Module 4: Introduction to Bootstrap

Module Objective

In this module, students will be able to learn about frontend technologies Bootstrap.

At the end of this module, students should be able to demonstrate appropriate knowledge, and show an understanding of the following:

- Learn CSS role in creating user interfaces (for mobile) and websites.
- Learn the basic CSS concepts: selectors, CSS properties, CSS code structure, CSS declarations, CSS unit types etc.
- Learn how CSS is included in an HTML page.

Bootstrap Introduction

Webpage designed with HTML have primary issue of context representation, webpage may look different in every browser or device (e.g. mobile, tablet, laptop). Hence, we may need to modify the code according to browser or device. Bootstrap can be easily resolved this problem.

Bootstrap is a free and open source front end development framework for the creation of websites and web apps. The Bootstrap framework is built on HTML, CSS, and JavaScript (JS) to facilitate the development of responsive, mobile-first sites and apps. Bootstrap includes several predefined classes for easy layouts e.g. dropdown buttons, navigation bar and alerts etc.

Responsive design makes it possible for a web page or app to detect the visitor's screen size and orientation and automatically adapt the display accordingly; the mobile first approach assumes that Smartphone's, tablets and task-specific Mobile apps are employees' primary tools for getting work done and addresses the requirements of those technologies in design.
Bootstrap includes user interface components, layouts and JS tools along with the framework for implementation. The software is available precompiled or as source code.

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Mark Otto and Jacob Thornton developed Bootstrap at Twitter as a means of improving the consistency of tools used on the site and reducing maintenance. The software was formerly known as Twitter Blueprint and is sometimes referred to as Twitter Bootstrap.

Official icon of bootstrap

Why use Bootstrap

Every front-end developer's goal is to create a multi functioning, easy-to-navigate, and aesthetically appealing front-end design for website and web/mobile apps. It might seem very basic but the effort that goes into building such a front-end requires a lot of patience, efforts such as writing repetitive and time consuming coding processes. Fortunately, a team of developers started to build a Framework.

A framework is a collection of programs that you can use to develop your own application. It is built on top of a programming language.

1. Components

Bootstrap provides a whole barrelful of components that can be easily included in our web applications, like:

- Dropdowns
- Forms
- Navigation Bars
- Buttons
- Tables
- Progress bars
- Thumbnails

Therefore, adding eye-catching design elements to our applications is very easy and we can be assured that all of the components will look awesome no matter the screen size or device used to view them. Thus, it provides a lot of ready-made functionalities at the fingertips.

2. Responsive Grid

Bootstrap has its own grid system predefined. We can get straight to filling your containers with the required content. Users can define certain custom breakpoints for each column, using their extra small, small, medium, large, and extra-large breaks. It also has a default option that can be used in most scenarios. Thus, the responsive grid of this framework makes the life of developers easy.

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3. Time-Saving

When we are bound to an extremely confined timeline to build a web application or a mobile application, we can easily take advantage of the Bootstrap framework and nail our project effortlessly. It is due to the ready-made blocks which are built ready for us to use them. Evidently, we do not have to start everything from scratch and can modify certain elements to make them unique with the inputs.

When we download and install Bootstrap, it unpacks ready-made themes & templates. We can choose from it or can also choose to include inputs from other sources. But, we must also be aware that there are a lot of people who do the same. Hence, to look unique from the rest of the websites that have the same theme or template, we need to get a little creative and modify certain components such that it defines our website or application uniquely.

4. Customizable

Users can always modify the CSS file if they are not satisfied with Bootstrap's design template. Also, it can be combined with existing designs, and thus, they can complement each other's functions. It is very much helpful when we want to give our application a unique look but we do not have enough time to learn or code custom CSS from scratch.

By using Bootstrap's customization page, we can tweak it further to create your own custom theme. We must also identify and remove all the plugins and components that are not required for the web project. Moreover, we also get to have a specific section where we can customize our template by changing the values of the variables.

5. Compatibility

The bootstrap framework also comes with compatibility. The Bootstrap development team assures the compatibility of the framework with all modern browsers, versions, and platforms. This framework doesn't support proxy browsers and older browsers, but that doesn't affect its display or functionality.

6. Consistency

There have been certain inconsistencies prevailing between the Front-end and Backend development teams. The creators of Bootstrap wanted to come up with a solution to establish consistency among these teams. Therefore, they developed this Bootstrap framework that eradicates the use of libraries that differ from developer to developer. So, as a result, no matter who handles the project, the framework establishes consistency throughout the project. Since it is also compatible across multiple browsers, no matter what browser we use for our development purpose, it consistently produces the same output across all browsers.

7. Community Support

Bootstrap provides a lot of resources and materials on its official website and some other websites also offer certain resources that would facilitate the front-end development process. Along with that, the fficial website also offers incredible documentation which makes creating a website, a lot simpler. Moreover, we can get access to their templates and themes to which we can make required changes.

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Since the Bootstrap community is huge, if we are stuck with any complex error and we could not figure out why it is happening using Google, we can always post a question where the expert developers having the same issues might help us out.

Bootstrap Versions

- Bootstrap 5 (released 2021) is the newest version of Bootstrap (released 2013); with new components, faster style sheet and more responsiveness.
- Bootstrap 5 supports the latest, stable releases of all major browsers and platforms. However, Internet Explorer 11 and down is not supported.
- The main differences between Bootstrap 5 and Bootstrap 3 & 4, is that Bootstrap 5 has switched to vanilla JavaScript instead of jQuery.
- Bootstrap 3 and Bootstrap 4 is still supported by the team for critical bug fixes and documentation changes, and it is perfectly safe to continue to use them. However, new features will NOT be added to them.

How to get Bootstrap

You can load bootstrap from a CDN (content delivery network) or locally. The local version can be pulled from Bower, npm, Github, or the Bootstrap website (https://getbootstrap.com/docs/3.4/getting-started) respectively.

CDN

Bootstrap is available via MaxCDN. A CDN enables a website to frequently retrieve used public files from globally distributed servers. When a user from the United States invokes your host in Germany, then the CDN will ensure that the bootstrap files are retrieved from a server in the United States. This relieves your server, the lines of the provider, the Internet in general and the user experiences a faster download. Basically it is a win–win.

If you program on the intranet, a CDN is in contrast not to your advantage is not to your advantage. If you expect only local users in Germany, there is no advantage to a CDN. The bootstrap files are included when using the CDN as follows (the backslash at the end of line conotates the line break and is not part of the URL):

```
<!-- The latest compiled and minimized CSS -->
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstr\
ap/5.0.0./css/bootstrap.min.css">

<!-- Optional Theme -->
```

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```
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstr\
ap/5.0.0/css/bootstrap-theme.min.css">

<!-- The latest compiled and minimized JavaScript -->
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/5.0.0/js/boot\
strap.min.js"></script>
```

Repository for Local Installation

To obtain a local copy, you can use either Bower2 or npm3. Bower is for general front-end development, while NPM is the repository (node package manager) for Node.js. If you develop in Ruby on Rails, you should look for Gem "Bootstrap for SASS" (bootstrap).

Install with Bower

You can get Bootstrap's SASS, CSS, JavaScript, and other files using Bower to install and manage.

$bower install bootstrap#5.0

Bower retrieves data from a separate repository, usually directly from GitHub.

Bower itself is a node package so it requires Node. If you have not worked with Bower, please observe the following conditions:

- First, install a Git client suitable for your operating system
- Install Node.js—which automatically will bring the Node Packet
- Manager npm
- Install Bower by NPM

  $npm install bower -g

Install using NPM

By using Bootstrap, npm is installed as follows:

$npm install bootstrap@next

If you are using npm, you will probably use Node.js. Bind bootstrap as follows in your node application files:

require('bootstrap')

This command loads bootstraps jQuery plug-ins in the jQuery object. The module bootstrap itself has exported nothing. You can download the jQuery plug-ins individually by loading the ***/js/.js*-** files in the root directory of the package.

Bootstraps **package.json** contains some additional metadata under the following keys:

- sass: Path to Bootstrap's SASS source files
- style: Path to Bootstrap's nonminimized CSS that has been precompiled with the default settings (without adjustment option)

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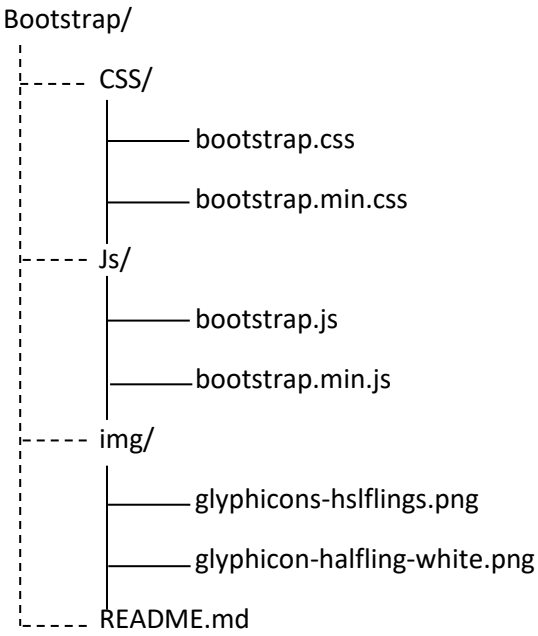
Create your first page with bootstrap

Creating very first web page using bootstrap is a new experience, before bootstrap and CSS, webpage designing required very high concentration and hard work and many times results were unsatisfactory, but with support of CSS the web pages are more defined, beautified and user friendly, they are structured with correct content place holding. When bootstrap interact with web designers, it was free front-end framework with faster web development it includes HTML, CSS based design templates for forms, table, button etc.

Bootstrap is a responsive web design it is about creating webpage's with automatic adjustment for all devices like desktop, laptop, tablet, smart phone etc.

Creating webpage with bootstrap is also very easy and effective, lets check before creating webpage with bootstrap, how bootstrap file structure looks like



The Bootstrap download includes three folders: css, js, and img. For simplicity, add these to the root of your project. Minified versions of the CSS and JavaScript are also included. It is not necessary to include both the uncompressed and the minified versions.

Basic HTML Template

```
<!DOCTYPE html>
<html>
    <head>
        <title>Bootstrap 101 Template</title>
    </head>
    <body>
```

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```
        <h1>Hello, world!</h1>
    </body>
</html>
```

With Bootstrap, we include the link to the CSS stylesheet and the JavaScript:

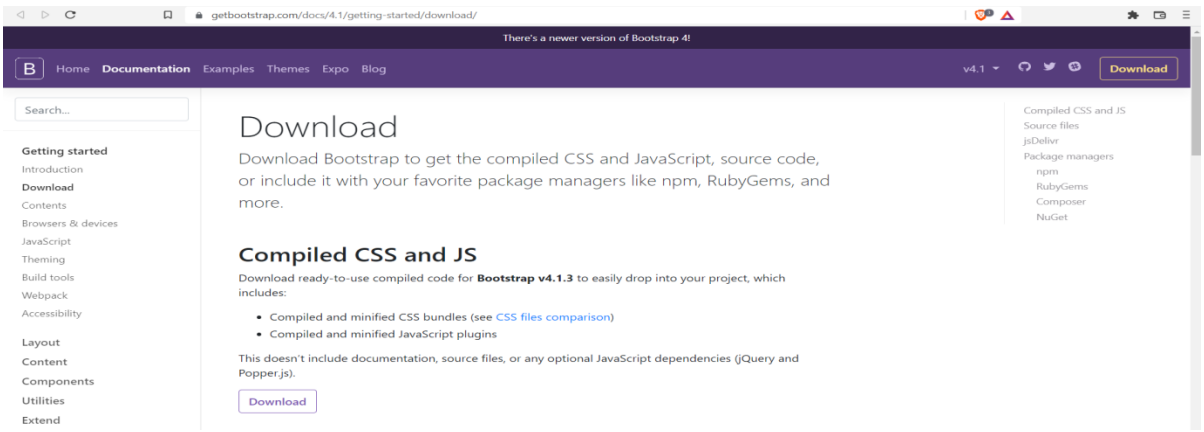
```
<!DOCTYPE html>
<html>
    <head>
        <title>Bootstrap 101 Template</title>
        <link href="css/bootstrap.min.css" rel="stylesheet">
    </head>
    <body>
        <h1>Hello, world!</h1>
        <script src="js/bootstrap.min.js"></script>
    </body>
</html>
```

The two basic methods to create Bootstrap webpage

A. Create Webpage by manual method
B. Create webpage using templates

Create Webpage by manual method

Step 1: Download from the official website of Bootstrap and unzip the Bootstrap files.



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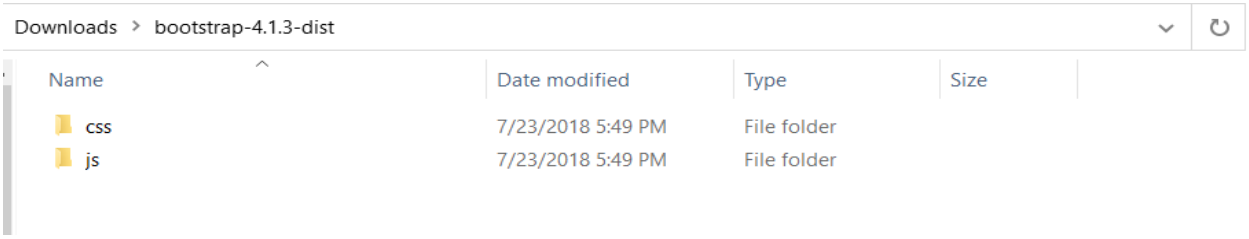
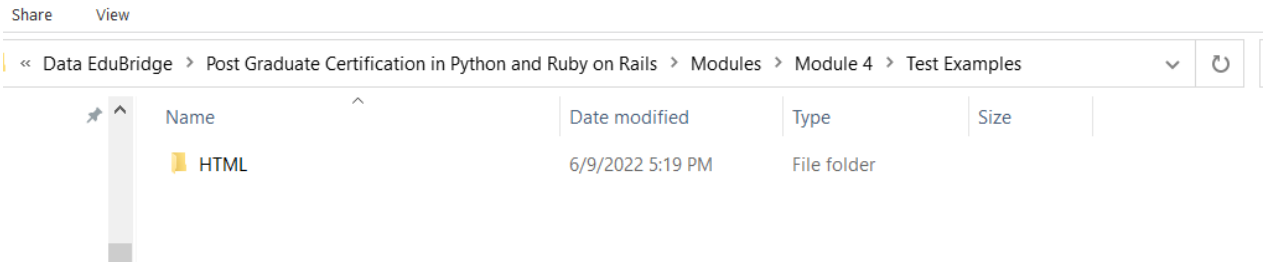
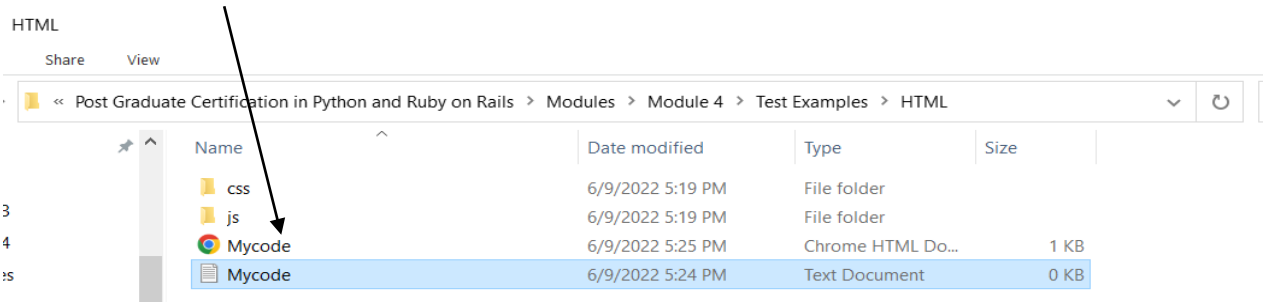


Step 2: Create an HTML directory name it. You can give it any name you prefer.



