# Bootstrap Guide

## 3. Bootstrap

### 3.1 Basics of Bootstrap

#### 3.1.1 Introduction to Bootstrap

* **Bootstrap**: A powerful front-end framework for building responsive and mobile-first web applications. It includes pre-designed components and a grid system that makes development faster and easier.
* **History**: Originally developed by Twitter and released as open-source in 2011. It has evolved to become one of the most popular frameworks for building websites.
* **Current Version**: As of now, Bootstrap 5 is the latest stable version.

#### 3.1.2 Use of Bootstrap

* **Purpose**: Bootstrap simplifies the process of designing complex and responsive layouts with minimal custom CSS.
* **Benefits**:
  + **Responsive Design**: Built-in support for a grid system and media queries.
  + **Pre-built Components**: Ready-to-use components like modals, carousels, and navigation bars.
  + **Customizable**: Easily customize Bootstrap using Sass variables and mixins.
* **Example**:
* <!DOCTYPE html>  
  **<html>**  
   **<head>**  
   **<link**  
   href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css"  
   rel="stylesheet"  
   **/>**  
   **</head>**  
   **<body>**  
   **<div** **class**="container"**>**  
   **<h1** **class**="text-primary"**>**Hello, Bootstrap!**</h1>**  
   **<p** **class**="lead"**>**This is a simple Bootstrap example.**</p>**  
   **<button** **class**="btn btn-success"**>**Click Me!**</button>**  
   **</div>**  
   **<script** **src**="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js"**></script>**  
   **</body>**  
  **</html>**

#### 3.1.3 Structure of Bootstrap

* **Basic Structure**: Bootstrap uses a grid system and various classes to style elements. To use Bootstrap, include the CSS and JavaScript files in your project.
* **HTML Template with Bootstrap**:
* <!DOCTYPE html>  
  **<html** **lang**="en"**>**  
   **<head>**  
   **<meta** **charset**="UTF-8" **/>**  
   **<meta** **name**="viewport" **content**="width=device-width, initial-scale=1.0" **/>**  
   **<title>**Bootstrap Template**</title>**  
   **<link**  
   href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css"  
   rel="stylesheet"  
   **/>**  
   **</head>**  
   **<body>**  
   **<div** **class**="container"**>**  
   **<h1>**Welcome to Bootstrap**</h1>**  
   **<p>**This is a basic structure using Bootstrap.**</p>**  
   **</div>**  
   **<script** **src**="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js"**></script>**  
   **</body>**  
  **</html>**

### 3.2 Bootstrap Grid System

* **Grid System**: A responsive layout system based on a 12-column layout. Elements can span multiple columns by specifying classes like col-, col-sm-, col-md-, etc.
* **Example**:
* **<div** **class**="container"**>**  
   **<div** **class**="row"**>**  
   **<div** **class**="col-md-4"**>**Column 1**</div>**  
   **<div** **class**="col-md-4"**>**Column 2**</div>**  
   **<div** **class**="col-md-4"**>**Column 3**</div>**  
   **</div>**  
  **</div>**
* **Explanation**: The .row class creates a horizontal group of columns, and .col-md-4 defines each column to take up 4 out of 12 parts of the row, making them evenly distributed.

### 3.3 Bootstrap Components

* **Alerts**: Provides predefined alert messages.
* **<div** **class**="alert alert-success" **role**="alert"**>**  
   This is a success alert—check it out!  
  **</div>**
* **Buttons**: Different button styles using classes like .btn, .btn-primary, .btn-danger.
* **<button** **class**="btn btn-primary"**>**Primary Button**</button>**  
  **<button** **class**="btn btn-danger"**>**Danger Button**</button>**
* **Navigation Bar**: Easy-to-create responsive navigation bars.
* **<nav** **class**="navbar navbar-expand-lg navbar-light bg-light"**>**  
   **<div** **class**="container-fluid"**>**  
   **<a** **class**="navbar-brand" **href**="#"**>**Navbar**</a>**  
   **<button**  
   class="navbar-toggler"  
   type="button"  
   data-bs-toggle="collapse"  
   data-bs-target="#navbarNav"  
   **>**  
   **<span** **class**="navbar-toggler-icon"**></span>**  
   **</button>**  
   **<div** **class**="collapse navbar-collapse" **id**="navbarNav"**>**  
   **<ul** **class**="navbar-nav"**>**  
   **<li** **class**="nav-item"**>**  
   **<a** **class**="nav-link active" **aria-current**="page" **href**="#"**>**Home**</a>**  
   **</li>**  
   **<li** **class**="nav-item"**>**  
   **<a** **class**="nav-link" **href**="#"**>**Features**</a>**  
   **</li>**  
   **</ul>**  
   **</div>**  
   **</div>**  
  **</nav>**

