Bootstrap 5

Introduction :-

Bootstrap is a popular open-source frontend framework that simplifies web development by providing a collection of CSS and JavaScript tools. It is used to create responsive, mobile-first websites quickly and efficiently.

Definition :-

Bootstrap is a comprehensive frontend framework that includes HTML, CSS, and JavaScript components. It is designed to help developer build responsive, mobile-first websites with ease. The framework includes a grid system, pre-designed components, and utilities for typography, forms, buttons, navigation and other interface element.

History :-

- Created by :- Mark Otto and Jacob Thornton at Twitter in 2011.
- Initial Purpose :- To maintain consistency across internal tools at twitter.
- Public Release :- It was made open-source later in 2011.
- Evolution :- Over the years, bootstrap has undergone several major updates,

with bootstrap 4 released in 2018, followed by bootstrap 5 in may 2021.

- Bootstrap 5 Highlights :-

- Removal of JQuery dependency.
- Introduction to a new utility API.
- Enhanced grid systems with more responsive breakpoints.

Installation :-

Bootstrap 5 can be easily installed in multiple ways, depending on your project setup and needs :

1. Via CDN :- The easiest way to include Bootstrap is by linking the official CDN (Content Delivery Network). Add the following "<link>" and "<script>" tags to the <head> and before the closing </body> tag of your HTML file respectively

Bootstrap CSS —

```
<link href="https://cdn.jsdeliver.net/npm/
bootstrap@5.3.0/dist/css/bootstrap.min.css"
rel="stylesheet">
```

P.T.O

Bootstrap JS bundle with Popper :—

<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js"></script>

2. Download and Host locally :—
You can download the bootstrap files from the official Bootstrap website and host them locally. This method gives us full control over the files and allows for offline development.

3. Using Package Managers :—

- npm : Run the following command in your project directory.

"npm install bootstrap@5.3.3"

- yarn : Run the following command in your project directory.

"yarn add bootstrap@5.3.3"

4. Sass Integration :-
If you want to customize Bootstrap using Sass, you can install Bootstrap via npm or yarn, and then import Sass files into your project. This allows you to modify Bootstrap's variable and styles.

"@import "node_modules/bootstrap/scss/bootstrap";

Why Use Bootstrap ?:-

- Ease to use :-
  It allows for fast and straightforward web development especially for beginners.

- Responsive Design :-
  Automatically adjusts layouts for different screen sizes, ensuring a consistent experience on desktop, tablets and mobiles.

- Customizable :-
  Though it provides a default style, Bootstrap can be customized to match the design needs of your project.

- Community Support :-
  A large and active community provides extensive documentation, tutorials, and third-party themes.

Advantages :-

- Time - Saving :-
  Pre-built components and styles saves developers time.

P.T.O.

- Consistency :-
Provides a consistent design across different browsers and devices.

- Responsive Grid System :-
A flexible grid system that supports up to 12 columns across the page, making it easier to design complex layouts.

- Extensive Documentation :-
Comprehensive documentation helps users understand and implement features.

- Large Ecosystems :-
A wide range of themes, templates, and plugins are available for Bootstrap.

Disadvantages :-

- Generic Design :-
Websites built with Bootstrap can look similar if not customized properly.

- Learning Curve :-
While Bootstrap simplifies a lot of tasks learning all the utilities and components may take some time.

- Overhead :-
The inclusion of unused components can

lead to a larger file size, effecting page load times.

- Dependency on Bootstrap Classes :-
Heavy reliance on Bootstrap classes can make the code less semantic and harder to maintain.

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Bootstrap - Layout.

1) Breakpoints :-

Breakpoints are customizable widths that determines how your responsive layout behaves across devices or viewport sizes in Bootstrap.

Available breakpoints
Bootstrap includes six default breakpoints, sometimes referred to as grid tiers, for building responsively. These breakpoints can be customized if you're using Bootstrap's source Sass files.

Breakpoint	Class infix	Dimensions
Extra small	None	<576px
Small	sm	>=576px
Medium	md	>=768px
Large	lg	>=992px
Extra large	xl	>=1200px
Extra extra large	xxl	>=1400px

2) Containers :-

Containers are a fundamental building block of bootstrap that contain, pad, and align your content within a given device or viewport.

How they work

Containers are the most basic layout element in bootstrap and are required when using Bootstrap's default grid system. Containers are used to contain, pad, and (sometimes) center the content within them.

Bootstrap comes with three different containers

- .Container, which sets a max-width at each breakpoint.
- .Container-{breakpoint}, which is width: 100% until the specified breakpoint.
- .Container-fluid, which is width: 100% at all breakpoints.

The table below illustrates how each container's max-width compares to the original .container and .container-fluid across each breakpoint.

