IS216
Web
Application
Development II

Session 3
CSS - Bootstrap

K. J. Shim
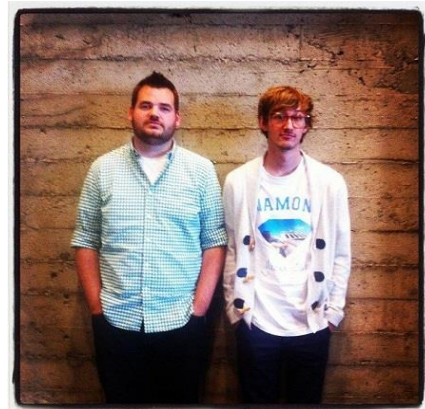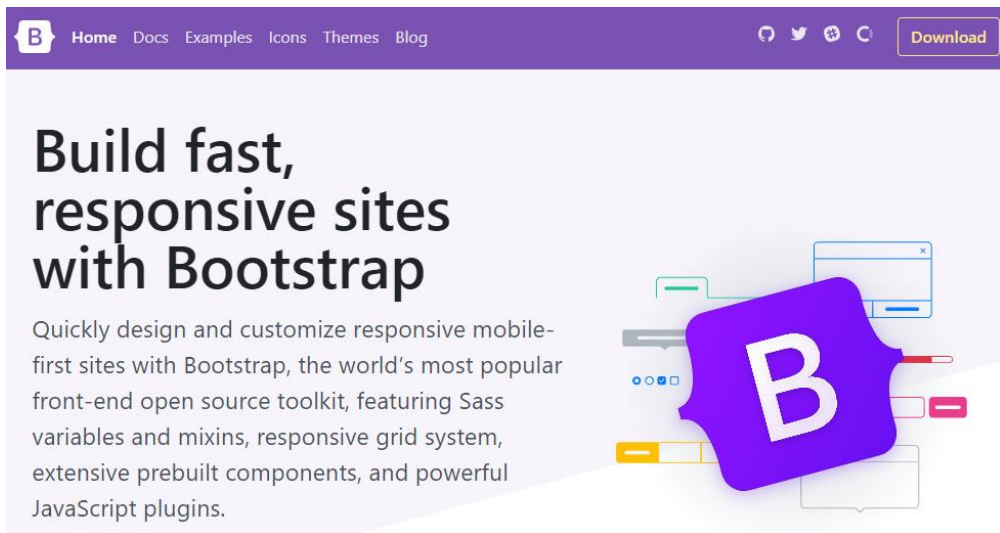Sections: G1 / G2 / G3 / G11

Agenda

Advanced *Selectors*

Re-visiting *Box Model*

Bootstrap
- What is Bootstrap?
- How to use Bootstrap
- Bootstrap examples
- Build a project using Bootstrap

Project Briefing & Sign-Up

Build fast, responsive sites with Bootstrap

Quickly design and customize responsive mobile-first sites with Bootstrap, the world's most popular front-end open source toolkit, featuring Sass variables and mixins, responsive grid system, extensive prebuilt components, and powerful JavaScript plugins.


Mark Otto and Jacob Thornton

Source Code Files

eLearn → Content → Session 3 → In Class → **Week3.zip**

- **Unzip** it into your **webroot** (*any meaningful sub-directory), for example:*
  - (WAMP) C:\wamp64**www**\is216\...**Week3**
  - (MAMP) /Applications/MAMP/**htdocs**/is216/.../**Week3**

- You don't have to follow the above path – it's just an example.
  - But we DO strongly encourage you to keep source code files **organized** so that you can easily **search** them during **Lab Tests**

Pair Programming

1. We will continue to use **VSCode extensions**
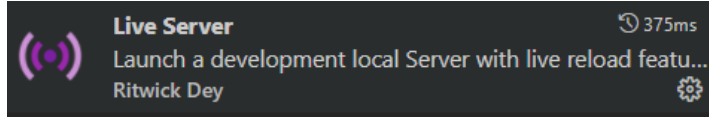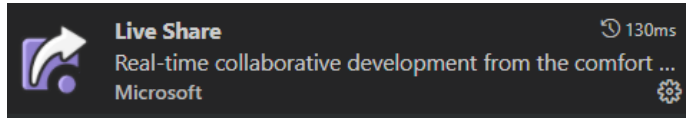
2. We resolved all issues brought to our attention last week Tuesday ~ Saturday. If you're still experience **issues**, please **Slack DM** your **TAs** right now in **Slack** – and they will assist you right away.