Step 3: Copy the JS and the CSS files in your HTML directory which you get after downloading Bootstrap 4 and create an index.html file.



Mycode.html is a representation of index.html file

Step 4: Link your Bootstrap CSS file, you need to copy the below-given code and paste it in the index.html file under the <head> tag.

<!-- Bootstrap core CSS →
<link href="css/bootstrap.css" rel="stylesheet">

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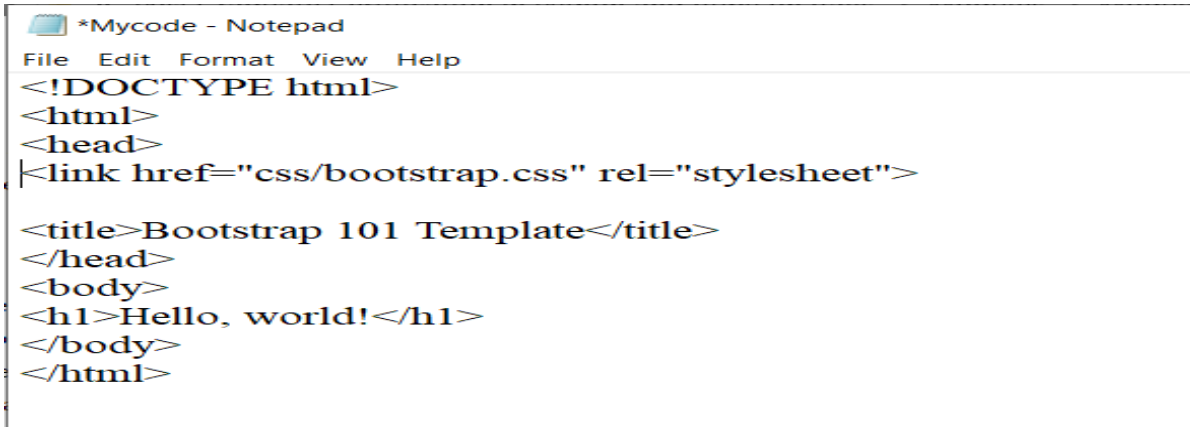

Step 5: In the same manner, add core Bootstrap JavaScript after Footer of index.html to quickly load the page.

<script src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.4/jquery.min.js"></script>

<script src="js/bootstrap.js"></script>

So, this is how you need to link the Bootstrap files to HTML.

Create Webpage using templates

Step 1: Choose CMS Platform

Download and install Template on your computer. First and foremost choose the CMS and pick any CMS you name like WordPress, Joomla, Drupal, Magento, etc. if you wish to create a dynamic website. Whereas, in order to create a static website, you need to choose HTML

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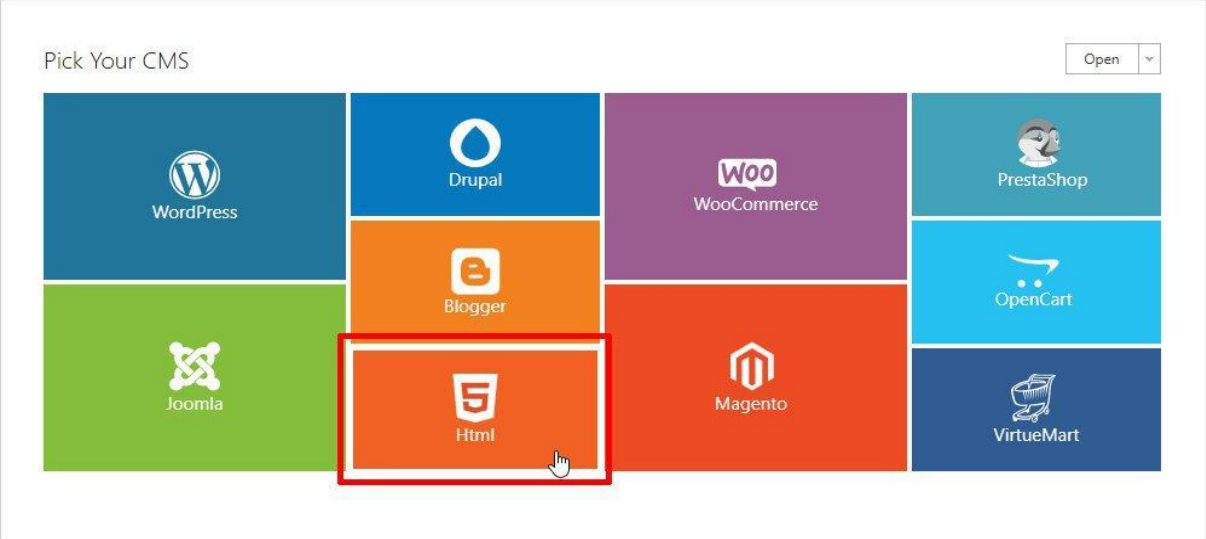
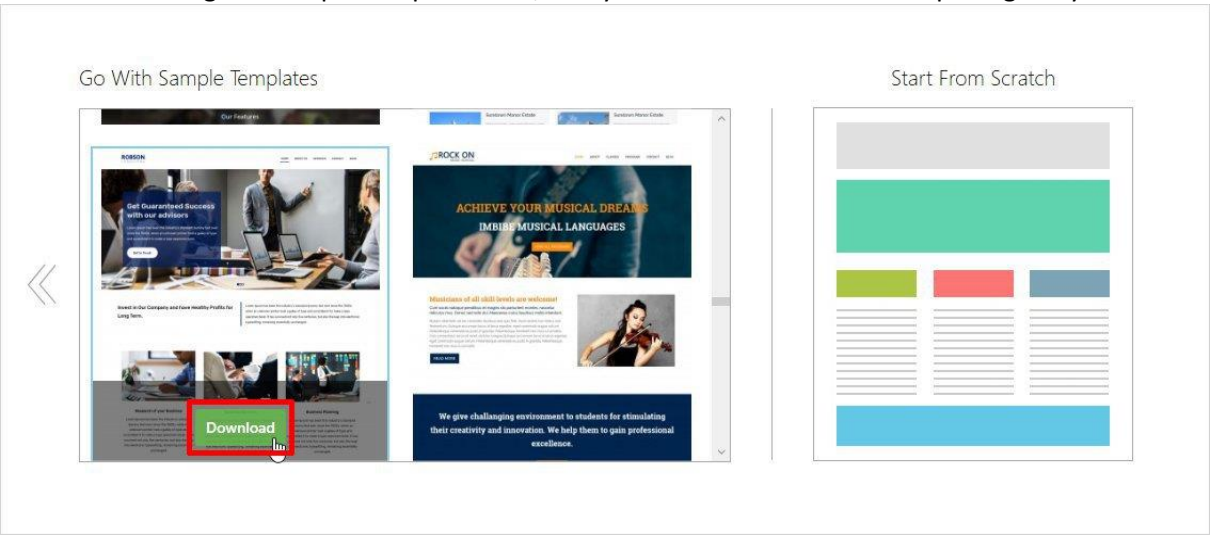


Step 2: Choose a Sample Template

Now, decide if you want to go with the Sample Template or you want to create your own template from scratch. I am using the Sample template here, easily downloaded from the template gallery.



Step 3: Go to the General Tab

With the sample template under the General tab, you can delve into various options such as favicons, sidebar, typography, etc. Similarly, you can set the website preferences as well

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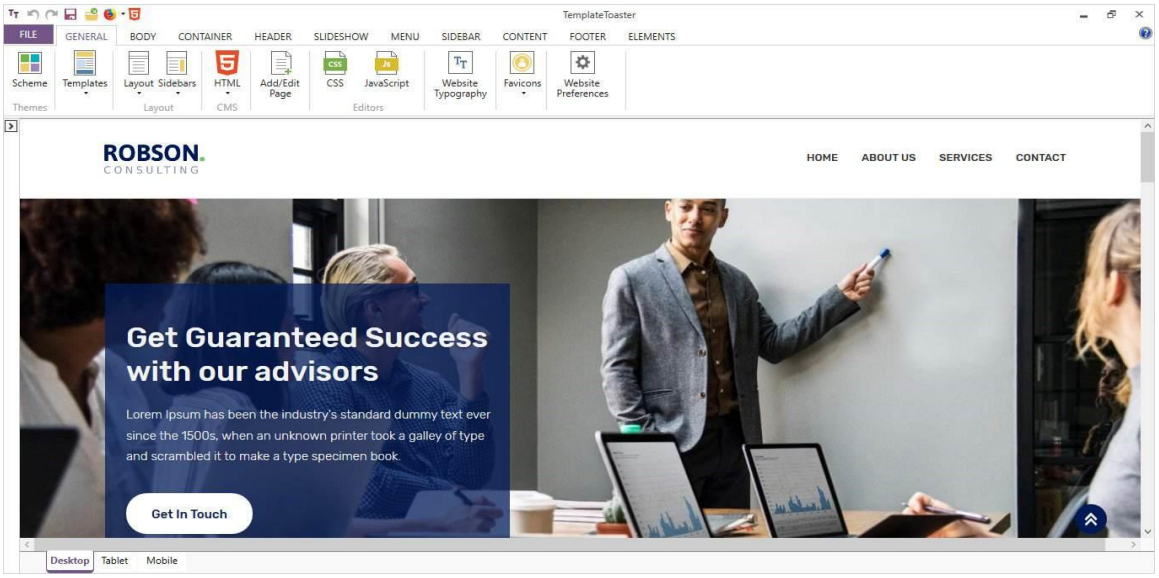
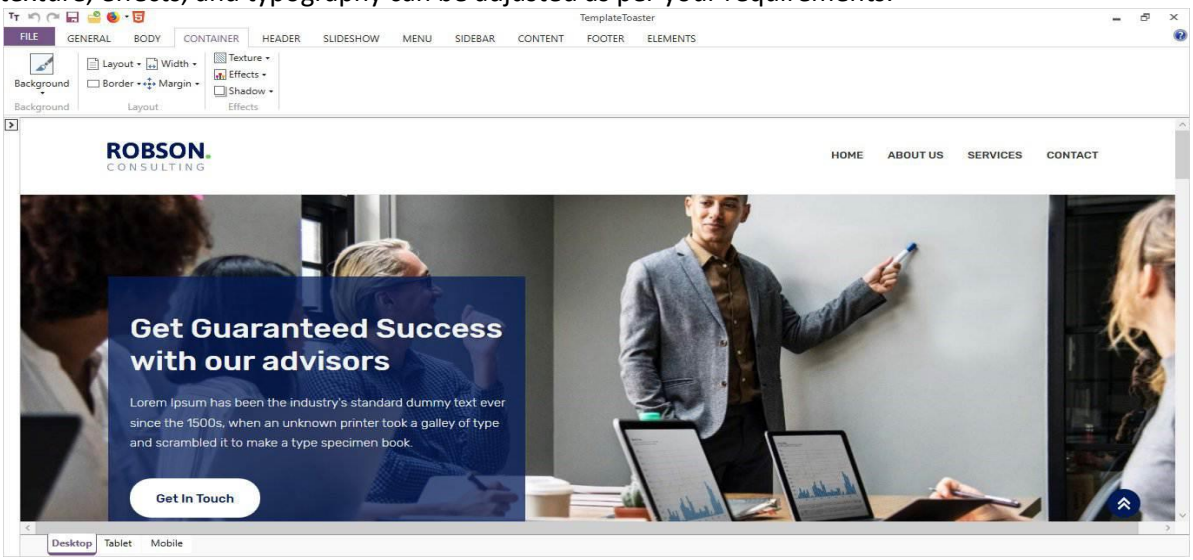


Step 4: Setup Layout

Set the layout for the container either Fixed or Fluid. And the width, margin, border as you like. The texture, effects, and typography can be adjusted as per your requirements.



Step 5: Go to the Menu Tab

Menu will appear here, you will get the options like setting the logo and placing the menu items. Align the menu button either horizontal or vertical. The background color and the typography for the menu can be set separately.

