

**Lab # 06**

**Web Engineering  
Fall 2020**

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| Semester | 8th |

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| **Lesson Set 6** | **Introduction to Bootstraps** | | | |
| **Purpose** | 1. To get basic awareness of bootstraps 2. To understand why we are using it. 3. To learn and create a sample web page with Bootstrap | | | |
| **Procedure** | 1. Students should read the Pre-lab Reading assignment before coming to lab. 2. Students should complete the Pre-lab Writing assignment before coming to lab. 3. In the lab, students should complete Labs 6.1 through 6.4 in sequence. Your instructor will give further instructions as to grading and completion of the lab. 4. Students should complete the set of lab tasks before the next lab and get them checked by their lab instructor. | | | |
|  | **Contents** | **Pre-requisites** | **Completion Time** | **Page Number** |
|  | Pre-lab Reading Assignment | - | 20 min | 3 |
|  | Pre-lab Writing Assignment | Pre-lab Reading | 10 min | 4 |
|  | **Lab 6** | | | |
|  | **Lab 6.1**  Bootstraps | Pre-lab reading | 30 min | 5 |
|  | **Lab 6.2**  Lab Tasks | Awareness with HTML and CSS | - | 9 |

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| **PRE-LAB READING ASSIGNMENT** | |
| **What is Bootstrap** | Bootstrap is a popular open-source framework for building responsive and mobile-first websites. It provides a collection of CSS and JavaScript components that can be used to quickly design and customize the layout and appearance of a website.  To use Bootstrap, you need to include the Bootstrap CSS and JavaScript files in your HTML code. You can either download the Bootstrap files and host them on your server, or you can include them from a Content Delivery Network (CDN).  Here's an example of how to use Bootstrap in your HTML code:  *<!DOCTYPE html>*  *<html>*  *<head>*  *<title>Bootstrap Example</title>*  *<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@5.8.0/dist/css/bootstrap.min.css">*  *</head>*  *<body>*    *<div class="container">*  *<h1>Welcome to My Website</h1>*  *<p>This is an example of using Bootstrap.</p>*  *<button class="btn btn-primary">Click me</button>*  *</div>*    *<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.8.0/dist/js/bootstrap.bundle.min.js"></script>*  *</body>*  *</html>*  In the example above, the Bootstrap CSS file is included in the <head> section using a CDN link. The Bootstrap JavaScript file is included at the bottom of the <body> section.  Within the HTML code, Bootstrap classes are used to style elements. For example, the <div> element with the class "container" applies a responsive container layout to its contents. The <h1> and <p> elements use the default Bootstrap styles for headings and paragraphs. The <button> element has the "btn" and "btn-primary" classes, which style it as a primary button.  By leveraging Bootstrap's classes and components, you can quickly create responsive and visually appealing websites without having to write custom CSS styles from scratch. |
| **Advantages of Bootstrap:** | 1. Responsive Design: Bootstrap is built with responsive design principles in mind, making it easy to create websites that adapt to different screen sizes and devices. 2. Cross-Browser Compatibility: Bootstrap is designed to be compatible with all modern browsers, ensuring consistent rendering and functionality across different platforms. 3. Pre-styled Components: Bootstrap provides a wide range of pre-styled components like buttons, forms, navigation menus, and more, saving development time and effort. 4. Grid System: Bootstrap's grid system allows for easy creation of responsive layouts with a customizable column structure. 5. Customization: Bootstrap can be easily customized to match the design requirements of your project, allowing you to override default styles and add your own CSS. |
| **Disadvantages of Bootstrap:** | 1. Learning Curve: While Bootstrap offers a lot of features and components, it also comes with a learning curve. It may take some time to familiarize yourself with the framework and its documentation. 2. Generic Look: As Bootstrap is widely used, websites built with Bootstrap can have a similar appearance, which may lack uniqueness or originality unless customized extensively. 3. Bloated Code: Bootstrap comes with a large CSS and JavaScript file size, which can affect page load times if not optimized properly. Unused components and styles may add unnecessary overhead to your project. 4. Limitations on Customization: While Bootstrap allows for customization, making extensive changes to its core styles and functionality can be challenging. Deep customization may require overriding default styles or modifying the framework's source code. 5. Dependency on Third-Party Code: By using Bootstrap, you are relying on a third-party framework, which means any updates, bug fixes, or changes to the framework may impact your website. It's important to stay updated with Bootstrap releases and handle version compatibility.   Ultimately, the decision to use Bootstrap depends on your specific project requirements and trade-offs between ease of development, design flexibility, and performance considerations. It can be a powerful tool for rapid prototyping or building basic websites, but for more complex and unique designs, you may need to consider a more tailored approach. |
| **Grid System** | Bootstrap provides a responsive grid system that helps in creating responsive layouts for web pages. The grid system in Bootstrap is based on a 12-column layout, allowing you to divide the page width into multiple columns. Here's an example of how to use the grid system in Bootstrap:  *<!DOCTYPE html>*  *<html>*  *<head>*  *<meta charset="UTF-8">*  *<title>Bootstrap Grid Example</title>*  *<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">*  *</head>*  *<body>*  *<div class="container">*  *<div class="row">*  *<div class="col-sm-6">*  *<div class="card">*  *<div class="card-body">*  *<h5 class="card-title">Column 1</h5>*  *<p class="card-text">This is the content of column 1.</p>*  *</div>*  *</div>*  *</div>*  *<div class="col-sm-6">*  *<div class="card">*  *<div class="card-body">*  *<h5 class="card-title">Column 2</h5>*  *<p class="card-text">This is the content of column 2.</p>*  *</div>*  *</div>*  *</div>*  *</div>*  *</div>*  *</body>*  *</html>*  In the above example, we have a container with a row class that contains two columns, each with a col-sm-6 class. This means the columns will take up 6 columns out of the available 12 columns, making them occupy half of the container width on small and larger screens.  By adjusting the class names and sizes, you can create different layouts using the Bootstrap grid system. For example, you can use col-sm-4 to create three equal-width columns, col-md-8 to make a column wider on medium-sized screens, or col-lg-3 to create four columns on large screens.  Remember to include the Bootstrap CSS file in your HTML document by adding the link tag **<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">**. This ensures that the necessary styles for the grid system and other Bootstrap components are applied to your page.  By using the Bootstrap grid system, you can create responsive and flexible layouts that adapt to different screen sizes and devices, making it easier to build responsive websites. |

