**Bootstrap** (<http://www.w3schools.com/bootstrap/bootstrap_get_started.asp>)

## What is Bootstrap?

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

**Bootstrap 3 vs. Bootstrap 4**

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

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

## Why Use Bootstrap?

Advantages of Bootstrap:

* **Easy to use:** Anybody with just basic knowledge of HTML and CSS can start using Bootstrap
* **Responsive features:** Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
* **Mobile-first approach:** In Bootstrap 3, mobile-first styles are part of the core framework
* **Browser compatibility:** Bootstrap is compatible with all modern browsers (Chrome, Firefox, Internet Explorer, Safari, and Opera)

## Where to Get Bootstrap?

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

You can:

* Download Bootstrap from getbootstrap.com
* Include Bootstrap from a CDN (Content Delivery Network)

**My suggestion is to use the Bootstrap 4 CDN:**

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

## Bootstrap CDN

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

<!-- Latest compiled and minified CSS -->
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/css/bootstrap.min.css">

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

<!-- Popper JS -->
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.12.9/umd/popper.min.js"></script>

<!-- Latest compiled JavaScript -->
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>

## Items needed when creating a Bootstrap Site

**1. Add the HTML5 doctype (this is included if using Visual Studio)**

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

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

**2. Bootstrap 4 is mobile-first**

 Bootstrap 4 is designed to be responsive to mobile devices. Mobile-first styles are part of the core framework. To ensure proper rendering and touch zooming, add the following <meta> tag inside the <head> element:

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

* **width=device-width**: sets the width of the page to follow the screen-width of the device (which will vary depending on the device).
* **initial-scale=1**: sets the initial zoom level when the page is first loaded by the browser.

**3. 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**



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



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

## Bootstrap Grid System

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

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

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| span 1 | span 1 | span 1 | span 1 | span 1 | span 1 | span 1 | span 1 | span 1 | span 1 | span 1 | span 1 |
|  span 4 |  span 4 |  span 4 |
| span 4 | span 8 |
| span 6 | span 6 |
| span 12 |

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

## Grid Classes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Extra small**<576px | **Small**≥576px | **Medium**≥768px | **Large**≥992px | **Extra large**≥1200px |
| Max width | None (auto) | 540px | 720px | 960px | 1140px |
| Class prefix | .col- | .col-sm- | .col-md- | .col-lg- | .col-xl- |
| Width | There is 15px on each side of column |

<https://www.quackit.com/bootstrap/bootstrap_4/tutorial/bootstrap_grid_system.cfm>

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

<div class="col-sm-3 col-md-6 col-lg-6">

Be sure that they all add up to 12 if they are in the same row.

## Basic Structure of a Bootstrap Grid

The following is a basic structure of a Bootstrap grid:

<div class="row">
  <div class="col-\*-\*"></div>
</div>

<div class="row">
  <div class="col-\*-\*"></div>
  <div class="col-\*-\*"></div>
  <div class="col-\*-\*"></div>
</div>
<div class="row">
  ...
</div>

First: create a row (<div class="row">). Then, add the desired number of columns (tags with appropriate .col-\*-\* classes). **Note that numbers in .col-\*-\* should always add up to 12 for each row.**

Below we have collected some examples of basic Bootstrap grid layouts.

## Three Equal Columns

.col-sm-4

.col-sm-4

.col-sm-4

The following example shows how to get a three equal-width columns starting at tablets and scaling to large desktops. On mobile phones, the columns will automatically stack:

## Example

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

## Two Unequal Columns

.col-sm-4

.col-sm-8

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

## Example

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

**More grid examples:**

<http://getbootstrap.com/examples/grid/>

<http://www.w3schools.com/bootstrap/bootstrap_grid_system.asp>

## For now start with md (medium) or sm (small)

## Bootstrap's Default Settings

* Bootstrap 4 uses a default font-size of 16px, and its line-height is 1.5.
* The default font-family is "Helvetica Neue", Helvetica, Arial, sans-serif.
* In addition, all <p> elements have margin-top: 0 and margin-bottom: 1rem (16px by default).

**Text/Typography**

<https://www.w3schools.com/bootstrap4/bootstrap_typography.asp>

**Colors**

<https://www.w3schools.com/bootstrap4/bootstrap_colors.asp>

**Jumbotron**

* A jumbotron indicates a big box for calling extra attention to some special content or information.
* A jumbotron is displayed as a grey box with rounded corners. It also enlarges the font sizes of the text inside it.

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

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

Jumbotron Inside Container

Place the jumbotron inside the <div class="container"> if you want the jumbotron to NOT extend to the edge of the screen:

Example

<div class="container">
  <div class="jumbotron">
    <h1>Bootstrap Tutorial</h1>
    <p>Bootstrap is the most popular HTML, CSS, and JS framework for developing
    responsive, mobile-first projects on the web.</p>
  </div>
  <p>This is some text.</p>
  <p>This is another text.</p>
</div>

Jumbotron Outside Container

Place the jumbotron outside the <div class="container"> if you want the jumbotron to extend to the screen edges:

Example

<div class="jumbotron">
  <h1>Bootstrap Tutorial</h1>
  <p>Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive,
  mobile-first projects on the web.</p>
</div>
<div class="container">
  <p>This is some text.</p>
  <p>This is another text.</p>
</div>

Creating a Page Header

A page header is like a section divider.

The .page-header class adds a horizontal line under the heading (+ adds some extra space around the element):

Example Page Header

Use a <div> element with class .page-header to create a page header:

Example

<div class="page-header">
  <h1>Example Page Header</h1>
</div>