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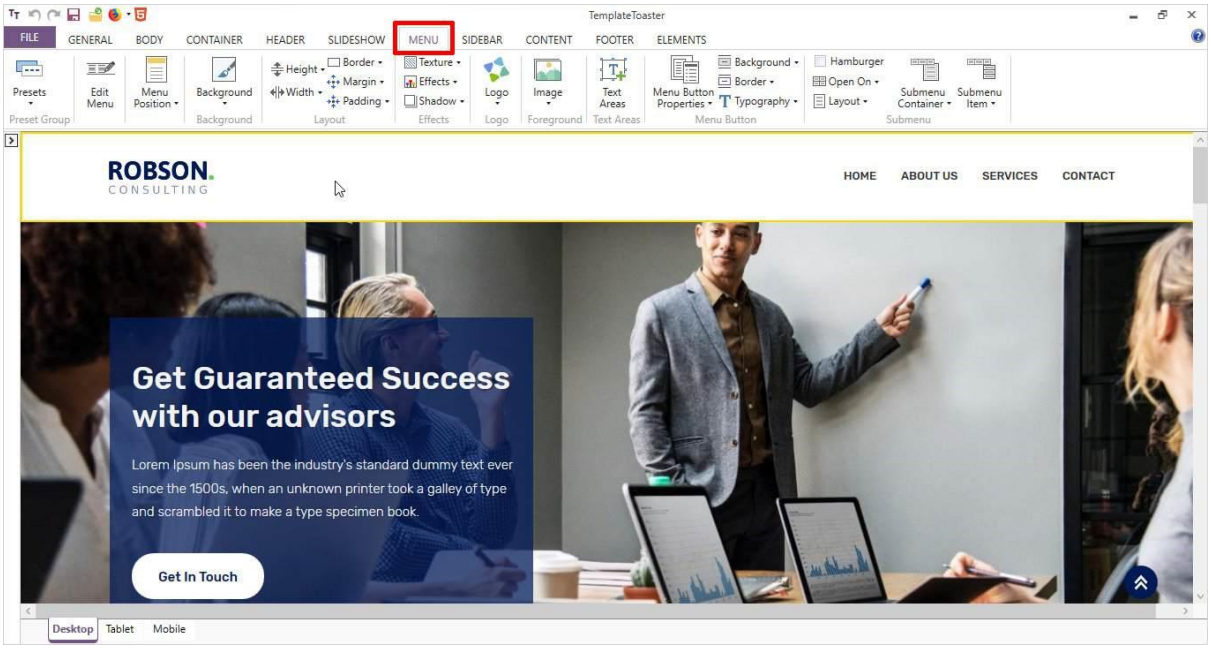
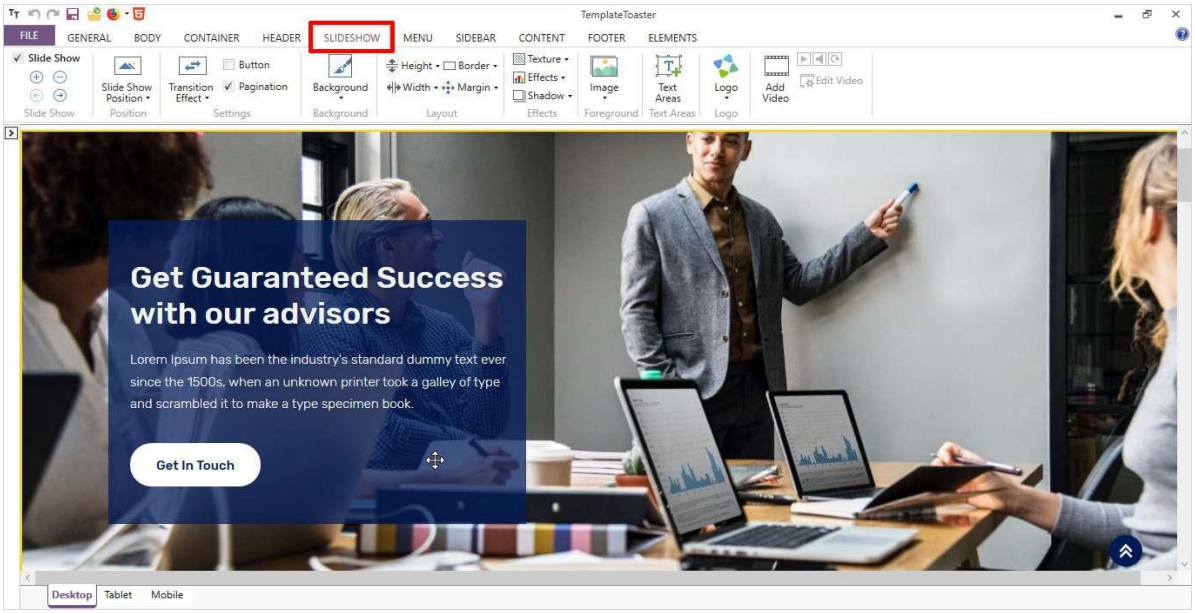


Step 6: Add a Slideshow to the Website

You can add a beautiful slideshow to your website with an incredible facility to include a video in the slideshow. Yes! Set a contrasting background color with a splendid image in the foreground.



Step 7: Change Content in the Content Area

Now, we have the main content area where you can show your valuable content on your site. As soon as you double click on the dummy content, the editor will be enabled and you can edit the content.

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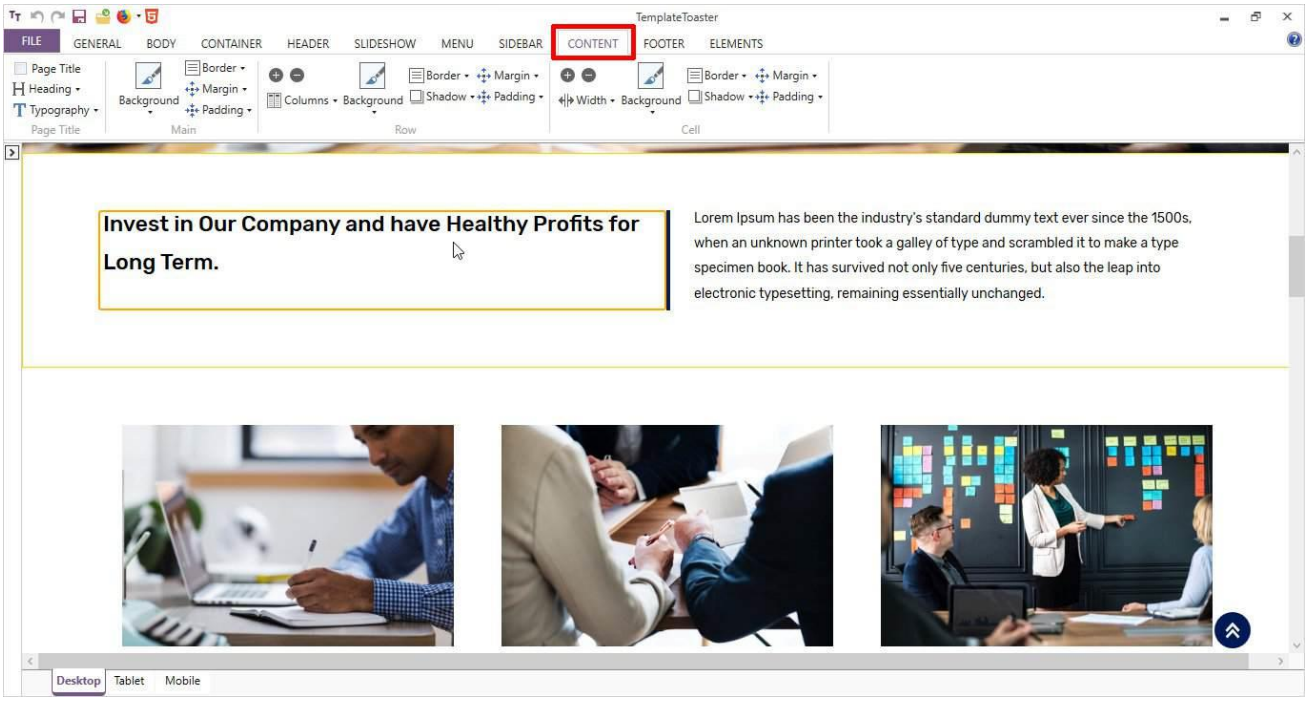
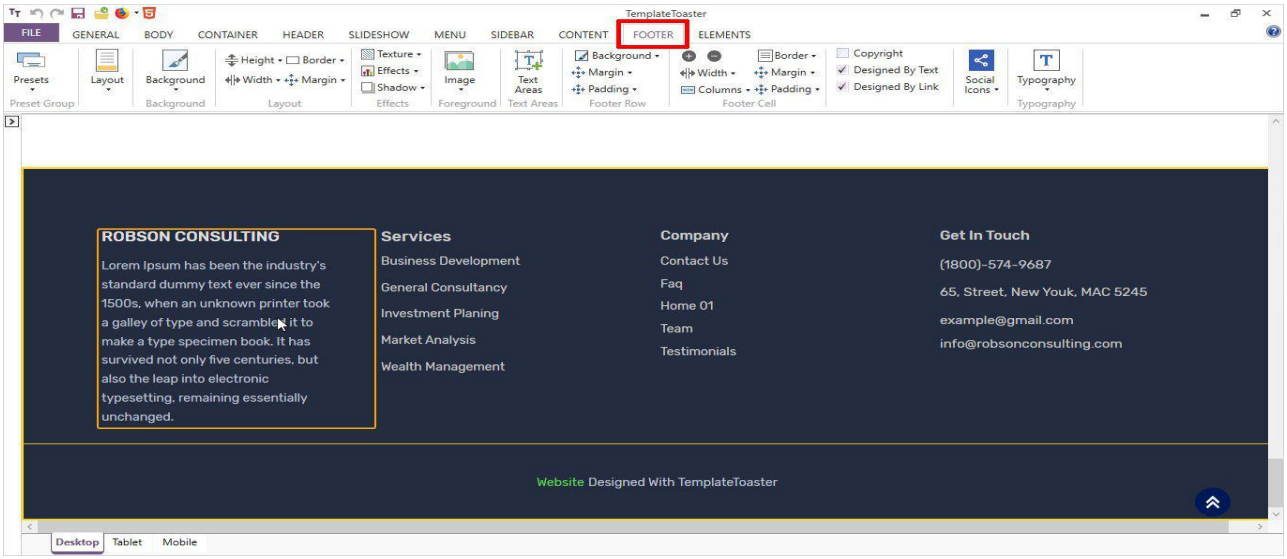


Step 8: Create Your Footer

Create your footer now. The footer can be used to add social icons and to add diverse essential information like contact us, FAQs, your address, etc.



Bootstrap is mobile first

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

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

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

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

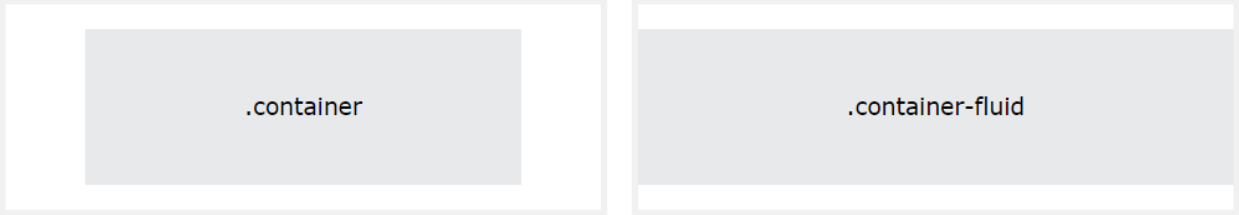
The **initial-scale=1** part sets the initial zoom level when the page is first loaded by the browser.

Containers

Bootstrap also requires a containing element to wrap site contents.

There are two container classes to choose from:

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



Containers Example

```
<!DOCTYPE html>
<html lang="en">
<head>
 <title>Container 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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
 <div class="container">
 <h1>My First Bootstrap Container Page</h1>
```

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```
 <p>This part is inside a .container class.</p>
 <p>The .container class provides a responsive fixed width container.</p>
</div>
</body>
</html>
```

Output:

Containers Fluid Example

```
<!DOCTYPE html>
<html lang="en">
<head>
 <title>Bootstrap Container-fluid 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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>

<div class="container-fluid">
 <h1>My First Bootstrap Container-fluid Page</h1>
 <p>This part is inside a .container-fluid class.</p>
 <p>The .container-fluid class provides a full width container, spanning the entire width of the viewport.</p>
</div>

</body>
</html>
```

Output:

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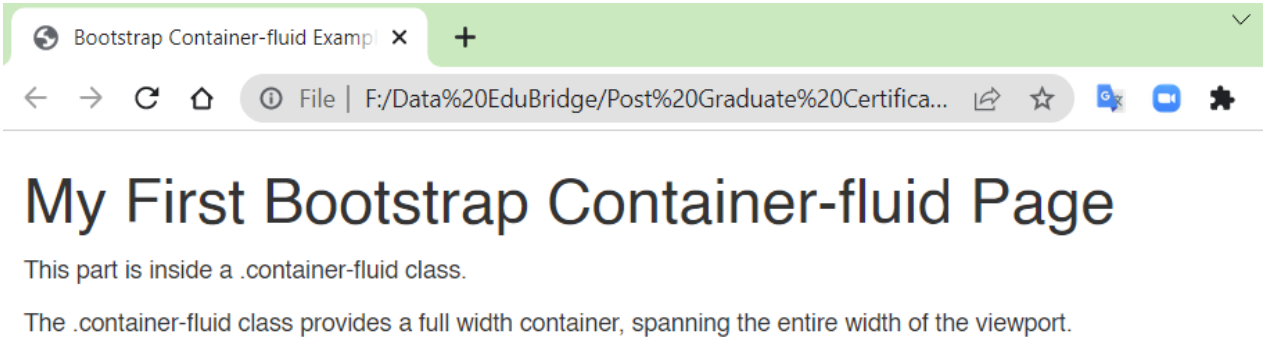

Bootstrap Button

Bootstrap Button

Buttons are an essential part of web design. They can easily attract the visitor's attention to your site, provide important information, or persuade them to take action on it.

The front-end development toolkit Bootstrap CSS understands the importance of this design element and provides ready-made button templates. These templates help you create and personalize buttons for your Bootstrap site quickly and easily. To do so, you'll only need a basic understanding of HTML and CSS.

How to Create a Button in Bootstrap

Creating a button in Bootstrap is easy thanks to the predesigned templates included in the toolkit. You can simply copy and paste the code of any of the predefined styles (shown below) into the body section of your HTML file to add buttons to your site.

Bootstrap Button Example

```
<!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/3.4.1/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
  <h2>Button Styles</h2>
  <button type="button" class="btn">Basic</button>
```

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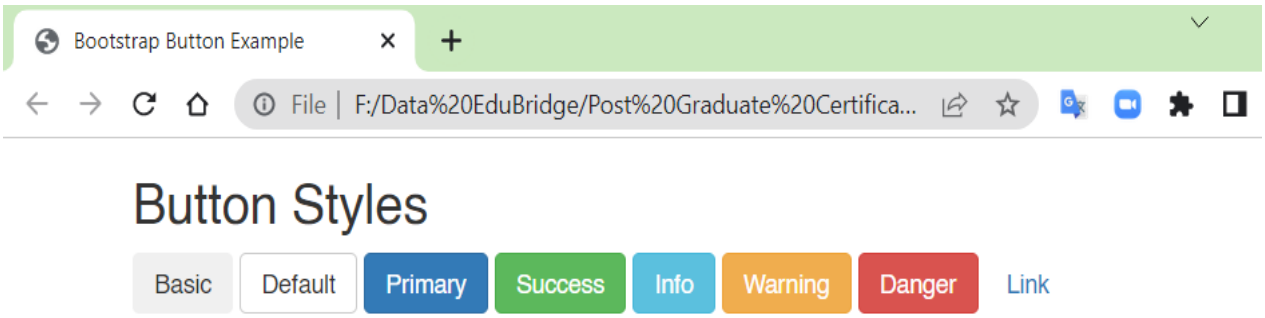
```
 <button type="button" class="btn btn-default">Default</button>
 <button type="button" class="btn btn-primary">Primary</button>
 <button type="button" class="btn btn-success">Success</button>
 <button type="button" class="btn btn-info">Info</button>
 <button type="button" class="btn btn-warning">Warning</button>
 <button type="button" class="btn btn-danger">Danger</button>
 <button type="button" class="btn btn-link">Link</button>
</div>
</body>
</html>
```

Output:



Button tags

The **.btn** classes are intended for use with the **<button>** element. These classes can be applied to **<a>** and **<input>** elements (though some browsers may apply a slightly different rendering).

Instead of linking to new pages or sections within the current page, button classes on **<a>** elements that are used to trigger in-page functionality (like collapsing content) should be given a role="button" to properly convey their purpose to assistive technologies like screen readers.

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
<title>Bootstrap Button Tag 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/3.4.1/css/bootstrap.min.css">
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
```

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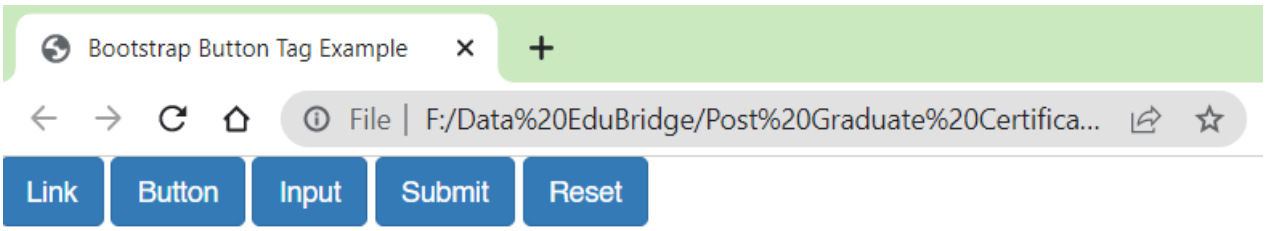
```
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<a class="btn btn-primary" href="#" role="button">Link</a>
<button class="btn btn-primary" type="submit">Button</button>
<input class="btn btn-primary" type="button" value="Input">
<input class="btn btn-primary" type="submit" value="Submit">
<input class="btn btn-primary" type="reset" value="Reset">
        </body>
</html>
```

Output:



Bootstrap Button Outline

In need of a button, but not the hefty background colors they bring? Replace the default modifier classes with the .btn-outline-* ones to remove all background images and colors on any button.

