Bootstrap Tutorials

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# What is Bootstrap?

1. “Bootstrap is the most popular CSS Framework for developing responsive and mobile-first websites.”

Source: [**https://www.w3schools.com/whatis/whatis\_bootstrap.asp**](https://www.w3schools.com/whatis/whatis_bootstrap.asp)

|  |
| --- |
| ***Mobile-first*** |
| “The mobile first design approach involves starting the product design process by designing for the smallest device first and progressively enhancing the design features for larger layouts—e.g., start designing for mobile and then move on to desktop.”  “Mobile first is a design approach that aims to improve the user experience by embracing the constraints of smaller screens and focusing on what’s indispensable for users.”  “It was initially proposed in 2009 by Luke Wroblewski, Google's Product Director. In his book "Mobile First," Wroblewski explains that designing web products, starting with the desktop version, is becoming a backward way of thinking about design. Instead, he suggests adopting the mobile first approach, which forces the designer to focus and enables innovation.”  “Mobile first supports itself in the concept of progressive enhancement. This web design strategy emphasizes web content first, providing universal access to essential content and allowing users with additional browser features or faster internet to receive an enhanced version of the same page.”  Source: <https://www.interaction-design.org/literature/topics/mobile-first> |

1. What is Bootstrap
2. “Bootstrap is a widely-used open-source front-end framework for web development, providing a collection of HTML, CSS, and JavaScript components and tools that enable developers to build responsive, mobile-first websites with ease.” Source: <https://www.geeksforgeeks.org/bootstrap/> (see also: *Applications of Bootstrap*).
3. “In essence, a CSS framework comprises several CSS stylesheets ready for use by web developers and designers. The stylesheets are prepped for standard web design functions: setting colors, layout, fonts, navbars, etc. Generally, stylesheets are supported and expanded by other scripting technologies like SASS and JavaScript.”

“With a CSS framework, the user has a completed CSS stylesheet, and they only have to code the HTML with accurate classes, structure, and IDs to set up a web page. The framework already has classes built-in for common website elements – footer, slider, navigation bar, hamburger menu, column-based layouts, etc.” Source: <https://www.browserstack.com/guide/top-css-frameworks>

1. “Bootstrap is a widely-used open-source front-end framework for web development, providing a collection of HTML, CSS, and JavaScript components and tools that enable developers to build responsive, mobile-first websites with ease.” Source: <https://www.geeksforgeeks.org/bootstrap/>
2. (Optional) See: [*Introduction to Bootstrap*](https://bootcamp.berkeley.edu/resources/coding/learn-bootstrap/) – very nice short introduction from a high level.
3. Examples of components:
4. <https://getbootstrap.com/docs/4.3/examples/>
5. <https://shuffle.dev/components/bootstrap>
6. Some components require JavaScript. Click the “Show components requiring JavaScript” link to see examples. Source: <https://getbootstrap.com/docs/4.0/getting-started/introduction/>

# Using Bootstrap

The preferred way to use Bootstrap is to use a CDN (content delivery network) by linking to the required files. Thus, simply add these lines to the *head* section of your HTML file or web form:

<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css" rel="stylesheet">

<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/js/bootstrap.min.js"></script>

In VS, Intellisense works when specifying style rules. For example, consider the class property below:

<div class="p-5 bg-primary text-white text-center">

To see how intellisense works, find a blank space in the string and start typing.

You can also download Bootstrap, directions are in an [appendix](#Appendix_Install_Bootstrap).

# Resources

## Videos

1. [Learn Bootstrap in 20 minutes](https://www.youtube.com/watch?v=eow125xV5-c) (len: 18:39) – Great introduction.

|  |  |
| --- | --- |
| **Time** | **Description** |
| 2:19 | Containers |
| 3:30 | Grid – based on Flexbox |
| 4:10 | Breakpoints |
| 9:46 | Offset |
| 15:36 | Components-Buton, Modal |
| 18:08 | Utilities – Borders |

1. [How to Make a Landing Page using Bootstrap 5](https://raddy.dev/blog/how-to-make-a-landing-page-using-bootstrap-video-tutorial/) (len: 1:36:00) – Only watched one short clip.

|  |  |
| --- | --- |
| **Time** | **Description** |
| 8:57 | Change Bootstrap defaults |

1. [Bootstrap 5 Crash Course](https://www.youtube.com/watch?v=4sosXZsdy-s) (1:18:00) – Excellent.

