INF 272
Advanced C#

10/03/2025

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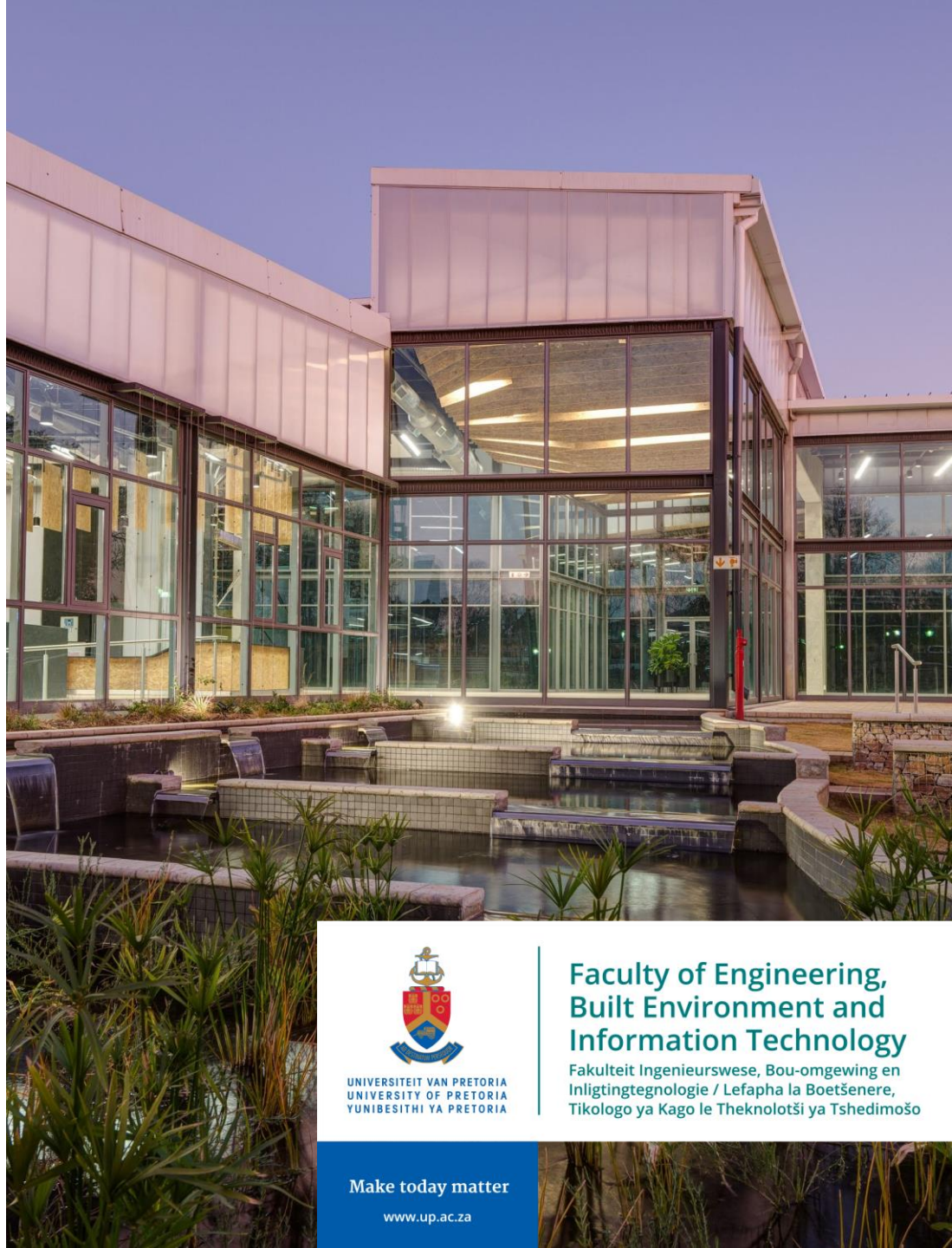
Responsive Web Design (RWD), HTML and Bootstrap in MVC

- CSS (Recap)
- Responsive Web Design
- Bootstrap
- Demo
- Conclusion



Cascading Style Sheets (CSS): Recap

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What is CSS?

CSS is a style sheet language used for describing the presentation of a document written in a markup language like HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript

CSS Inclusion Styles

- Internal – Used in style tags on the HTML page, e.g. *<style> body {padding-top: 70px;padding-bottom: 20px;}</style>*
- External – Created in separate files linked into the HTML page through stylesheet links, e.g. *<link rel="stylesheet" href="/css/main.css">*
- Embedded – Integrated into an attribute of an HTML Element, e.g. *<p style="height:182px !important;">*

Responsive Web Design

What now!?