Follow Me (Code Together)

1. **selectors2.html, selectors3.html** (advanced selectors)
2. **boxmodel2.html** (margin collapsing)
3. **boxmodel3.html, boxmodel4.html** (float: left, display: flex)
4. (Pair Programming) **Activity 1**
5. **Bootstrap** – walkthrough
6. (Pair Programming) **Activity 2**
7. **Project Briefing**

Activity 1: Re-thinking the User Interface

1. Go to **FollowMe → pizza → home.html**
2. Papa John's Pizza company CEO hired you to **re-think** their (OMG... 😱) ugly website.

   "It's terrible looking... nobody wants to order pizza from us anymore", said the CEO (sobbing).

3. **[Task]** Work with your **pair programming** partner to **re-think** the design of home.html.
   - You will be randomly assigned to a **Zoom Breakout Room** → Accept and **Join**
   - Go to **Slack → #lesson-g<your_section>** → *Kyong will post a link to a **Google Drive folder***
   - Click on the **PPTX** file with **Your Zoom Breakout Room #**.
   - For example, if you're assigned to **Room 2**, click on **Room 2** file
     Please do NOT go and peek into other rooms' files !!!

     [IS216-Session 3] Pair Programming (Room 1).pptx
     [IS216-Session 3] Pair Programming (Room 2).pptx
     [IS216-Session 3] Pair Programming (Room 3).pptx

   - Read the **instructions** in **Slide #1**
   - You are given **15 minutes** to complete this activity.
   - When done, **stay in your Zoom Breakout Room** until Kyong lets you out.

Activity 2: Save the BTS fan page

1. Go to **FollowMe → bts → home.html**
2. Oh no... which enthusiastic fan made this *OMG What Is This!!!* 😱 **BTS fan page** ???

   "We must ban this person from listening to BTS songs for 10 years", *said another enthusiastic (and angry) fan.*

3. **[Task]** Work with your **pair programming** partner to **code** home.html and make it **beautiful**
   - You're free to use ANY **Bootstrap** styling/components.
   - https://getbootstrap.com/docs/5.1/getting-started/introduction/
   - Consider using **carousel**, **buttons** (links), **navigation**, **alerts**
   - Be ready to **show** your **home.html** later via screen share

   - You are given **30 minutes** to complete this activity.
   - When done, **stay in your Zoom Breakout Room** until Kyong lets you out.

Project (25%): Briefing

1. **Register Group Members** in **eLearn** → Group Info → **Groups**
   - https://elearn.smu.edu.sg/d2l/home/299951
2. **Project Briefing Document**
   - https://smu.sg/2021-is216-project-briefing
3. Once we have your **Group Number**, we will add your group members to a **Proposal Document** (Google Doc)
   - *Sample* **Proposal**: https://smu.sg/2021-supreme-project-sample-proposal
   - **[DEADLINE]** *Initial* proposal (with all fields filled out) due (Week 8) on **8-OCT-2021 (FRI) 12PM SG Time**
   - Teaching team will review and add **comments** inside your **Proposal Document** by (Week 9) **11-Oct-2021 (Monday) 12PM SG Time**. You will need to review our comments and **address** by **replying**.
   - **[DEADLINE]** *Final* proposal (with all fields filled out) due (Week 9) on **17-OCT-2021 (SUN) 12PM SG Time**
   - *You can ask **Kyong** to review your proposal ANYTIME before **8-OCT-2021** – she will provide fast feedback and advice.* **Slack DM** her anytime.
4. **[GitHub Classroom]** Every group must push their project source files into a private repo in **is216-supreme Classroom**.
   - **Kyong** will send an invitation to each group by **Week 4 Monday**.

