

Web Programming

Bootstrap

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CSS Frameworks



Write classes instead of CSS

Fixed-width vs fluid layouts

- Fixed-width layout
 - Components inside a fixed-width wrapper have either percentage or fixed widths. Typically, grid systems.
- Fluid (or liquid) layout
 - Components have percentage widths (in % or em), thus adjust to the user's screen resolution



Responsive design

- Tailoring layout specifically for the type of screen
 - E.g., three column layout for desktops, a two column layout for tablets, and a single column layout on smartphones
- Using a fluid grid and media queries in CSS

Front-end frameworks

(a.k.a. CSS boilerplates)

- Provide a common structure
- Usually a mix of HTML, CSS, and JS code
- Typical components
 - Positioning blocks (often based on a grid system)
 - Typography style definitions for HTML elements
 - Solutions for browser (in)compatibility
 - Advanced components

Grid systems

- 960gs
<http://960.gs/>
- Golden grid
<http://goldengridsystem.com/>
- Responsive grid
<http://www.responsivegridsystem.com/>
- Gridiculo.us
<http://gridiculo.us/>

Complete frameworks

- Bootstrap
<http://getbootstrap.com/>
- Foundation
<http://foundation.zurb.com/>
- Gumby
<http://gumbyframework.com/>
- YAML
<http://www.yaml.de/>

Pros and cons for using frameworks

Advantages

- Speeds up processes
- Clean and tidy code
- Solutions to common CSS problems
- Browser compatibility
- Helpful in collaborative work

Disadvantages

- (Often) mixes content and presentation
- Overhead
- Slower learning curve
- You don't learn to do it yourself



Write classes instead of CSS

960gs

960 Grid System

<http://960.gs/>

- Provide commonly used dimensions based on a width of 960 pixels
 - Why 960?
- 12 or 16 columns
 - can be used separately or in tandem
 - each column has 10px of margin on the left and right

Drupal, 12col grid

Get Started Community & Support Documentation Download & Extend Marketplace About

Drupal

Come for the software, stay for the community

Drupal is an open source content management platform used to power millions of websites and software applications. It's built, used, and supported by an active and diverse community of people from around the world.

Drupal Homepage Login / Register

Why Choose Drupal?

Drupal can be used to build everything from personal blogs to sophisticated enterprise applications. It features thousands of add-on modules and design themes that enable you to build any kind of site you can imagine. Drupal is free software that is flexible, robust, and constantly being improved by a community of hundreds of thousands of passionate users. Come join us!

Get Started with Drupal

Sites Made with Drupal

The Economist

Log in Register

Home World Business & Finance

The Economist.com data migration to Drupal

Drupal is used by some of the biggest sites on the Web, like The Economist, Examiner.com and The White House. Read more Drupal success stories.

Develop with Drupal

Drupal is extensible, powerful, scalable, and flexible.

Current activity:

- 6,988 modules
- 862 themes
- 3,740 active developers

This week:

- 31 new modules
- 1,355 code commits
- 5,410 issue comments

Drupal API Download Drupal Security Info Handbook

Modules and Themes Explore Drupal modules and themes

Get Drupal Security Announcements
Keep your site secure.

708,149 people in 230 countries speaking 182 languages power Drupal.

News Docs Updates Forum Posts Commits

Support Drupal by voting in the 2010 Open Source Awards
October 13, 2010

Packt Publishing, the company behind many well-known Drupal books, is also responsible for the Open Source Awards, an annual online event held to distinguish excellence among open [Read more](#)

beta.drupal.org is ready to QA!
Distributed Authentication (the drupal.module) on drupal.org will be turned off November 1st, 2010



Drupal, 12col grid

The screenshot shows the Drupal.org homepage using a 12-column grid system. The layout is organized into three main columns across four rows.

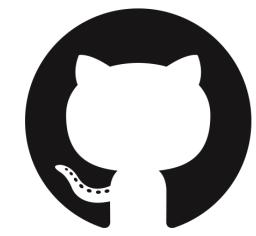
- Row 1:** Contains the main navigation bar with links like "Get Started", "Community & Support", "Documentation", "Download & Extend", "Marketplace", and "About". It also features a search bar with a magnifying glass icon and a "Search" button.
- Row 2:** Contains a sub-navigation section titled "Refine your search" with links to "Modules", "Themes", "Documentation", "Forums & Issues", and "Groups".
- Row 3:** Contains three main content blocks:
 - Why Choose Drupal?**: Describes Drupal's flexibility, robustness, and community support. It includes a "Get Started with Drupal" button.
 - Sites Made with Drupal**: Shows a thumbnail of "The Economist" website and a link to "The Economist.com data migration to Drupal".
 - Develop with Drupal**: Describes Drupal's extensibility and current activity statistics (6,988 modules, 862 themes, 3,740 active developers).
- Row 4:** Contains a large callout at the bottom left with the text "708,149 people in 230 countries speaking 182 languages power Drupal." and a small "DrupalCon Chicago March 7-10 2011" badge. The right side of this row contains footer links for "News", "Docs", "Updates", "Forum Posts", "Commits", and a link to "Support Drupal by voting in the 2010 Open Source Awards".

Usage

- Each column has 10 pixels of margin on the left and right, which create 20 pixel wide gutters between columns

```
<div class="container_12"> → 12 or 16 columns  
  <div class="grid_*"> → * is the column width (1, 2, ... 12)  
    [...]  
  </div>  
  <div class="grid_*">  
    [...]  
  </div>  
  <div class="clear"></div> → separator between rows  
  <div class="grid_*">  
    [...]  
  </div>  
  [...]  
</div>
```

Exercise #1



[https://github.com/dat310-2023/info/tree/master/
exercises/bootstrap](https://github.com/dat310-2023/info/tree/master/exercises/bootstrap)

Solution

⌚ solutions/bootstrap/exercise1.html



```
<div class="container_12">  
    <div class="grid_6">  
        <div class="blue"></div>  
    </div>  
    <div class="grid_6">  
        <div class="blue"></div>  
    </div>  
    <div class="clear"></div>  
    <div class="grid_4">  
        <div class="yellow"></div>  
    </div>  
    <div class="grid_4">  
        <div class="yellow"></div>  
    </div>  
    <div class="grid_4">  
        <div class="yellow"></div>  
    </div>
```

Bootstrap

Bootstrap

<http://getbootstrap.com/>

- Powerful front-end framework
- Developed by Twitter, open sourced in 2011
- Responsive, mobile-first
- Common HTML elements
- Custom CSS classes
- Custom HTML and CSS components
- Newest version 5.0
- Uses Flexbox

Getting started

- Download or include it from CDN
- Include CSS for styling and layout

```
<!DOCTYPE html>           HTML5 doctype is required!
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <!-- Latest compiled and minified CSS -->
  <link rel="stylesheet"
    href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta1/dist/css/
bootstrap.min.css" integrity="sha384-
giJF6kkoqNQ00vy+HMDP7az0uL0xtbfIcaT9wjKHr8RbDVddVHyTfAAsrekwKmP1">
</head>
```

Bootstrap is mobile-first. To ensure proper rendering and touch zooming, include:

Getting started

- Download or include it from CDN
- Include CSS for styling and layout

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <!-- Latest compiled and minified CSS -->
  <link rel="stylesheet"
    href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta1/dist/css/
bootstrap.min.css" integrity="sha384-
giJF6kkoqNQ00vy+HMDP7az0uL0xtbfIcaT9wjKHr8RbDVddVHyTfAAsrekwKmP1">
</head>
```

Getting started

- Download or include it from CDN
- Include minified JavaScript for components

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <!-- Latest compiled and minified CSS -->
  <link rel="stylesheet"
    href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta1/dist/css/
bootstrap.min.css" integrity="sha384-
giJF6kkoqNQ00vy+HMDP7az0uL0xtbfIcaT9wjKHr8RbDVddVHyTfAAAsrekwKmP1">
  <!-- Latest compiled JavaScript -->
  <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta1/dist/js/
bootstrap.bundle.min.js" integrity="sha384-ygbV9kiqUc6oa4msXn9868pTtWMgiQaeYH7/
t7LECLbyPA2x65Kgf800JFdroafW"></script>
</head>
```

Getting started

- Download or include it from CDN
- Include minified JavaScript for components
 - JS only required for certain components:
<https://getbootstrap.com/docs/5.0/getting-started/introduction/#components>