## Web Pages

These are some web pages about bootstrap, we will go over some of them in class.

|  |
| --- |
| Layout |
| [Breakpoints](https://getbootstrap.com/docs/5.1/layout/breakpoints/) |
| [Containers](https://getbootstrap.com/docs/5.1/layout/containers/) |
| [Grid](https://getbootstrap.com/docs/5.1/layout/grid/) |
| Content |
| [Typography](https://getbootstrap.com/docs/5.1/content/typography/) |
| [Images](https://getbootstrap.com/docs/5.1/content/images/) |
| [Tables](https://getbootstrap.com/docs/5.1/content/tables/), [Tables](https://www.w3schools.com/bootstrap5/bootstrap_tables.php) |
| Utilities |
| [Spacing](https://getbootstrap.com/docs/5.1/utilities/spacing/) |
| [Borders](https://getbootstrap.com/docs/5.1/utilities/borders/) |
| [Background](https://getbootstrap.com/docs/5.1/utilities/background/) |
| [All Utilities](https://getbootstrap.com/docs/5.1/utilities/api/), [All Utilites](https://www.w3schools.com/bootstrap5/bootstrap_utilities.php) |
| Components |
| [Accordian](https://getbootstrap.com/docs/5.0/components/accordion/) |
| [Navigation & Tabs](https://getbootstrap.com/docs/5.0/components/navs-tabs/) |
| [Scrollspy,](https://getbootstrap.com/docs/5.0/components/scrollspy/) [Scrollspy](https://www.w3schools.com/bootstrap5/bootstrap_scrollspy.php) |
| Examples & Templates |
| [GetBootstrap](https://getbootstrap.com/docs/5.2/examples/) |
| [TutorialRepublic](https://www.tutorialrepublic.com/twitter-bootstrap-examples.php) |
| [W3Schools-Examples](https://www.w3schools.com/bootstrap/bootstrap_examples.asp) |
| [W3Schools-Templates](https://www.w3schools.com/bootstrap5/bootstrap_templates.php)  [JavaTPoint](https://www.javatpoint.com/bootstrap-tutorial) |
| Tutorials |
| [TutorialRepublic](https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/) |
| [W3Schools](https://www.w3schools.com/bootstrap5/index.php) |
| [TutorialsPoint](https://www.tutorialspoint.com/bootstrap/index.htm) |
| [GeeksForGeeks](https://www.geeksforgeeks.org/bootstrap/) |
| [BootstrapCreative](https://bootstrapcreative.com/resources/flexbox-cheat-sheet/) – Compares CSS Flexbox and Bootstrap. Very thorough, step-by-step guide. |

## My Examples

These are found in the code download, *Bootstrap.zip.*

## Free Bootstrap Editors

* [Codeply](https://www.codeply.com/) – Search for samples, has editor and live display. Also shows the Bootstrap CSS
* [Layoutit](https://www.layoutit.com/) – Drag and drop. Can’t edit the code, but can download it.
* [StyleBootstrap](http://stylebootstrap.info/) – Haven’t used
* [Bootstrap Magic](https://pikock.github.io/bootstrap-magic/index.html) – Haven’t used
* [Bootstrap Builder](https://bootstrap.build/) – Haven’t used

Appendix

1. Bootstrap Resources

Bootstrap – all CSS classes:

* <https://www.w3schools.com/bootstrap4/bootstrap_ref_all_classes.asp>
* <https://getbootstrap.com/docs/5.0/getting-started/introduction/>
* <https://bootstrapcreative.com/resources/bootstrap-5-cheat-sheet-classes-index/>
* <https://bootstrapcreative.com/resources/bootstrap-4-css-classes-index/>
* <https://hackerthemes.com/bootstrap-cheatsheet/>

Simpler references:

* <https://getbootstrap.com/docs/5.0/examples/cheatsheet/>
* <https://www.rotamaxima.com/en/bootstrap-4-reference-guide-of-the-most-used-elements/> - Good summary of classes, shows examples of each.