Things to Finish Before Session 4

1. Watch and follow code demo in
   - **CSS – Part 2 (Bootstrap) – Deep Dive – Card**
   - **CSS – Part 2 (Bootstrap) – Deep Dive – Navs & Spacing**
   - **CSS – Part 2 (Bootstrap) – Deep Dive – Navigation Bar**
   - **CSS – Part 2 (Bootstrap) – Deep Dive – Others**
   - **Resource files** can be downloaded from https://github.com/RealKrazyWoman/IS216/
2. "My Profile" GitHub assignment ***Don't forget to update*** **README.md** and push!

> 🔗 (Week 3) 🐙 Add Bootstrap to beautify your website
>
> The goal this week is for you uto apply what you learned about **Bootstrap** to your website. Please consider using the following Bootstrap components/styling/utilities (feel free to use any that's not listed here):
>
> - Alerts, Badge, Buttons
> - Card, Carousel, Collapse, Dropdowns
> - Modal, Navs & tabs, Navbar
> - Forms

3. Complete **Homework** (Krazy Tuition Centre)
4. eLearn → Content → Quizzes → **Quiz 1** *(it will remain open until Week 16 end)*
5. eLearn → Content → Session 4 → Before Class
   - Watch the video
   - Complete [Session 4] Pre-Class Quiz (JavaScript – Part 1)

Homework: Krazy Tuition Centre

1. Go to **FollowMe → tuition → home.html**
2. **Krazy Tuition Centre** has done everything right *EXCEPT* their hideous website.

   "I nearly had a heart attack when I saw their home page!", said a concerned parent of a prospect.

3. **[Task]** Work on your own to **code** home.html and make it (oh well...) **not hideous**
   - You're free to use ANY **Bootstrap** styling/components.
   - https://getbootstrap.com/docs/5.1/getting-started/introduction/
   - Check out a **Bootstrap component** called **card**. Do you think this can save home.html?

   - Be ready to **show** your **home.html** later via screen share at the start of **Session 5**
   - Please post/answer questions about this homework in **Slack #troubleshoot**

What is Bootstrap?

"The most popular HTML, CSS, and JS framework for developing responsive, mobile first projects on the web."

Bootstrap is a giant collection of handy, reusable bits of code written in HTML, CSS, and JavaScript. It's a front-end development framework that enables developers to quickly build fully responsive websites.

Full details are at: www.getbootstrap.com

In programmers' language

Bootstrap =

    bootstrap.min.css + bootstrap.min.js

What is Bootstrap?

Bootstrap highlights

Bootstrap's responsive grid

Bootstrap's Responsive Images

Bootstrap's Components

Bootstrap's JavaScript

…

Examples

https://getbootstrap.com/docs/5.1/examples/

Down the source code of the examples and customize accordingly if you wish.

Using Bootstrap

A system of distributed servers (network) that deliver webpages and other Web content to a user based on the geographic locations of the user, the origin of the webpage and a content delivery server.

The **integrity** attribute allows a browser to check the fetched script to ensure that the code is never loaded if the source has been manipulated.

Using BootstrapCDN *(CDN: Content Delivery Network)*

```
<head>
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.0/dist/css/bootstrap.min.css"
    rel="stylesheet"
    integrity="sha384-KyZXEAg3QhqLMpG8r+8fhAXLRk2vvoC2f3B09zVXn8CA5QIVfZOJ3BCsw2P0p/We"
    crossorigin="anonymous">
</head>
<body>
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.0/dist/js/bootstrap.bundle.min.js"
            integrity="sha384-U1DAWAznBHeqEIlVSCgzq+c9gqGAJn5c/t99JyeKa9xxaYpSvHU5awsuZVVFIhvj"
            crossorigin="anonymous">
    </script>
</body>
```

The **crossorigin** attribute sets the mode of the request to an HTTP CORS Request. CORS stands for Cross-Origin Resource Sharing, and is a mechanism that allows resources on a web page to be requested from another domain outside their own domain.
"anonymous" means no credentials (from your local server) will be sent over to the destination server.