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Media Queries

- The @media rule is used in media queries to apply different styles for different media types/devices, e.g. tablet, laptop, smartphone.
- Using media queries are a popular technique for delivering a tailored style sheet (responsive web design) to desktops, laptops, tablets, and mobile phones.
- You can also use media queries to specify that certain styles are only for printed documents or for screen readers (mediatype: print, screen, or speech).

Media Queries (continued…)

- In addition to media types, there are also media features. Media features provide more specific details to media queries, by allowing to test for a specific feature of the user agent or display device.
- In other words, you can apply styles to only those screens that are greater, or smaller, than a certain width, e.g.

```
@media (max-width: 1100px) {
<!-- Add your styles here -->}
```

- Responsive web design is about creating web sites which automatically adjust themselves to look good on all devices, from small phones to large desktops
- Bootstrap is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first web sites
- RWD uses Responsive frameworks

- Examples of responsive frameworks include:
  - Bootstrap
  - Foundation
  - Bulma
  - UIkit
  - Semantic UI
  - Susy
  - Materialize
  - Pure
  - Skeleton
  - Milligram
  - Tailwind CSS
  - Tacit
  - Spectre
  - Primer

Bootstrap

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- Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousel, etc., as well as optional JavaScript plugins

- Bootstrap also gives you the ability to easily create responsive designs

Advantages of Bootstrap

- Easy to use: Anybody with basic knowledge of HTML and CSS can start using Bootstrap
- Responsive features: Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
- Mobile-first approach: In Bootstrap, mobile-first styles are part of the core framework
- Browser compatibility: Compatible with all modern browsers

Bootstrap 5

v5.x

Current major release. Last update was v5.3.3.

- 5.3 Latest
- 5.2
- 5.1
- 5.0

v4.x

Our previous major release with its minor releases. Last update was v4.6.2.

- 4.6
- 4.5
- 4.4
- 4.3
- 4.2
- 4.1

v3.x

Every minor release from v3 is listed below. Last update was v3.4.1.

- 3.4
- 3.3

v2.x

Every minor and patch release from v2 is listed below.

- 2.3.2
- 2.3.1
- 2.3.0
- 2.2.2
- 2.2.1
- 2.2.0
- 2.1.1

v1.x

Every minor and patch release from v1 is listed below.

- 1.4.0
- 1.3.0
- 1.2.0
- 1.1.1
- 1.1.0
- 1.0.0

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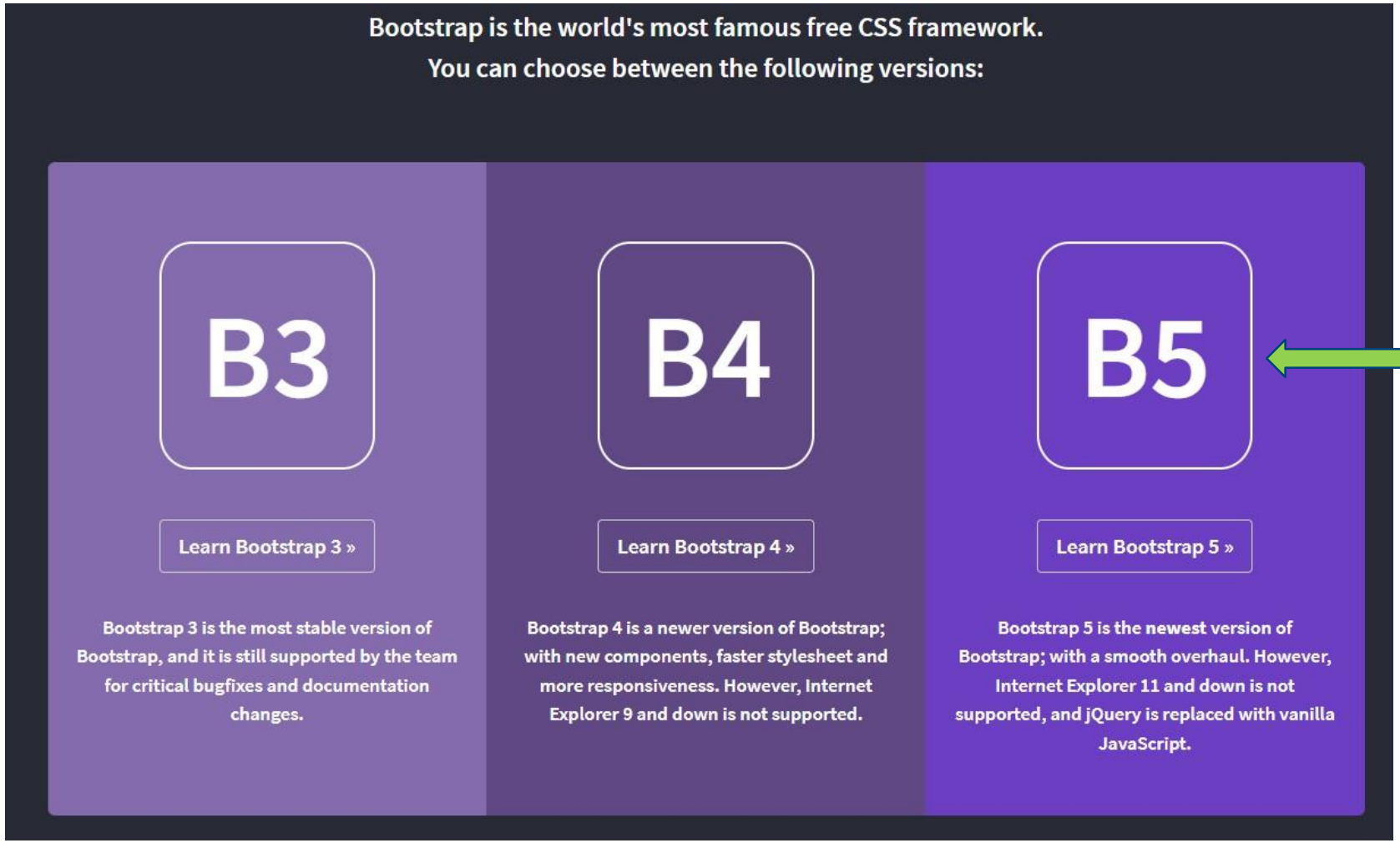
Bootstrap 5



