

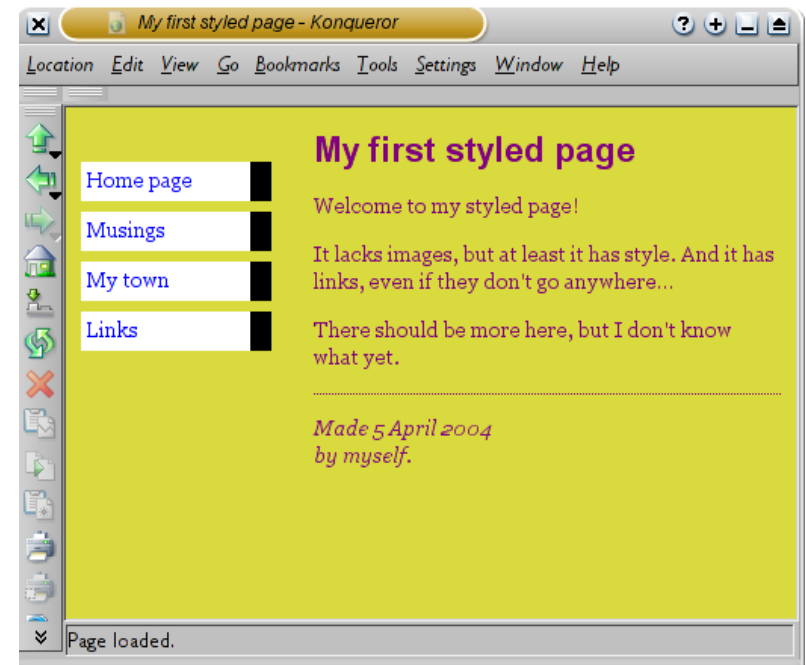
# CSS frameworks: Bootstrap

CITS3403 and CITS5505 - Agile Web Development

# CSS frameworks

# Challenges with CSS

- CSS is a powerful language for creating and implementing a presentation style for a website/application.
- However, there are several limitations:
  - Some simple operations, like centering pictures or text can be unintuitive.
  - It is difficult to create *responsive* styles that change depending on the device on which they are being viewed.
  - Many websites don't require the full power of CSS and can be styled using a simpler subset of operations.
  - Producing an attractive style is a highly creative activity!



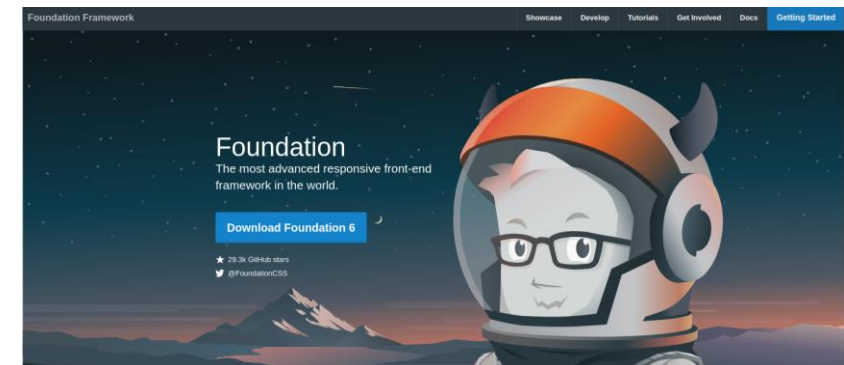
# Frameworks

- CSS frameworks are open-source libraries for developing responsive web-applications.
- Frameworks use CSS and JavaScript to build style components in a reasonably aesthetic way with very little effort.
- A big advantage is that they are normally designed to be *responsive*, so one application will look good on mobile devices, tablets and PCs with minimal effort.



# Common frameworks

- Disadvantage: websites built with the same framework will often appear visually similar.



# The Bootstrap framework

# Loading Bootstrap

- To include Bootstrap components and styles in your page, you can either download and host the code yourself, or just reference a *Content Delivery Network* in the header of your web-page.
- Bootstrap consists of a CSS file, a JavaScript file and optional theme files.

```
<!-- Latest compiled and minified CSS -->
<link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@3.3.7/dist/css/bootstrap.min.css" integrity="sha384-
BVYiISIFeK1dGmJRAkycuHAHRg320mUcww7on3RYdg4Va+PmSTsz/K68vbdEjh4u" crossorigin="anonymous">

<!-- Optional theme -->
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@3.3.7/dist/css/bootstrap-
theme.min.css" integrity="sha384-rHyoN1iRsVXV4nD0JutlnGaslCJuC7uwjduW9SVrLvRYooPp2bWYgmgJQIXw1/Sp"
crossorigin="anonymous">

<!-- Latest compiled and minified JavaScript -->
<script src="https://cdn.jsdelivr.net/npm/bootstrap@3.3.7/dist/js/bootstrap.min.js"
integrity="sha384-Tc5IQib027qvyjSMfHjOMaLkfuWVxZxUPnCJA7l2mCWNIpG9mGCD8wGNicPD7Txa"
crossorigin="anonymous"></script>
```