Containers

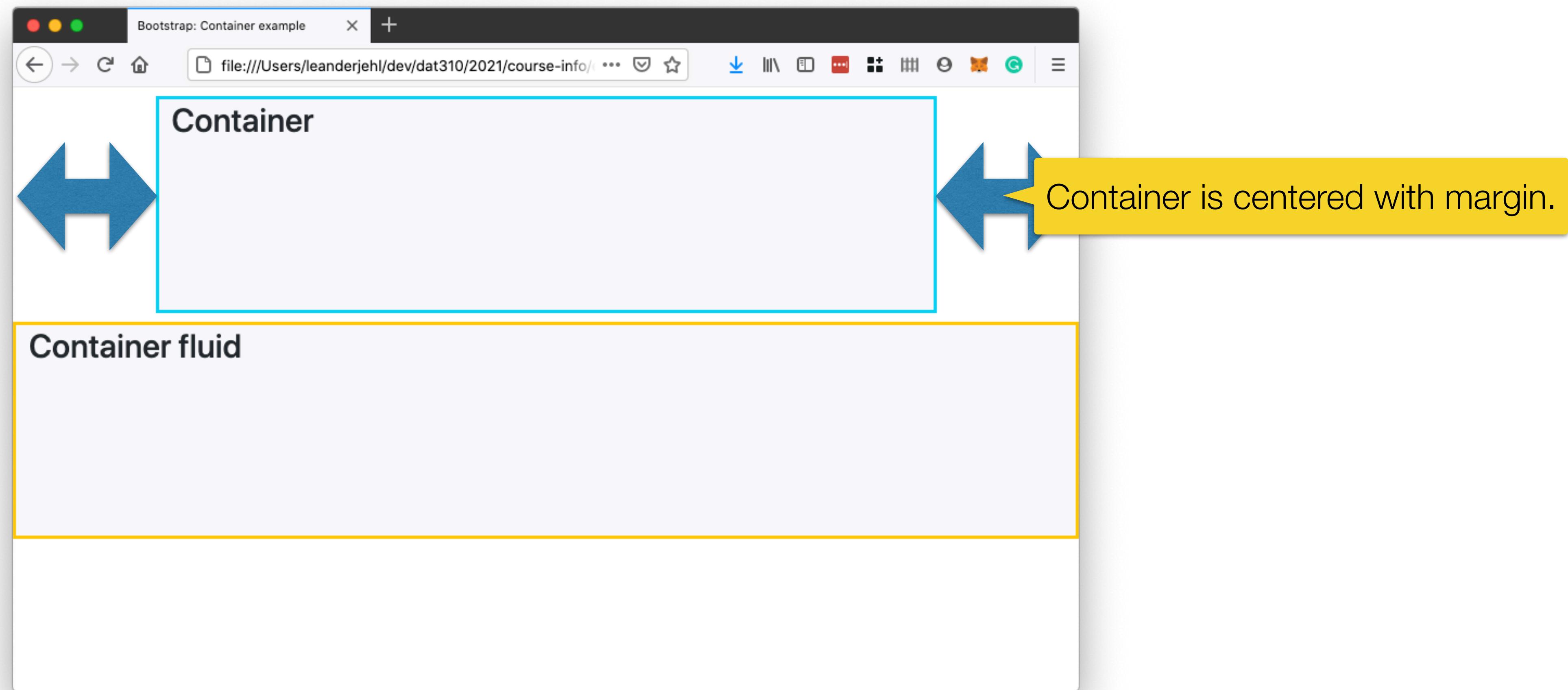
- Two container classes to wrap site contents

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

- **container** provides a responsive fixed width container
- **container-fluid** provides a full width container, spanning the entire width of the viewport
- Do not nest containers!

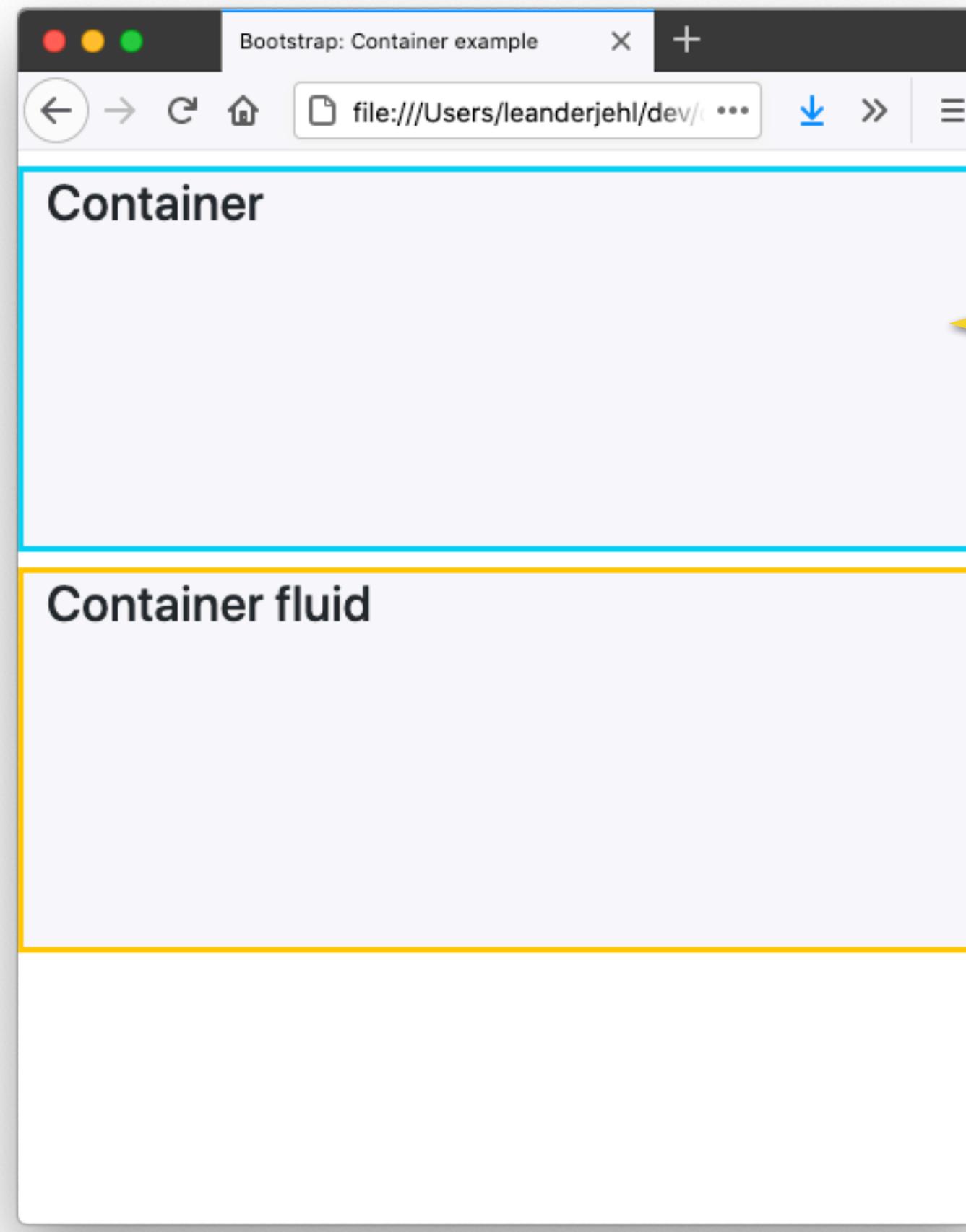
Example

examples/bootstrap/container.html



Example

⌚ examples/bootstrap/container.html



On small screen (mobile),
container has no margin

Rows and columns

- **row** class on the element containing multiple elements next to each other.
- **col** class on the elements.
- **col-*** class on the elements with * = **1, 2, ..., 12**
 - Specify width on 12 column grid
 - **col-6** column takes 50% width
 - **col-4** column takes 33% width
 - **col-3** column takes 25% width

Example

examples/bootstrap/columns.html

The screenshot shows a web browser window with four examples of Bootstrap column usage:

- 12 Columns**: A row containing 12 "col-1" columns.
- Combined Columns (total 11)**: A row containing 5 columns with the following spans: col-2, col-2, col-3, col-3, and col-1. The total width is 11 columns, with 1 missing column left empty.
- Combined columns (total 13)**: A row containing 5 columns with the following spans: col-2, col-2, col-3, col-3, and col-1. The total width is 13 columns, with 1 missing column left empty. A note below states: "Columns more than 12 are wrapped."
- Variable columns**: A row containing 6 columns with the following spans: col, col, col-3, col-3, col, and col-2. The first two "col" classes grow to fill the row.

Missing columns are left empty.

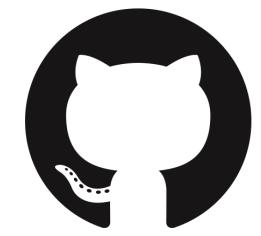
Columns more than 12 are wrapped.

Columns without number, `col` grow to fill the row.