In the outline buttons, we recommend adding data-mdb-ripple-color="dark" to change the color of the ripple effect. The default light color of the ripple (applied automatically to every button) may not be well visible in the case of light and outline buttons.

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
 <title>Bootstrap Button Outline 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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<button type="button" class="btn btn-outline-primary" data-mdb-ripple-color="dark">Primary</button>
<button type="button" class="btn btn-outline-secondary" data-mdb-ripple-
color="dark">Secondary</button>
<button type="button" class="btn btn-outline-success" data-mdb-ripple-color="dark">Success</button>
```

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```
<button type="button" class="btn btn-outline-danger" data-mdb-ripple-color="dark">Danger</button>
<button type="button" class="btn btn-outline-warning" data-mdb-ripple-
color="dark">Warning</button>
<button type="button" class="btn btn-outline-info" data-mdb-ripple-color="dark">Info</button>
<button type="button" class="btn btn-outline-light" data-mdb-ripple-color="dark">Light</button>
<button type="button" class="btn btn-outline-dark" data-mdb-ripple-color="dark">Dark</button>
</body>
</html>
```

Output:

Bootstrap Button Size

In Bootstrap, you can control the size as well as the color of your buttons. To change the size of your buttons, you can add the following modifier classes in your HTML:

- .btn-lg: generate large size button
- .btn-sm: generate small size button
- .btn-xs: generate extra small size button
- .btn-normal: generate normal buttons for webpage

Bootstrap Button Size-Example

```
<!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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
 <h2>Button Sizes</h2>
 <button type="button" class="btn btn-primary btn-lg">Large</button>
 <button type="button" class="btn btn-primary">Normal</button>
 <button type="button" class="btn btn-primary btn-sm">Small</button>
 <button type="button" class="btn btn-primary btn-xs">XSmall</button>
</div>
```

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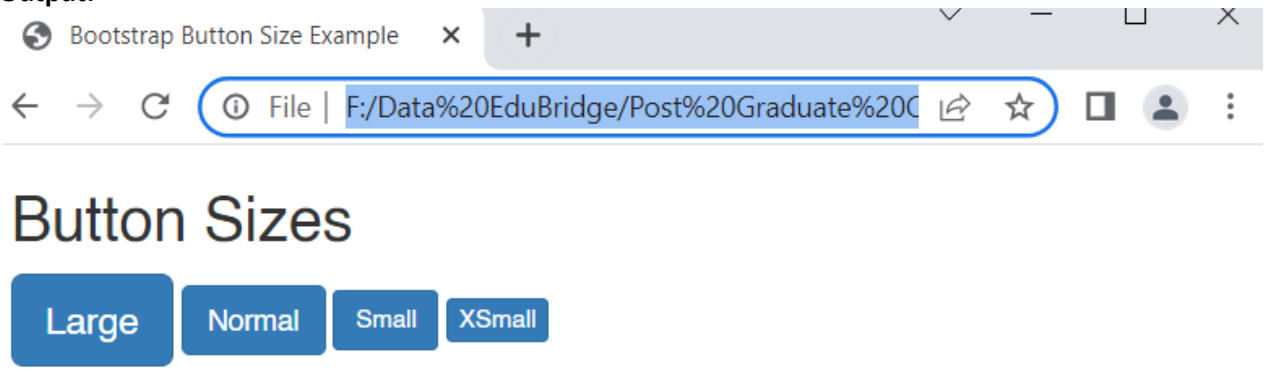
```
</body>
</html>
```

Output:



Bootstrap Button Active /Disable

When a button is active, it will appear with a darker background, darker border, and an inset shadow. Inside < Button> tag by placing **.active** will initiate button active and include the aria-pressed="true" attribute. It do not require a class because they use a pseudo-class. Similarly, If you do not want to appear button active on your webpage use **disabled** attribute to button and it will deactivate the button appearance

Bootstrap Button Active /Disable example

```
<!DOCTYPE html>
<html lang="en">
<head>
 <title>Bootstrap Button Active Deactive 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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
 <h2>Button States</h2>
 <button type="button" class="btn btn-primary">Primary Button</button>
 <button type="button" class="btn btn-primary active">Active Primary</button>
 <button type="button" class="btn btn-primary disabled">Disabled Primary</button>
</div>
</body>
</html>
```

Output:

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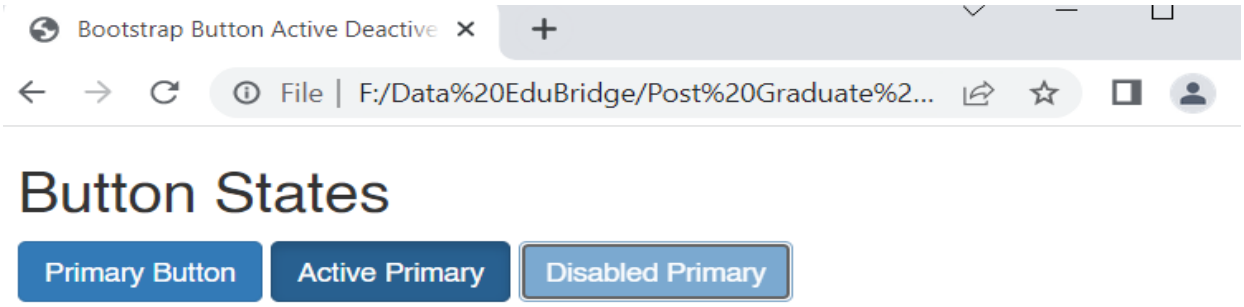

Active button is appeared with dark blue and disabled button is appeared with light blue color

Bootstrap Badges

Badges are simple and basic components in Bootstrap v5 that are used to display an indicator or count a number. This is very useful for mail counting and alerts, among other things. Except the exception of more rounded corners, badges are identical to labels. By using relative font sizing and em units, badges scale to match the size of the immediate parent element. The focus and hover styles for links are no longer available in Bootstrap v5.

To make rectangular badges, we can use the .badge class within elements. We can also create different badge variations with minimal effort by using a contextual class (such as .badge-secondary). Steps for creating a simple badge in Bootstrap are outlined below.

Step 1: Include Bootstrap and jQuery CDN into the <head> tag before all other stylesheets to load our CSS.

<link rel=”stylesheet” href=”https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css”>
<script src=”https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js”></script>
<script src=”https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js”></script>
<script src=”https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js”></script>

Step 2: Add tag in <body> tag.

<h1>this is a bootstrap example New </h1>

Step 3: Add the .badge class together with a contextual class (like .badge-secondary) within elements.

<h1> this is a bootstrap example New</h1>

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Note: Users of screen readers and other assistive technology may find badges perplexing depending on how they're utilized. While badges' design gives users a visual clue as to what they are for, these users will only see the badge's text. These badges may appear as random extra words or numbers at the end of a phrase, depending on the context.

Example:

In this example, we will place badges in front of the text to draw attention to it. The "New" badge is shown in the example below. Badges will be able to alert the user to any "New" posts or messages that have appeared on his account. Badges can be used as direct links to a webpage or web page buttons to provide a counter.

```
<!DOCTYPE html>
<html lang="en">
<head>
        <title>Badges 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/4.5.2/css/bootstrap.min.css"/>
        <script src=
"https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js">
        </script>
        <script src=
"https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js">
        </script>
        <script src=
"https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js">
        </script>
</head>
<body style="color: green">
        <div class="container">
        <h2>Badges in Bootstrap</h2>
        <h1>
                PG Certificate in Python and Ruby on Rails
                <span class="badge badge-secondary">
                New
                </span>
        </h1>
        <h2>
                this is a bootstrap example
                <span class="badge badge-secondary">
                New
                </span>
```

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```
        </h2>
        <h3>
            this is a bootstrap example
            <span class="badge badge-secondary">
            New
            </span>
        </h3>
        <h4>
            this is a bootstrap example
            <span class="badge badge-secondary">
            New
            </span>
        </h4>
        <h5>
            this is a bootstrap example
            <span class="badge badge-secondary">
            New
            </span>
        </h5>
        <h6>
            this is a bootstrap example
            <span class="badge badge-secondary">
            New
            </span>
        </h6>
        </div>
</body>
</html>
```

Output:

Contextual Badges

In this example change our background utility classes to quickly modify the appearance of a badge. Please note that when using Bootstrap's default **.bg-light**, you'll likely need a text color utility like **.text-dark** for proper styling. This is because background utilities do not set anything but background color.

```
<!DOCTYPE html>
```

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```
<html lang="en">
<head>
        <title>Badges 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/4.5.2/css/bootstrap.min.css"/>
        <script src=
"https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js">
        </script>
        <script src=
"https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js">
        </script>
        <script src=
"https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js">
        </script>
</head>
<body>
        <span class="badge bg-primary">
        Primary
        </span>
        <span class="badge bg-secondary">
        Secondary
        </span>
        <span class="badge bg-success">
        Success
        </span>
        <span class="badge bg-danger">
        Danger
        </span>
        <span class="badge bg-warning text-dark">
        Warning
        </span>
        <span class="badge bg-info text-dark">
        Info
        </span>
        <span class="badge bg-light text-dark">
        Light
        </span>
        <span class="badge bg-dark">
        Dark
        </span>
</body>
</html>
```

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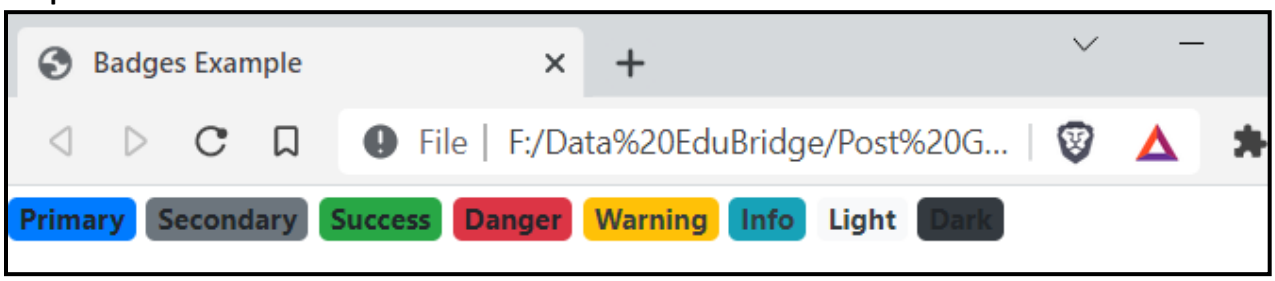
Output:



Bootstrap Badges inside an element

In this example, we'll put badges inside a button to show the counter. It indicates that the user has three notifications, twelve messages, and five updates. It will prompt the user to review those notifications, messages, and updates. To change the color of badges, we can also change the background utility. We can use red to indicate danger, yellow to indicate caution, and so on.

```
<!DOCTYPE html>
<html lang="en">
<head>
	<title>Badges 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/4.5.2/css/bootstrap.min.css" />
	<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js">
	</script>
	<script src= "https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js">
	</script>
	<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js">
	</script>
</head>
<body style="color: green">

	<button type="button"
			class="btn btn-primary">
	Notifications
	<span class="badge bg-secondary">
		3
	</span>
	</button>
	<button type="button"
			class="btn btn-primary">
	Messages
```

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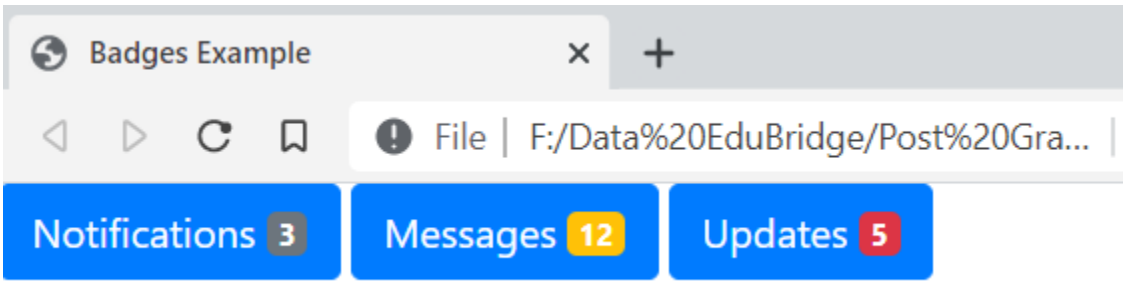
```
<span class="badge bg-warning">
        12</span>
</button>
<button type="button"
                class="btn btn-primary">
Updates
<span class="badge bg-danger">
        5
</span>
</button>
```




```
</body>
</html>
```

Output:

Bootstrap Progress Bar

Progress bars are an important event for any web page, it explains about the overall process or task growth, it generally called as analysis tool to represent overall growth of any event. For front-end development progress bar are very important, progress bars are customized entity according to webpage requirement, progress bar are defined as

- Basic Progress Bar
- Progress Bar with labels
- Colored Progress Bar
- Striped Progress Bar
- Animated Progress Bar
- Stacked Progress Bar

Let's understand all progress bars with each example

Basic Progress Bar: This progress bar is use to represent default values it uses **.Progress** class inside ** ** tag. Let's check with example