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| **PRELAB WRITING ASSIGNMENT** | |
| **Fill in the blanks** | 1. Bootstrap is a popular front-end framework for building responsive and mobile-first websites. 2. It provides a set of pre-built and reusable components that can be easily customized and used in web development. 3. The grid system in Bootstrap allows you to create responsive layouts by dividing the page into 12 equal-width columns. 4. Bootstrap utilizes utility classes to apply predefined styles and behaviors to HTML elements. 5. Bootstrap is based on HTML and JavaScript programming languages and includes both CSS and JavaScript components. |

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| **Lab 6.2** | **Lab Tasks** |

**Description:**

Your task is to create a responsive portfolio web page using Bootstrap. The web page should showcase your skills, projects, and contact information. It should be visually appealing and work well on different screen sizes.

**Requirements:**

1. Use Bootstrap to create a responsive layout for your web page.
2. Include a navigation bar with links to different sections of the page (e.g., Home, About, Projects, Contact).
3. Create a section to showcase your skills. Use Bootstrap's grid system to display your skills in a visually appealing way.
4. Design a section to showcase your projects. Use Bootstrap's card component to display project details, including project name, description, and an image.
5. Add a contact form to collect user information. Use Bootstrap's form components to create the form fields (e.g., name, email, message).
6. Make sure the web page is visually appealing by applying Bootstrap's predefined styles and components.
7. Ensure that the web page is fully responsive and looks good on different devices and screen sizes.

**Hints:**

* Use Bootstrap's documentation (<https://getbootstrap.com/docs/>) to explore available components, classes, and utilities.
* Make use of Bootstrap's grid system to create a responsive layout.
* Customize the styles by modifying Bootstrap's CSS classes or adding your own CSS rules.

**Additional Challenge (optional):**

* Implement a responsive image gallery using Bootstrap's carousel component to showcase your project screenshots or portfolio images.