This will load the libraries through the CDN - not from your local server.

Using Bootstrap

Get started

https://getbootstrap.com/docs/5.1/getting-started/introduction/

The starter template

Refer to example: wk3example1.html

Exercise 1

- Open ex1.html (same as wk3example1.html) in your browser.
- Take note how the "Hello, world!" looks like.
- Comment out the Bootstrap CSS.
- See if the "Hello, world!" message looks different now.

Bootstrap Features: Grid System

"Use our 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."

COL-3	COL-3	COL-3	COL-3

COL-4	COL-4	COL-4

COL-6	COL-6

COL-2	COL-2	COL-2	COL-2	COL-2	COL-2

COL-1	COL-1	COL-1	COL-1	COL-1	COL-1	COL-1	COL-1	COL-1	COL-1	COL-1	COL-1

Bootstrap Features: Grid System

Container: the most basic layout element in Bootstrap; required for using Bootstrap's grid system

Responsive breakpoints: scale up/down elements as the viewport (browser width) changes.

There are six responsive breakpoints – extra small (.xs), small (.sm), medium (.md), large (.lg), extra large (.xl) and extra extra large (.xxl). Click HERE to find the value of the breakpoints.

Example

```
//resizes in chunks at breakpoints
<div class = "container">
          <!-- Content here -->
</div>


//continuously resizes as you change the //width
of your window/browser
<div class = "container-fluid">
          <!-- Content here -->
</div>
```

Bootstrap Features: Grid System

Responsive columns for easy layout and aligned content

Columns are centered within the parent .container

Each column has 1/n of the width

Bootstrap works with a 12 columns grid system

https://getbootstrap.com/docs/5.1/layout/grid/

Example:

wk3example2.html

Resize the browser to see the effect. Change it to container-fluid and see the difference

Bootstrap Features: Grid System

Example

```
<style>
  .box {
      background-color: goldenrod;
      border: 1px solid black;
  }
</style>
```

Example: wk3example3.html

```
<div class="container">
  <div class="row">
          <div class="col box"> 1 of 3 </div>
          <div class="col-6 box"> 2 of 3 (wider)
</div>
          <div class="col box"> 3 of 3</div>

  </div>
</div>
```

1 of 3	2 of 3 (wider)	3 of 3

Bootstrap Features: Grid System

Use **.col-sm-*** classes to create a grid system that starts out stacked and becomes horizontal after reaching the small breakpoint (sm) onwards.

Example: *wk3example4.html*

```
<div class="container">
   <div class="row">
      <div class="col-sm-8">Lorem Ipsum…</div>
      <div class="col-sm-4">Lorem Ipsum…</div>
   </div>
</div>
```

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in

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At a small screen width

At a larger (than sm breakpoint) screen width

Grid Content Alignment

Place content in the center:

```
<div class="row justify-content-center">
```

Place content at the end:

```
<div class="row justify-content-end">
```

Place empty space equally around the content:

```
<div class="row justify-content-around">
```

Empty space in between the content:

```
<div class="row justify-content-between">
```

Exercise 2

Given ex2.html,

- referring to the various grid layouts based on the examples given in
  https://getbootstrap.com/docs/5.1/layout/grid/
- create a grid that looks similar to the one shown below.
- use class .container-fluid to span across the whole browser width.

Text

Use text-center, text-right classes to change the alignment of your text

Use lead class to make your paragraph stand out

Use the mark tag to highlight the text

https://getbootstrap.com/docs/5.1/utilities/text/

Example:

wk3example5.html

List

Use *list-unstlyed* class to remove the bullet points

Use *list-inline* and *list-inline-item* classes to make the list inline

Example

wk3example6.html

Image

Make the image responsive (to browser width and resizing) by using *img-fluid* class and height: auto

Use *float-left, float-right* classes to align the images

Examples: *wk3example7.html*

```
<img src="..." class="img-fluid" height="auto">

<img src="img1.png" class="img-fluid float-left" height="auto">

<img src="img2.png" class="img-fluid float-right" height="auto">
```

Resize the browser to see the effect.