Example

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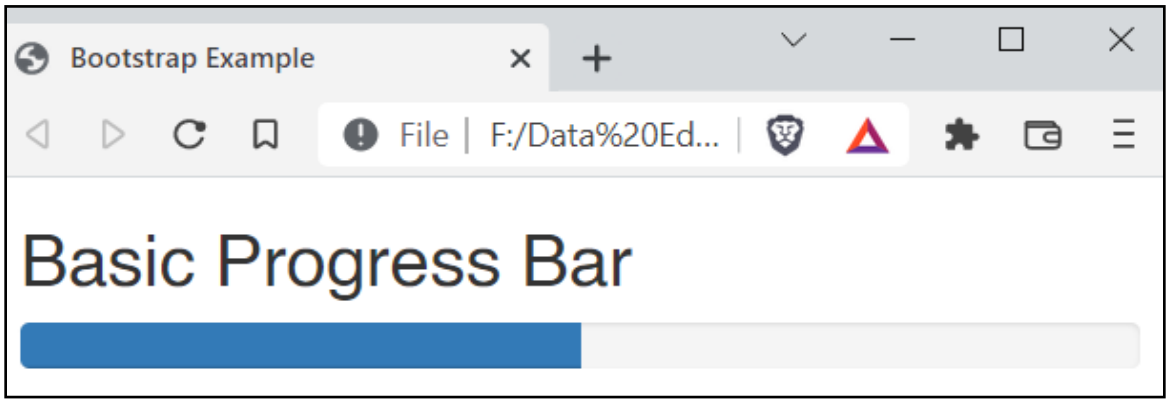
```
<!DOCTYPE html>
<html lang="en">
<head>
 <title>Bootstrap Example</title>
 <meta charset="utf-8">
 <meta name="viewport" content="width=device-width, initial-scale=1">
 <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
 <h2>Basic Progress Bar</h2>
 <div class="progress">
  <div class="progress-bar" role="progressbar" aria-valuenow="70" aria-valuemin="0" aria-
valuemax="100" style="width:70%">
    <span class="sr-only">70% Complete</span>
  </div>
 </div>
</div>
        </body>
        </html>
```

Output



Progress Bar with labels: This progress bare is as similar to basic progress bar with progress value as label, if we remove .sr-only from tag then it will be able to display progress with label

Example

```
<!DOCTYPE html>
<html lang="en">
<head>
 <title>Bootstrap Example</title>
 <meta charset="utf-8">
 <meta name="viewport" content="width=device-width, initial-scale=1">
```

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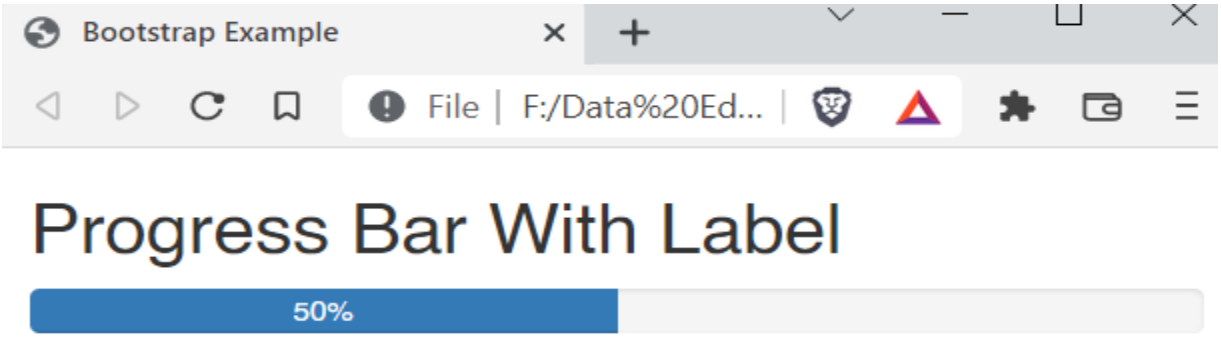
```
 <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
 <h2>Progress Bar With Label</h2>
 <div class="progress">
 <div class="progress-bar" role="progressbar" aria-valuenow="50" aria-valuemin="0" aria-
valuemax="100" style="width:50%">
    50%
  </div>
 </div>
</div>
</body>
</html>
```

Output



Colored Progress Bar: Many contextual classes are use to create message from progress bar, to achieve this, colored progress bares are use which differentiate various progress and growths on the basis of different color values with label.

Example

```
<!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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
```

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```
</head>
<body>
<div class="container">
 <h2>Colored Progress Bars</h2>
 <p>The contextual classes colors the progress bars:</p>
 <div class="progress">
  <div class="progress-bar progress-bar-success" role="progressbar" aria-valuenow="30" aria-
valuemin="0" aria-valuemax="100" style="width:30%">
    30% Complete (Moderated Speed)
  </div>
 </div>
 <div class="progress">
  <div class="progress-bar progress-bar-info" role="progressbar" aria-valuenow="40" aria-
valuemin="0" aria-valuemax="100" style="width:40%">
    40% Complete (Average Speed)
  </div>
 </div>
 <div class="progress">
  <div class="progress-bar progress-bar-warning" role="progressbar" aria-valuenow="50" aria-
valuemin="0" aria-valuemax="100" style="width:50%">
    50% Complete (Alarming Speed)
  </div>
 </div>
 <div class="progress">
  <div class="progress-bar progress-bar-danger" role="progressbar" aria-valuenow="70" aria-
valuemin="0" aria-valuemax="100" style="width:70%">
    70% Complete (Over Limit Speed)
  </div>
 </div>
</div>
</body>
</html>
```

Output

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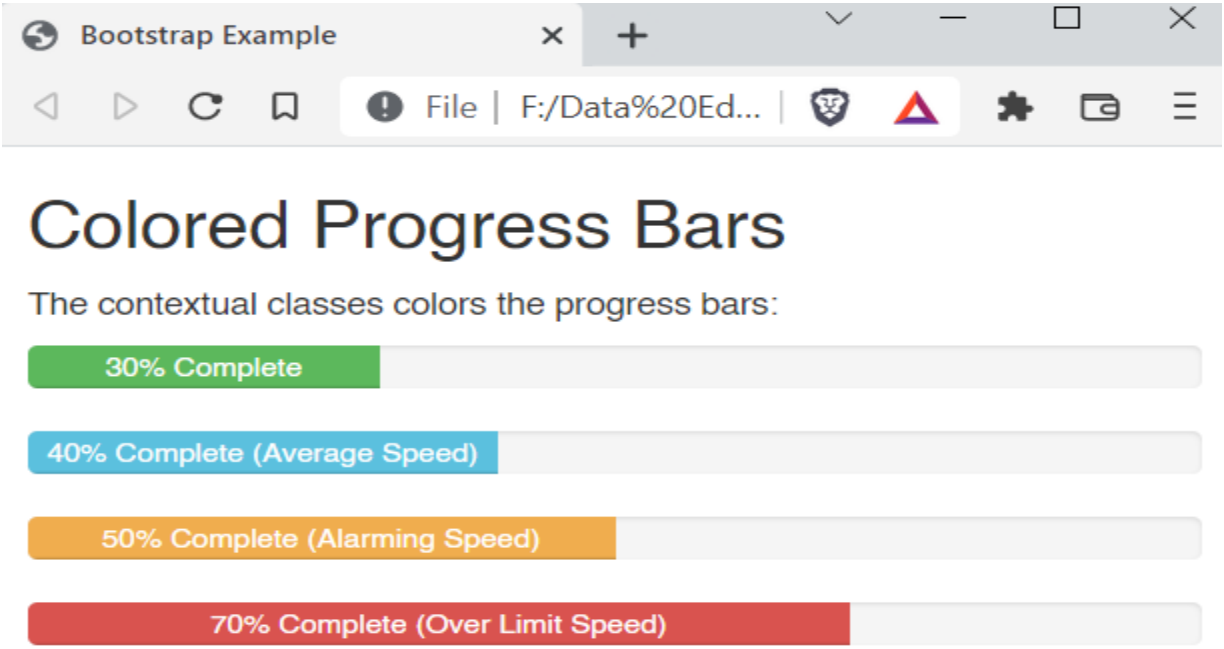

Striped Progress Bar: The another colored progress bar with some more design or animation, let's check with example

Example

```
<!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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
 <h2>Striped Progress Bars</h2>
 <p>The .progress-bar-striped class adds stripes to the progress bars:</p>
 <div class="progress">
  <div class="progress-bar progress-bar-success progress-bar-striped" role="progressbar" aria-
valuenow="40" aria-valuemin="0" aria-valuemax="100" style="width:40%">
    40% Complete (success)
  </div>
 </div>
 <div class="progress">
```

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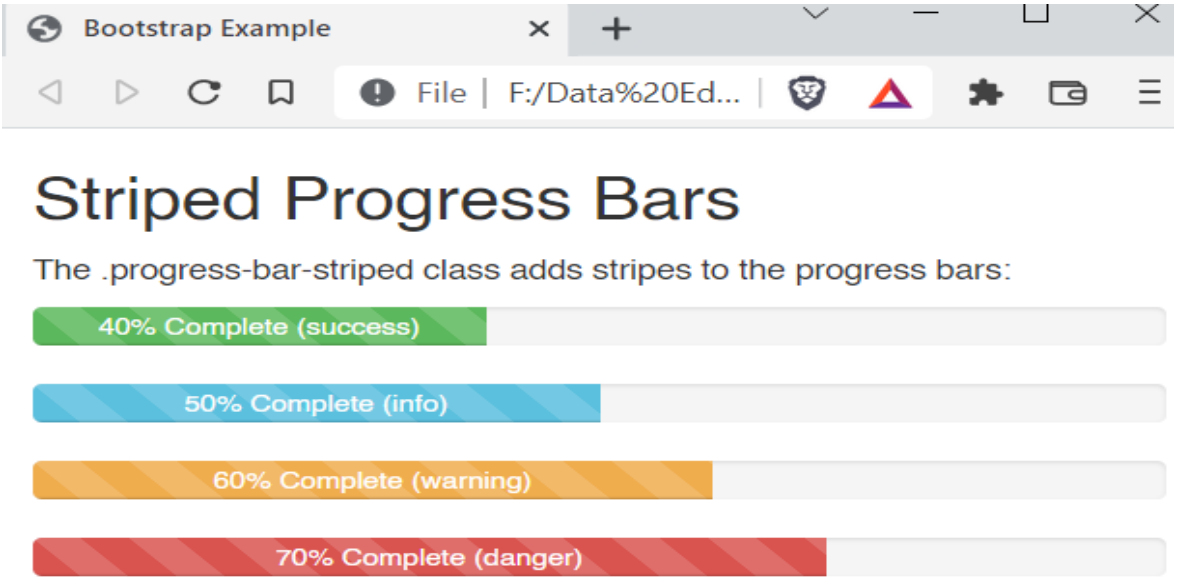
```
  <div class="progress-bar progress-bar-info progress-bar-striped" role="progressbar" aria-valuenow="50" aria-valuemin="0" aria-valuemax="100" style="width:50%">
    50% Complete (info)
  </div>
 </div>
 <div class="progress">
  <div class="progress-bar progress-bar-warning progress-bar-striped" role="progressbar" aria-valuenow="60" aria-valuemin="0" aria-valuemax="100" style="width:60%">
    60% Complete (warning)
  </div>
 </div>
 <div class="progress">
  <div class="progress-bar progress-bar-danger progress-bar-striped" role="progressbar" aria-valuenow="70" aria-valuemin="0" aria-valuemax="100" style="width:70%">
    70% Complete (danger)
  </div>
 </div>
</div>
</body>
</html>
```

Output



Animated Progress if we add **.active** class in our labeled progress bar it become animated progress bar

Example

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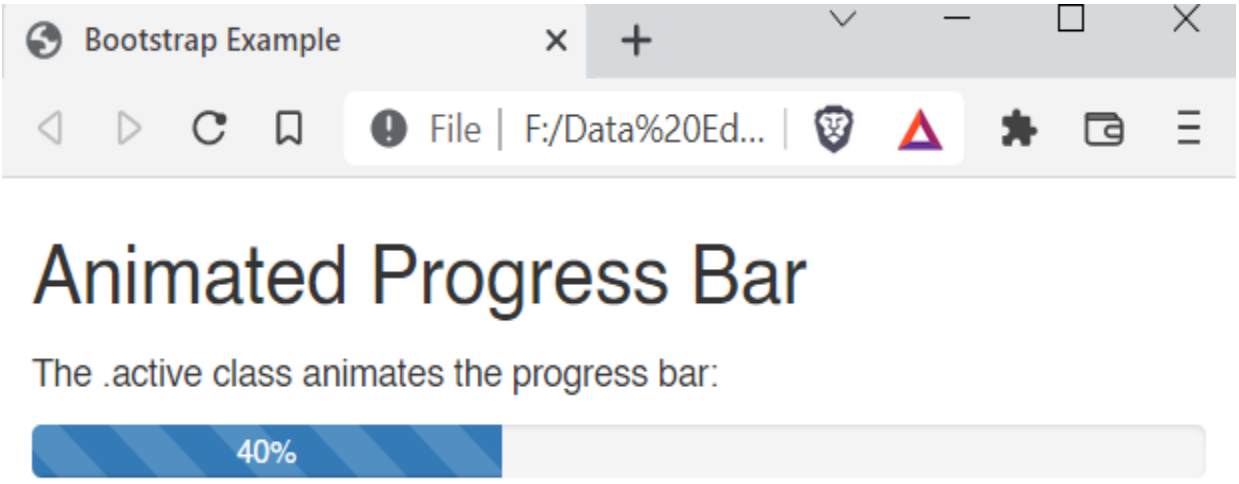
```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
  <h2>Animated Progress Bar</h2>
  <p>The .active class animates the progress bar:</p>
  <div class="progress">
    <div class="progress-bar progress-bar-striped active" role="progressbar" aria-valuenow="40" aria-
valuemin="0" aria-valuemax="100" style="width:40%">
      40%
    </div>
  </div>
</div>
</body>
</html>
```

Output



Stacked Progress Bar if you need to display different values into one single bar use stack formation of progress it need to add progress class inside div as following ** :**

Example

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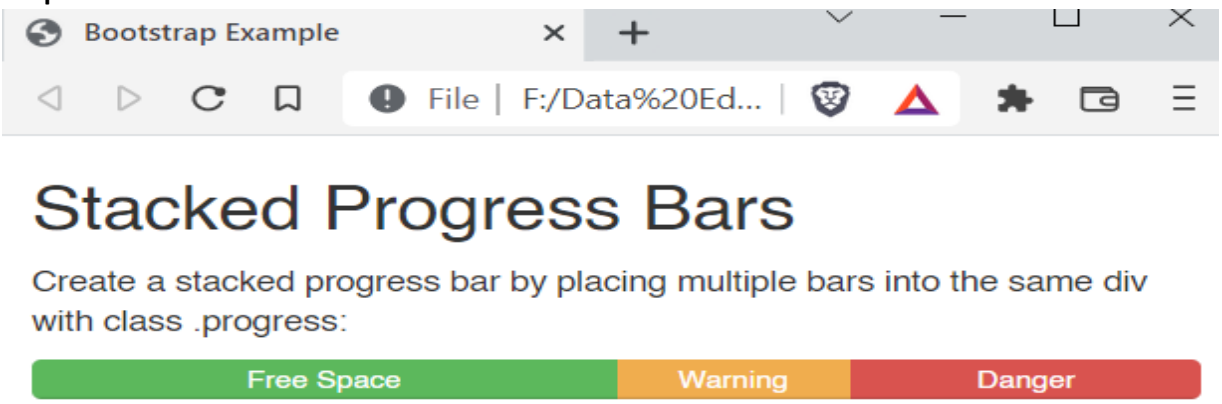
```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<div class="container">
  <h2>Stacked Progress Bars</h2>
  <p>Create a stacked progress bar by placing multiple bars into the same div with class
.progress:</p>
  <div class="progress">
    <div class="progress-bar progress-bar-success" role="progressbar" style="width:50%">
      Free Space
    </div>
    <div class="progress-bar progress-bar-warning" role="progressbar" style="width:20%">
      Warning
    </div>
    <div class="progress-bar progress-bar-danger" role="progressbar" style="width:30%">
      Danger
    </div>
  </div>
</div>
</body>
</html>
```

Output



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Bootstrap Forms

Creating Forms with Bootstrap

HTML forms are an integral part of the web pages and applications, but creating the form layouts or styling the form controls manually one by one using CSS are often boring and tedious. Bootstrap greatly simplifies the process of styling and alignment of form controls like labels, input fields, selectboxes, textareas, buttons, etc. through predefined set of classes.
Bootstrap provides three different types of form layouts:

- Vertical Form (default form layout)
- Horizontal Form
- Inline Form

The following section will give you the detailed overview of all these form layouts as well as the various form related Bootstrap components one by one. Well let's get started.

Creating Vertical Form Layout

To create vertical form layouts simply use the predefined margin utility classes for grouping the labels, form controls, optional form text, and form validation messages.

Here's an example in which form controls are vertically stacked with labels on the top.

Example

