamental HTML elements styled and enhanced with extensible classes, and an advanced grid system

**Grids-** Bootstrap provides a grid system, which creates a page layout through a series of rows and columns that can place the content.

**Containers-** Containers are not nestable (you cannot put a container inside another container).

**Bootstrap Inline:** In an inline form, all of the elements are inline, left-aligned, and the labels are alongside

**Navigation Bar-** A navigation bar is like a navigation header that is placed at the top of the page. You can collapse or extend it according to the screen size

**Inverted Navigation Bar:** Inverted navigation bar provides an alternative black navbar. It can be used to style the default navigation bar by changing `navbar-default class` into `navbar-inverse class`.

## **SelfAssessment**

1. Which of the following class in Bootstrap is used to provide a responsive fixed width container?
  - A. `.container-fixed`
  - B. `.container-fluid`
  - C. `.container`
  - D. All of the above
2. Is Bootstrap 4 mobile-first?
  - A. True
  - B. False
  - C. Can't say
  - D. May be
3. How many columns are allowed in a bootstrap grid system?
  - A. 2
  - B. 12
  - C. 3

- D. 5
4. What are advantages of Bootstrap
- A. Easy to use
  - B. Responsive
  - C. Mobile first
  - D. All of the above
5. What is full form of CDN
- A. Content Direct Network
  - B. Content Delivery Network
  - C. Content Delivery Node
  - D. Create Delivery Network
6. Which of the following class in bootstrap is used to create a big box for calling extra attention?
- A. .box
  - B. .container
  - C. .container-fluid
  - D. .jumbotron
7. The correct syntax of creating a standard navigation bar is -
- A. <nav class="navigationbar navbar">
  - B. <nav class="navbar navbar-default">
  - C. <nav class="nav navbar">
  - D. <nav class="navbar default">
8. Which class in Bootstrap Grid System used for phones:
- A. Xs
  - B. Sm
  - C. Md
  - D. Lg
9. Which class in Bootstrap Grid System used for tablets:
- A. Xs
  - B. Sm
  - C. Md
  - D. Lg
10. Which class in Bootstrap Grid System used for desktops:
- A. Xs
  - B. Sm

- C. Md
  - D. Lg
11. Which class in Bootstrap Grid System used for larger desktops:
- A. Xs
  - B. Sm
  - C. Md
  - D. Lg
12. Which is default form layout in Bootstrap
- A. Vertical form
  - B. Horizontal form
  - C. Inline form
  - D. None of these
13. \_\_\_\_\_ are used to provide additional information about something
- A. Labels
  - B. Badges
  - C. Headings
  - D. None of these
14. A \_\_\_\_\_ can also be called as slideshow or image slider
- A. Carousel
  - B. Labels
  - C. Badges
  - D. Headings
15. A carousel can be created using:
- A. Using slides only
  - B. Using controls
  - C. With the indicators
  - D. All of the above

### **Answers for SelfAssessment**

- |       |       |       |       |       |
|-------|-------|-------|-------|-------|
| 1. C  | 2. A  | 3. B  | 4. D  | 5. B  |
| 6. D  | 7. B  | 8. A  | 9. B  | 10. C |
| 11. D | 12. A | 13. A | 14. A | 15. D |

## **Review Questions**

1. Explain why Bootstrap is preferred for website development?
2. What is Bootstrap Grid System? Explain with an example?
3. Explain the typography and links in Bootstrap
4. What is media object in Bootstrap and what are their types
5. Explain the uses of carousel plugin in Bootstrap.
6. What are the bootstrap media objects?
7. What are Bootstrap panels? Explain how to create a Bootstrap panel with a heading
8. What are Bootstrap alerts?
9. What is navigation Bar?
10. What is Inverted Navigation Bar?



## **Further Readings**

- Bootstrap in 24 Hours, Sams
- Silvio Moreto, Bootstrap 4 By Example
- Learning Bootstrap 4 Second Edition, Matt Lambert



## **Web Links**

- <https://getbootstrap.com/>
- [https://en.wikipedia.org/wiki/Bootstrap\\_\(front-end\\_framework\)](https://en.wikipedia.org/wiki/Bootstrap_(front-end_framework))