	Extra small <576Px	Small ≥576Px	Medium ≥768Px	Large ≥992Px	X-large ≥1200Px	XX-Large ≥1400Px
Container	100%	540Px	720Px	960Px	1140Px	1320Px
.Container-sm	100%	540Px	720Px	960Px	1140Px	1320Px
.Container-md	100%	100%	720Px	960Px	1140Px	1320Px
.Container-lg	100%	100%	100%	960Px	1140Px	1320Px
.Container-xl	100%	100%	100%	100%	1140Px	1320Px
.Container-xxl	100%	100%	100%	100%	100%	1320Px
.Container-fluid	100%	100%	100%	100%	100%	100%

3) Grid Systems :-

Use Bootstrap's powerful mobile-first flexbox grid to build layouts of all shapes and sizes thanks to a twelve column system, six default responsive tiers, Sass variables and mixins, and dozens of predefined classes.

How it works

- Bootstrap's grid supports six responsive breakpoints. Breakpoints are based on min-width media queries, meaning they affect that breakpoint and all those above it (e.g., .col-sm-4 applies to sm, md, lg, xl and xxl). This means you can control Container and Column sizing and behavior by each breakpoint.

- Containers center and horizontally pad your content. Use .container for a responsive pixel width, .container-fluid for width: 100% across all viewport and devices, or a responsive container (e.g., .container-md) for a combination of fluid and pixel widths.

- Rows are wrappers for columns. Each column has horizontal padding (called a gutter) for controlling the space between them.

- Columns are incredibly flexible. There are 12 template columns available per row, allowing you to create different combinations of elements that span any number of columns. Column classes indicate the number of template column to span (col-4 spans four). widths are set in the percentages so we always have same relative sizing.

- Gutters are also responsive and customizable. We can change horizontal gutters with .gx-* classes, vertical gutters with .gy-*, or all gutters with .g-* classes. .g-0 is also available to remove gutters.

Grid options

Bootstrap's grid option / system can adapt all six default breakpoints, and any breakpoints you customize. The six default grid tiers are as follows:

- Extra Small (xs)
- Small (sm)
- Medium (md)
- Large (lg)
- Extra large (xl)
- Extra Extra large (xxl)

As noted above, each of these breakpoints have their own container, unique class prefix, and modifiers. Here's how the grid changes across these breakpoints :-

	xs	sm	md	lg	xl	xxl
	<576Px	>576Px	>768Px	>992Px	>1200Px	>1400Px
Container (max-width)	None (auto)	540 Px	720 Px	960 Px	1140 Px	1320 Px
class prefix	.col-	.col-sm-	.col-md-	.col-lg-	.col-xl-	.col-xxl-
# of columns	12					
Gutter width	1.5 rem (.75 rem on left and right)					
Custom gitters	Yes					
Nestable	Yes					
Column ordering	Yes					

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Bootstrap Components.

Bootstrap components are pre-styled UI elements like buttons, forms, navbar and more, built with HTML, CSS and JavaScript. They provide a consistent and responsive design framework,

facilitating rapid development of web apps. with minimal customization required.

Some of the commonly used bootstrap components are explained below :-

1. Buttons :-

They are used to perform an action in forms, dialogue boxes etc. They come in multiple states, sizes and predefined classes.

Base class —

Bootstrap has a base .btn class that sets up basic styles such as padding and content alignment.

variants —

Bootstrap provides several button variants, each serving its own semantic purpose, with a few extras thrown in for more control.

variant classes :-

- .btn-primary
- .btn-secondary
- .btn-sucess
- .btn-danger
- .btn-warning
- .btn-info
- .btn-light
- .btn-dark
- .btn-link

Note :- We can also use .btn class with <a> or <input> elements (though some browsers may apply a slightly different rendering).

Outline buttons :-
In need of a button, but not the hefty background colours they bring? Replace the default modifier classes with the .btn-outline-* .
where, * is last words of variant class except 'link'.

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2. Cards :-
Bootstrap's cards provide a flexible and extensible content container with multiple variants and options.

To use them in a simple way just go to the bootstrap documentation page and select a whatever card you like and add some customization to it (if you want).

Note :- They have no margin by default, so use spacing utilities as needed.

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3. Carousel :-
A slideshow element / component for cycling through elements - images or slides of text - like a carousel.

It is a built with CSS 3D transforms and a bit of JavaScript. It works with a series of images, text or custom markup. It also includes support for previous/next controls and indicators.

- Nested carousels are not supported. You should also be aware that carousels in general can often cause usability and accessibility challenges.

To, use them just go to bootstrap documentation and select the one whatever you love.

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4. Collapse :-

Toggle the visibility of content across your project with a few classes and JavaScript plugins. Buttons or anchors are used as triggers that are mapped to specific elements you toggle.

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5. Dropdowns :-

Dropdowns are toggleable, contextual overlays for displaying lists of links and more. They're made interactive with the included Bootstrap dropdown javascript plugin. They are toggled by clicking, not by hovering.

Dropdowns are build on a third party library, Popper, which provides dynamic positioning and viewport detection. Be sure to include popper.min.js before Bootstrap's JavaScript or use bootstrap.bundle.min.js / bootstrap.bundle.js which contains Popper.

Quick Tips

1. If got Struck at any point or there is something you don't understand just go to bootstrap's offical documentation and move on the your problem.

2. Download Bootstrap's files for offline development.

3. Want cheetsheet for every thing on bootstrap just go to the "Https://bootstrap-cheatsheet.themeselection.com"