Rows and columns

- Columns build on flexbox and have the flexbox possibilites:
 - **align-items-center** on row vertically centeres items
 - **justify-content-*** horizontal spread of items
 - **center** centered items
 - **between** equal space between items
 - **evenly** equal space between and around items

Exercise #2a



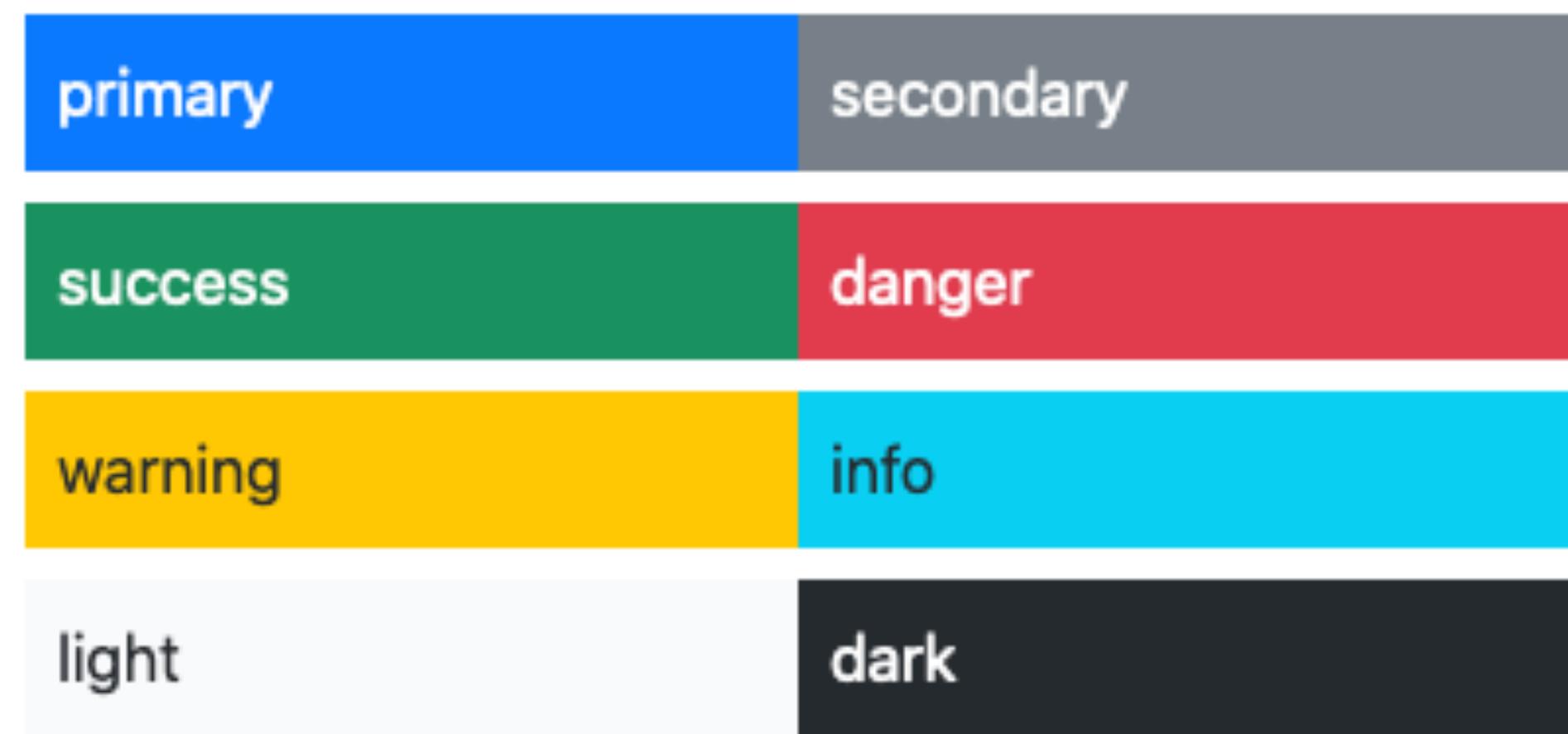
[https://github.com/dat310-2023/info/tree/master/
exercises/bootstrap](https://github.com/dat310-2023/info/tree/master/exercises/bootstrap)

Colors

- 8 Theme colors are predefined but configurable

primary, secondary, success,
* → danger, warning, info,
light, dark

Color Themes



Class	Effect
bg-*	background color
text-*	Color
border-*	Border color
table-*	Table background
btn-*	Button color

Breakpoints

- Adjust columns (and other classes based on screen width)
- Responsive, i.e., columns rearrange automatically depending on the screen size

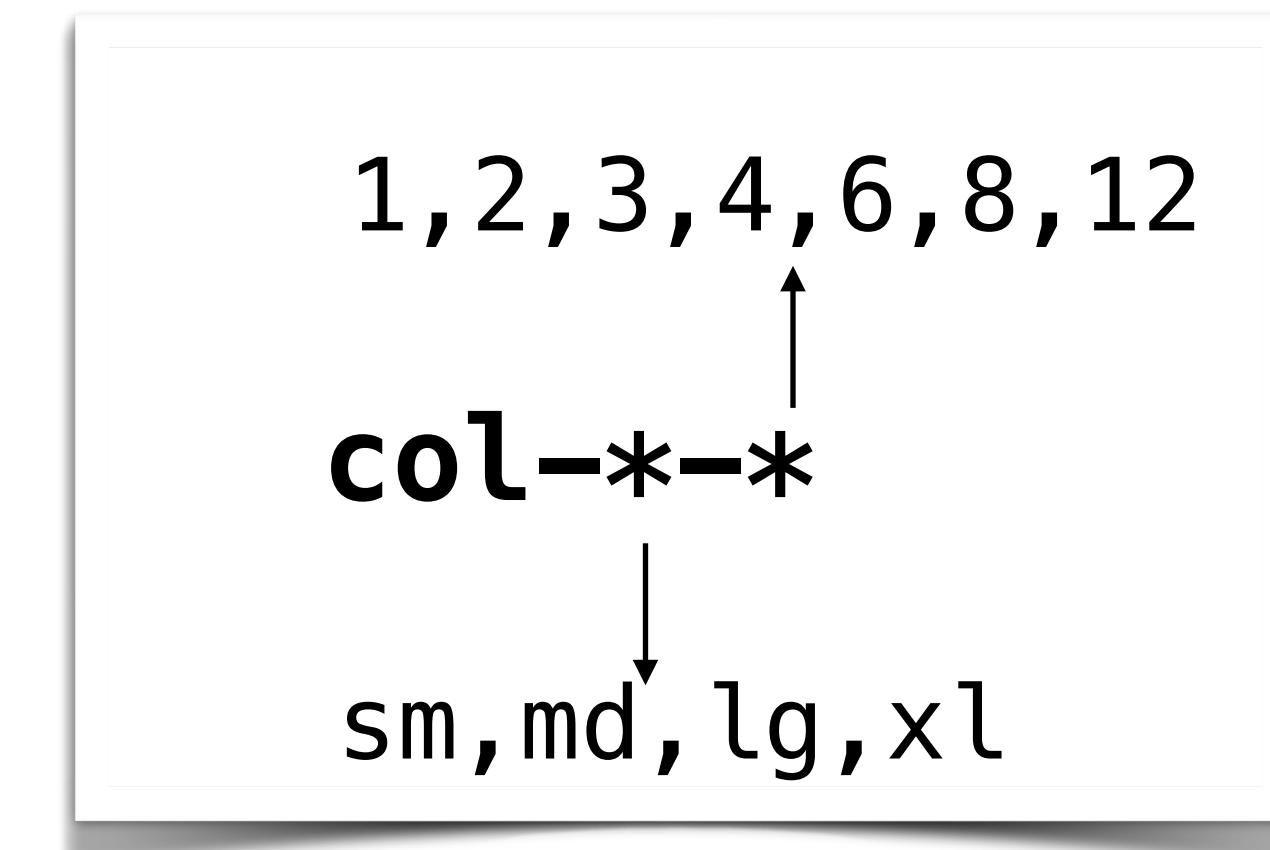
Breakpoint	Class infix	Dimensions
X-Small	None	<576px
Small	sm	≥576px
Medium	md	≥768px
Large	lg	≥992px
Extra large	xl	≥1200px
Extra extra large	xxl	≥1400px

Breakpoints

- **container-md** change to fluid container for screen < medium

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

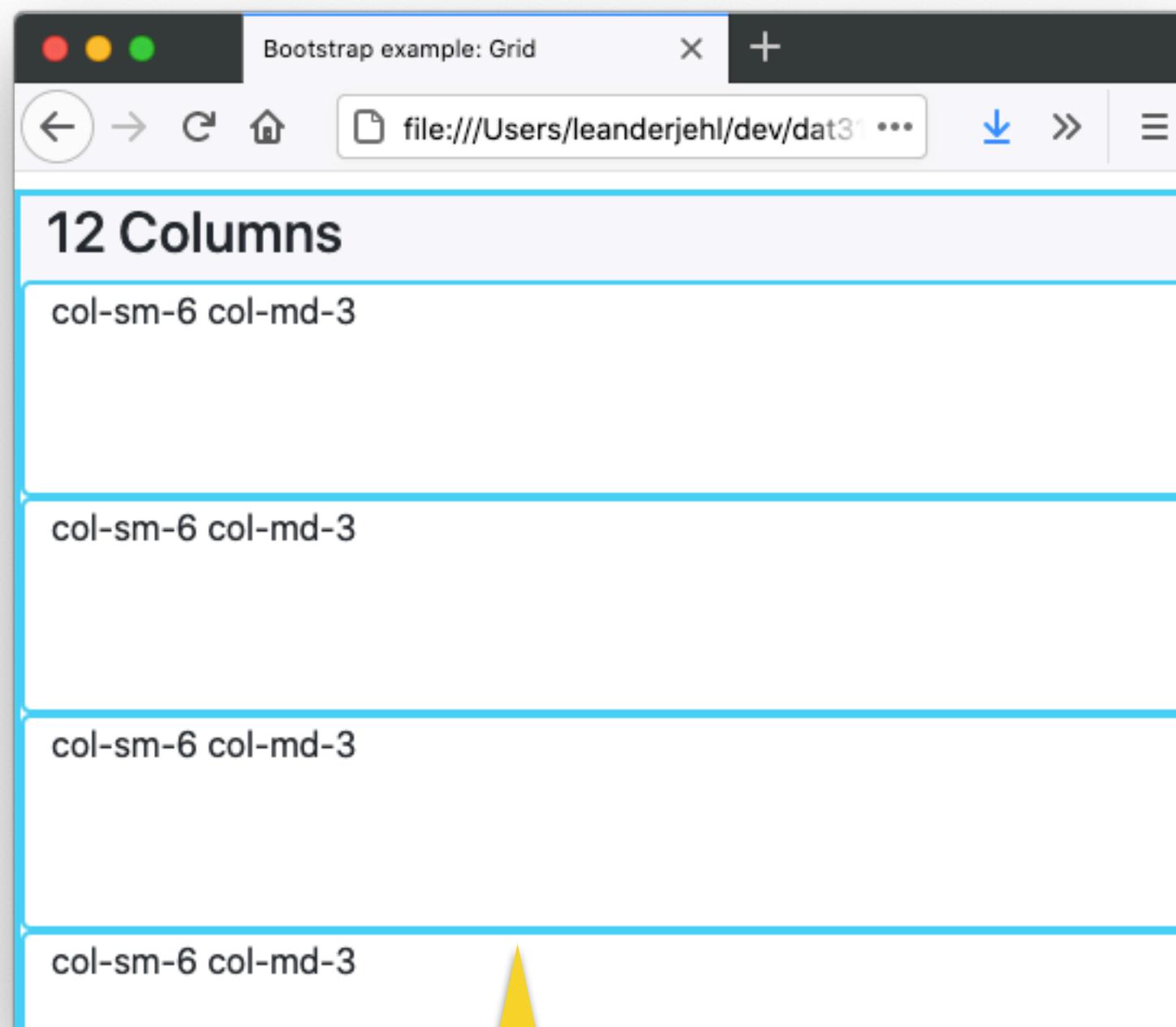
- **col-sm-6** takes 6 columns on **sm** and larger
-> full width on **xs**.



