

# CS 416

## Homework 2

### 1. Objectives

The purpose of this assignment is to get you familiar with responsive web development and improve your skills in the areas below:

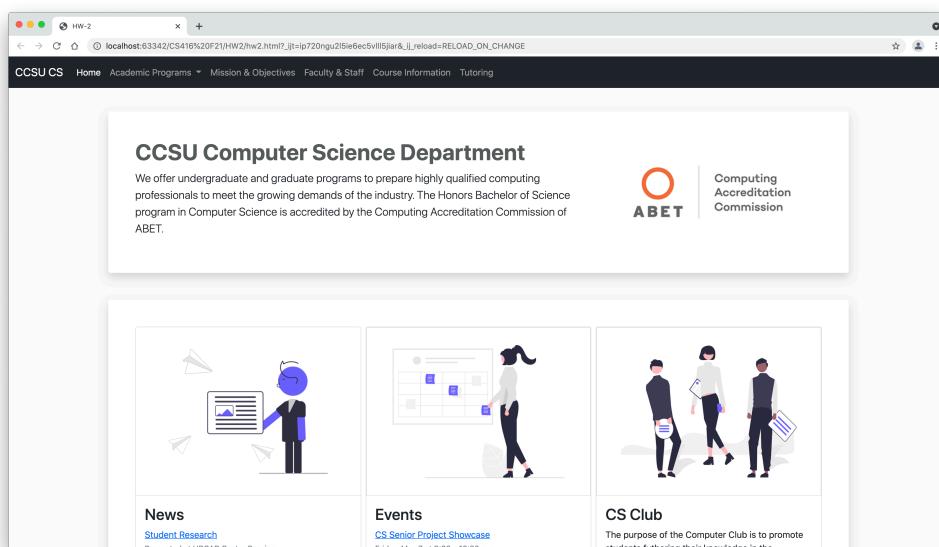
- Creating a web page using HTML, and CSS
- Using Bootstrap
- Making a web page that is responsive for various screen sizes

### 2. What to do?

In this assignment, you are given several screenshots and a description of a particular web page to replicate. Using **Bootstrap**, you will recreate this web page exactly as shown in the provided screenshots and video below. In particular, you will create an HTML file named **index.html** that can be used as a home page for our CS department. You will also create a CSS file named **styles.css** that contains the styles for this page. However, unlike HW-1, you will be utilizing Bootstrap CSS classes rather than implementing them yourself, so **styles.css** should contain very few CSS rules.

#### 2.1 Overall appearance

The image below shows a miniature screenshot of the website you need to recreate in this homework. Two full-size screenshots of the entire page (one for a large screen and one for a small screen) are attached with this assignment on Blackboard. You can also watch a video showing the look and behavior of this page.



### 2.1.1 Content of the page

The content of the web page has been adapted from our department page. The text of the web page is in **content.txt**, which is attached with this assignment. Thus, you **do not need to type in all of the text** of this web page. You can copy and paste the text in **content.txt** into your text editor to create this page, and then add the necessary HTML tags, and necessary CSS styles using Bootstrap classes. The images are also attached with this assignment on Blackboard and can be found in **images/** directory.

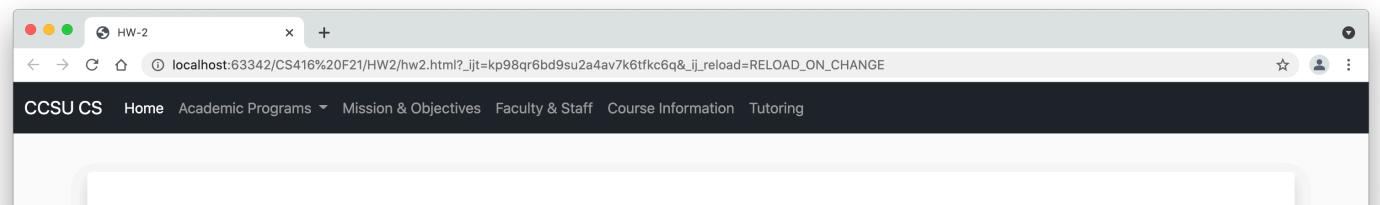
## 2.2 Requirements and Appearance Details

