



Bootstrap

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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



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

Bootstrap Versions

Bootstrap 5 (released 2021) is the newest version of Bootstrap (released 2013); with new components, faster stylesheet 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.

What is JQuery

JQuery is a fast, small, and feature-rich JavaScript library.

JQuery Version 1.0 was release in 2006 and in Mar 2022 the latest version is 3.6

It makes things much simpler with an easy-to-use API that works across a multitude of browsers. Example

- HTML document traversal and manipulation,
- event handling,
- animation, and
- Ajax



JqueryDemo.html

Javascript -> JQuery -> Javascript

The success of JQuery also brought many issues.

- Version Fragmentation
- Software Decay (Some website still using JQuery 1.0)
- Different 3rd party client libraries/frameworks depending on different JQuery versions
- Many complex things which were made simple by JQuery are not directly available in Javascript.

This resulted in most 3rd party no longer depending on JQuery, but revert to Javascript

Thus, while Bootstrap 3 and 4 use JQuery while Bootstrap 5 no longer depends on JQuery

- However, if you are using JQuery, Bootstrap 5 will continue to work with JQuery

Why Use Bootstrap?

Easy to use

- Anybody with just basic knowledge of HTML and CSS can start using Bootstrap

Responsive features

- Bootstrap's responsive CSS adjusts to phones, tablets, and desktops

Mobile-first approach

- In Bootstrap, mobile-first styles are part of the core framework

Browser compatibility

- Bootstrap 5 is compatible with all modern browsers (Chrome, Firefox, Edge, Safari, and Opera).
- Note that if you need support for IE11 and down, you must use either BS4 or BS3.

Where to Get Bootstrap 5?

Include Bootstrap 5 from a CDN

- `<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet">`
- `<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"></script>`

Download Bootstrap 5 from getbootstrap.com

- Download the bootstrap distributable zip from getbootstrap.com
- Unzip the file and copy the **bootstrap-5.1.3-dist** folder contain js and css folder to your project
- `<link href="bootstrap-5.1.3-dist/css/bootstrap.min.css" rel="stylesheet">`
- `<script src="bootstrap-5.1.3-dist/js/bootstrap.bundle.min.js"></script>`

Important points to note

One advantage of using the Bootstrap 5 CDN:

- Many users already have downloaded Bootstrap 5 from jsDelivr 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.

Why does Bootstrap need Javascript

- Bootstrap 5 use JavaScript for different components
 - like modals, tooltips, popovers etc.
- However, if you just use the CSS part of Bootstrap, you don't need them.

Create Your First Web Page With Bootstrap

Add the HTML5 doctype

- Bootstrap 5 uses HTML elements and CSS properties that require the HTML5 doctype.
- Always include the HTML5 doctype at the beginning of the page, along with the lang attribute and the correct title and character set:
 - `<!DOCTYPE html>`
 - `<meta charset="utf-8">`

Bootstrap 5 is mobile-first

- Bootstrap 5 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">`

Bootstrap starter template

```
<!doctype html>
<html lang="en">
<head>
  <!-- Required meta tags -->
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">

  <!-- Bootstrap CSS -->
  <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet">
  <title>Hello, world!</title>
</head>
<body>
  <h1>Hello, world!</h1>
  <!-- Optional JavaScript; choose one of the two! -->
  <!-- Option 1: Bootstrap Bundle with Popper -->
  <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"></script>

  <!-- Option 2: Separate Popper and Bootstrap JS -->
  <!--
  <script src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.10.2/dist/umd/popper.min.js"></script>
  <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.min.js"></script>
  -->
</body>
</html>
```

<https://getbootstrap.com/docs/4.5/components/popovers/>

Create Your First Web Page With Bootstrap

Containers

- Bootstrap 5 also requires a containing element to wrap site contents.
- There are two container classes to choose from:
 - The **.container** class provides a responsive fixed width container
 - Note that its width (**max-width**) will change on different screen sizes:

	Extra small <576px	Small ≥576px	Medium ≥768px	Large ≥992px	Extra Large ≥1200px	XXL ≥1400px
max-width	100%	540px	720px	960px	1140px	1320px

- The **.container-fluid** class provides a full width container, spanning the entire width of the viewport
 - **width** is always 100%



container.html



container-fluid.html

Bootstrap Media Queries & Breakpoints

The most important part of responsive design is creating the proper layout for each device.

This is not easy because there is a wide range of different devices available.

Media queries and breakpoints come to the scene in this case.

Media queries

- Architect your CSS by breakpoint.
- Media queries are a feature of CSS that allow you to conditionally apply styles based on a set of browser and operating system parameters.
- We most commonly use min-width in our media queries.

Breakpoints

- The building blocks of responsive design.
- Use them to control when your layout can be adapted at a particular viewport or device size.



Media Query

A media query is a CSS (Cascade Style Sheet) technique (introduced from CSS 3) that enables you to arrange the contents of a web page or use different styles based on the devices' general type such as

- print,
- screen, or
- the various media query breakpoints that we will discuss in the next slide.

Because Bootstrap comes as a responsive and mobile-first CSS framework for your front-end web development, it uses many media queries to create perfect breakpoints for its layouts and interfaces.

Media Query Example

```
/* Example: hide the image in
'xs' breakpoint and show it
from 'sm' breakpoint */

.custom-class {
    display: none;
}

@media (min-width:576px) {
    .custom-class {
        display: block;
    }
}

/*and (max-width:767.98px) {*/
```

```
<!doctype html>
<html lang="en">
<head>
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <!-- Bootstrap CSS -->
    <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
rel="stylesheet">
    <!-- custom CSS -->
    <link href="min_width.css" rel="stylesheet" />
    <title> Bootstrap Media Queries</title>
</head>
<body>
    <h3> 8-Core CPU 14-Core GPU 16GB Unified Memory 512GB SSD Storage</h3>
    <div class="custom-class">
        
    </div>
    <p> 16-core Neural Engine, 14-inch Liquid Retina XDR display. Three Thunderbolt
4 ports, HDMI port,.... </p>
</body>
</html>
```

Bootstrap breakpoints

Bootstrap includes six default breakpoints, sometimes referred to as grid tiers, for building responsively.

Breakpoint	Class infix	Dimensions
X-Small	<i>None</i>	<576px
Small	<i>sm</i>	≥576px
Medium	<i>md</i>	≥768px
Large	<i>lg</i>	≥992px
Extra large	<i>xl</i>	≥1200px
Extra extra large	<i>xxl</i>	≥1400px