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Learn Bootstrap 5

https://www.w3schools.com/bootstrap5/index.php

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Bootstrap 5 Components

- BS5 Containers
- BS5 Grid Basic
- BS5 Typography
- BS5 Colors
- BS5 Tables
- BS5 Images
- BS5 Jumbotron
- BS5 Alerts
- BS5 Buttons
- BS5 Button Groups
- BS5 Badges
- BS5 Progress Bars
- BS5 Spinners
- BS5 Pagination
- BS5 List Groups
- BS5 Cards

- BS5 Cards
- BS5 Dropdowns
- BS5 Collapse
- BS5 Navs
- BS5 Navbar
- BS5 Carousel
- BS5 Modal
- BS5 Tooltip
- BS5 Popover
- BS5 Toast
- BS5 Scrollspy
- BS5 Offcanvas
- BS5 Utilities
- BS5 Dark Mode
- BS5 Flex

Bootstrap 5 Components Examples

```
<!-- Button to Open the Modal -->
<button type="button" class="btn btn-primary" data-bs-toggle="modal" data-bs-target="#myModal">
  Open modal
</button>

<!-- The Modal -->
<div class="modal" id="myModal">
  <div class="modal-dialog">
    <div class="modal-content">

      <!-- Modal Header -->
      <div class="modal-header">
        <h4 class="modal-title">Modal Heading</h4>
        <button type="button" class="btn-close" data-bs-dismiss="modal"></button>
      </div>

      <!-- Modal body -->
      <div class="modal-body">
        Modal body..
      </div>

      <!-- Modal footer -->
      <div class="modal-footer">
        <button type="button" class="btn btn-danger" data-bs-dismiss="modal">Close</button>
      </div>

    </div>
  </div>
</div>
```

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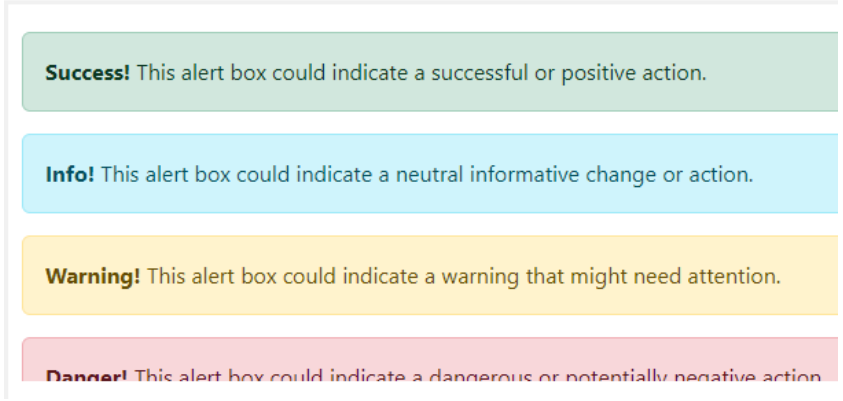
Bootstrap 5 Components Examples