1. Installing Bootstrap in a VS Project

Follow these steps to install Bootstrap in a VS project:

1. Create an ASP.NET web application project, empty.
2. Right-click project name in Solution Explorer (SE) and choose: Manage NuGet Packages…
3. Choose: Browse from the menu at the top left.
4. Enter: “bootstrap” in the search dialog.
5. Select: “bootstrap” and then: Install
6. Choose: OK to allow VS to make changes to the project.
7. Note that *Content* and *Scripts* folders were added to the project as shown in the SE. Open one of the *css* files and observe the content.
8. Drag these two files into the *head* section, or copy/paste the lines below:

<link href="Content/bootstrap.min.css" rel="stylesheet" />

<script src="Scripts/bootstrap.bundle.min.js"></script>

1. Advanced CSS Topics

Many other topics in the W3Schools CSS tutorials are useful to understand when utilizing responsive design and bootstrap. The highlighted topics were skipped when we covered CSS earlier. It would be useful to study them.

|  |  |
| --- | --- |
| [CSS Tutorial](http://www.w3schools.com/css/default.asp)   1. CSS HOME – Already covered 2. CSS Introduction – Already covered 3. CSS Syntax – Already covered 4. CSS Selectors – Already covered 5. CSS How To – Already covered 6. CSS Colors – Already covered 7. CSS Backgrounds – Already covered 8. CSS Borders – Already covered 9. CSS Margins – Already covered 10. CSS Padding – Already covered 11. CSS Height/Width – Already covered 12. CSS Box Model – Already covered 13. CSS Outline – Already covered 14. CSS Text – Already covered 15. CSS Fonts – Already covered 16. CSS Icons - Omit 17. CSS Links – Scan quickly 18. CSS Lists – Already covered 19. CSS Tables – Already covered | 1. CSS Display – Scan 2. CSS Max-width - Scan 3. CSS Position – Read carefully 4. CSS Overflow - Scan 5. CSS Float – Read carefully 6. CSS Inline-block - Read carefully 7. CSS Align – Read carefully 8. CSS Combinators – Already covered 9. CSS Pseudo-class – Read carefully 10. CSS Pseudo-element – Scan 11. CSS Opacity – Omit 12. CSS Navigation Bar – Scan 13. CSS Dropdowns – Scan 14. CSS Image Gallery – Omit 15. CSS Image Sprites – Omit 16. CSS Attr Selectors – Scan Quickly 17. CSS Forms – Read carefully 18. CSS Counters – Scan Quickly 19. CSS Website Layout – Read very carefully 20. CSS Units – Scan quickly 21. CSS Specificity – Scan quickly |

Further down in the W3Schools CSS tutorial is an “Advanced” section. The highlighted topics would be useful also.

|  |  |
| --- | --- |
| [CSS Advanced Tutorial](https://www.w3schools.com/css/css3_borders.asp)   1. CSS Rounded Corners – Scan quickly 2. CSS Border Images – Omit 3. CSS Backgrounds – Omit 4. CSS Colors – Scan quickly, only first section: RGBA Colors 5. CSS Gradients – Omit 6. CSS Shadows – Omit 7. CSS Text Effects – Scan quickly, only first section: CSS Word Wrapping 8. CSS Web Fonts – Omit 9. CSS 2D Transforms – Omit 10. CSS 3D Transforms – Omit 11. CSS Transitions – Omit 12. CSS Animations – Omit | 1. CSS Tooltips – Scan quickly 2. CSS Style Images – Omit 3. CSS object-fit – Omit 4. CSS Buttons – Scan 5. CSS Pagination – Scan quickly 6. CSS Multiple Columns – Scan quickly 7. CSS User Interface – Scan quickly, only the second section: CSS Resizing 8. CSS Variables – Scan quickly 9. CSS Box Sizing – Read carefully 10. CSS Media Queries – Read carefully 11. CSS MQ Examples – Scan quickly, just the first 3 examples. 12. CSS Flexbox 13. CSS Flexbox – Read carefully 14. CSS Flex Container – Scan 15. CSS Flex Items – Scan quickly, just the first 2 sections: Child Elements & The order Property 16. CSS Flex Responsive – Scan |

1. Bootstrap Basic Tutorial – TutorialRepublic

This section is a review of some of the chapters of the Bootstrap tutorial at: <https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/>.