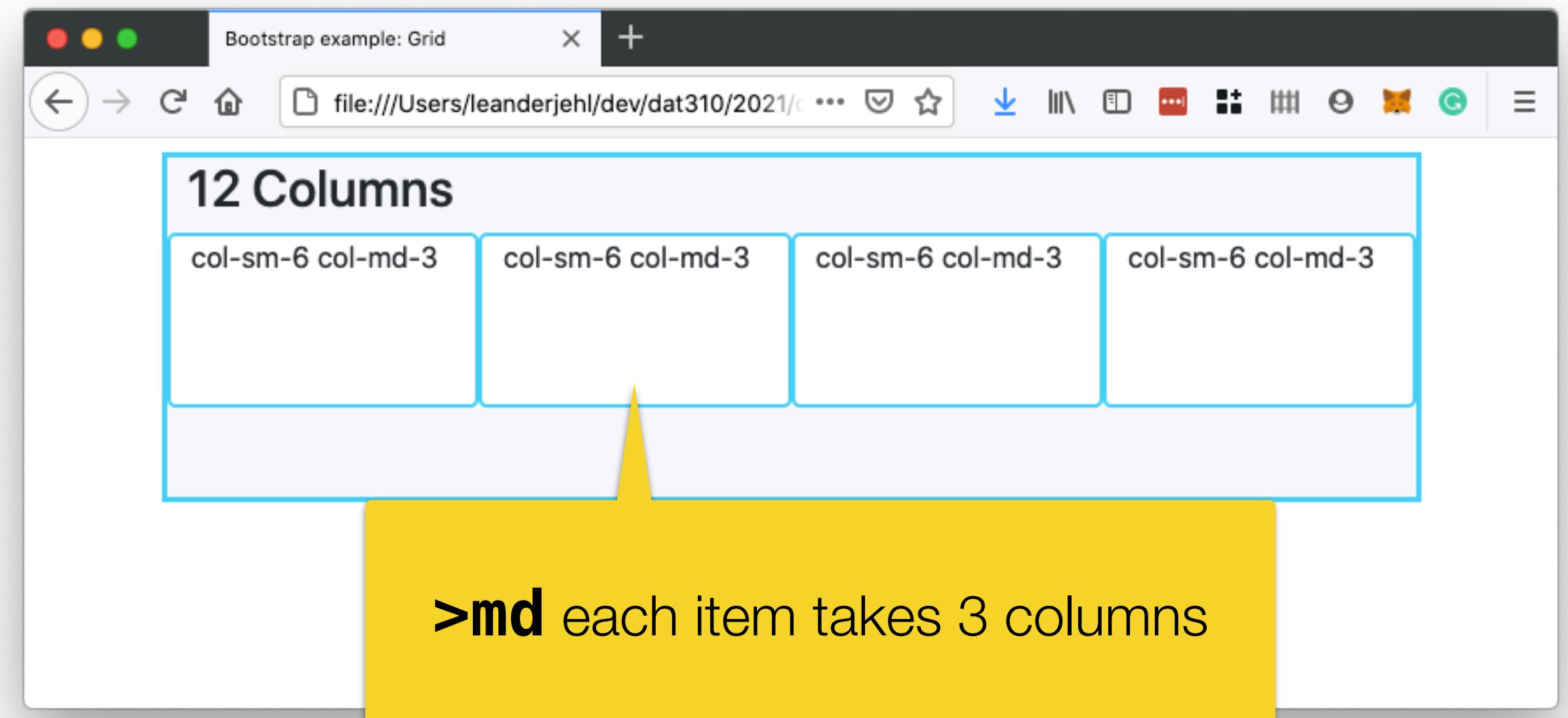
Example

examples/bootstrap/grid.html

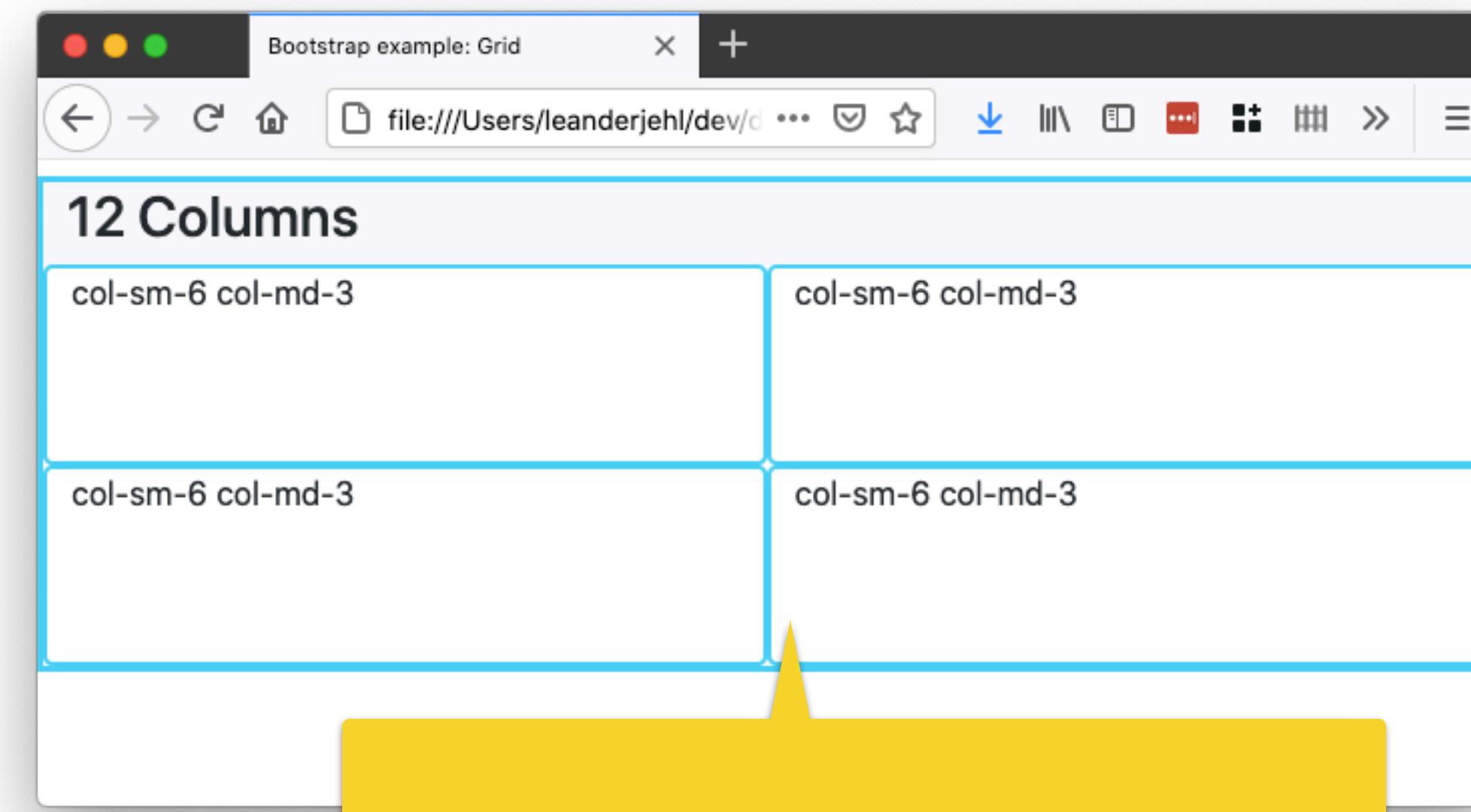
```
<div class="col-md-3 col-sm-6">  
  ...  
</div>
```