### Overall page:

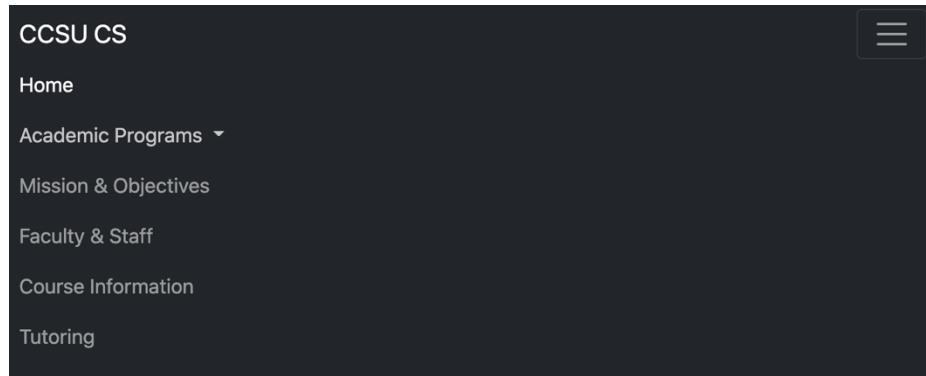
- The page's **body** should have a background-color of **#fafafa**.
- All the images must scale such that they are larger on a wide screen, and shrink to be narrow enough to fit small screen.
  - Hint: You can use **.img-fluid** class to implement this. See the link below for more information.
    - <https://getbootstrap.com/docs/5.1/content/images/#responsive-images>
- The background-color of each section is white. Each section should also have some space from top and bottom.
  - Hint: White background can be added using **bg-white**, and you can use **my-#** (replace **#** with a number from 0 to 5) to add margin to both top and bottom (see the links)
    - <https://getbootstrap.com/docs/5.1/utilities/background/#background-color>
    - <https://getbootstrap.com/docs/5.1/utilities/spacing/#margin-and-padding>

### Navigation bar

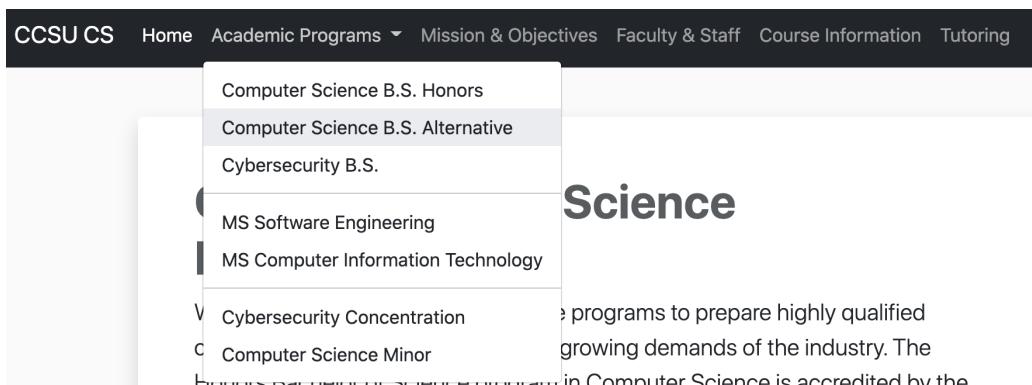
- The page must have a top navigation bar that has a dark background, and the text should be white for active elements. The navigation bar should always be visible. This is referred as “**fixed top**” navigation bar.
  - Hint-1: This can be achieved using dark background color (i.e., **bg-dark**) and dark navbar classes (**navbar-dark**)
  - Hint-2: You can implement this by adding **fixed-top** class to your navbar as shown below
    - <https://getbootstrap.com/docs/5.1/components/navbar/#placement>



- The top navbar must be collapsible when the screen is small as shown below (do not delete JavaScript code at the end of the starter template if you want this button to work as expected).