# Your first Bootstrap page

- Include the CDN libraries, and a meta-tag setting the viewport width to device width (for zooming and scaling)
- The container class automatically sets margins that respond to the page size.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/js/bootstrap.min.js"></script>
</head>
<body>

<div class="container">
  <h1>My First Bootstrap Page</h1>
  <p>This part is inside a .container class.</p>
  <p>The .container class provides a responsive fixed width container.</p>
</div>

</body>
</html>
```

Result Size: 479 x 336

## My First Bootstrap Page

This part is inside a .container class.

The .container class provides a responsive fixed width container.



# Bootstrap Container

- **.container:** A responsive, fixed-width container whose maximum width adjusts at different breakpoints (xs, sm, md, lg, xl, xxl). It centers your content and adapts based on the device's screen size.
- **.container-fluid:** A full-width container that always spans 100% of the viewport, regardless of screen size.
- **.container-{breakpoint}:** These classes (e.g., .container-sm, .container-md) are fluid (full-width) until the specified breakpoint is reached, at which point they behave like a fixed-width container.

## Break point container chart

Class	Extra small <576px	Small ≥576px	Medium ≥768px	Large ≥992px	X-Large ≥1200px	XX-Large ≥1400px
<b>.container</b>	100%	540px	720px	960px	1140px	1320px
<b>.container-sm</b>	100%	540px	720px	960px	1140px	1320px
<b>.container-md</b>	100%	100%	720px	960px	1140px	1320px
<b>.container-lg</b>	100%	100%	100%	960px	1140px	1320px
<b>.container-xl</b>	100%	100%	100%	100%	1140px	1320px
<b>.container-xxl</b>	100%	100%	100%	100%	100%	1320px
<b>.container-fluid</b>	100%	100%	100%	100%	100%	100%

# The Bootstrap grid system

- Bootstrap uses rows of 12 columns for layout. Every component (or div) can be specified to span a number of these columns.
- The layout can be specified with respect to the device size (*extra small*, *small*, *medium* and *large*).
- The number of spanned columns should always add up to 12.

span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1
span 4				span 4				span 4			
span 4				span 8							
span 6						span 6					
span 12											

```
<div class="col-3" style="background-color: ■ rgb(172, 232, 51); border:1cm">col-3</div>  
<div class="col-9" style="background-color: ■ rgb(232, 51, 223); border:1cm">col-9</div>
```

col-3

col-9

# The Bootstrap grid system

- Bootstrap's grid system uses a series of containers, rows, and columns to layout and align content.
- Class `col` creates equal-width columns across all devices and viewports using our predefined grid classes. Those columns are centered in the page with the parent `.container`.

```
<div class="container">
  <h1 class="mb-5">Bootstrap Grid Columns</h1>
  <!-- Basic Grid Layout -->
  <div class="row">
    <div class="col text-bg-light border">1 of 2</div>
    <div class="col bg-light border">2 of 2</div>
  </div>
  <div class="row">
    <div class="col bg-light border">1 of 3</div>
    <div class="col bg-light border">2 of 3</div>
    <div class="col bg-light border">3 of 3</div>
  </div>
</div>
```

## Bootstrap Grid Columns

1 of 3	2 of 2	
1 of 3	2 of 3	3 of 3

# The Bootstrap grid system

- You can specify the number of slices that you want that column to take up.
- The class `col-6` assigns an element to span 6 out of those 12 columns, which is exactly half the width of the row.
- An uneven layout is achieved with a class `col-4` column occupying one-third of the row and a class `col-8` column filling the remaining two-thirds.

```
<!-- Column Sizes -->
<div class="row">
  <div class="col-6 bg-light border">1 of 2</div>
  <div class="col-6 bg-light border">2 of 2</div>
</div>

<div class="row">
  <div class="col-4 bg-light border">1 of 2</div>
  <div class="col-8 bg-light border">2 of 2</div>
</div>
```

## Bootstrap Grid Columns

1 of 2	2 of 2
1 of 2	2 of 2

# The Bootstrap grid system

- The class **col-md-6** specifies that on medium devices and larger, each column will occupy 50% of the row's width, resulting in two-column layout.
- Using both classes **col-sm-6** and **col-lg-3**. We can specify different layout for different devices, so something can be specified to take 2 columns on a small devices (and up), and on large devices device take 4 columns.