xs each item takes all columns



>md each item takes 3 columns

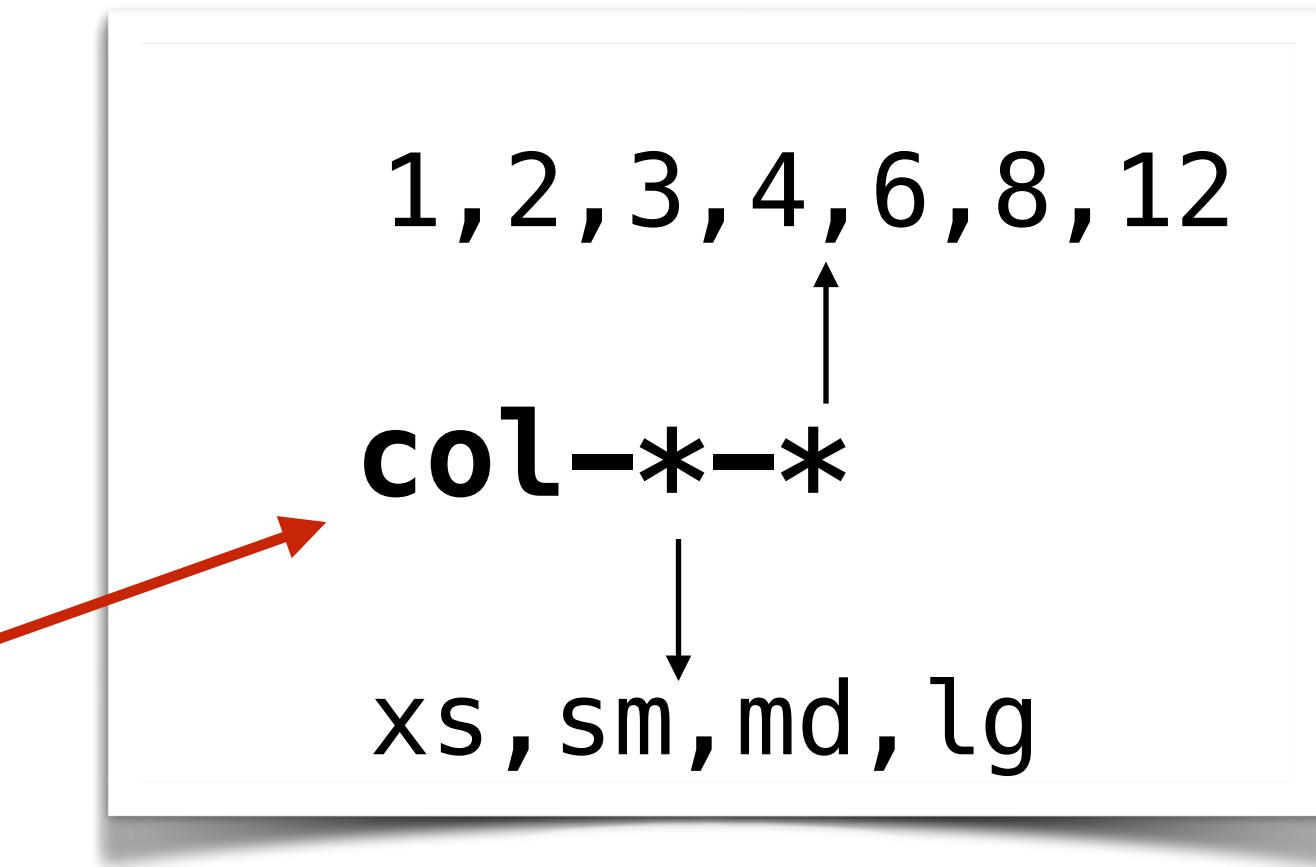


sm each item takes 6 columns

Grid system (2)

- Basic structure

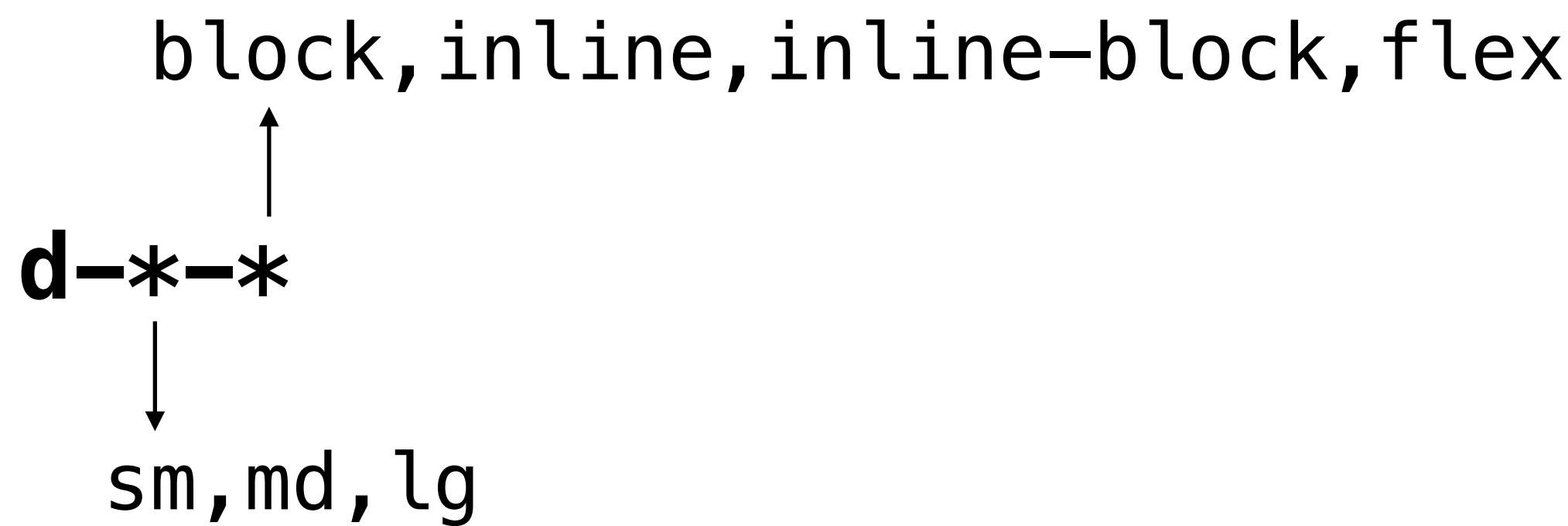
```
<div class="row">
  <div class="col-*-*">...</div>
  <div class="...">...</div>
  <div class="...">...</div>
</div>
<div class="row">
  ...
</div>
```



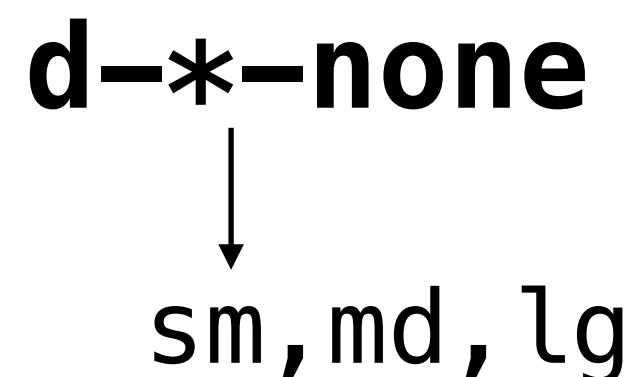
- If more than 12 columns are placed within a single row, they will wrap into a new line

Responsive classes

- Change display property based on device
- Visible only on certain devices



- Hidden on certain devices (visible on all other)

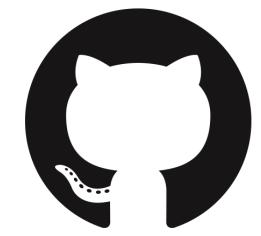


Example (responsive classes)

examples/bootstrap/grid_rc.html



Exercise #2b

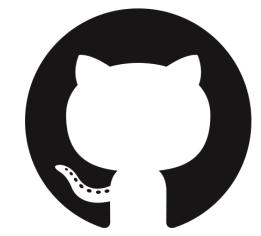


[https://github.com/dat310-2023/info/tree/master/
exercises/bootstrap](https://github.com/dat310-2023/info/tree/master/exercises/bootstrap)

Spacing

- Set **margin** and **padding** with predefined classes
 - sizes: 0, 1, 2, 3, 4, or 5 (and auto for margin)
 - p-0 → padding: 0;
 - m-1 → margin: 0.25rem;
 - sides: **t** top, **b** bottom, **s** left (start), **e** right (end),
x left&right, **y** top&bottom
 - py-2 → padding-left: 0.5rem; padding-right: 0.5rem;
 - mt-3 → margin-top: 1rem;
 - add breakpoints
 - p-sm-1 → padding on small and larger screens
 - my-md-2 → margin 2 on medium and larger screens
- Use gutter **gy-2** to add horizontal spacing between columns

Exercise #2c



[https://github.com/dat310-2023/info/tree/master/
exercises/bootstrap](https://github.com/dat310-2023/info/tree/master/exercises/bootstrap)

Style classes for HTML elements

- Basic text
- Tables
- Images
- Buttons
- Forms
- Helpers
- See <https://getbootstrap.com/docs/5.0>

Text/Typography

- Elements are styled differently from browser defaults
 - Headings
 - Marks
 - Blockquotes
 - ...
- Contextual classes (for colors and backgrounds)
- See <https://getbootstrap.com/docs/5.0/content/typography/>

Example (text)

examples/bootstrap/text.html

Browser default

h1 heading secondary text

h2 heading secondary text

h3 heading secondary text

h4 heading secondary text

h5 heading secondary text

h6 heading secondary text

Highlight Text

Use the mark element to **highlight** text.