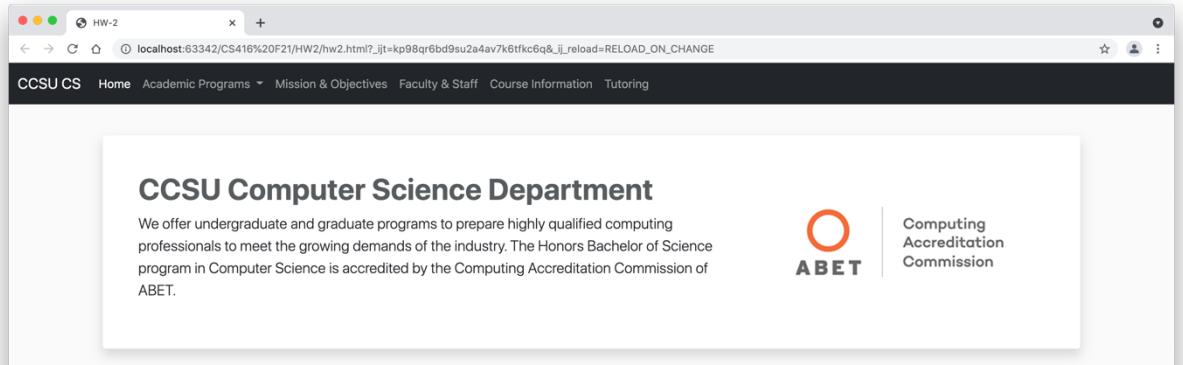
- The top navbar should have 6 items in which Academic Programs should be drop-down with 7 items as shown below.
  - Make sure to use `dropdown-divider` to separate the items as shown below.



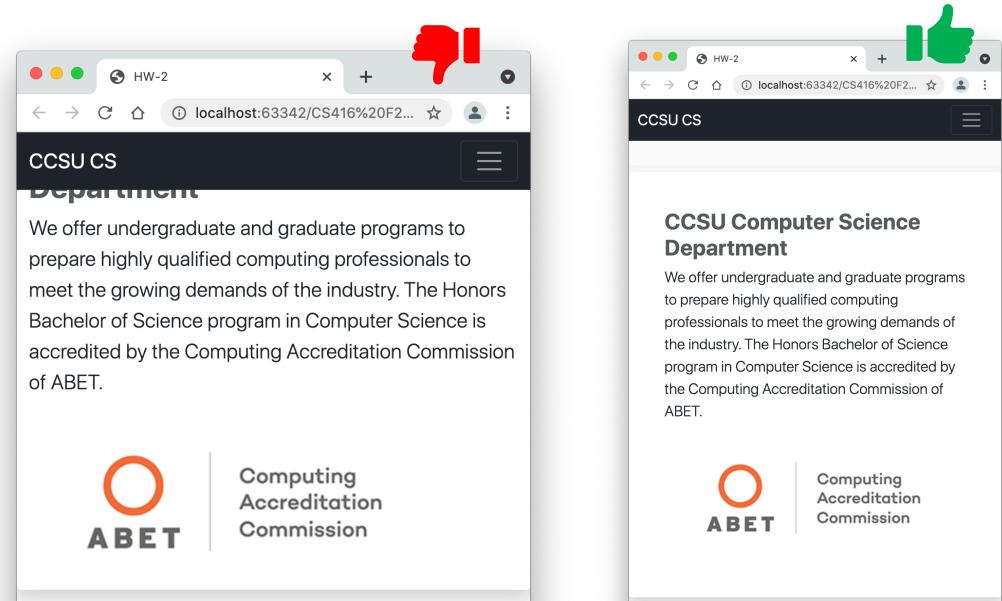
### CCSU Computer Science Department Section