```
<!-- Responsive Grid -->
```

```
<div class="row">
```

```
  <div class="col-md-6 bg-light border">1 of 2</div>
```

```
  <div class="col-md-6 bg-light border">2 of 2</div>
```

```
</div>
```

```
<div class="row">
```

```
  <div class="col-sm-6 col-lg-3 bg-light border">1 of 4</div>
```

```
  <div class="col-sm-6 col-lg-3 bg-light border">2 of 4</div>
```

```
  <div class="col-sm-6 col-lg-3 bg-light border">3 of 4</div>
```

```
  <div class="col-sm-6 col-lg-3 bg-light border">4 of 4</div>
```

```
</div>
```

## Bootstrap Grid Columns

1 of 2	
2 of 2	
1 of 4	2 of 4
3 of 4	4 of 4

# Bootstrap tables

- The class `table` adds basic styling to a table, with horizontal lines and padding.
- There are additional classes `table-striped`, `table-bordered`, `table-hover` and `table-condensed`, with different styles and effects.
- There are also classes for table rows and cells for different effects.

Firstname	Lastname	Email
Default	Defaultson	def@somemail.com
Success	Doe	john@example.com
Danger	Moe	mary@example.com
Info	Dooley	july@example.com
Warning	Refs	bo@example.com
Active	Activeson	act@example.com

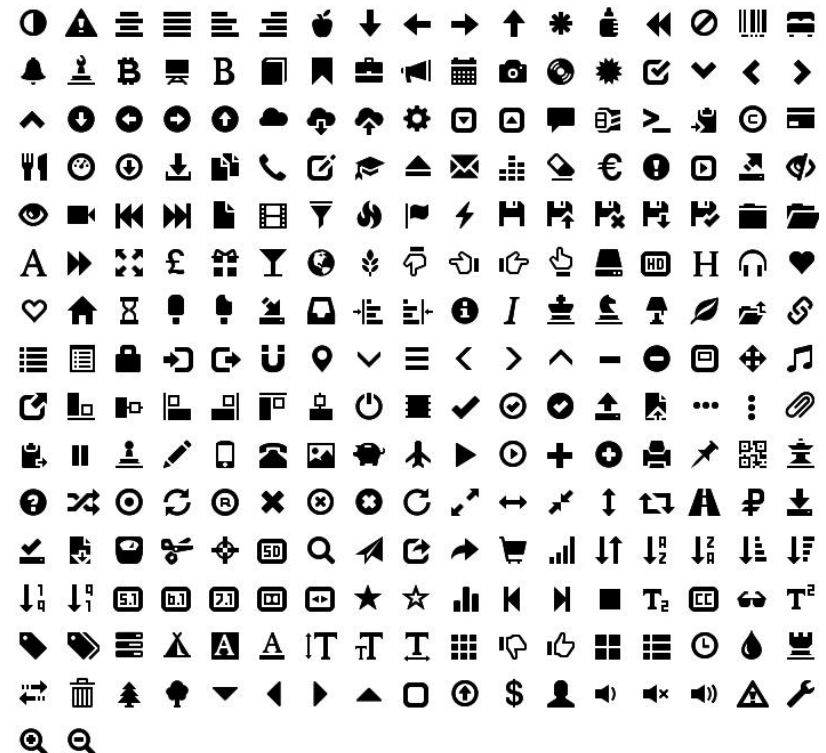
```
<tbody>
  <tr>
    <td>Default</td>
    <td>Defaultson</td>
    <td>def@somemail.com</td>
  </tr>
  <tr class="success">
    <td>Success</td>
    <td>Doe</td>
    <td>john@example.com</td>
  </tr>
  <tr class="danger">
    <td>Danger</td>
    <td>Moe</td>
    <td>mary@example.com</td>
  </tr>
  <tr class="info">
    <td>Info</td>
    <td>Dooley</td>
    <td>july@example.com</td>
  </tr>
  <tr class="warning">
    <td>Warning</td>
    <td>Refs</td>
    <td>bo@example.com</td>
  </tr>
  <tr class="active">
    <td>Active</td>
    <td>Activeson</td>
    <td>act@example.com</td>
  </tr>
</tbody>
```

# Glyphicons

- Bootstrap comes with 200 icons to use, called *Glyphicons*.
- These are rendered as text, so will resize with headers etc.
- The glyphicon syntax just applies a class to an empty span.

```
<p>Search icon on a button:  
  <button type="button" class="btn btn-default">  
    <span class="glyphicon glyphicon-search"></span> Search  
  </button>  
</p>
```

Search icon on a button:



# Other features of Bootstrap

- Bootstrap also supports widgets such as jumbotrons modals, form layouts, carousels.
- It is worthwhile taking the time to get familiar with these, as they can make a web-page look professional with relatively little effort.
- See the w3schools tutorial: <https://www.w3schools.com/bootstrap/default.asp> or the Bootstrap site <https://getbootstrap.com/docs/4.3/getting-started/>

## Bootstrap Tutorial

Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile-first projects on the web.