* 1. Introduction

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/>

* What you can do and advantages

Bootstrap is the most popular and powerful front-end (HTML, CSS, and JavaScript) framework for faster and easier responsive web development.

Bootstrap was originally created by a designer and a developer at Twitter in mid-2010. Before being an open-sourced framework, Bootstrap was known as Twitter Blueprint.

* 1. Getting Started

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-get-started.php>

* Creating a Bootstrap template: include: bootstrap.css, bootstrap.js

<head>

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

<!-- Bootstrap CSS -->

<link href=<https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css>

rel="stylesheet" integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOmLASjC" crossorigin="anonymous">

<!-- Bootstrap JS Bundle with Popper -->

<script src=<https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js>

integrity="sha384-MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsP1UyJoMp4YLEuNSfAP+JcXn/tWtIaxVXM"

crossorigin="anonymous"></script>

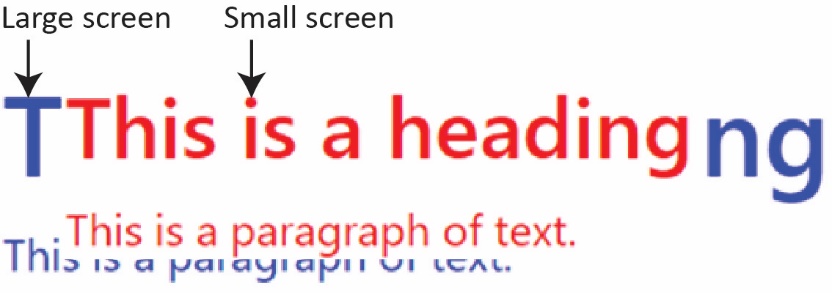
</head>

The attributes integrity and crossorigin have been added to CDN links to implement Subresource Integrity (SRI). It is a security feature that enables you to mitigate the risk of attacks originating from compromised CDNs, by ensuring that the files your website fetches (from a CDN or anywhere) have been delivered without unexpected or malicious modifications. It works by allowing you to provide a cryptographic hash that a fetched file must match.

* 1. Containers

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-containers.php>

* Containers are div’s (probably some other things also). Shows .container and .container-fluid examples. What is unclear is how the margin changes with different screen sizes, and how the text size changes. Table shows size of container for different screen sizes, but not how margin and text size change. Clearly it is in the css, but how would you change that. From the examples in tutorial, the font sizes are different at different break points:



* Looks like .container-fluid is the default responsive, or can get more detailed with .container-sm, .container-md, *etc.*
* Background: .bg-(light, dark, primary, secondary, transparent, white, warning, success, info, danger)
* Borders: .border-(light, dark primary, secondary, transparent, white, warning, success, info, danger, 0, top-0, right-0, bottom-0, left-0, top, right, bottom, left)
* Text color: .text-(primary, secondary, success, danger, warning, info, light, dark, body, muted, white, black-50, white-50)
* Padding and Margins: .m\*-# and .p\*-#. Where: \*=(t,b,s,e,x,y) and #=(0,1,2,3,4,5). T=top, b=bottom, s=left (start), e=right (end), x=both left and right, y=both top and bottom.
* Good reference for these utility classes: <https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-helper-classes.php>
* See my example: 01\_containers.html
  1. Grid System