200x200

200x200

Utilities: Spacing

Bootstrap includes a wide range of shorthand responsive margin and padding utility classes to modify an element's appearance.

https://getbootstrap.com/docs/5.1/utilities/spacing/

The classes are named using the format {property}{sides}-{size} for xs and {property}{sides}-{breakpoint}-{size} for sm, md, lg, xl, and xxl.

Example:

mx-auto: margin on left and right auto (centered)

px-md-5: padding on left and right, breakpoint md (720px); size 5

m for margin and p for padding
x for left+right; y for top+bottom

Utilities: Display

Responsive display utility classes.

Classes can be combined for various effects as you need.

https://getbootstrap.com/docs/5.1/utilities/display/

Examples

Notation: *d-{value}* where value is one of: none, inline, inline-block, block, etc.

For example, display buttons inline, with padding size 2 and white-colored text:

```
<div class="d-inline p-2 bg-primary text-white">
  d-inline
</div>

<div class="d-inline p-2 bg-dark text-white">
  d-inline
</div>
```

Utilities: Sizing

Easily make an element as wide or as tall (relative to its parent) with sizing utilities.

https://getbootstrap.com/docs/5.1/utilities/sizing/

Examples

Support auto, 25%, 50%, 75%, 100% of the parent element

```
<div style="width: 400px; height: 200px;
    background-color: grey;">

  <div class="w-75 h-50 p-3"
      style="background-color: red;">

      Width 75%, Height 50% of the parent element
  </div>

</div>
```

Image Centering

Center the image using mx-auto and d-block classes

mx-auto class is for horizontally centering fixed-width block level content

Example: *wk3example7.html*

```
<img src="..." class="mx-auto d-block" height="auto">
```

Table

In Bootstrap, table styling is opt-in

i.e., you have to add .table class in the table tag to use Bootstrap's styling

Example: *wk3example8.html*

- Use .table-dark class to produce the dark colored theme
- Use .table-borderless class to remove the borders
- Use .table-sm class to make the table more compact
- Use <caption> tag to caption the table

Buttons

- Bootstrap includes several predefined button styles, each serving its own semantic purpose
- Use .btn-group to create Button toolbar horizontally or vertically
- The .btn classes can also be used with <a> or <input> elements

Example

wk3example9.html

Exercise 3

Given ex3.html, search bootstrap documentation, and create a group of buttons arranged vertically - with your reasonable guess without Google first :-)
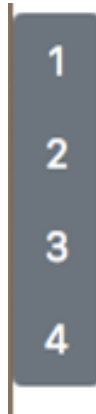
Dropdown

To create dropdowns, wrap the dropdown's toggle (button or link) and the dropdown menu within .dropdown

Use .dropdown-toggle and data-toggle="dropdown" attribute to link the toggle to the .dropdown-menu

(so that it is there once clicked; and it is not there once clicked again)

Examples

wk3example10.html

Collapse

Collapse class indicates a collapsible element (the content that will be shown or hidden with a click of a button).

To control (show/hide) the collapsible content, add the data-toggle="collapse" attribute to an <a> or a <button> element.

Then add the target="#id" attribute to link.

https://getbootstrap.com/docs/5.1/components/collapse/

Examples

wk3example11.html

Card

Bootstrap provides a ready-to-use card that can contain image and text

https://getbootstrap.com/docs/5.1/components/card/

Examples

wk3example12.html
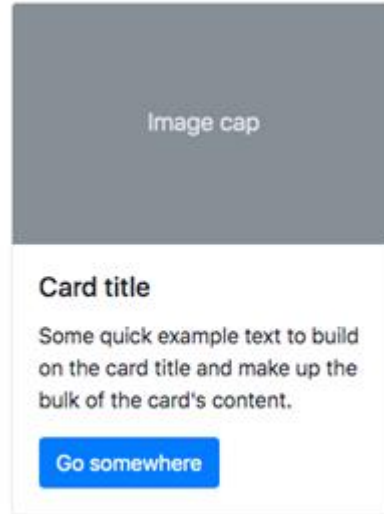
Carousel

The carousel is a slideshow for cycling through a series of content, 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.