Blockquotes

Theblockquoteelementisusedtopresentcontentfromanothersource:

For 50 years, WWF has been protecting the future of nature. The world's leading conservation organization, WWF works in 100 countries and is supported by 1.2 million members in the United States and close to 5 million globally.

From WWF's website

Code Snippets

Example: Bootstrap text

h1 heading secondary text

h2 heading secondary text

h3 heading secondary text

h4 heading secondary text

h5 heading secondary text

h6 heading secondary text

Highlight Text

Use the mark element to **highlight** text.

Blockquotes

Theblockquoteelementisusedtopresentcontentfromanothersource:

For 50 years, WWF has been protecting the future of nature. The world's leading conservation organization, WWF works in 100 countries and is supported by 1.2 million members in the United States and close to 5 million globally.

From WWF's website

Code Snippets

Inline snippets of code should be embedded in the code element:

The following HTML elements: `span`, `section`, and `div` defines a section in a document.

Contextual Colors

Use the contextual classes to provide "meaning through colors":

This text is muted.

This text is important.

This text indicates success.

This text represents some information.

This text represents a warning.

This text represents danger.

Contextual Backgrounds

Use the contextual background classes to provide "meaning through colors":

This text is important.

This text indicates success.

This text represents some information.

This text represents a warning.

This text represents danger.

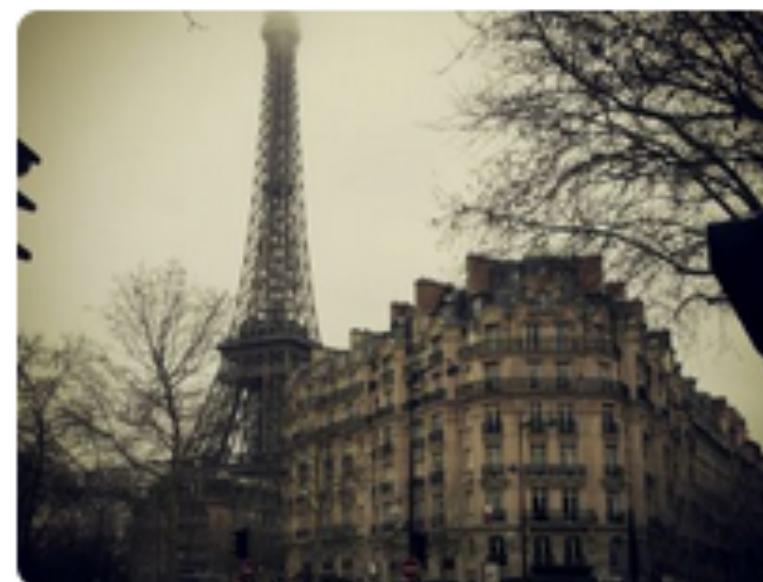
Tables

- **.table** – basic table
- **.table-striped** – adds zebra-stripes
- **.table-bordered** – adds borders (on all sides of the table/cells)
- **.table-hover** – enables a hover state on table rows
- **.table-sm** – makes a table more compact
- For colors use **.table-active**, **.table-primary**, ... or **border-active**, **border-primary**, ...
- See <https://getbootstrap.com/docs/5.0/content/tables/>

Images

- **.rounded** – adds rounded corners to image or other elements
- **.rounded-circle** – shapes the image to a circle
- **.img-thumbnail** – shapes the image to a thumbnail
- **.img-fluid** – automatically scale img to parent element
- See <https://getbootstrap.com/docs/5.0/content/images/>

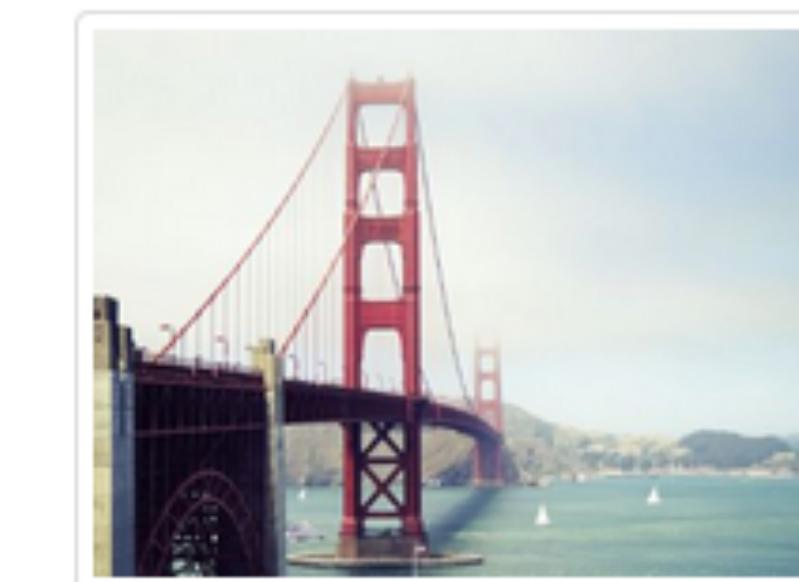
Rounded Corners:



Circle:

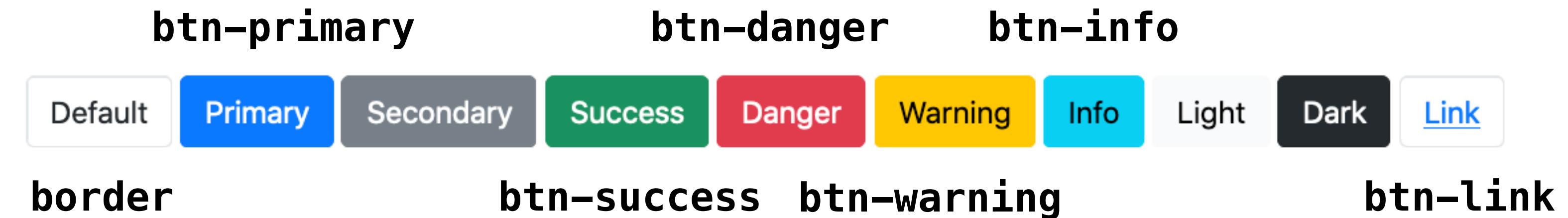


Thumbnail:

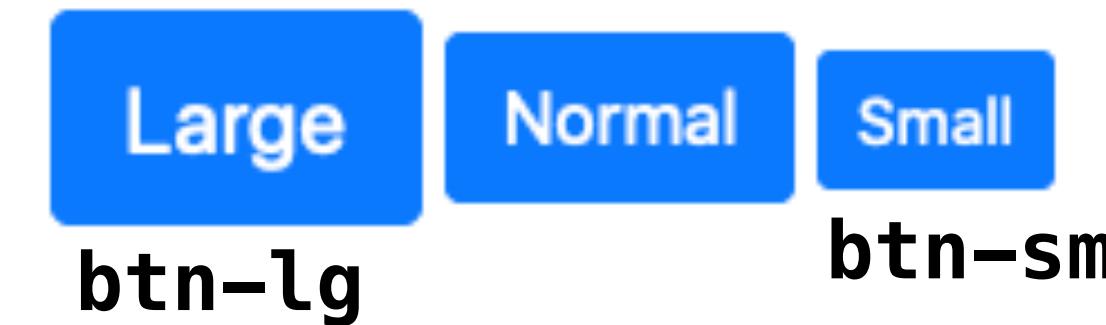


Buttons

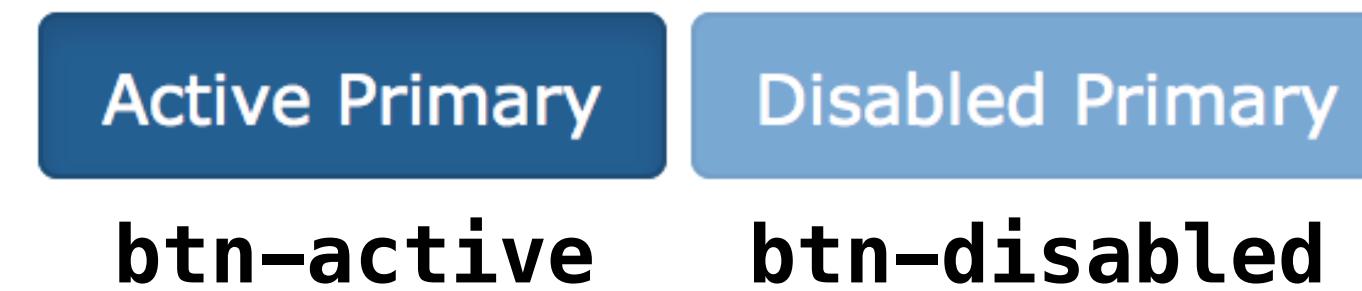
- Styles



- Sizes



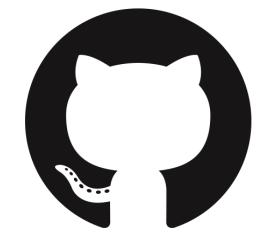
- States



- Button classes can be used on <a>, <button>, and <input> elements. E.g.,

```
<input type="submit" class="btn btn-info btn-md" value="Submit Button">
```