- For this section, you can use the Bootstrap's Grid System. In particular, the section can have a row containing two columns. The first column should contain a heading, and paragraph. The second column should contain an image (the link is provided in content file) as shown below. The columns should be centered vertically. The width of the first section should be twice the width of the second section. When the screen size is smaller than the large screen size, these columns must stack on top of each other rather than going side by side.
  - Hint-1: You can take a look at the usage of different break points in grid system at the link below:
    - <https://getbootstrap.com/docs/5.1/layout/grid/#grid-options>
  - Hint-2: See the link to learn more about vertical alignment of columns in row
    - <https://getbootstrap.com/docs/5.1/layout/columns/#vertical-alignment>
- The section should have a rounded border and shadow.
  - Hint: You can take a look at the usage of borders and shadow classes at the links below:
    - <https://getbootstrap.com/docs/5.1/utilities/borders/>
    - <https://getbootstrap.com/docs/5.1/utilities/shadows/>

- For the heading (e.g., h1), you can use `fw-bold text-dark text-opacity-75`, that gives the text bold, dark color with 75% opacity
- For the paragraph, you can use `.lead` class to make it stand out.



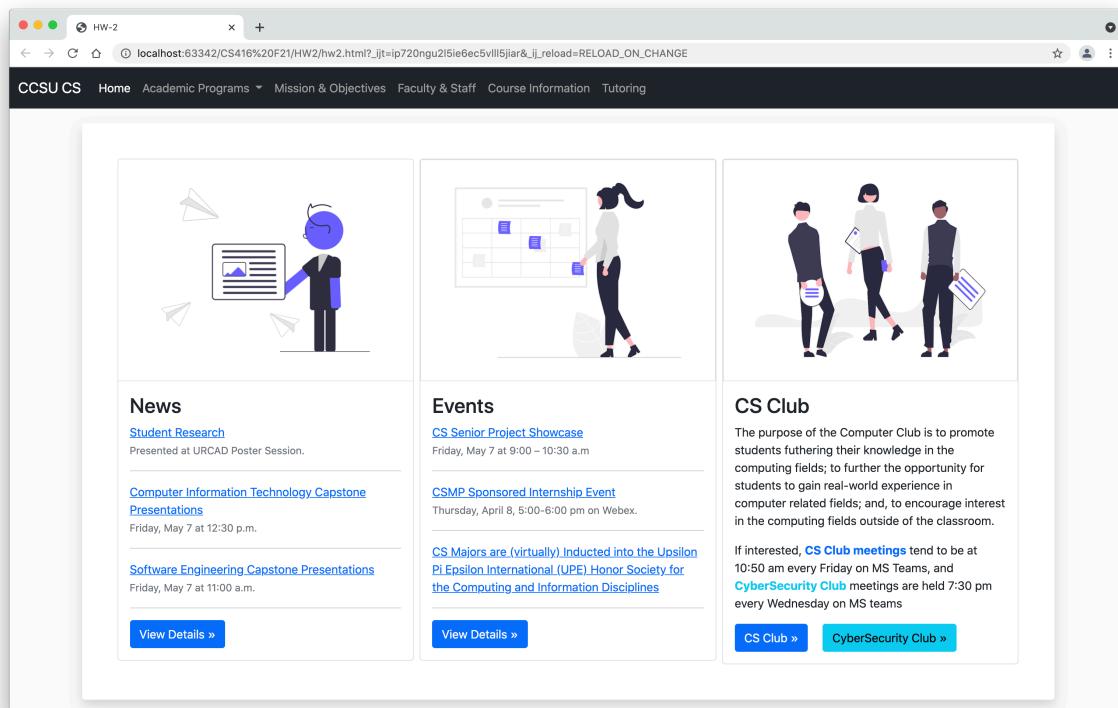
- The screenshot on the left shows a potential problem you might encounter for small screens. To avoid this, make sure add padding and margin for this section. Additionally, you might need to add padding to top of the body to get a little bit room after the navbar.