```
<form>
  <div class="mb-3">
    <label class="form-label" for="inputEmail">Email</label>
    <input type="email" class="form-control" id="inputEmail" placeholder="Email">
  </div>
  <div class="mb-3">
    <label class="form-label" for="inputPassword">Password</label>
    <input type="password" class="form-control" id="inputPassword" placeholder="Password">
  </div>
  <div class="mb-3">
    <div class="form-check">
      <input class="form-check-input" type="checkbox" id="checkRemember">
      <label class="form-check-label" for="checkRemember">Remember me</label>
    </div>
  </div>
  <button type="submit" class="btn btn-primary">Sign in</button>
</form>
```

The output of the above example will look something like this:

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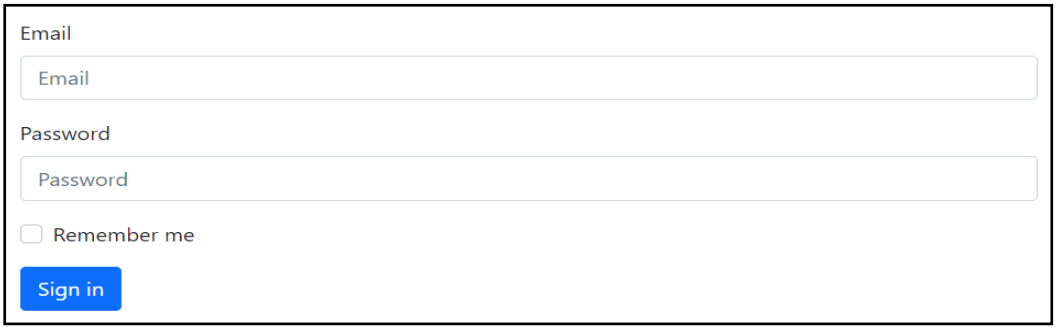

Note: All textual form controls, such as <input> and <textarea> requires the class .form-control, while <select> requires the class .form-select for general styling. These classes also make the forms controls 100% wide. To change their width or use them inline, you can utilize the Bootstrap's predefined grid classes.
Tip: It is recommend to use margin-bottom utility classes (e.g., mb-2, mb-3, etc.) to add vertical spacing between the form groups. As, using single direction margin throughout in the form prevent margin collapsing and create more consist form.

Creating Horizontal Form Layout
You can also create horizontal form layouts where labels and form controls are aligned side-by-side using the Bootstrap grid classes. To create a horizontal form layout add the class .row on form groups and use the .col-*-* grid classes to specify the width of your labels and controls.

Also, be sure to apply the class .col-form-label on the <label> elements, so that they're vertically centered with their associated form controls. Let's check out an example:

Example

```
<form>
  <div class="row mb-3">
    <label for="inputEmail" class="col-sm-2 col-form-label">Email</label>
    <div class="col-sm-10">
      <input type="email" class="form-control" id="inputEmail" placeholder="Email">
    </div>
  </div>
  <div class="row mb-3">
    <label for="inputPassword" class="col-sm-2 col-form-label">Password</label>
    <div class="col-sm-10">
      <input type="password" class="form-control" id="inputPassword" placeholder="Password">
    </div>
  </div>
  <div class="row mb-3">
    <div class="col-sm-10 offset-sm-2">
      <div class="form-check">
```

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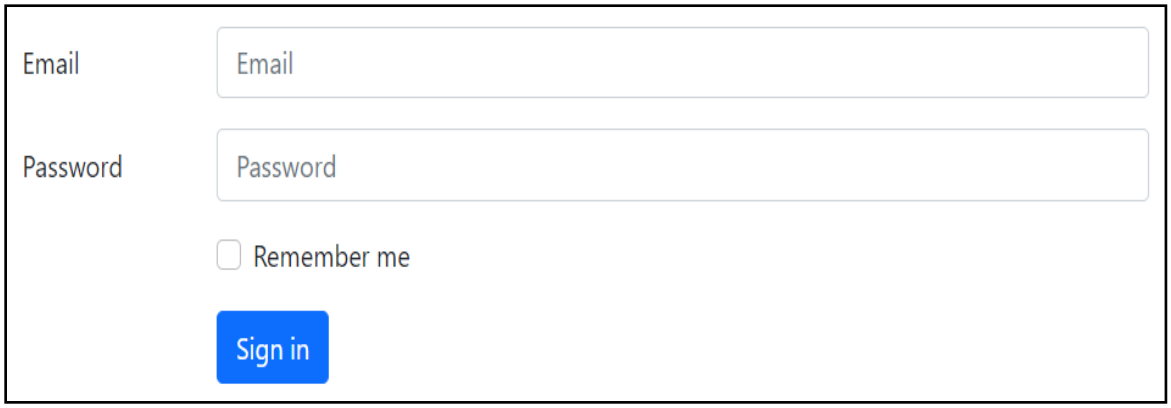
```
            <input class="form-check-input" type="checkbox" id="checkRemember">
            <label class="form-check-label" for="checkRemember">Remember me</label>
        </div>
      </div>
    </div>
    <div class="row">
      <div class="col-sm-10 offset-sm-2">
        <button type="submit" class="btn btn-primary">Sign in</button>
      </div>
    </div>
</form>
```

The output of the above example will look something like this:



Creating Inline Form Layout

Sometimes you may want to display a series of form controls, and buttons in a single horizontal row to compact the layout. You can do this easily by using the Bootstrap's grid classes.

Let's take a look at following example and see how it actually works:

Example

```
<form>
  <div class="row align-items-center g-3">
    <div class="col-auto">
      <label class="visually-hidden" for="inputEmail">Email</label>
      <input type="email" class="form-control" id="inputEmail" placeholder="Email">
    </div>
    <div class="col-auto">
      <label class="visually-hidden" for="inputPassword">Password</label>
      <input type="password" class="form-control" id="inputPassword"
placeholder="Password">
```

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```
      </div>
      <div class="col-auto">
        <div class="form-check">
          <input class="form-check-input" type="checkbox" id="checkRemember">
          <label class="form-check-label" for="checkRemember">Remember me</label>
        </div>
      </div>
      <div class="col-auto">
        <button type="submit" class="btn btn-primary">Sign in</button>
      </div>
    </div>
</form>
```

The output of the above example will look something like this:

Creating Responsive Form Layout

You can also make your forms responsive through using the grid classes with specific breakpoints.

The following example will create a form which laid out inline on medium devices and up (i.e., viewport width ≥768px), but will become vertically stacked on smaller viewports.

Example

```
<form>
  <div class="row align-items-center g-3">
    <div class="col-md-auto col-12">
      <label class="form-label d-md-none" for="inputEmail">Email</label>
      <input type="email" class="form-control" id="inputEmail" placeholder="Email">
    </div>
    <div class="col-md-auto col-12">
      <label class="form-label d-md-none" for="inputPassword">Password</label>
      <input type="password" class="form-control" id="inputPassword" placeholder="Password">
    </div>
    <div class="col-md-auto col-12">
      <div class="form-check">
        <input class="form-check-input" type="checkbox" id="checkRemember">
        <label class="form-check-label" for="checkRemember">Remember me</label>
      </div>
    </div>
    <div class="col-md-auto col-12">
      <button type="submit" class="btn btn-primary">Sign in</button>
```

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```
    </div>
  </div>
</form>
```

Creating Static Form Control

There might be a situation when you just want to display a plain text value next to a form label instead of a working form control. You can do this easily by replacing the class .form-control with the .form-control-plaintext and applying the attribute readonly. The .form-control-plaintext class removes the default styling from the form field, but preserves the correct margin and padding. Let's take a look at an example:

Example

```
<!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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
<form>
  <div class="row mb-3">
    <label for="inputEmail" class="col-sm-2 col-form-label">Email</label>
    <div class="col-sm-10">
      <input type="email" readonly class="form-control-plaintext" id="inputEmail"
value="info@edubridgeindia.in">
    </div>
  </div>
  <div class="row mb-3">
    <label for="inputPassword" class="col-sm-2 col-form-label">Password</label>
    <div class="col-sm-10">
      <input type="password" class="form-control" id="inputPassword" placeholder="Password">
    </div>
  </div>
  <div class="row mb-3">
    <div class="col-sm-10 offset-sm-2">
      <div class="form-check">
          <input class="form-check-input" type="checkbox" id="checkRemember">
          <label class="form-check-label" for="checkRemember">Remember me</label>
      </div>
    </div>
```

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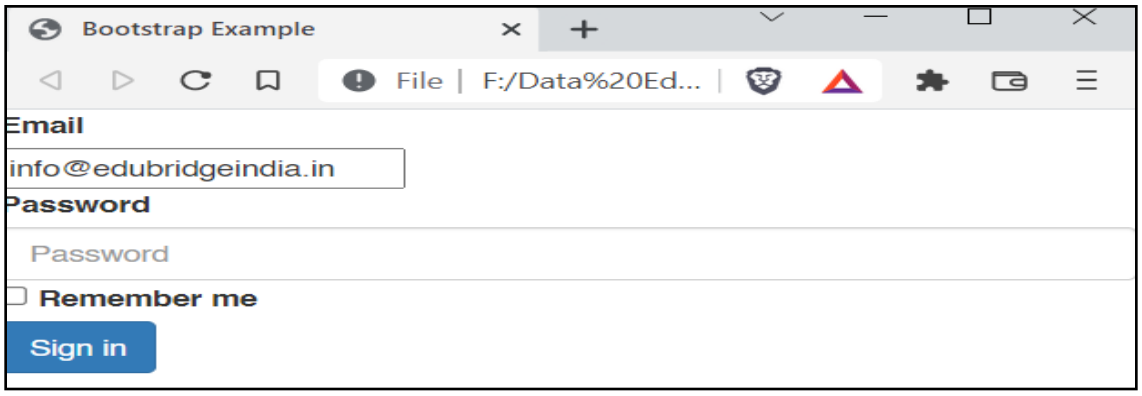
```
  </div>
  <div class="row">
    <div class="col-sm-10 offset-sm-2">
      <button type="submit" class="btn btn-primary">Sign in</button>
    </div>
  </div>
</form>

</body>
</html>
```

Output:



Bootstrap Form Validation

Bootstrap provides an easy and quick way to validate web forms on client-side. It uses browser's native form validation API to validate the form. Form validation styles are applied via CSS: invalid and: valid pseudo-classes. It applies to <input>, <select>, and <textarea> elements.

Let's try out the following example and see how it actually works:

Example

```
<!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/3.4.1/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
  <form class="needs-validation" novalidate>
   <div class="mb-3">
     <label class="form-label" for="inputEmail">Email</label>
```

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```
      <input type="email" class="form-control" id="inputEmail" placeholder="Email" required>
      <div class="invalid-feedback">Please enter a valid email address.</div>
    </div>
    <div class="mb-3">
      <label class="form-label" for="inputPassword">Password</label>
      <input type="password" class="form-control" id="inputPassword" placeholder="Password"
required>
      <div class="invalid-feedback">Please enter your password to continue.</div>
    </div>
    <div class="mb-3">
      <div class="form-check">
        <input class="form-check-input" type="checkbox" id="checkRemember">
        <label class="form-check-label" for="checkRemember">Remember me</label>
      </div>
    </div>
    <button type="submit" class="btn btn-primary">Sign in</button>
</form>
</body>
</html>
```

Output

You can alternatively swap the .{valid|invalid}-feedback classes for .{valid|invalid}-tooltip classes to display the validation feedback text in a tooltip style. Also, be sure to apply the style position: relative or class .position-relative on the parent element for proper feedback tooltip positioning. Here's an example:

Example

```
<!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/3.4.1/css/bootstrap.min.css">
```

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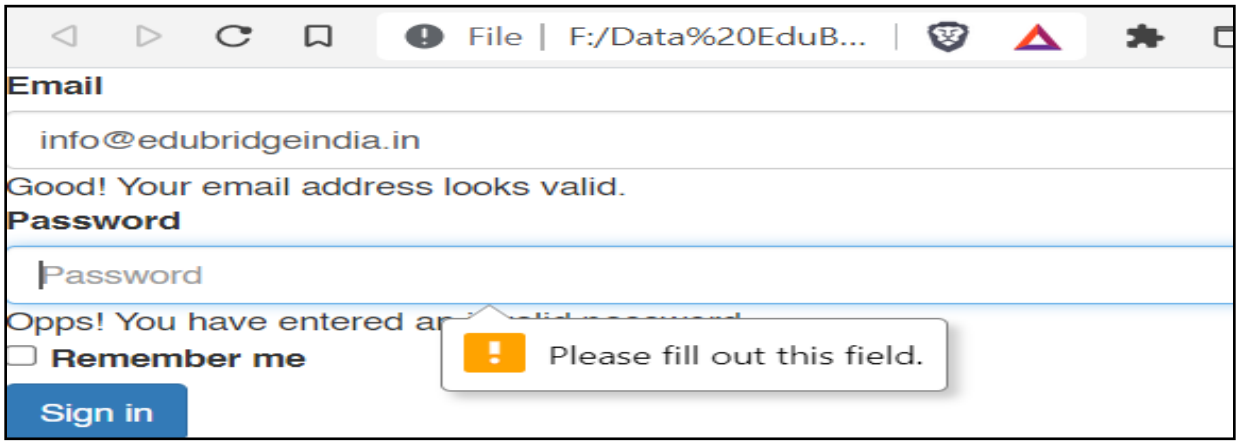
```
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.0/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>
<body>
  <form>
   <div class="mb-3 position-relative">
     <label class="form-label" for="inputEmail">Email</label>
     <input type="email" class="form-control is-valid" id="inputEmail" placeholder="Email"
value="info@edubridgeindia.in" required>
     <div class="valid-tooltip">Good! Your email address looks valid.</div>
   </div>
   <div class="mb-3 position-relative">
     <label class="form-label" for="inputPassword">Password</label>
     <input type="password" class="form-control is-invalid" id="inputPassword" placeholder="Password"
required>
     <div class="invalid-tooltip">Opps! You have entered an invalid password.</div>
   </div>
   <div class="mb-3">
     <div class="form-check">
       <input class="form-check-input" type="checkbox" id="checkRemember">
       <label class="form-check-label" for="checkRemember">Remember me</label>
     </div>
   </div>
   <button type="submit" class="btn btn-primary">Sign in</button>
</form>
</body>
</html>
```

Output



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Bootstrap Navbars

Creating Navbar with Bootstrap

You can use the Bootstrap navbar component to create responsive navigation header for your website or application. These responsive navbar will be collapsed on devices having small viewports like mobile phones but expand when user click the toggle button. However, it will be horizontal as normal on the medium and large devices such as laptop or desktop. You can also create different variations of the navbar such as navbars with dropdown menus and search boxes as well as fixed positioned navbar with much less effort. The following example will show you how to create a simple static navbar with navigation links.