Exercises #3



[https://github.com/dat310-2023/info/tree/master/
exercises/bootstrap](https://github.com/dat310-2023/info/tree/master/exercises/bootstrap)

Forms

- Individual form controls
- Inline vs. horizontal forms
- States (focused, disabled, readonly)
- Help text
- Validation states
- See <https://getbootstrap.com/docs/5.0/forms/overview/>

Forms

```
<form>
  <label for="email" class="form-label">Email address</label>
  <input type="email" class="form-control" id="email">
  <div class="form-text">We'll never share your email.</div>
  <label for="password" class="form-label">Password</label>
  <input type="password" class="form-control" id="password">
  <div class="form-check">
    <input type="checkbox" class="form-check-input" id="check">
    <label class="form-check-label" for="check">Check me out</label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

Email address

We'll never share your email with anyone else.

Password

Check me out

Submit

Forms

Email address

We'll never share your email with anyone else.

Password

Check me out

Submit

```
<form>
  <label for="email" class="form-label">Email address</label>
  <input type="email" class="form-control" id="email">
  <div class="form-text">We'll never share your email.</div>
  <label for="password" class="form-label">Password</label>
  <input type="password" class="form-control" id="password">
  <div class="form-check">
    <input type="checkbox" class="form-control" checked="checked"/>
    <label class="form-check-label">Check me out</label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

All textual `<input>`, `<textarea>`, and `<select>` elements with **form-control** are set to **width: 100%**. Their `<label>`s with **form-label** also get **width: 100%**.

Forms

```
<form>
  <label for="email" class="form-label">Email address</label>
  <input type="email" class="form-control" id="email">
  <div class="form-text">We'll never share your email.</div>
  <label for="password" class="form-label">Password</label>
  <input type="password" class="form-control" id="password">
  Text explaining an input is formatted with form-text class.
  <div class="form-check">
    <input type="checkbox" class="form-check-input" id="check">
    <label class="form-check-label" for="check">Check me out</label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

Email address

We'll never share your email with anyone else.

Password

Check me out

Submit

Forms

```
<form>
  <label for="email" class="form-label">Email address</label>
  <input type="email" class="form-control" id="email">
  <div class="form-text">We'll never share your email.</div>
  <label for="password" class="form-label">Password</label>
  <input type="password" class="form-control" id="password">
  <div class="form-check">
    <input type="checkbox" class="form-check-input" id="check">
    <label class="form-check-label" for="check">Check me out!</label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

Email address

We'll never share your email with anyone else.

Password

Check me out!

Submit

Checkboxes and radio buttons should be put into a separate **<div>**.

Forms

Email address

We'll never share your email with anyone else.

Password

Check me out

Submit

```
<form>
  <label for="email" class="form-label">Email address</label>
  <input type="email" class="form-control" id="email">
  <div class="form-text">We'll never share your email.</div>
  <label for="password" class="form-label">Password</label>
  <input type="password" class="form-control" id="password">
  <div class="form-check">
    <input type="checkbox" class="form-check-input" id="check">
    <label class="form-check-label" for="check">Check me out</label>
  </div>
  <button type="submit">Submit</button>
</form>
```

Add classes **form-check**, **form-check-input** and **form-check-label** to **<div>**, **<input>**, and **<label>** for checkbox and radio buttons

nicer Forms

```
<form>
  <div class="mb-3">
    <label for="exampleInputEmail1" class="form-label">Email address</label>
    <input type="email" class="form-control" id="exampleInputEmail1">
    <div class="form-text">We'll never share your email with anyone else.</div>
  </div>
  <div class="mb-3">
    <label for="password" class="form-label">Password</label>
    <input type="password" class="form-control" id="password">
  </div>
  <div class="mb-3 form-check">
    <input type="checkbox" class="form-check-input" id="exampleCheck1">
    <label class="form-check-label" for="exampleCheck1">Check me out</label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

Email address

We'll never share your email with anyone else.

Password

Check me out

Submit

Wrap label and input in a `<div>`, and add **bottom margin**.

Horizontal Forms

```
<form>
  <div class="mb-3 row">
    <label for="exampleInputEmail1" class="form-label col-3">Email address</label>
    <div class="col-9">
      <input type="email" class="form-control" id="exampleInputEmail1">
      <div class="form-text">We'll never share your email with anyone else.</div>
    </div>
  </div>          Use the grid (row and col) to make horizontal forms
  <div class="mb-3">
    <label for="password" class="form-label">Password</label>
    <input type="password" class="form-control" id="password">
  </div>
  <div class="mb-3 form-check">
    <input type="checkbox" class="form-check-input" id="exampleCheck1">
    <label class="form-check-label" for="exampleCheck1">Check me out</label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

Email address

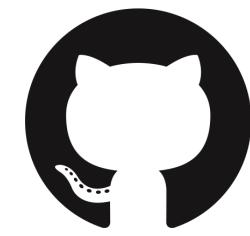
We'll never share your email with anyone else.

Password

Check me out

Submit

Exercises #4-#5



[https://github.com/dat310-2023/info/tree/master/
exercises/bootstrap](https://github.com/dat310-2023/info/tree/master/exercises/bootstrap)

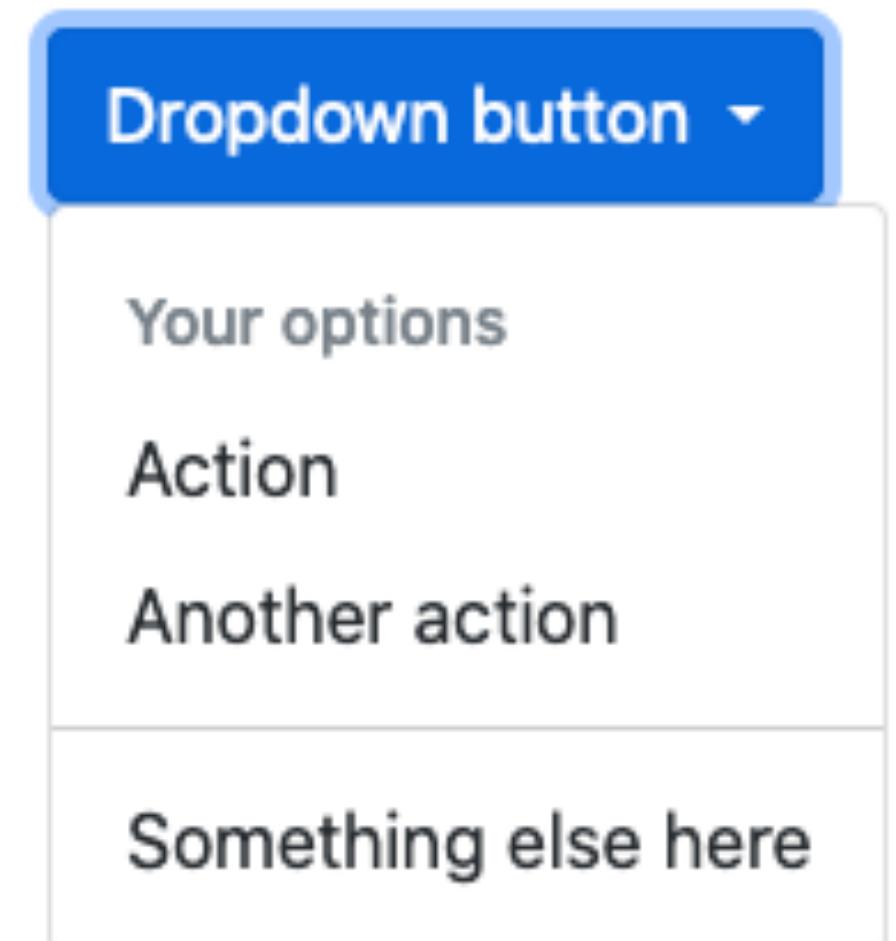
Bootstrap Components

Need to include JavaScript

Dropdowns

- Toggleable, contextual menu for displaying lists of links
 - Made interactive with JavaScript

```
<div class="dropdown">
  <button class="btn btn-primary dropdown-toggle" type="button"
    data-bs-toggle="dropdown">
    Dropdown button
  </button>
  <ul class="dropdown-menu">
    <li><h6 class="dropdown-header">Your options</h6></li>
    <li><a class="dropdown-item" href="#">Action</a></li>
    <li><a class="dropdown-item" href="#">Another action</a></li>
    <li><hr class="dropdown-divider"></li>
    <li><a class="dropdown-item" href="#">Something else here</a></li>
  </ul>
</div>
```