## News, Events, CS Club Section

- For this section, you can use Bootstrap's cards along with the Grid System. In particular, the section should have a row containing three columns. Each of these columns contains a card with image, title, text and button (a link shown as button). Each column should have the same width. When the screen size is smaller than the large screen size, these columns must stack on top of each other rather than going side by side.

- Hint: The following link provides an example how a card can be used. Note that the example uses style="width: 18rem;", which is not necessary for our page.
    - <https://getbootstrap.com/docs/5.1/components/card/#example>
- The text under “News” and “Events” sections should be link along with smaller text underneath.
  - You do not have to provide actual links, # as a placeholder would be acceptable for this.
- For the small text under links, you can use `<small>` tag with `text-muted` class to make it small and gray color. Also, to make the text closer to the associated link, you can use negative margin such as `mb-0`
- The text “View Details” should be a link displayed as button.
  - Hint: To show a link as a button, you can use `.btn btn-primary` class for this a tag. Also, the right-angle quote after View Details” can be shown using &raquo;
- In the CS Club part, the words “CS Club meetings” and “CyberSecurity Club” should be given primary (blue) and info (light-blue) classes. The same applies to corresponding buttons.
  - <https://getbootstrap.com/docs/5.1/utilities/colors/#colors>
- You can also use “Gutters” to have small gaps between column content (e.g., `g-2` given to row)

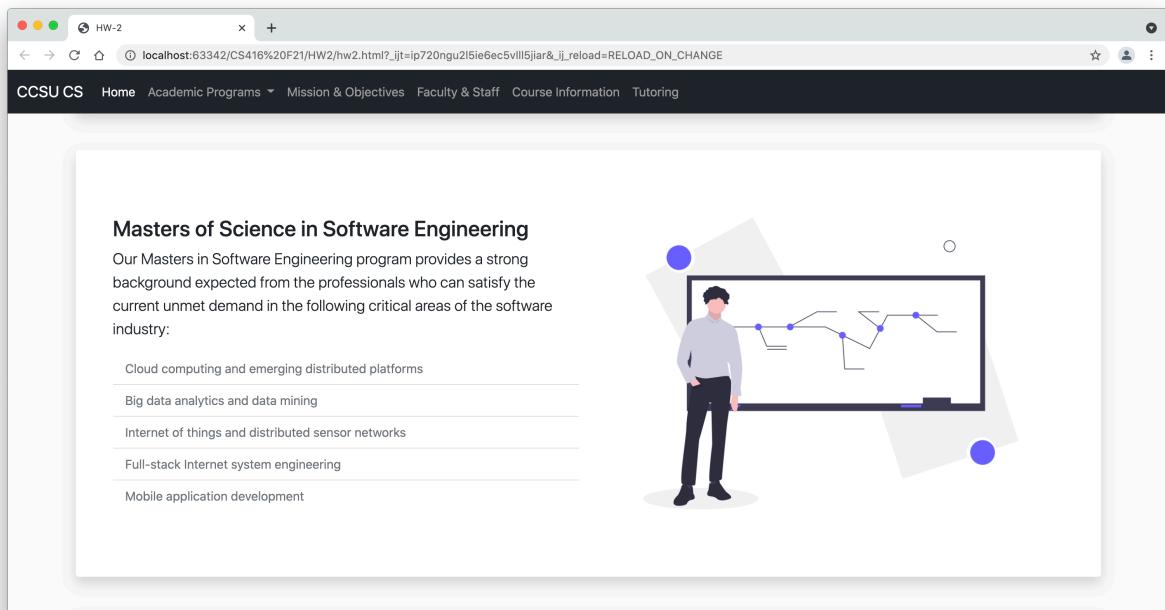


## Masters of Science in Software Engineering

- This section should have a row containing two columns. The first column should contain a heading, paragraph and a list with 5 items. The second column should contain an image as shown below. The columns should be vertically centered. The width of the first section should

be same as the second section. When the screen size is smaller than the large screen size, these columns must stack on top of each other rather than going side by side.