https://getbootstrap.com/docs/5.1/components/carousel/

Examples

wk3example13.html
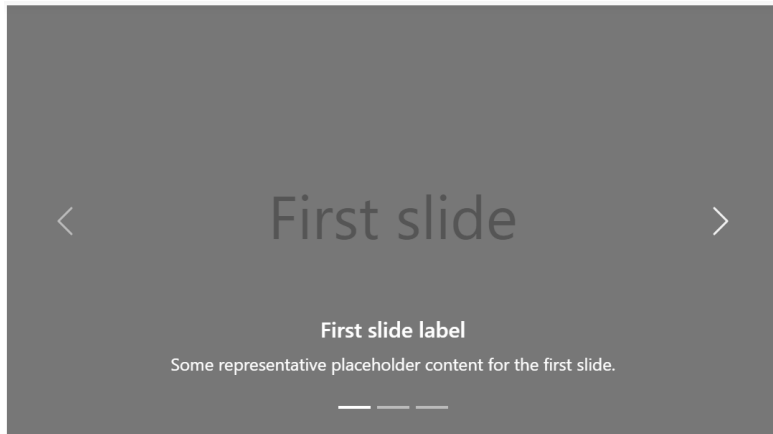
Carousel: Cont'd

- The .active class needs to be added to one of the slides otherwise the carousel will not be visible.
- set a unique id on the .carousel for optional controls
- Control and indicator elements must have a data-target attribute (or href for links) that matches the id of the .carousel element.
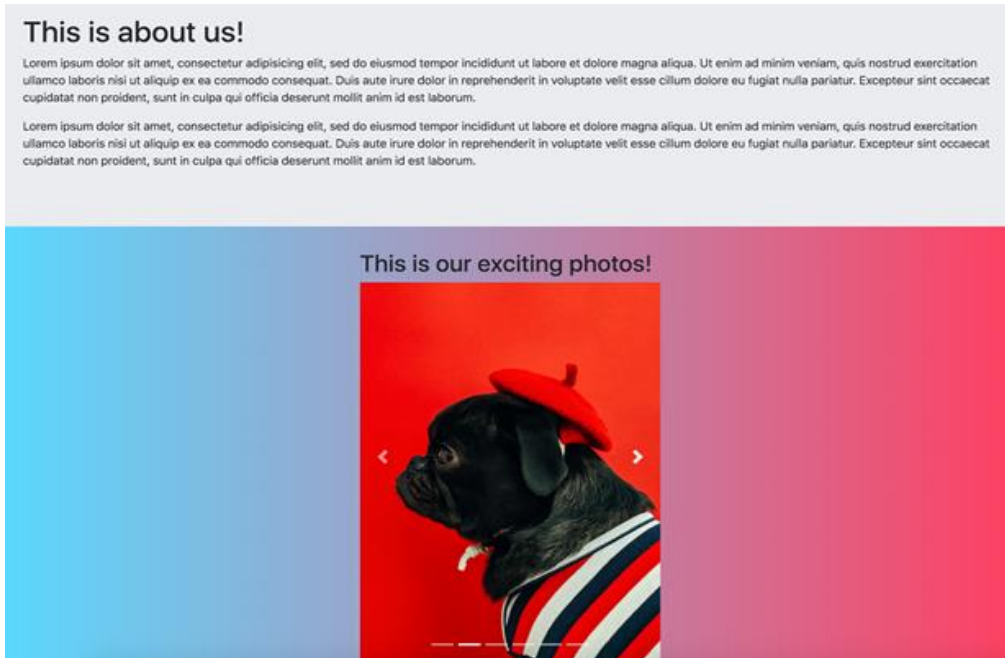
Examples