Button groups

- Group a series of buttons together on a single line

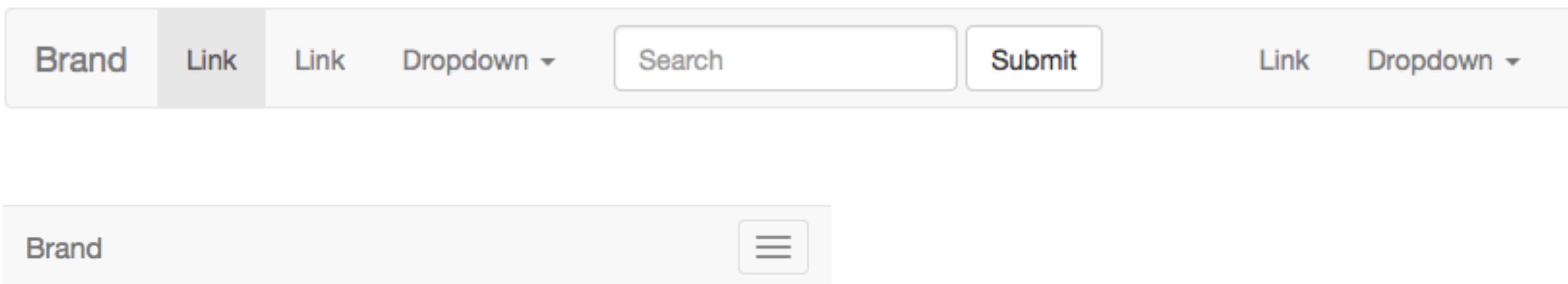
```
<div class="btn-group" role="group" aria-label="Basic example">
  <button type="button" class="btn btn-primary">Left</button>
  <button type="button" class="btn btn-primary">Middle</button>
  <button type="button" class="btn btn-primary">Right</button>
</div>
```



Left Middle Right

Navbar

- Navigation header for the application or site
 - Collapsed in mobile views and become horizontal as the viewport increases
 - Requires JS



Badges

- Labels in rounded boxes
 - Size is adjusted automatically

```
<h3>Example heading <span class="badge bg-secondary">New</span></h3>
```



```
<a href="#">Inbox <span class="badge bg-secondary">42</span></a>
```



```
<button class="btn btn-primary" type="button">  
  Messages <span class="badge bg-light text-dark">4</span>  
</button>
```



Badges rounded

- Labels in rounded boxes
 - Size is adjusted automatically

```
<h3>Example heading <span class="badge bg-secondary rounded-pill">New</span></h3>
```

Example Heading 

```
<a href="#">Inbox <span class="badge bg-secondary rounded-pill">42</span></a>
```

[Inbox](#) 

```
<button class="btn btn-primary" type="button">  
  Messages <span class="badge bg-light text-dark rounded-pill">4</span>  
</button>
```

 Messages 4

Alerts

- Contextual feedback messages for typical user actions

```
<div class="alert alert-warning" role="alert">
  <strong>Warning!</strong> Check the <a href="https://getbootstrap.com/docs/5.0/components/alerts" class="alert-link">documentation</a>.
</div>
```

Warning: Check the [documentation](#).

Dismissible alerts

- Make any alert "closeable"
 - Needs JS

```
<div class="alert alert-warning alert-dismissible" role="alert">
  <button type="button" class="btn-close" data-dismiss="alert"><span>&times;;</span></button>
  <strong>Holy guacamole!</strong> Check out all the options!</div>
```

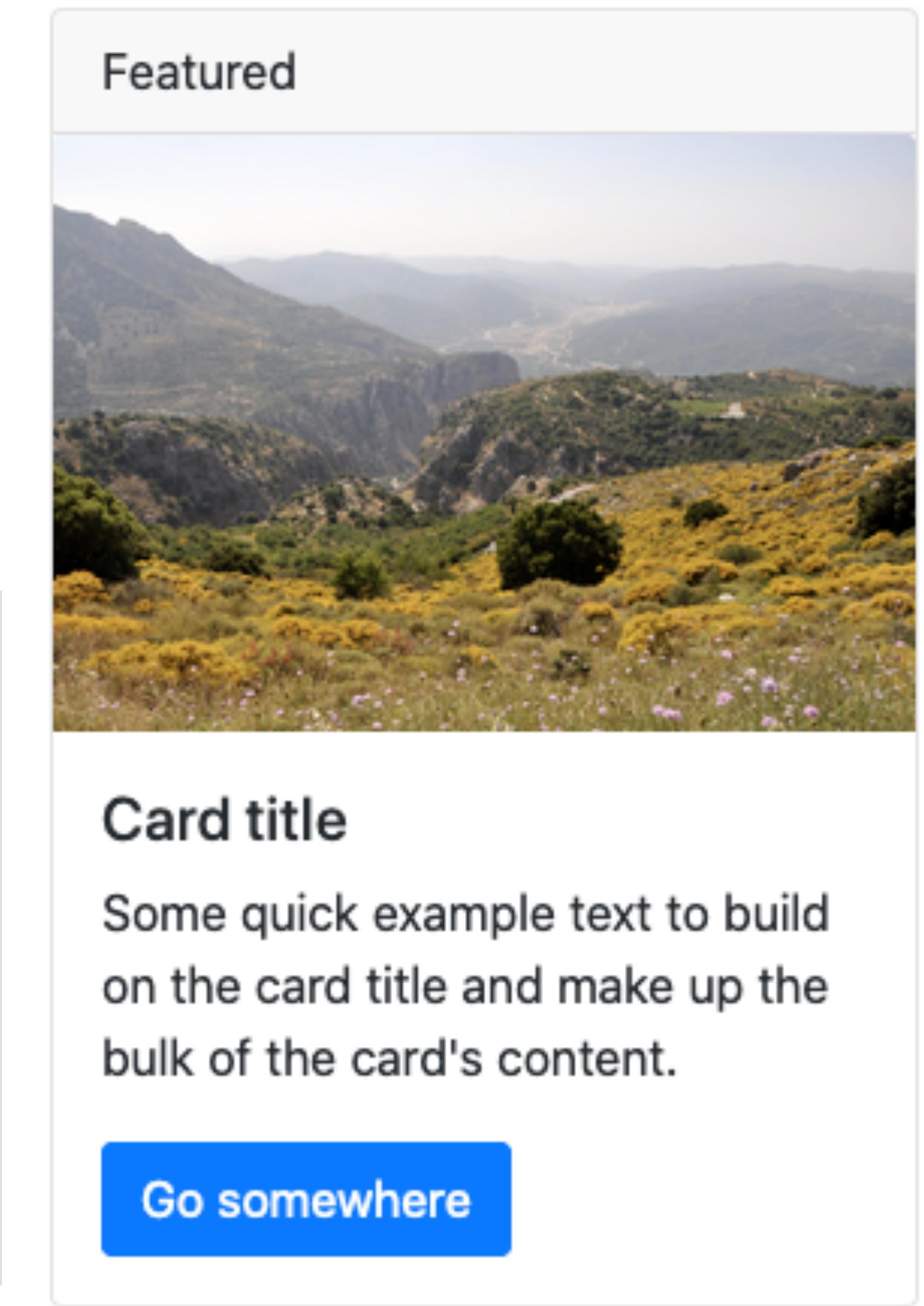
Holy guacamole! Check out all the options!



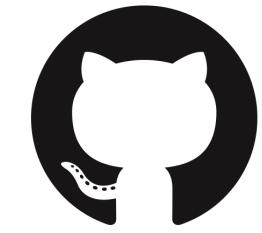
Cards

- For "boxing" content

```
<div class="card" style="width: 18rem;">
  <div class="card-header">
    Featured
  </div>
  <img src=..." class="card-img-top" alt="...">
  <div class="card-body">
    <h5 class="card-title">Card title</h5>
    <p class="card-text">Some quick example text to build on
make up the bulk of the card's content.</p>
    <a href="#" class="btn btn-primary">Go somewhere</a>
  </div>
</div>
```



Exercise #6-#7



[https://github.com/dat310-2023/info/tree/master/
exercises/bootstrap](https://github.com/dat310-2023/info/tree/master/exercises/bootstrap)

Example

examples/bootstrap/datatables.html

Name	Position	Office	Age	Start date	Salary
Airi Satou	Accountant	Tokyo	33	2008/11/28	\$162,700
Angelica Ramos	Chief Executive Officer (CEO)	London	47	2009/10/09	\$1,200,000
Ashton Cox	Junior Technical Author	San Francisco	66	2009/01/12	\$86,000
Bradley Greer	Software Engineer	London	41	2012/10/13	\$132,000
Brenden Wagner	Software Engineer	San Francisco	28	2011/06/07	\$206,850
Brielle Williamson	Integration Specialist	New York	61	2012/12/02	\$372,000
Bruno Nash	Software Engineer	London	38	2011/05/03	\$163,500
Caesar Vance	Pre-Sales Support	New York	21	2011/12/12	\$106,450
Cara Stevens	Sales Assistant	New York	46	2011/12/06	\$145,600
Cedric Kelly	Senior Javascript Developer	Edinburgh	22	2012/03/29	\$433,060

Name	Position	Office	Age	Start date	Salary
Airi Satou	Accountant	Tokyo	33	2008/11/28	\$162,700

Showing 1 to 10 of 57 entries

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Server-side processing

- Needed if working with large databases
- All paging, searching, ordering operations are handed off to the server (where an SQL engine performs them)
- AJAX is used to get the required data from the server
- Details: <https://datatables.net/manual/server-side>

References

- Bootstrap
 - <http://getbootstrap.com>
 - <http://www.w3schools.com/bootstrap>
- Lists of CSS boilerplates and frameworks
 - <http://mashable.com/2013/04/26/css-boilerplates-frameworks/>
 - <http://www.awwwards.com/what-are-frameworks-22-best-responsive-css-frameworks-for-web-design.html>