- Hint: You can use `.list-group` and `.list-group-flush` classes to remove some borders and rounded corners to render list group items edge-to-edge (see the link below for more information).
  - <https://getbootstrap.com/docs/5.1/components/list-group/#flush>
- For list items, `.text-secondary` class can be used for gray color
- For the paragraph, you can use `.lead` class to make it stand out.



## Cybersecurity Concentration

- This section should have a row containing two columns. The first column should contain an image as shown below. The second column should contain a heading, and paragraph. The columns should be vertically centered. The width of the first section should be same as the second section. When the screen size is smaller than the large screen size, these columns must stack on top of each other rather than going side by side.
- For the paragraph, you can use `.lead` class to make it stand out.

## Scholarships for Computer Science majors

- Same as Masters of Science in Software Engineering. Also, add two links for “CSMP Scholarship Program” and “AGILE Scholarship Program” part of the text.

**Cybersecurity Concentration**

Cybersecurity concentration prepares students with advanced skills and in depth knowledge for defending and developing secure software systems. This optional concentration is available to all students in our Computer Science Honors and Alternative B.S. programs. Having this concentration listed on the transcript will ensure employers that the graduates have knowledge of a wide range of computer science security issues.

**Scholarships for Computer Science majors**

CCSU Computer Science department has two programs that provide financial support for academically talented students with demonstrated financial need:

1. [CSMP Scholarship Program](#) supports full-time students in BS Computer Science Honors and BS Computer Science Alternative programs. Students can receive up to \$10,000 per year for up to four years. This program also offers peer and faculty mentoring services, research and internship opportunities, field trips and guest lectures.
2. [AGILE Scholarship Program](#) serves students in MS Software Engineering program who are enrolled on at least half-time basis. Students can receive up to \$10,000 per year for up to three years, plus one more year to complete any pre-requisite coursework. This program provides students with industry-backed experiences; it also offers faculty and peer mentoring, as well as childcare support to qualified students.

## Footer:

- For the footer, you can use the Bootstrap Grid System as well. In particular, this section should have a row containing two columns: the left side taking 4, the right side taking 8 columns. The footer should collapse to a single column when the window is smaller than a large screen size.
- A horizontal rule can be used to separate this section from the previous one
- For large text Contact, you can use `.display-4` class
- The person names must be clickable link.
  - Hint: You can use an unordered list with `.list-unstyled` class to remove bullet points

- There should be a phone icon for phone numbers, and a pin icon for location. The color of phone icon must be green (e.g., text-success) and pin icon must be red (e.g., text-danger).
  - Hint: You can get the icons from the following link by searching phone (e.g., telephone -fill) and location (e.g., geo-alt-fill) in the search bar (see lecture-4 slides to learn how to use bootstrap images).
    - <https://icons.getbootstrap.com/>

The screenshot shows a web browser window titled "HW-2" displaying a page from "CCSU CS". The page content is as follows:

## Scholarships for Computer Science majors

CCSU Computer Science department has two programs that provide financial support for academically talented students with demonstrated financial need:

1. [CSMP Scholarship Program](#) supports full-time students in BS Computer Science Honors and BS Computer Science Alternative programs. Students can receive up to \$10,000 per year for up to four years. This program also offers peer and faculty mentoring services, research and internship opportunities, field trips and guest lectures.
2. [AGILE Scholarship Program](#) serves students in MS Software Engineering program who are enrolled on at least half-time basis. Students can receive up to \$10,000 per year for up to three years, plus one more year to complete any pre-requisite coursework. This program provides students with industry-backed experiences; it also offers faculty and peer mentoring, as well as childcare support to qualified students.