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-grid-system.php>

* Built with [flexbox](https://www.tutorialrepublic.com/css-tutorial/css3-flexible-box-layouts.php) – CSS3 flexible box layouts.
* Breaks screen into up to 12 columns
* [*rem* and *em*](https://www.sitepoint.com/understanding-and-using-rem-units-in-css/)units. *Rem* is used to specify size relative to the “root” (html) element, which is usually 16px. *Em* is used to specify size relative to the parent element. *Rem* is usally the best choice.
* The *gutter* is space between columns.
* Lots of examples, reasonable well explained: 2-column, 3-column, auto-layout, column wrapping, nesting grid columns, variable width grid columns,
* See my example: 02\_grid.html
  1. Fixed Layout

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-fixed-layout.php>

* Everything about this relates to: div’s: containers, rows, columns
* .container defines a “fixed” layout. Inside, create .row, and inside rows create .col.
* Columns in a row, in the simplest case, sum to 12. *E.g.* .col-md-4, a column that spans flexbox columns on screens that are medium (md) or larger.
* Collapsible navigation bar.
* See my example: 03\_layout.html
  1. Fluid Layout

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-fluid-layout.php>

* .container-fluid fills the width to 100% across all devices, but can still use the grid system.
* Examples: [fixed](https://www.tutorialrepublic.com/examples/fullscreen/output.php), [fluid](https://www.tutorialrepublic.com/examples/fullscreen/output.php)
  1. Responsive Layout

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-responsive-layout.php>

* Rows and columns responsive example.
* Gutters are the gaps between columns. Could do this manually, with padding and negative margin in ends. This explains: <https://getbootstrap.com/docs/5.0/layout/gutters/> . I think gutters are new in Bootstrap 5.
* Annotated code example: 04\_responsive\_layout.
  1. Typography

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-typography.php>

* <small> tag makes text one size smaller.
* .text-muted – make text “gray”
* .diaplay-1, …-6, displays headings in larger font-size, but lighter font-weight
* .lead on a paragraph makes text a bit larger, and it looks like a slightly lighter weight.
* .text-start, .text-center, .text-right – left, center, and right, respectively justified text in paragraph, probably other things too, like a table cell. There are responsive versions of these, *e.g.* .text-sm-center, .text-md-center, etc.
* .text-lowercase, .text-uppercase – transforms all text to lower or upper case respectively. Also, .text-capitalize – makes first letter of each word capitalized.
* Text coloring – looks like there are 7 standard colors with classes like: .text-primary, .text-secondary, .text-success, etc.
* Block quotes:

<figure>

<blockquote class="blockquote">

<p>The world is a dangerous place to live; not because of the people who are evil, but because of the people who don't do anything about it.</p>

</blockquote>

<figcaption class="blockquote-footer">by <cite>Albert Einstein</cite></figcaption>

</figure>

* Shows how to truncate text, but not how to make a link so the remainder shows.
* Shows wrapping and overflow text.
  1. Tables

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-tables.php>

* .table - basic table with horizontal dividers
* Can use the standard colors for background: .table-primary, .table-success, .table-dark, etc.
* .table-striped – for striped rows, every other
* Some nice tables: <https://www.tutorialrepublic.com/snippets/gallery.php?tag=table>
* .table-bordered – all borders, light gray. Or, .table-borderless
* .table-hover – highlights the row where mouse is hovered
* .table-sm – more compact table, cuts padding in half all around. Strange that -sm doesn’t have meaning of screen size as it does else where, e.g. responsive.
* Set header colors: <thead class="table-light">
* To make a table responsive, put table inside: <div class="table-responsive">
* Scroll bars: .table-responsive{-sm|-md|-lg|-xl}
  1. Lists

<https://www.tutorialrepublic.com/twitter-bootstrap-tutorial/bootstrap-lists.php>

* .list-unstyled for no numbering/marking
* .list-inline-item – horizontal lists with no marking
* Horizontal definition lists – use flexbox, i.e. rows and columns

1. Bootstrap 5 Tutorial – W3Schools

You will cover some of the pages in W3School’s Bootstrap 5 Tutorial, as listed below.

