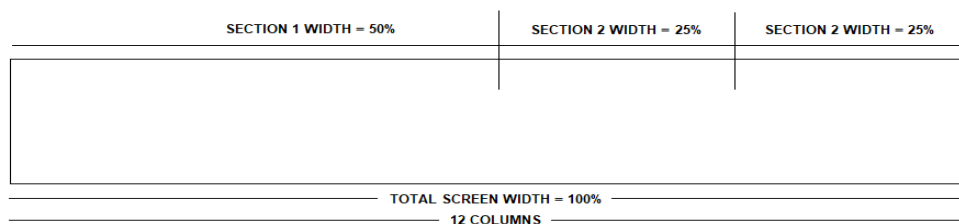# LAB # 6

Bootstrap and SASS

OBJECTIVE

To get familiar with Bootstrap and SASS to control the styling of web page.

THEORY

Bootstrap is a styling library which heavily focuses on mobile-first and responsiveness of the website. A mobile-first website focuses the mobile first and gradually takes care of the devices with more real estate available. Responsiveness means that the design works for all the devices and fits in nicely within design clutters. You can create a complete website theme using it as it provides out-of-the-box solutions for many of the design and styling issues. Bootstrap follows grid design pattern where the screen is divided into equal 12 columns. You can decide how much of the space a particular section can take by assigning as many columns to it as you want. For example, if the whole screen has three sections and you want to assign 50% to the first section and equal width to the last two remaining sections, you can assign 6 columns to first section and 3 columns to each remaining sections.
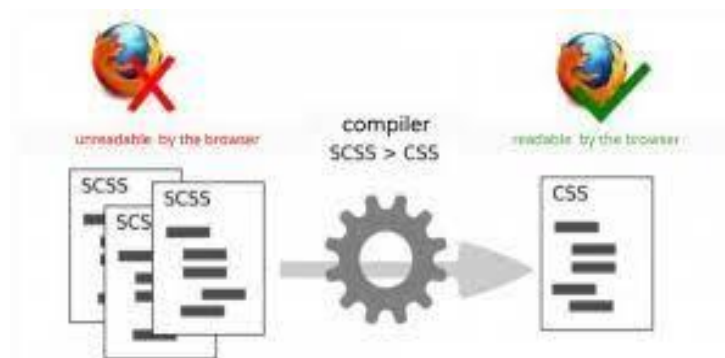

It provides you class names which can be used to consume certain width based on the device that the website is rendering on. There are classes for very small, small, medium, large and very large devices.

- *.col-* (extra small devices - screen width less than 576px)
- *.col-sm-* (small devices - screen width equal to or greater than 576px)
- *.col-md-* (medium devices - screen width equal to or greater than 768px)
- *.col-lg-* (large devices - screen width equal to or greater than 992px)
- *.col-xl-* (xlarge devices - screen width equal to or greater than 1200px)

SASS is a CSS preprocessor. It helps reduce the CSS code and provides many other features that make it much easier and takes less time to create a style. A preprocessor is something which performs some operations before the actual process kicks in. In our case, before CSS is generated, it is written in such a way that it requires to go through some preprocessing as it is not in native CSS code format. SASS provides its own syntax to write CSS and after going through transpilation (preprocessing), it emits the CSS which is then consumed in the real page.

SASS provides nesting CSS rules, variables declaration, functions, mixins, imports, and extends including other features. Nesting helps avoid the same selector again and again. Variable declaration helps use the same values wherever needed. Functions is a reusable functionality that can take in parameters as well. Imports allow you to write modular SASS files and import wherever needed promoting reusability. Extends allows a basic inheritance of the parent rules.