**Contact**

**Chad Williams**  
Professor, Department Chair  
📞 (860) 832-2719

**Neva Deutsch**  
Administrative Assistant  
📞 (860) 832-2710

**Location**📍  
Maria Sanford Hall, 303

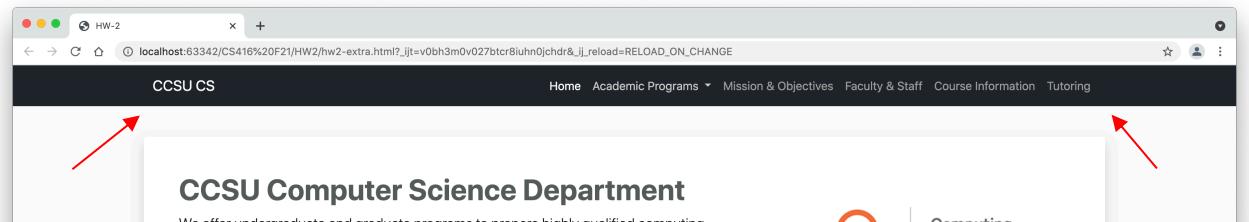
- Overall, your page should be responsive and viewable from a mobile device (see the screenshots and video on Blackboard to see behavior of the page for small screens).

Please note that though the specifications above can be helpful, they may not cover all the details. Thus, you should design your page in accordance to the given full-size screenshots and the video on Blackboard.

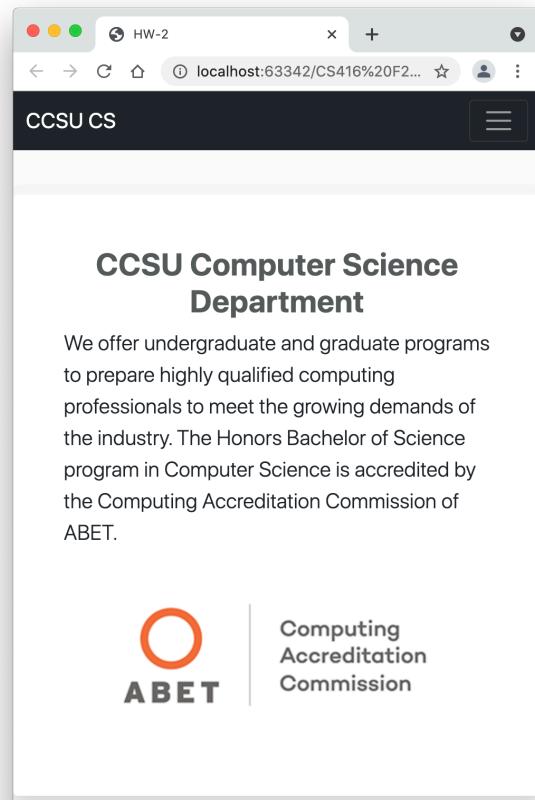
## Extra Credit (OPTIONAL)

Up to **11** bonus points will be given if you complete the additional tasks below.

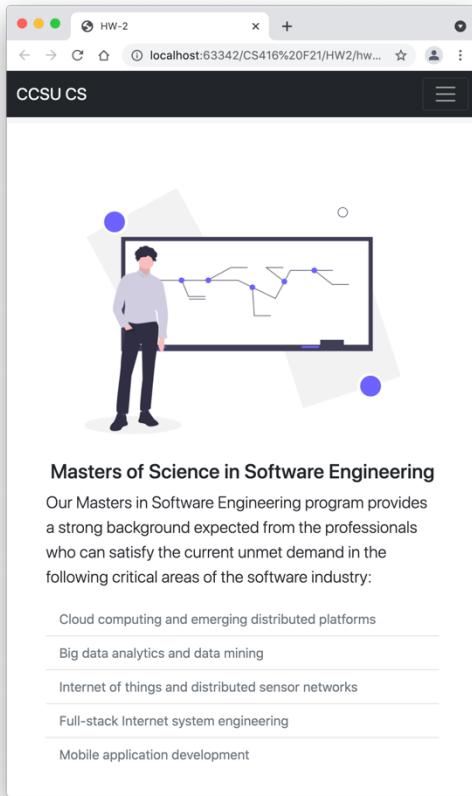
- **Navbar (2 points):**
  - Items in the navbar should be aligned to the right, and the navbar should be centered on the page as shown below.