* 1. Introduction

<https://www.w3schools.com/bootstrap5/index.php>

* Example
* Bootstrap 5 vs. 3 & 4 – 5 uses JS instead of jQuery
* Exercises & Quiz – Don’t know enough to answer yet. I believe the point is that there will be exercises (and quizzes, see next bullet) as this tutorial goes along, or at the end.
  1. Getting Started

<https://www.w3schools.com/bootstrap5/bootstrap_get_started.php>

* What is Bootstrap?
  + Free front-end framework for faster and easier web development
  + 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
  + Example
* Bootstrap Versions
* Why use Bootstrap?
* Where to get Bootstrap 5? CDN or download
* Create first page with Bootstrap

1. Set doctype, lang, charset, viewport
2. Fixed (.container) and full width (.container-fluid) containers. Examples show div’s.

* Two examples
  + .container example
  + .container-fluid example
  1. Containers

<https://www.w3schools.com/bootstrap5/bootstrap_containers.php>

* Explanation of fixed container, example, but still not sure how it works. There is always a margin unless the width gets small.
* Explanation of fluid container and example.
* Padding, borders and colors – very brief intro. Says we will see more later. See the Utilities page: <https://www.w3schools.com/bootstrap5/bootstrap_utilities.php>
* Responsive containers (.container-sm, .container-md, *etc.*). Example, but no explanation of the css classes.
  1. Grids

<https://www.w3schools.com/bootstrap5/bootstrap_grid_basic.php>

* Grid system is built with flexbox and allows up to 12 columns across the page.
* Explains structure, how to specify classes for divs. Leaves a lot of questions unanswered.
* Examples: 3 equal columns, responsive columns, 2 unequal responsive columns. Shows how it works if played with.
  1. Text/Typography

<https://www.w3schools.com/bootstrap5/bootstrap_typography.php>

* Default settings for font size, line height, responsive h1-h6 tags, display and small classes for h1-h6, mark tag for highlighting, abbreviation tag, block quote, definition list (dl), and some others.
  1. Colors

<https://www.w3schools.com/bootstrap5/bootstrap_colors.php>

* Text colors: text-muted, text-primary, text-body, *etc.*
* Background colors: bg-primary, bg-warning, bg-dark, *etc.*
* Sometimes need to combine text and background colors.
  1. Tables

<https://www.w3schools.com/bootstrap5/bootstrap_tables.php>

* Use for reference.
  1. Buttons

<https://www.w3schools.com/bootstrap5/bootstrap_buttons.php>

* Use for reference.
  1. Button Groups

<https://www.w3schools.com/bootstrap5/bootstrap_button_groups.php>

* Use for reference.
  1. Utilities

<https://www.w3schools.com/bootstrap5/bootstrap_utilities.php>

* Use for reference.
* Borders (width, color, radius), Float (start & end), width, height, colors, background colors

1. Bootstrap 5 Forms – W3Schools

This is a subsection of the Bootstrap 5 Tutorial. Visit the pages below.

* 1. Forms

<https://www.w3schools.com/bootstrap5/bootstrap_forms.php>

* Use for reference.
* Input type=text, TextArea
  1. Select Menus

<https://www.w3schools.com/bootstrap5/bootstrap_form_select.php>

* Use for reference.
  1. Checkboxes & Radio Buttons

<https://www.w3schools.com/bootstrap5/bootstrap_form_check_radio.php>

* Use for reference.
  1. Floating Labels

<https://www.w3schools.com/bootstrap5/bootstrap_form_floating_labels.php>

* Use for reference.

1. Bootstrap 5 Grid System – W3Schools

This is a subsection of the Bootstrap 5 Tutorial. Visit the pages below.

* 1. Grid System

<https://www.w3schools.com/bootstrap5/bootstrap_grid_system.php>

* Review of grid system with a bit more detail. Use for reference.
  1. Grid XSmall, Small, *etc*

<https://www.w3schools.com/bootstrap5/bootstrap_grid_xsmall.php>

* The remainder of the sections show examples for different screen sizes. Use for reference.

1. Bootstrap 5 Other – W3Schools

This is a subsection of the Bootstrap 5 Tutorial. The page below shows a basic template for the front page of a website. No forms are used.

<https://www.w3schools.com/bootstrap5/bootstrap_templates.php>