SASS Installation steps using NodeJS and how to pre-process the SASS file into CSS

1   Install *NodeJS*
2   Run following command: *npm install -g node-sass*
3   Create a folder *Lab3*/*Style*
4   Create a file input.scss inside the newly created folder
5   Paste below given SASS code into input.scss file

```
/*SASS Variables*/

$myFont: Helvetica, sans-serif;
$myColor: red;
$myFontSize: 18px;
$myWidth: 680px;

body {
  font-family: $myFont;
  font-size: $myFontSize;
```

```
  color: $myColor;
}

#container {
  width: $myWidth;
}
```

6   Goto CMD prompt (on Windows) into *Lab3/Style* folder
7   Run following command: *node-sass input.scss output.css*
8   Open the file *output.css* and it should have regular CSS code after preprocessing the *input.scss* file using node-sass package

Bootstrap – *Fixed Width Container*

Sample Program

```
<!DOCTYPE html>
<html>
      <head>
            <title>Lab#6 – Bootstrap and SASS</title>
            <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
            <meta name="viewport" content="width=device-width, initial-scale=1">
      </head>
      <body>
            <div class="container p-3 my-3 bg-primary text-white">
                  <div class="row">
                        <div class="col border border-primary">Row1 Col1</div>
                        <div class="col border border-warning">Row1 Col2</div>
                        <div class="col border border-secondary">Row1 Col3</div>
                        <div class="col border border-info">Row1 Col4</div>
                  </div>
                  <div class="row">
                        <div class="col">.col</div>
                        <div class="col">.col</div>
                        <div class="col">.col</div>
                        <div class="col">.col</div>
                  </div>
            </div>
      </body>
</html>
```

Output

This width of the container is fixed and responsive

| Row1 Col1 | Row1 Col2 | Row1 Col3 | Row1 Col4 |
| .col | .col | .col | .col |

Bootstrap – *Fluid Width Container*
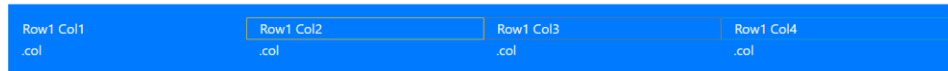
Sample Program

```
<!DOCTYPE html>
<html>
      <head>
             <title>Lab#6 – Bootstrap and SASS</title>
             <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
             <meta name="viewport" content="width=device-width, initial-scale=1">
      </head>
      <body>
             <div class="container-fluid p-3 my-3 bg-primary text-white">
                    <div class="row">
                           <div class="col border border-primary">Row1 Col1</div>
                           <div class="col border border-warning">Row1 Col2</div>
                           <div class="col border border-secondary">Row1 Col3</div>
                           <div class="col border border-info">Row1 Col4</div>
                    </div>
                    <div class="row">
                           <div class="col">.col</div>
                           <div class="col">.col</div>
                           <div class="col">.col</div>
                           <div class="col">.col</div>
                    </div>
             </div>
      </body>
</html>
```

Output

This width of the container is fluid (full page width) and responsive

| Row1 Col1 | Row1 Col2 | Row1 Col3 | Row1 Col4 |
| .col | .col | .col | .col |

Bootstrap – *Grid System*

Sample Program
```
<!DOCTYPE html>
<html>
       <head>
               <title>Lab#6 – Bootstrap and SASS</title>
               <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
               <meta name="viewport" content="width=device-width, initial-scale=1">
       </head>
       <body>
               <h1>Grid System</h1>
               <div class="container-fluid p-3 my-3 bg-primary text-white">
                       <div class="row">
                               <div class="col-sm-3">25% width - 3 columns</div>
                               <div class="col-sm-3">25% width - 3 columns</div>
                               <div class="col-sm-6">50% width - 6 columns</div>
                       </div>
               </div>
       </body>
</html>
```
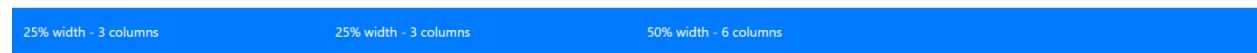
Output