Alerts

Bootstrap 5 provides an easy way to create predefined alert messages:




```
<div class="alert alert-success">
  <strong>Success!</strong> Indicates a successful or positive action.
</div>
```

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Bootstrap 5 Components Examples

Basic Progress Bar

A progress bar can be used to show how far a user is in a process.

```
<div class="progress">
  <div class="progress-bar" style="width:70%"></div>
</div>
```

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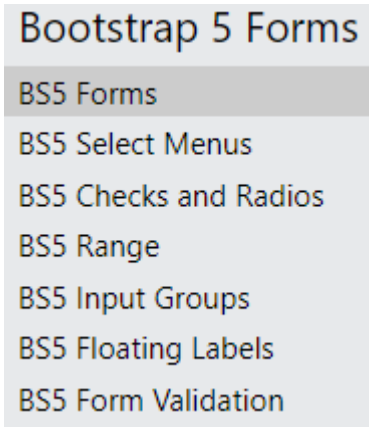
Bootstrap 5 Forms



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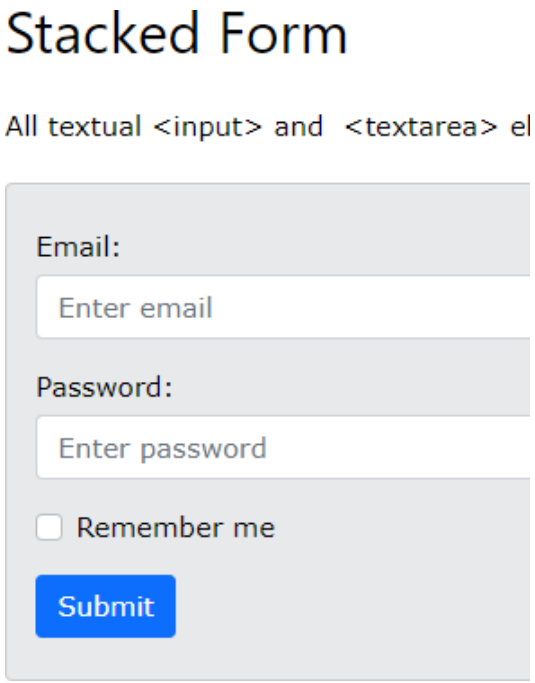
Bootstrap 5 Forms Example

```
<form action="/action_page.php">
  <div class="mb-3 mt-3">
    <label for="email" class="form-label">Email:</label>
    <input type="email" class="form-control" id="email" placeholder="Enter email" name="email">
  </div>
  <div class="mb-3">
    <label for="pwd" class="form-label">Password:</label>
    <input type="password" class="form-control" id="pwd" placeholder="Enter password" name="pswd">
  </div>
  <div class="form-check mb-3">
    <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>
```



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Bootstrap 5 Grid

Bootstrap 5 Grid

BS5 Grid System
BS5 Stacked/Horizontal
BS5 Grid XSmall
BS5 Grid Small
BS5 Grid Medium
BS5 Grid Large
BS5 Grid XLarge
BS5 Grid XXL
BS5 Grid Examples

Bootstrap 5 Grid System

The Grid System

Bootstrap's grid system is built with flexbox and allows up to 12 columns across the page.

If you do not want to use all 12 columns individually, you can group the columns together to create wider columns:

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

The grid system is responsive, and the columns will re-arrange automatically depending on the screen size.

Make sure that the sum adds up to 12 or fewer (it is not required that you use all 12 available columns).

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Bootstrap 5 Grid Example

Three Unequal columns

To create unequal columns, you have to use numbers. The following example will create a 25%/50%/25% split:

```
<div class="row">
  <div class="col-3">col-3</div>
  <div class="col-6">col-6</div>
  <div class="col-3">col-3</div>
</div>
```

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Demo

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Conclusion

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Conclusion

- In a world dominated by a multitude of devices with varying screen sizes, responsive web design has emerged as an indispensable approach to building client applications
- Its core principle lies in creating websites that seamlessly adapt their layout and content across desktops, laptops, tablets, and smartphones
- Bootstrap, a powerful front-end framework, has become synonymous with responsive web design

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