- CCSU Computer Science Department Section (1 point):
  - The title in this section should be centered when the screen size is small, and anything above a small screen size the title should be aligned to the left.
    - Hint: You can take a look at the usage of responsive text alignment classes at the link below:
      - <https://getbootstrap.com/docs/5.1/utilities/text/#text-alignment>



- Master of Science Section (**3 points**):
  - The title in this section should be centered when the screen size is small, and anything above a small screen size the title should be aligned to the left.
  - When the screen size is smaller than a large screen size, the image should be shown at the top and followed by the content (i.e., change the order of your columns) as shown below.
    - Hint: You can take a look at the usage of responsive order classes at the link below:
    - <https://getbootstrap.com/docs/5.1/layout/columns/#order-classes>



- Cybersecurity Concentration Section (**1 point**):
  - The title in this section should be centered when the screen size is small, and anything above a small screen size the title should be aligned to the left.
- Scholarship for Computer Science Major Section (**2 points**):
  - The title in this section should be centered when the screen size is small, and anything above a small screen size the title should be aligned to the left.
  - When the screen size is smaller than a large screen size, the image should be hidden (i.e., not shown).

- Hint: You can take a look at the usage of hiding element classes at the link below:
    - <https://getbootstrap.com/docs/5.1/utilities/display/#hiding-elements>
- Contact Section (2 points)
  - The last part in the contact section should have three icons for Facebook with blue color, Twitter with light blue, and Instagram with orange color. Each of these icons should be clickable and open the corresponding page. Also, they should have width and height of 32.
    - Hint: You can get the icons from the following link by searching the name of corresponding social media platform in the search bar (see lecture-4 slides to learn how to use bootstrap images):
      - <https://icons.getbootstrap.com/>
  - There should be also a small space between the social media icons and between the bottom of the page as shown below.

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**Location**   
Maria Sanford Hall, 303

### Assignment Checklist:

The following is a checklist that you should refer to before submitting your assignment. This will prevent you making mistakes that you would otherwise lose points.

- Make sure that the web page you submit includes the html, head, title, body, and **doctype** tags.
- Make sure that your HTML file is well formed, meaning all the html, head, title and body tags are opened must be closed. For example, if you have `<body>` tag, you must have `</body>`.
  - You should check your HTML code using "[Nu Html Checker](#)"

- [https://validator.w3.org/#validate\\_by\\_input](https://validator.w3.org/#validate_by_input)
- Try to avoid redundancy in your CSS as much as possible. You should not have too many redundant styles, if there are ways to use inheritance or special selectors to concisely define style rules. Points will be deducted if styles used for this page are too redundant.
- File names (e.g., html file, images, css file) should be all lower-case with no space to separate words, instead use `-` to separate words (e.g., recipe-styles.css).
- It is best practice to use relative file paths when describing location of image files. You can create an image directory, put images in this directory, and use a relative path as follows:
  - `` Good
  - `` Avoid
  - Using relative file path, as shown on the first example above, allows the link to work on your computer as well as on other computers (e.g., public domain).
- Make sure you follow the best HTML practices, which you can find under Lecture-2 on Blackboard.

## What to submit?

Submit a **single zip file** containing the following on Blackboard (please name this zip file with your first name and last name such as **John Smith HW2.zip**):

- The HTML file (**index.html**) and CSS file (**styles.css**) along with the image files.
- 3 screenshots (in PNG, JPG, JPEG or PDF format) showing your web page in your web browser for each of 3 different screen sizes (desktop size display, medium size display, and small size display). You can use **Firefox** or **Chrome** to take a screenshot of full page (see the tutorial under “Tutorial” section on Blackboard)).
- Fill out the attached self-evaluation form and submit it along with the rest of the files

If for some reason you are still not able to submit your files, email your files to me before the deadline. Please attach your files to this email.

## Getting help

Start your assignment early. If you need help, send an email to me or make an online appointment with me during my office hours.