Grid System

| 25% width - 3 columns | 25% width - 3 columns | 50% width - 6 columns |

Bootstrap – *Table Formatting*

Sample Program
```
<!DOCTYPE html>
<html>
       <head>
               <title>L lab#6 – Bootstrap and SASS</title>
               <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
               <meta name="viewport" content="width=device-width, initial-scale=1">
       </head>
       <body>
               <div class="container">
                       <h2>Bordered Table</h2>
                       <p>The .table-bordered class adds borders on all sides of the table and the
cells:</p>
                       <table class="table table-bordered">
```

```
                              <thead>
                                <tr>
                                        <th>AAA</th>
                                        <th>BBB</th>
                                        <th>CCC</th>
                                </tr>
                              </thead>
                              <tbody>
                                <tr>
                                        <td>BBB</td>
                                        <td>CCC</td>
                                        <td>DDD</td>
                                </tr>
                                <tr>
                                        <td>CCC</td>
                                        <td>DDD</td>
                                        <td>EEE</td>
                                </tr>
                                <tr>
                                        <td>DDD</td>
                                        <td>EEE</td>
                                        <td>FFF</td>
                                </tr>
                              </tbody>
                        </table>
                </div>
        </body>
</html>
```

Output

Bordered Table

The .table-bordered class adds borders on all sides of the table and the cells:

AAA	BBB	CCC
BBB	CCC	DDD
CCC	DDD	EEE
DDD	EEE	FFF

Bootstrap – *Typography, Colors, Images, Buttons and Form*

Sample Program

```
<!DOCTYPE html>
<html>
        <head>
                <title>Lab#6 – Bootstrap and SASS</title>
```

```
                <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
                <meta name="viewport" content="width=device-width, initial-scale=1">
        </head>
        <body>
                <div class="container-fluid">
                        <h2>Typography</h2>
                        <div class="row">
                                <div class="col-sm-6">
                                        <p class="font-weight-bold">Bold text.</p>
                                        <p class="font-weight-bolder">Bolder text.</p>
                                        <p class="font-weight-normal">Normal weight text.</p>
                                        <p class="font-weight-light">Light weight text.</p>
                                        <p class="font-weight-lighter">Lighter weight text.</p>
                                        <p class="font-italic">Italic text.</p>
                                </div>
                                <div class="col-sm-6">
                                        <p class="text-left">Left-aligned text.</p>
                                        <p class="text-right">Right-aligned text.</p>
                                        <p class="text-center">Center-aligned text.</p>
                                        <p class="text-justify">Justified text. Justified text.
Justified text. Justified text. Justified text. Justified text.</p>
                                        <p class="text-nowrap">No wrap text. No wrap text. No
wrap text. No wrap text.</p>
                                        <p><strong>Tip:</strong> Try to resize the browser
window to see the behaviour of justify and nowrap.</p>
                                </div>
                        </div>
                </div>
                <div class="container-fluid">
                        <h2>Colors</h2>
                        <div class="row">
                                <div class="col-sm-6">
                                        <p class="text-muted">This text is muted.</p>
                                        <p class="text-primary">This text is important.</p>
                                        <p class="text-success">This text indicates success.</p>
                                        <p class="text-info">This text represents some
information.</p>
                                        <p class="text-warning">This text represents a
warning.</p>
                                        <p class="text-danger">This text represents danger.</p>
                                        <p class="text-secondary">Secondary text.</p>
                                        <p class="text-dark">This text is dark grey.</p>
                                        <p class="text-body">Default body color (often
black).</p>
```

```
                                        <p class="text-light">This text is light grey (on white
background).</p>
                                        <p class="text-white">This text is white (on white
background).</p>
                        </div>
                        <div class="col-sm-6">
                                <p class="bg-primary text-white">This text is
important.</p>
                                <p class="bg-success text-white">This text indicates
success.</p>
                                <p class="bg-info text-white">This text represents some
information.</p>
                                <p class="bg-warning text-white">This text represents a
warning.</p>
                                <p class="bg-danger text-white">This text represents
danger.</p>
                                <p class="bg-secondary text-white">Secondary
background color.</p>
                                <p class="bg-dark text-white">Dark grey background
color.</p>
                                <p class="bg-light text-dark">Light grey background
color.</p>
                        </div>
                </div>
        </div>
        <div class="container-fluid">
                <h2>Images</h2>
                <div class="row">
                        <div class="col-sm-3">
                                <img src="assets/cinqueterre.jpg" class="rounded"
alt="Cinque Terre" width="304" height="236">
                        </div>
                        <div class="col-sm-3">
                                <img src="assets/cinqueterre.jpg" class="rounded-circle"
alt="Cinque Terre" width="304" height="236">
                        </div>
                        <div class="col-sm-3">
                                <img src="assets/cinqueterre.jpg" class="img-thumbnail"
alt="Cinque Terre" width="304" height="236">
                        </div>
                        <div class="col-sm-3">
                                <img src="assets/paris.jpg" class="float-left" alt="Paris"
width="304" height="236">
                                <img src="assets/paris.jpg" class="float-right" alt="Paris"
width="304" height="236">
                        </div>
```

```
                              </div>
                              <div class="row">
                                     <div class="col-sm-6">
                                            <img src="assets/paris.jpg" class="mx-auto d-block">
                                     </div>
                                     <div class="col-sm-6">
                                            <img class="img-fluid" src="assets/img_chania.jpg"
alt="Chania">
                                     </div>
                              </div>
                       </div>
                       <div class="container-fluid">
                              <h2>Buttons</h2>
                              <div class="row">
                                     <div class="col-sm-6">
                                            <button type="button" class="btn">Basic</button>
                                            <button type="button" class="btn btn-
primary">Primary</button>
                                            <button type="button" class="btn btn-
secondary">Secondary</button>
                                            <button type="button" class="btn btn-
success">Success</button>
                                            <button type="button" class="btn btn-info">Info</button>
                                            <button type="button" class="btn btn-
warning">Warning</button>
                                            <button type="button" class="btn btn-
danger">Danger</button>
                                            <button type="button" class="btn btn-
dark">Dark</button>
                                            <button type="button" class="btn btn-
light">Light</button>
                                            <button type="button" class="btn btn-link">Link</button>
                                     </div>
                                     <div class="col-sm-6">
                                            <button type="button" class="btn btn-primary
active">Active Primary</button>
                                            <button type="button" class="btn btn-primary"
disabled>Disabled Primary</button>
                                            <button type="button" class="btn btn-primary btn-
lg">Large</button>
                                            <button type="button" class="btn btn-
primary">Default</button>
                                            <button type="button" class="btn btn-primary btn-
sm">Small</button>

                                            <button class="btn btn-primary">
                                              <span class="spinner-border spinner-border-sm"></span>
```

```
                                        </button>

                                        <button class="btn btn-primary">
                                          <span class="spinner-border spinner-border-sm"></span>
                                          Loading..
                                        </button>

                                        <button class="btn btn-primary" disabled>
                                          <span class="spinner-border spinner-border-sm"></span>
                                          Loading..
                                        </button>

                                        <button class="btn btn-primary" disabled>
                                          <span class="spinner-grow spinner-grow-sm"></span>
                                          Loading..
                                        </button>
                                    </div>
                                </div>
                        </div>
                        <div class="container-fluid">
                                <h2>Forms</h2>
                                <div class="row">
                                        <div class="col-sm-6">
                                                <form action="/student_login.php">
                                                        <div class="form-group">
                                                          <label for="email">Email:</label>
                                                          <input type="email" class="form-control"
id="email" placeholder="Enter email" name="email">
                                                          </div>
                                                          <div class="form-group">
                                                          <label for="pwd">Password:</label>
                                                          <input type="password" class="form-control"
id="pwd" placeholder="Enter password" name="pswd">
                                                          </div>
                                                          <div class="form-group form-check">
                                                          <label class="form-check-label">
                                                                  <input class="form-check-input"
type="checkbox" name="remember"> Remember me
                                                          </label>
                                                          </div>
                                                          <button type="submit" class="btn btn-
primary">Submit</button>
                                                </form>
                                        </div>
                                        <div class="col-sm-6">
                                                <form class="form-inline" action="/student_login.php">
```
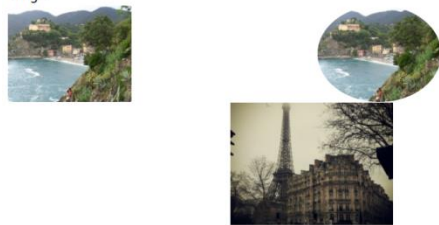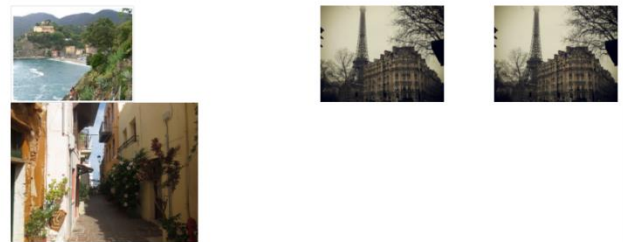
```
                                    <label for="email" class="mr-sm-2">Email
address:</label>
                                    <input type="email" class="form-control mb-2 mr-sm-2"
placeholder="Enter email" id="email">
                                    <label for="pwd" class="mr-sm-2">Password:</label>
                                    <input type="password" class="form-control mb-2 mr-
sm-2" placeholder="Enter password" id="pwd">
                                    <div class="form-check mb-2 mr-sm-2">
                                        <label class="form-check-label">
                                          <input class="form-check-input"
type="checkbox"> Remember me
                                        </label>
                                    </div>
                                    <button type="submit" class="btn btn-primary mb-
2">Submit</button>
                                </form>
                        </div>
                    </div>
                </div>
        </body>
</html>
```

