

Bootstrap

Bootstrap is a free and open-source front-end framework used for designing responsive and mobile-first websites.

- Current version: Bootstrap 5 (as of latest knowledge)
- Features: Responsive grid system, pre-styled components, utility classes

Bootstrap Layout System (Containers & Grid)

Bootstrap provides layout container classes that act as wrappers for content.

They help control the width of your layout based on screen size.

1. container

- A **responsive fixed-width** container.
- Adjusts its width **automatically** at different breakpoints.
- Adds left and right padding.
- Centered on the page.

2. container-fluid

- Always takes up **100% width** of the viewport.
- Does **not** change width at different screen sizes.
- Has horizontal padding by default.

CSS Breakpoints

Breakpoints are the specific screen widths where a website's layout or design changes to provide a better user experience on different devices.

Breakpoint	Screen Width	Devices Example
xs	Less than 576px (<576px)	Small phones
sm	576px and up ($\geq 576\text{px}$)	Phones
md	768px and up ($\geq 768\text{px}$)	Tablets
lg	992px and up ($\geq 992\text{px}$)	Small laptops/desktops
xl	1200px and up ($\geq 1200\text{px}$)	Large desktops
xxl	1400px and up ($\geq 1400\text{px}$)	Extra large monitors

Grid System

- Based on **12-column layout**
- Uses Flexbox
- Responsive using breakpoints
 - `.container`: Wraps the content
 - `.row`: A horizontal row to group columns
 - `.col`: A flexible column (auto size)

Background Color Classes

Class	Description
.bg-primary	Blue background
.bg-secondary	Gray background
.bg-success	Green background
.bg-danger	Red background
.bg-warning	Yellow background
.bg-info	Light blue background
.bg-light	Light gray background
.bg-dark	Dark gray/black background
.bg-white	White background
.bg-transparent	Transparent background

Border Classes

Class	Description
.border	Adds a border on all sides
.border-top	Adds only top border
.border-end	Adds only right border (<i>left in RTL</i>)
.border-bottom	Adds only bottom border
.border-start	Adds only left border (<i>right in RTL</i>)

Remove Border

Class	Description
.border-0	Removes all borders
.border-top-0	Removes top border
.border-end-0	Removes right border
.border-bottom-0	Removes bottom border
.border-start-0	Removes left border

Border Color

Class	Description
.border-primary	Blue border
.border-secondary	Gray border
.border-success	Green border
.border-danger	Red border
.border-warning	Yellow border
.border-info	Light blue border
.border-light	Light gray border
.border-dark	Dark gray border
.border-white	White border

Border Width

Class	Description
.border-1	Thin border
.border-2	Medium border
.border-3	Thicker border
.border-4	Thicker still
.border-5	Thickest predefined width

Border Radius

Class	Description
.rounded	Rounded corners (default size)
.rounded-sm	Small radius
.rounded-lg	Large radius
.rounded-pill	Fully rounded (pill shape)
.rounded-circle	Circle (useful for square images)
.rounded-0	No rounding

Side-Specific Radius

Class	Description
.rounded-top	Top corners rounded
.rounded-end	Right corners rounded
.rounded-bottom	Bottom corners rounded
.rounded-start	Left corners rounded

Text Color Classes

Class	Description
.text-primary	Blue
.text-secondary	Gray
.text-success	Green
.text-danger	Red
.text-warning	Yellow
.text-info	Light blue
.text-light	Light gray (on dark background)
.text-dark	Dark gray
.text-body	Default body text color
.text-muted	Muted (light gray)
.text-white	White
.text-black	Black
.text-reset	Resets inherited text color

Display Property Classes

Bootstrap display utility classes (.d-*) – using only Bootstrap classes

Class	Description
.d-none	Hides the element (display: none)
.d-inline	Makes element inline (display: inline)
.d-inline-block	Makes element inline-block
.d-block	Makes element block
.d-grid	Makes element a CSS grid container
.d-inline-grid	Inline grid container
.d-flex	Makes element a flex container
.d-inline-flex	Inline flex container
.d-table	Makes element behave like a <table>
.d-table-row	Like a <tr>
.d-table-cell	Like a <td>

Flex Container

Class	Description
.d-flex	Display as flex
.d-inline-flex	Display as inline-flex

Flex Direction

Class	Description
.flex-row	Default: horizontal left-to-right
.flex-row-reverse	Horizontal right-to-left
.flex-column	Vertical top-to-bottom
.flex-column-reverse	Vertical bottom-to-top

Justify Content (horizontal alignment)

Class	Description
.justify-content-start	Align left/start
.justify-content-end	Align right/end
.justify-content-center	Center horizontally
.justify-content-between	Space between
.justify-content-around	Space around
.justify-content-evenly	Equal space around

Align Items (vertical alignment)

Class	Description
.align-items-start	Align top
.align-items-end	Align bottom
.align-items-center	Center vertically
.align-items-baseline	Align to baseline
.align-items-stretch	Stretch (default)

Align Self (individual item)

Class	Description
.align-self-start	Align this item to top
.align-self-end	Align to bottom
.align-self-center	Center this item
.align-self-baseline	Align to baseline
.align-self-stretch	Stretch this item

Flex Wrap

Class	Description
.flex-wrap	Wrap items (default)
.flexnowrap	Don't wrap items
.flex-wrap-reverse	Wrap in reverse direction

Flex Grow/Shrink

Class	Description
.flex-grow-0	Prevent growing
.flex-grow-1	Allow to grow
.flex-shrink-0	Prevent shrinking
.flex-shrink-1	Allow shrinking

Order (Reordering Items)

Class	Description
.order-0, .order-1, ..., .order-5	Set order
.order-first	Move to start
.order-last	Move to end

Positioning Classes

Class	Description
.position-static	Default (not positioned)
.position-relative	Positioned relative to itself
.position-absolute	Positioned relative to the nearest positioned ancestor
.position-fixed	Fixed to the viewport
.position-sticky	Sticks within its container on scroll

spacing utility classes

Bootstrap spacing utility classes (.m-* , .p-* , etc.) — all using only Bootstrap classes.

Properties:

Property	Description
m	Margin
p	Padding

Sides:

Code	Affects
t	Top
b	Bottom
s	Start (left in LTR)
e	End (right in LTR)
x	Left & Right (Horizontal)
y	Top & Bottom (Vertical)
(no side)	All sides

Size Scale:

Size	Value
0	0rem (0px)
1	0.25rem (4px)
2	0.5rem (8px)
3	1rem (16px)
4	1.5rem (24px)
5	3rem (48px)
auto	margin: auto (only for margins)

Bootstrap text utility classes (`.text-*`)

Text Color

Class	Description
.text-primary	Blue
.text-secondary	Gray
.text-success	Green
.text-danger	Red
.text-warning	Yellow
.text-info	Light blue
.text-light	Light (use on dark bg)
.text-dark	Dark gray
.text-body	Default body text color
.text-muted	Muted gray
.text-white	White
.text-black	Black
.text-reset	Reset inherited color

Text Alignment

Class	Description
.text-start	Align left (LTR)
.text-end	Align right (LTR)
.text-center	Center align

Text Transformation

Class	Description
.text-lowercase	lowercase
.text-uppercase	UPPERCASE
.text-capitalize	Capitalize Each Word

Font Weight & Style

Class	Description
.fw-light	Light (300)
.fw-normal	Normal (400)
.fw-bold	Bold (700)
.fst-italic	Italic
.fst-normal	Not italic

Font Size

Class	Size
.fs-1	Largest
.fs-2	↓
.fs-3	↓
.fs-4	↓
.fs-5	↓
.fs-6	Smallest