



The Bootstrap framework

Bootstrap

- Open Source CSS (and JavaScript) framework
- Allows applying “modern” styles
 - Sensible and nice-looking defaults
 - Easy to apply custom themes
- Takes care of cross-browser issues
- Simplified layout model
- Developed by Twitter
 - <http://getbootstrap.com/>
 - <https://getbootstrap.com/docs/4.4/>

Bootstrap philosophy

- Based on CCS classes
- Each class applies one “effect”
- Various classes may be combined in the same element
- Wide range of “standard” classes
- Wide range of additional “components”
 - Ready-to use interactive elements or groups of elements
- Mobile-first
 - Responsive

Using Bootstrap

- Use Bootstrap CDN
 - Bootstrap CSS – in <head>
 - Javascript support – end of <body>
 - Used by Bootstrap (bootstrap.min.js)
 - Used by some components (jQuery and Popper.js)
- Or download locally
 - <https://github.com/twbs/bootstrap/releases/download/v4.4.1/bootstrap-4.4.1-dist.zip>
 - npm install bootstrap

Bootstrap CDN

```
<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css" integrity="sha384-Vkoo8x4CGs03+Hhvxv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9Ifjh" crossorigin="anonymous">
```

```
<script src="https://code.jquery.com/jquery-3.4.1.slim.min.js" integrity="sha384-J6qa4849blE2+poT4WnyKhv5vZF5SrPo0iEjwBvKU7imGFAV0wwj1lyYfoRSJoZ+n" crossorigin="anonymous"></script>
```

```
<script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js" integrity="sha384-Q6E9RHvbIyZFJoft+2mJbHaEWldlvI9IOYy5n3zV9zzTtmI3UksdQRVvoxMfooAo" crossorigin="anonymous"></script>
```

```
<script src="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/js/bootstrap.min.js" integrity="sha384-wfSDF2E50Y2D1uUdj003uMBJnjuUD4Ih7YwaYd1iqfktj0Uod8GCExl3Og8ifwB6" crossorigin="anonymous"></script>
```

Page structure

- Start with **Basic template**
 - <https://getbootstrap.com/docs/4.4/getting-started/introduction/#starter-template>
 - Notice the “responsive viewport”
`<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">`
- Or, choose from published **Examples**
 - <https://getbootstrap.com/docs/4.4/examples/>
- Remember to include your page content in a
 - `<div class="container">`

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, shrink-to-fit=no">

    <!-- Bootstrap CSS -->
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css" integrity="sha384-Vkoo8x4CGS0J+HHxv81/"

    <title>Hello, world!</title>
  </head>
  <body>
    <h1>Hello, world!</h1>

    <!-- Optional JavaScript -->
    <!-- jQuery first, then Popper.js, then Bootstrap JS -->
    <script src="https://code.jquery.com/jquery-3.4.1.slim.min.js" integrity="sha384-J6qa4840b1E2iput4MryK1v5z7F5SeP0A1EjuRvK17imGFAV0awj1yYf0R51"
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js" integrity="sha384-Q6F9RHvbTy7F30t12m3Hh0FWIld1eT9TOYy5n3zV"
    <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/js/bootstrap.min.js" integrity="sha384-wf5DF2058Y2D1U0dJ003uMDJnJuUD4Ih7YwaYd"
  </body>
</html>
```

Adding your style

- Write your additional CSS rules in a file, and load it in the head section, after the bootstrap CSS

```
<head>
  ...
  <link rel="stylesheet" href="... > // bootstrap css

  <!-- Custom CSS for this document -->
  <link rel="stylesheet" href="mystyle.css">
  ...
</head>
```


Containers (mandatory top-level element)

- All-in-one: responsive, fixed-width container: its max-width changes at each breakpoint

```
<div class="container">  
  <!-- Content here -->  
</div>
```

- Fluid: full width container, spanning the entire width of the viewport

```
<div class="container-fluid">  
  ...  
</div>
```

Grid system

- Based on flexbox
- Uses a 12-column virtual grid
- The container is divided in .row blocks
- Each Row contains columns .col
 - By default, all columns have equal width
 - May specify spanning over more columns (.col-4)
 - May specify a breakpoint for that column to be visualized (.col-sm or .col-sm-4)
- 5 Breakpoints

Breakpoints

	Extra small <576px	Small ≥576px	Medium ≥768px	Large ≥992px	Extra large ≥1200px
Max container width	None (auto)	540px	720px	960px	1140px
Class prefix	.col-	.col-sm-	.col-md-	.col-lg-	.col-xl-
# of columns	12				
Gutter width	30px (15px on each side of a column)				
Nestable	Yes				
Column ordering	Yes				

Example layouts

<https://getbootstrap.com/docs/4.4/layout/grid/>

The screenshot shows the Bootstrap 4.4 documentation page for the Grid system. The page has a purple header with navigation links: Home, Documentation, Examples, Icons, Themes, Expo, and Blog. A search bar is located on the left. The main content area is titled "Responsive classes" and "All breakpoints". It explains that Bootstrap's grid includes five tiers of predefined classes for building complex responsive layouts. It also mentions that for grids that are the same from the smallest of devices to the largest, the `.col` and `.col-*` classes can be used. A visual example shows a row of four `col` classes and a row of two `col-8` and `col-4` classes. Below this, the corresponding HTML code is provided, and a "Copy" button is visible. A right sidebar contains a list of links for further exploration, including "Variable width content", "Responsive classes", "All breakpoints", "Stacked to horizontal", "Mix and match", "Gutters", "Row columns", "Alignment", "Vertical alignment", "Horizontal alignment", "No gutters", "Column wrapping", "Column breaks", "Reordering", "Order classes", "Offsetting columns", "Offset classes", "Margin utilities", "Nesting", "Sass mixins", "Variables", and "Mixins".

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v4.4

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Getting started

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About

Responsive classes

Bootstrap's grid includes five tiers of predefined classes for building complex responsive layouts. Customize the size of your columns on extra small, small, medium, large, or extra large devices however you see fit.

All breakpoints

For grids that are the same from the smallest of devices to the largest, use the `.col` and `.col-*` classes. Specify a numbered class when you need a particularly sized column; otherwise, feel free to stick to `.col`.

col	col	col	col
col-8		col-4	

```
<div class="container">
  <div class="row">
    <div class="col">col</div>
    <div class="col">col</div>
    <div class="col">col</div>
    <div class="col">col</div>
  </div>
</div>
```

Copy

- Variable width content
- Responsive classes
 - All breakpoints
 - Stacked to horizontal
 - Mix and match
 - Gutters
 - Row columns
- Alignment
 - Vertical alignment
 - Horizontal alignment
 - No gutters
 - Column wrapping
 - Column breaks
- Reordering
 - Order classes
 - Offsetting columns
 - Offset classes
 - Margin utilities
- Nesting
- Sass mixins
- Variables
- Mixins

Page content

- Reboot – normalize and replace browser defaults
- Typography – heading and text styles
- Images and Figures – alignment and responsiveness
- Tables – rich visual styles, and responsive tables
- See: <https://getbootstrap.com/docs/4.4/content/reboot/>

Components

- Ready-to-use classes for creating common UI elements
- See: <https://getbootstrap.com/docs/4.4/components/>