Example

```
<nav class="navbar navbar-expand-lg navbar-light bg-light">
  <div class="container-fluid">
    <a href="#" class="navbar-brand">Brand</a>
    <button type="button" class="navbar-toggler" data-bs-toggle="collapse" data-bs-
target="#navbarCollapse">
      <span class="navbar-toggler-icon"></span>
    </button>
    <div class="collapse navbar-collapse" id="navbarCollapse">
      <div class="navbar-nav">
        <a href="#" class="nav-item nav-link active">Home</a>
        <a href="#" class="nav-item nav-link">Profile</a>
        <a href="#" class="nav-item nav-link">Messages</a>
        <a href="#" class="nav-item nav-link disabled" tabindex="-1">Reports</a>
      </div>
      <div class="navbar-nav ms-auto">
        <a href="#" class="nav-item nav-link">Login</a>
      </div>
    </div>
  </div>
</nav>
```

Output

Navbars require a wrapping .navbar with .navbar-expand{-sm|-md|-lg|-xl|-xxl} for responsive collapsing, and color scheme classes for appearance. Also, use the spacing and flex utility classes for controlling spacing and alignment within navbars.

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Adding Logo Images to Navbars

You can also place your logo image inside the navbar, instead of plain text. However, you need to set the logo height manually to fit it properly inside the navbar, as shown here:

Example

```
<nav class="navbar navbar-expand-lg navbar-light bg-light">
  <div class="container-fluid">
    <a href="#" class="navbar-brand">
      <img src="images/logo.svg" height="28" alt="CoolBrand">
    </a>
    <button type="button" class="navbar-toggler" data-bs-toggle="collapse" data-bs-target="#navbarCollapse">
      <span class="navbar-toggler-icon"></span>
    </button>
    <div class="collapse navbar-collapse" id="navbarCollapse">
      <div class="navbar-nav">
        <a href="#" class="nav-item nav-link active">Home</a>
        <a href="#" class="nav-item nav-link">Profile</a>
        <a href="#" class="nav-item nav-link">Messages</a>
        <a href="#" class="nav-item nav-link disabled" tabindex="-1">Reports</a>
      </div>
      <div class="navbar-nav ms-auto">
        <a href="#" class="nav-item nav-link">Login</a>
      </div>
    </div>
  </div>
</nav>
```

Output

Use the utility classes such as .ms-auto, .me-auto, .justify-content-between, etc. to align the nav links, forms, buttons or text inside the navbar.

Adding Dropdowns to Navbar

You can also include dropdowns and search box within the navbars, as shown here:

Example

```
<nav class="navbar navbar-expand-lg navbar-light bg-light">
  <div class="container-fluid">
    <a href="#" class="navbar-brand">Brand</a>
```

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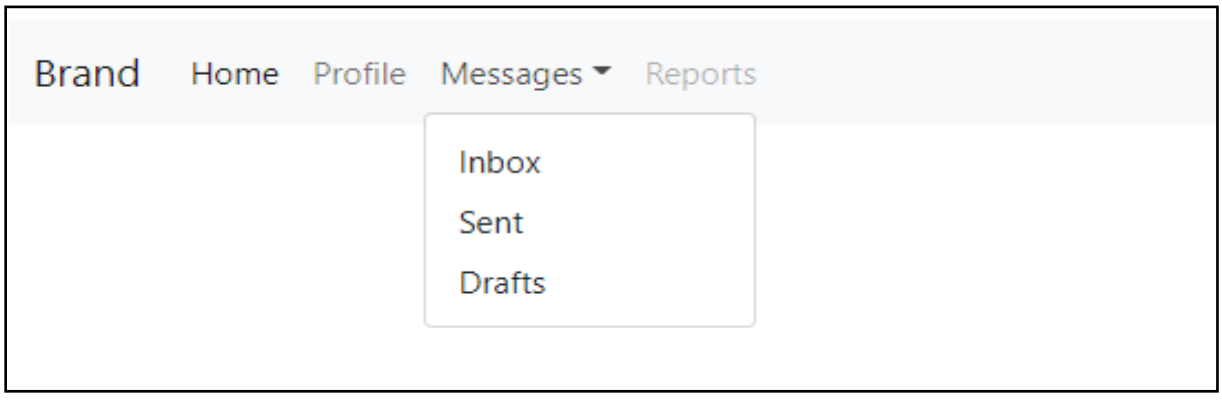
```
      <button type="button" class="navbar-toggler" data-bs-toggle="collapse" data-bs-
target="#navbarCollapse">
        <span class="navbar-toggler-icon"></span>
      </button>
      <div class="collapse navbar-collapse" id="navbarCollapse">
        <div class="navbar-nav">
          <a href="#" class="nav-item nav-link active">Home</a>
          <a href="#" class="nav-item nav-link">Profile</a>
          <div class="nav-item dropdown">
            <a href="#" class="nav-link dropdown-toggle" data-bs-
toggle="dropdown">Messages</a>
            <div class="dropdown-menu">
              <a href="#" class="dropdown-item">Inbox</a>
              <a href="#" class="dropdown-item">Sent</a>
              <a href="#" class="dropdown-item">Drafts</a>
            </div>
          </div>
          <a href="#" class="nav-item nav-link disabled" tabindex="-1">Reports</a>
        </div>
        <div class="navbar-nav ms-auto">
          <a href="#" class="nav-item nav-link">Login</a>
        </div>
      </div>
    </div>
</nav>
```

Output



Placing Search Form inside Navbar

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Search form is a very common component of the navbars and you have seen it on various website quite often. You can place various form controls within a navbar using the class .d-flex on the <form> element, as demonstrated in the following example:

Example

```
<nav class="navbar navbar-expand-lg navbar-light bg-light">
  <div class="container-fluid">
    <a href="#" class="navbar-brand">Brand</a>
    <button type="button" class="navbar-toggler" data-bs-toggle="collapse" data-bs-
target="#navbarCollapse">
      <span class="navbar-toggler-icon"></span>
    </button>
    <div class="collapse navbar-collapse justify-content-between" id="navbarCollapse">
      <div class="navbar-nav">
        <a href="#" class="nav-item nav-link active">Home</a>
        <a href="#" class="nav-item nav-link">Profile</a>
        <div class="nav-item dropdown">
          <a href="#" class="nav-link dropdown-toggle" data-bs-
toggle="dropdown">Messages</a>
          <div class="dropdown-menu">
            <a href="#" class="dropdown-item">Inbox</a>
            <a href="#" class="dropdown-item">Sent</a>
            <a href="#" class="dropdown-item">Drafts</a>
          </div>
        </div>
      </div>
      <form class="d-flex">
        <div class="input-group">
          <input type="text" class="form-control" placeholder="Search">
          <button type="button" class="btn btn-secondary"><i class="bi-
search"></i></button>
        </div>
      </form>
      <div class="navbar-nav">
        <a href="#" class="nav-item nav-link">Login</a>
      </div>
    </div>
  </div>
</nav>
```

Output

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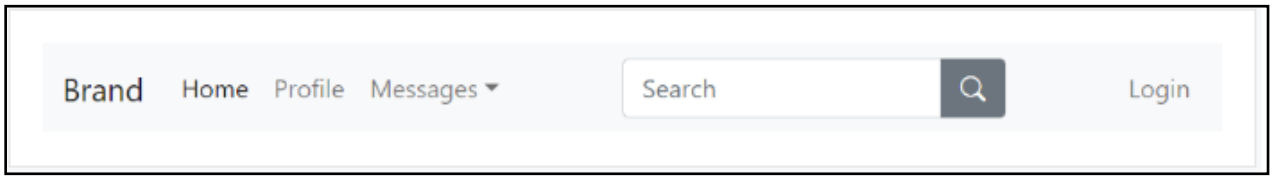


Changing the Color Scheme of Navbars

You can also change the color scheme of the navbar by using the .navbar-light for the light background colors, or .navbar-dark for the dark background colors. Then, customize it with the background color utility classes, such as .bg-dark, .bg-primary, and so on.

Alternatively, you can also apply the CSS background-color property on the .navbar element yourself to customize the navbar theme, as shown in the following example:

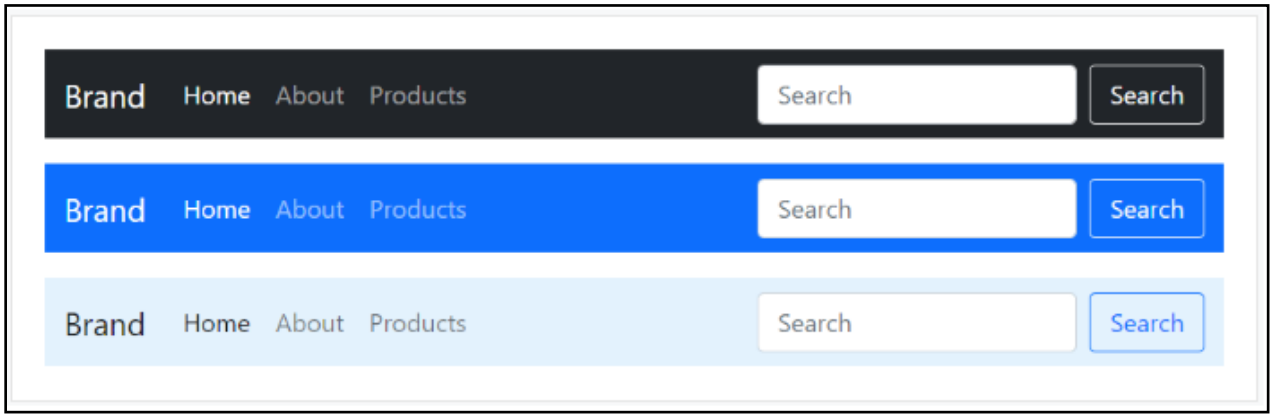
Example

```
<nav class="navbar navbar-dark bg-dark">
  <!-- Navbar content -->
</nav>

<nav class="navbar navbar-dark bg-primary">
  <!-- Navbar content -->
</nav>

<nav class="navbar navbar-light" style="background-color: #ddeeff;">
  <!-- Navbar content -->
</nav>
```

Output



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Bootstrap Grids

The grid is formed by twelve (12) equal width columns. Predefined classes can be used to place elements on a given column and span a number of columns at a time. Inside the columns are rows that can be defined to allow an alternate use of the column widths.

The procedure should be based on a few rules:
Series (.row) must be in a container (.container (fixed width) or .container-fluid (full width))
Series may be used horizontally to place multiple elements sideby-side.
Columns (.col-xx-n) may be placed in rows. Only column elements are immediate child elements of rows.
Column spacing (gap between columns) is defined using padding-rules. These distances are to the left of the first column and the right of the last column with negative intervals (margin) balanced. This content is aligned outside of the grid's leftaligned equal.
If the elements need columns that can be placed within a row and exceed the elements limit of twelve columns, then the whole group will be wrapped.

The structure of the column classes is simple:

- The introduction begins with col-
- The middle part determines the jurisdiction for screen widths (xs, sm, md, lg)—the breakpoints.
- The number at the end determines the number of columns (1 to 12).

If you use the class .col-xs-4, you can have 3 juxtaposing decorated elements (3 × 4 = 12). The higher (larger device) definition applies until it is overwritten. You can use .col-md-2, .col-lg-2, than “MD” is not valid for very large devices.

Device Specific Definitions

Small units with less than 768 px are not defined separately, because this class of device is already the default. The information contained in the variables are defined as follows:

- “xs” <= 544 px
- “sm” <= 768 px
- “md” <= 992 px
- “lg” <= 1200 px
- “xl” > 1200 px

Following table define mode options about grid

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

Above table demonstrates one important thing, applying any .col-sm-* class to an element will not only have an effect on small devices, but also on medium, large and extra large devices (viewport width ≥768px), if a .col-md-*, .col-lg-*, .col-xl-*, or .col-xxl-* class is not present. Similarly, the .col-md-* class will not only have an effect on medium devices, but also on large and extra large devices if a .col-lg-*, .col-xl-*, or .col-xxl-* class is not present. Now the question arises how to create rows and columns using this 12 column responsive grid system. The answer is pretty simple, at first create a container that acts as a wrapper for your rows and columns using any container classes such as .container, after that create rows inside the container using the .row class, and to create columns inside any row you can use the .col-*, .col-sm-*, .col-md-*, .col-lg-*, .col-xl-* and .col-xxl-* classes.

Creating Two Column Layouts

The following example will show you how to create two column layouts for medium, large and extra large devices like tables, laptops and desktops etc. However, on mobile phones (screen width less than 768px), the columns will automatically become horizontal (2 rows, 1 column).