Output

SASS – *Variables and Nested Rules*

```scss
/*SASS Variables*/

$myFont: Helvetica, sans-serif;
$myColor: red;
$myFontSize: 18px;
$myWidth: 680px;

body {
  font-family: $myFont;
  font-size: $myFontSize;
  color: $myColor;
}

#container {
  width: $myWidth;
}

/*SASS Nesting*/
nav {
  ul {
    margin: 0;
    padding: 0;
    list-style: none;
  }
  li {
    display: inline-block;
  }
  a {
    display: block;
    padding: 6px 12px;
    text-decoration: none;
  }
}
```

SASS – *Imports*

reset.scss (SASS)

```scss
html,
body,
ul,
ol {
  margin: 0;
```

```
  padding: 0;
}
```

standard.scss (SASS)

```
@import "reset";

body {
  font-family: Helvetica, sans-serif;
  font-size: 18px;
  color: red;
}
```

Lab Task

1   Bootstrap: Redesign the *Login Form* created in Lab#1 using Bootstrap
    a.   Add fixed-width container
    b.   Add rows for title, form, and buttons
    c.   Divide the row into three equal width columns
    d.   Center-align the form
    e.   Style the buttons and add colors
2   SASS: Redesign the *Student Profile* page with CSS emitted using SASS
    a.   Refactor the colors using variables
    b.   Nest the CSS rules to avoid repetition
    c.   Separate the colors, variables and reset rules into different files and import them into main SASS file.
    d.   Emit the CSS using SASS preprocessor and apply it

Home Task

1   Bootstrap: Redesign the *Student Registration Form* using Bootstrap
    a.   Add fluid full-width container
    b.   Add rows for title, form, and buttons
    c.   Divide the row into three equal width columns
    d.   Center-align the form
    e.   Style the buttons and add colors
2   SASS: Redesign the *Student Registration Form* page with CSS emitted using SASS
    a.   Refactor the colors using variables
    b.   Nest the CSS rules to avoid repetition
    c.   Separate the colors, variables and reset rules into different files and import them into main SASS file.
    d.   Create a mixin and use it
    e.   Extend the rules of a selector using extends keyword by utilizing existing class
    f.   Emit the CSS using SASS preprocessor and apply it