wk3example13.html
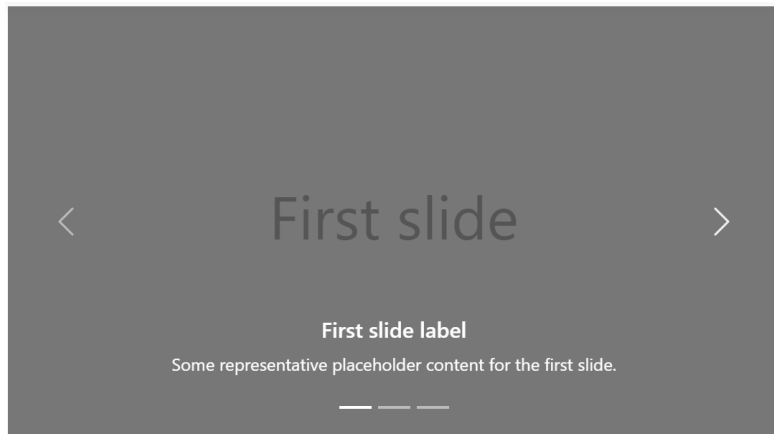
Exercise 4

Add code in ex4-about.html to create a web page that looks like this.

Hint: for the top part, consider jumbotron (*wk3example14.html*)

NOTE: jumbotron is no longer supported in Bootstrap 5.x.
wk3example14.html uses Bootstrap 4.1 (for demo purposes).

Hint: consider carousel.

Form

Bootstrap provides various form control styles, layout options, and custom components for creating forms.

Use appropriate type attribute on all inputs to take advantage of newer input controls like email verification and number selection.

https://getbootstrap.com/docs/5.1/forms/overview/

Example

wk3example15.html

Exercise 5

Add code in ex5-signup.html to create a sign up form that looks like this.

Hint: form-group

Sign Up

Please provide your name, email, and password!

Name

Name

Email address

Email

Password

Password

Confirm Password

Confirm Password

Submit

Navs

Bootstrap provides ready-to-use, flexible, well-styled navigation links and bars.

https://getbootstrap.com/docs/5.1/components/navs/

Home   Log In   Log Out

Example: *wk3example16.html*

```
<ul class="nav">
   <li class="nav-item">
     <a class="nav-link" href="/home.php">Home</a>
   </li>
   <li class="nav-item">
     <a class="nav-link" href="/login.php">Log In</a>
   </li>
   <li class="nav-item">
     <a class="nav-link" href="/logout.php">Log Out</a>
   </li>
</ul>
```
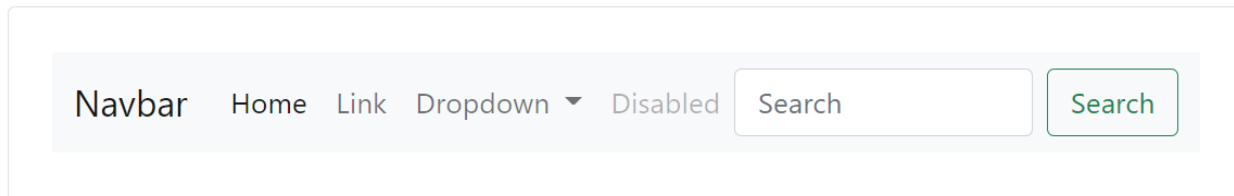
NavBar

Bootstrap's powerful, responsive navigation header, the navbar.