Example

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<title>Bootstrap Two Column Grid Layouts for Tablets and Desktops</title>
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet">
```

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```
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"></script>
<style>
  /* Some custom styles to beautify this example */
  .demo-content{
    padding: 15px;
    font-size: 18px;
    background: #dbdfe5;
    margin-bottom: 15px;
  }
  .demo-content.bg-alt{
    background: #abb1b8;
  }
</style>
</head>
<body>
  <h2 class="text-center mt-3">Bootstrap Responsive Layout</h2>
        <div class="text-center my-3">Open the output in a new blank tab (Click the arrow next to "Show Output" button) and resize the browser window to understand how the Bootstrap responsive grid system works.</div>
  <div class="container">
    <!--Row with two equal columns-->
    <div class="row">
      <div class="col-md-6">
        <div class="demo-content">.col-md-6</div>
      </div>
      <div class="col-md-6">
        <div class="demo-content bg-alt">.col-md-6</div>
      </div>
    </div>
        <!--Row with two columns divided in 1:2 ratio-->
    <div class="row">
      <div class="col-md-4">
        <div class="demo-content">.col-md-4</div>
      </div>
      <div class="col-md-8">
        <div class="demo-content bg-alt">.col-md-8</div>
      </div>
    </div>
        <!--Row with two columns divided in 1:3 ratio-->
    <div class="row">
      <div class="col-md-3">
        <div class="demo-content">.col-md-3</div>
      </div>
      <div class="col-md-9">
        <div class="demo-content bg-alt">.col-md-9</div>
      </div>
```

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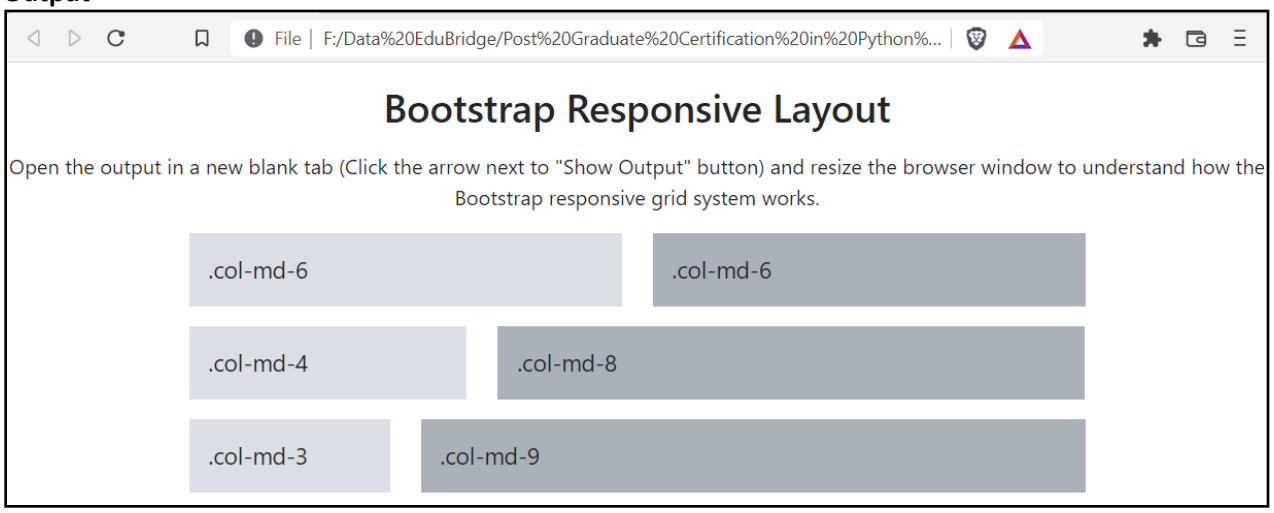
```
    </div>
  </div>
</body>
</html>
```

Output



In a grid layout, content must be placed inside the columns (.col and .col-*) and only columns may be the immediate children of rows (.row). Also, rows should be placed inside a container (either fixed or fluid) for proper padding and alignment. Grid column widths are set in percentages, so they're always fluid and sized relative to their parent element. In addition, each column has horizontal padding (called a gutter) for controlling the space between individual columns.

Since the Bootstrap grid system is based on 12 columns, therefore to keep the columns in a one line (i.e. side by side), the sum of the grid column numbers within a single row should not be greater than 12. If you go through the above example code carefully you will find the numbers of grid columns (i.e. col-md-*) add up to twelve (6+6, 4+8 and 3+9) for every row.

Grid System .col

Creating Three Column Layouts

Similarly, you can create other layouts based on the above principle. For instance, the following example will typically create three column layouts for laptops and desktops screens. It also works in tablets in landscape mode if screen resolution is more than or equal to 992 pixels (e.g. Apple iPad). However, in portrait mode the grid columns will be horizontal as usual.

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
```

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```
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<title>Bootstrap Three Column Grid Layouts for Tablets (landscape) and Desktops</title>
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"></script>
<style>
   /* Some custom styles to beautify this example */
   .demo-content{
      padding: 15px;
      font-size: 18px;
      background: #dbdfe5;
      margin-bottom: 15px;
   }
   .demo-content.bg-alt{
      background: #abb1b8;
   }
</style>
</head>
<body>
   <h2 class="text-center mt-3">Bootstrap Responsive Layout</h2>
         <div class="text-center my-3">Open the output in a new blank tab (Click the arrow next
to "Show Output" button) and resize the browser window to understand how the Bootstrap
responsive grid system works.</div>
   <div class="container">
      <!--Row with three equal columns-->
      <div class="row">
         <div class="col-lg-4">
            <div class="demo-content">.col-lg-4</div>
         </div>
         <div class="col-lg-4">
            <div class="demo-content bg-alt">.col-lg-4</div>
         </div>
         <div class="col-lg-4">
            <div class="demo-content">.col-lg-4</div>
         </div>
      </div>

      <!--Row with three columns divided in 1:4:1 ratio-->
      <div class="row">
         <div class="col-lg-2">
```

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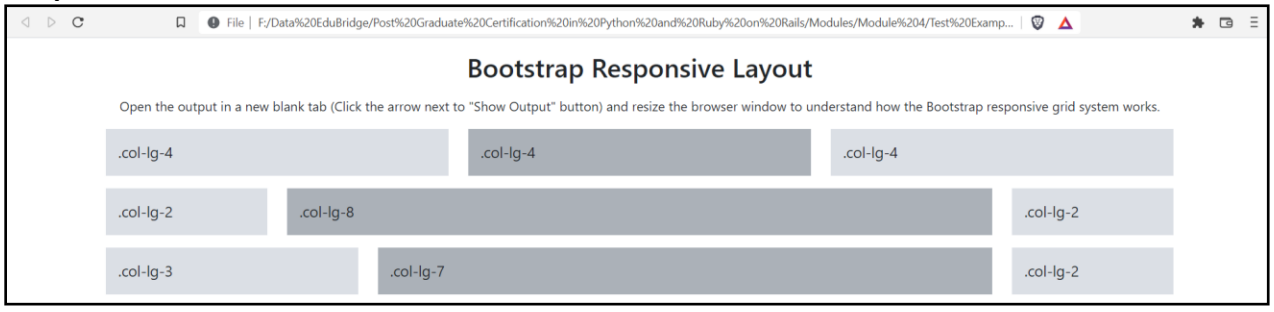
```
            <div class="demo-content">.col-lg-2</div>
          </div>
          <div class="col-lg-8">
            <div class="demo-content bg-alt">.col-lg-8</div>
          </div>
          <div class="col-lg-2">
            <div class="demo-content">.col-lg-2</div>
          </div>
        </div>
        <!--Row with three columns divided unevenly-->
        <div class="row">
          <div class="col-lg-3">
            <div class="demo-content">.col-lg-3</div>
          </div>
          <div class="col-lg-7">
            <div class="demo-content bg-alt">.col-lg-7</div>
          </div>
          <div class="col-lg-2">
            <div class="demo-content">.col-lg-2</div>
          </div>
        </div>
      </div>
</body>
</html>
```

Output



Creating Multi-Column Layouts with Bootstrap

With the new Bootstrap mobile first flexbox grid system you can easily control how your website layout will render on different types of devices that have different screen or viewport sizes like mobile phones, tablets, desktops, etc. Let's consider the following illustration.

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In the above illustration there are total 12 content boxes in all devices, but its placement varies according to the device screen size, like in mobile device the layout is rendered as one column grid layout which has 1 column and 12 rows placed above one another, whereas in tablet it is rendered as two column grid layout which has 2 columns and 6 rows.

Further, in large screen size devices like laptops and desktops it is rendered as three column grid layout which has 3 columns and 4 rows and finally in extra large screen devices like large desktops it is rendered as four column grid layout which has 4 columns and 3 rows.

Now the question is how we can create such responsive layouts using this Bootstrap flexbox grid system. Let's start with the primary target device. Suppose our primary target device is laptop or normal desktop. Since our laptop layout has 3 columns and 4 rows i.e. 3x4 grid layout, so the HTML code for making such grid structure would look something like this.

Example:

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<title>Bootstrap Grid Layouts for Large Devices</title>
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet">
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"></script>
<style>
  /* Some custom styles to beautify this example */
  p{
    padding: 50px;
    font-size: 32px;
    font-weight: bold;
    text-align: center;
    background: #dbdfe5;
```

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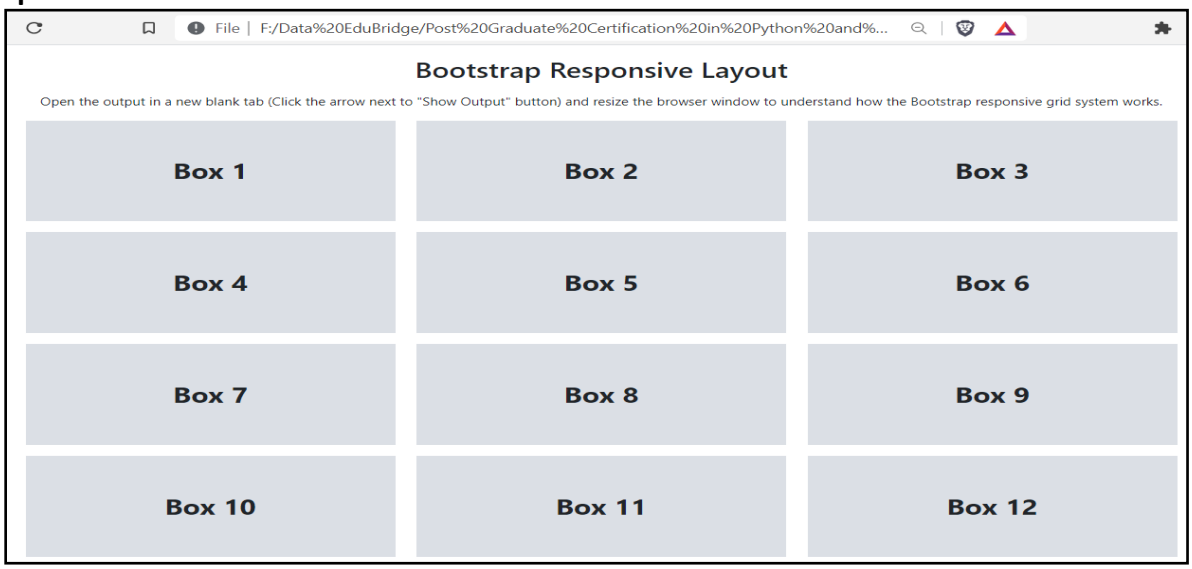
```
  }
</style>
</head>
<body>
  <h2 class="text-center mt-3">Bootstrap Responsive Layout</h2>
       <div class="text-center my-3">Open the output in a new blank tab (Click the arrow next to "Show Output" button) and resize the browser window to understand how the Bootstrap responsive grid system works.</div>
  <div class="container-lg">
    <div class="row">
      <div class="col-xl-4"><p>Box 1</p></div>
      <div class="col-xl-4"><p>Box 2</p></div>
      <div class="col-xl-4"><p>Box 3</p></div>
      <div class="col-xl-4"><p>Box 4</p></div>
      <div class="col-xl-4"><p>Box 5</p></div>
      <div class="col-xl-4"><p>Box 6</p></div>
      <div class="col-xl-4"><p>Box 7</p></div>
      <div class="col-xl-4"><p>Box 8</p></div>
      <div class="col-xl-4"><p>Box 9</p></div>
      <div class="col-xl-4"><p>Box 10</p></div>
      <div class="col-xl-4"><p>Box 11</p></div>
      <div class="col-xl-4"><p>Box 12</p></div>
    </div>
  </div>
</body>
</html>
```

Output



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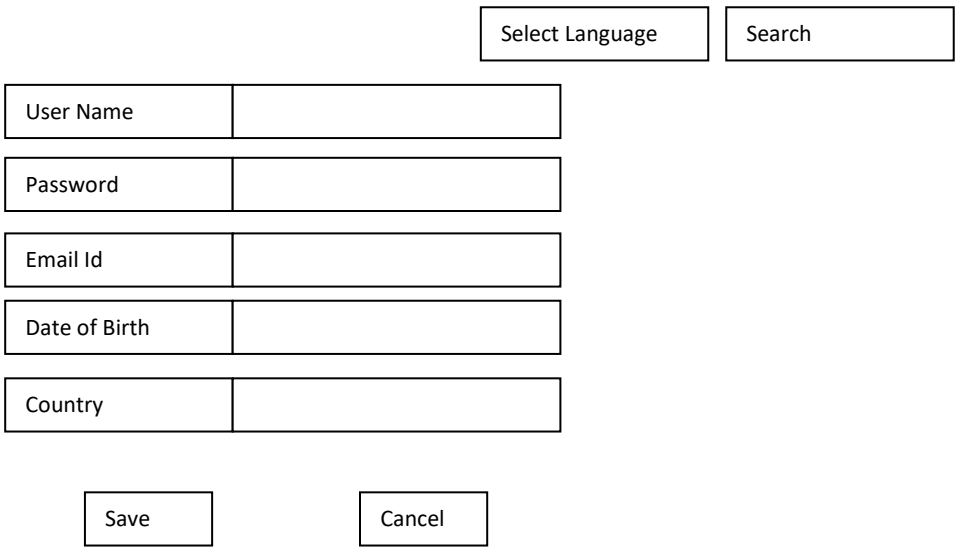
If you see the output of the above example in a large device such as a laptop or desktop which has screen or viewport width greater than or equal to 1200px but less than 1400px, you will find the layout has 4 rows where each row has 3 equal columns resulting in 3x4 grid layout.



Activity

1. Referring to above create a web page with given parameters as following

User Name, Password, Email ID, Date of Birth, and Country all these should be on label, neighbor felid should be text box for submitting answer, Save and Cancel are buttons, select language will be dropdown box and search will be a search filed

Follow all the bootstrap rules and methods for designing this web page

2. Discuss Bootstrap table and various classes that can change the appearance of the table.

3. What are badges? Which class will you use to make your badge look more rounded?

4. What are badges? Which class will you use to make your badge look more rounded?

5. How to create a navbar in bootstrap, create changing the color scheme of Navbars for any subject.

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