### 3.4 Bootstrap Utilities

* **Spacing Utilities**: Quickly add margin or padding using classes like m-3 (margin) or p-3 (padding).
* **Example**:
* **<div** **class**="m-3 p-3 bg-light"**>**Content with margin and padding**</div>**
* **Text Utilities**: Easily change text alignment, color, and wrapping.
* **Example**:
* **<p** **class**="text-center text-danger"**>**Centered red text**</p>**

### 3.5 Bootstrap Forms

* **Form Controls**: Use classes to style input elements.
* **<form>**  
   **<div** **class**="mb-3"**>**  
   **<label** **for**="email" **class**="form-label"**>**Email address**</label>**  
   **<input**  
   type="email"  
   class="form-control"  
   id="email"  
   placeholder="name@example.com"  
   **/>**  
   **</div>**  
   **<div** **class**="mb-3"**>**  
   **<label** **for**="message" **class**="form-label"**>**Message**</label>**  
   **<textarea** **class**="form-control" **id**="message" **rows**="3"**></textarea>**  
   **</div>**  
   **<button** **type**="submit" **class**="btn btn-primary"**>**Submit**</button>**  
  **</form>**

### 3.6 Bootstrap Cards

* **Cards**: A flexible content container with multiple options for headers, footers, and body content.
* **<div** **class**="card" **style**="width: 18rem;"**>**  
   **<img** **src**="https://via.placeholder.com/150" **class**="card-img-top" **alt**="..." **/>**  
   **<div** **class**="card-body"**>**  
   **<h5** **class**="card-title"**>**Card Title**</h5>**  
   **<p** **class**="card-text"**>**  
   Some quick example text to build on the card title.  
   **</p>**  
   **<a** **href**="#" **class**="btn btn-primary"**>**Go somewhere**</a>**  
   **</div>**  
  **</div>**

### 3.7 Bootstrap Modal

* **Modals**: Used to display content in a popup dialog.
* **<button**  
   type="button"  
   class="btn btn-primary"  
   data-bs-toggle="modal"  
   data-bs-target="#exampleModal"  
  **>**  
   Launch Modal  
  **</button>**  
    
  **<div**  
   class="modal fade"  
   id="exampleModal"  
   tabindex="-1"  
   aria-labelledby="exampleModalLabel"  
   aria-hidden="true"  
  **>**  
   **<div** **class**="modal-dialog"**>**  
   **<div** **class**="modal-content"**>**  
   **<div** **class**="modal-header"**>**  
   **<h5** **class**="modal-title" **id**="exampleModalLabel"**>**Modal title**</h5>**  
   **<button**  
   type="button"  
   class="btn-close"  
   data-bs-dismiss="modal"  
   aria-label="Close"  
   **></button>**  
   **</div>**  
   **<div** **class**="modal-body"**>**This is the modal content.**</div>**  
   **<div** **class**="modal-footer"**>**  
   **<button**  
   type="button"  
   class="btn btn-secondary"  
   data-bs-dismiss="modal"  
   **>**  
   Close  
   **</button>**  
   **<button** **type**="button" **class**="btn btn-primary"**>**Save changes**</button>**  
   **</div>**  
   **</div>**  
   **</div>**  
  **</div>**

### 3.8 Responsive Design

* **Breakpoints**: Bootstrap uses a set of predefined breakpoints to create responsive designs. The common breakpoints are:
  + Extra Small (xs): <576px
  + Small (sm): ≥576px
  + Medium (md): ≥768px
  + Large (lg): ≥992px
  + Extra Large (xl): ≥1200px
* **Example**:
* **<div** **class**="d-none d-md-block"**>**Visible on medium and larger screens only**</div>**

### 3.9 Additional Components

* **Carousel**: For creating image sliders.
* **<div** **id**="carouselExample" **class**="carousel slide" **data-bs-ride**="carousel"**>**  
   **<div** **class**="carousel-inner"**>**  
   **<div** **class**="carousel-item active"**>**  
   **<img**  
   src="https://via.placeholder.com/800x400"  
   class="d-block w-100"  
   alt="..."  
   **/>**  
   **</div>**  
   **<div** **class**="carousel-item"**>**  
   **<img**  
   src="https://via.placeholder.com/800x400"  
   class="d-block w-100"  
   alt="..."  
   **/>**  
   **</div>**  
   **</div>**  
   **<button**  
   class="carousel-control-prev"  
   type="button"  
   data-bs-target="#carouselExample"  
   data-bs-slide="prev"  
   **>**  
   **<span** **class**="carousel-control-prev-icon" **aria-hidden**="true"**></span>**  
   **<span** **class**="visually-hidden"**>**Previous**</span>**  
   **</button>**  
   **<button**  
   class="carousel-control-next"  
   type="button"  
   data-bs-target="#carouselExample"  
   data-bs-slide="next"  
   **>**  
   **<span** **class**="carousel-control-next-icon" **aria-hidden**="true"**></span>**  
   **<span** **class**="visually-hidden"**>**Next**</span>**  
   **</button>**  
  **</div>**