https://getbootstrap.com/docs/5.1/components/navbar/

Example: *wk3example17.html*

Extra: Accessible Rich Internet Applications Suite

https://www.w3.org/TR/wai-aria/

- WAI-ARIA is a spec defining support for making web content more accessible to people with disabilities.
- It defines bunch of markup extensions (mostly as attributes on HTML5 elements), which can be used by the web app developer to provide additional information about the semantics of the various elements to assistive technologies like screen readers.
- Browser interprets the ARIA markup with best effort, but the spec is created in such a way that ignoring the ARIA-specific markup will not affect the web app's functionality.
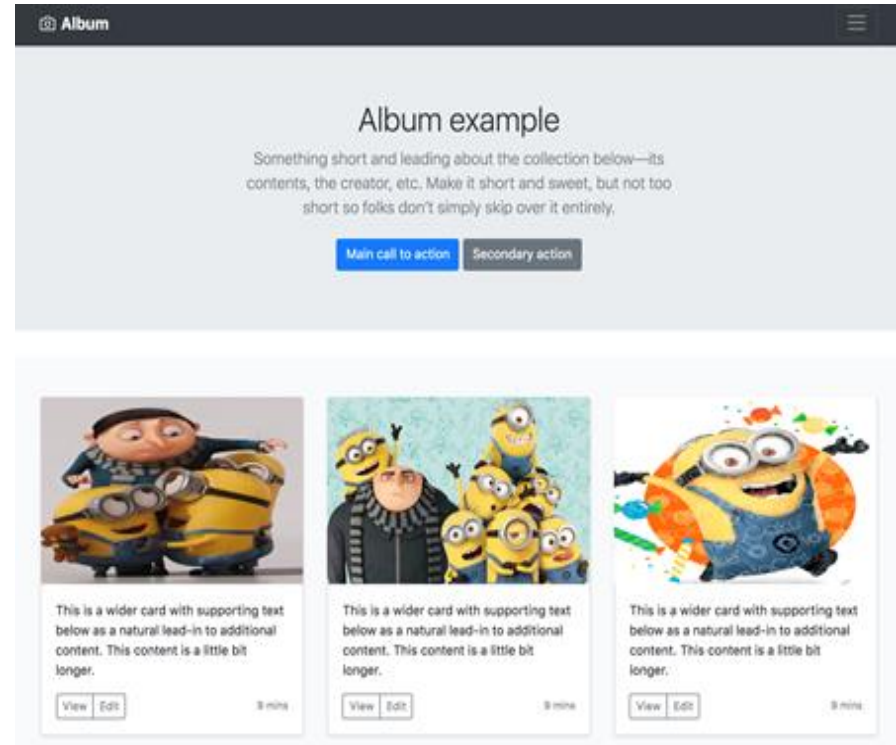
Bootstrap Templates

- Go to: https://getbootstrap.com/docs/5.1/examples/
- Download examples (bootstrap-5.1.0-examples.zip)
- Unzip the folder
- Customize bootstrap examples
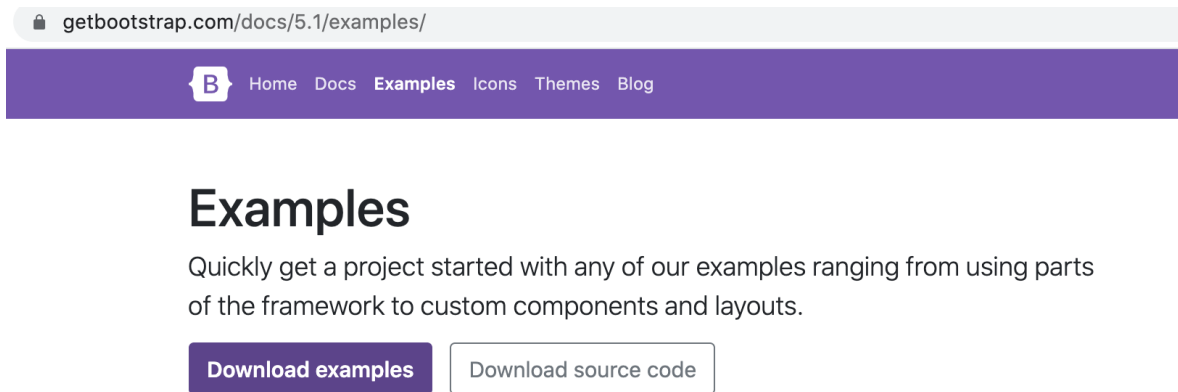
Exercise 6: Album

- Unzip the folder
- Go to
  https://getbootstrap.com/docs/5.1/examples/album/
- Copy the sample album code into ex6 folder and create your own album page

Take Away Messages

- Bootstrap pre-defines many classes.
- Use the grid system to have a responsive layout.