SunilOS

Bootstrap 3

www.sunilos.com

www.raystec.com

Think IT Think Us
RAYS

Bootstrap?

- It is a front-end Framework
- It is a CSS, HTML, JS framework to develop responsive websites.
- It is free to download and use.
- It is compatible for all modern browser.
- It includes HTML and CSS based design templates for creating common user interface components like forms, buttons, navigations, dropdowns, alerts, modals, tabs, tooltips, and so on.

Bootstrap

How to get Bootstrap

- Two ways to get bootstrap
- Download Bootstrap from getbootstrap.com
- Include Bootstrap from a CDN(Content Delivery Network)
  - ```
    <!-- Latest compiled and minified CSS -->
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn
    .com/bootstrap/3.4.1/css/bootstrap.min.css">

    <!-- jQuery library -->
    <script src="https://ajax.googleapis.com/ajax/libs/jquer
    y/3.5.1/jquery.min.js"></script>

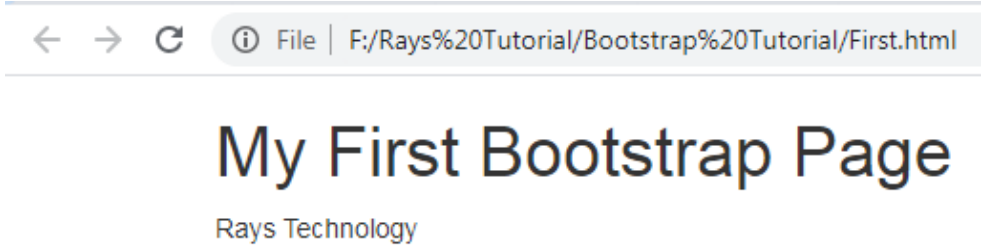
    <!-- Latest compiled JavaScript -->
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3
    .4.1/js/bootstrap.min.js"></script>
    ```
    ```

First Page in Bootstrap

- Create a simple Html page with <!DOCTYPE html> tag.
- Bootstrap 3 is mobile first so we have to add <meta> tag inside the <head> tag to see the effects of zooming and proper rendering.
  - <meta name="viewport" content="width=device-width, initial-scale=1">
- Bootstrap also requires a containing element to wrap site contents.
  - The .container class provides a responsive **fixed width container**
  - The .container-fluid class provides a **full width container**, spanning the entire width of the viewport

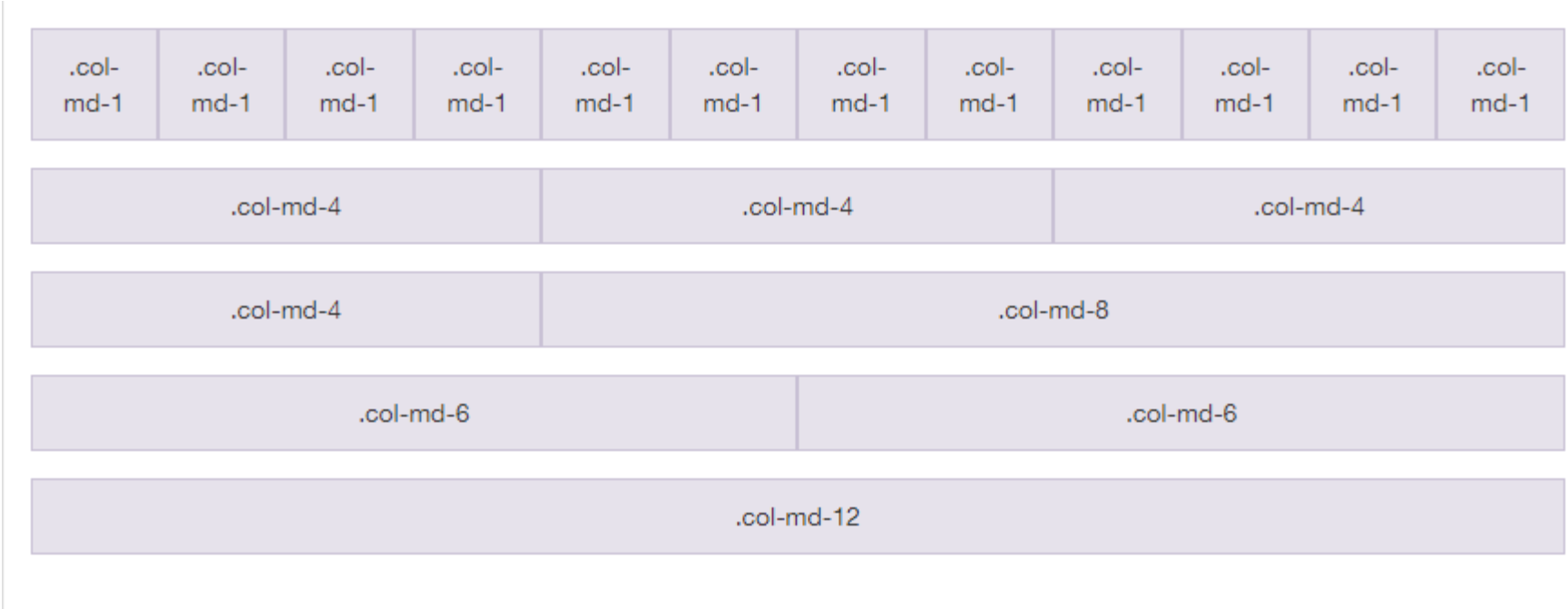
First Page with fixed/full width container in Bootstrap

```
<!DOCTYPE html>
<html lang='en'>
<head>
      <title>First 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/3.4.1/css/bootstrap.min.css">
  <script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
  <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script
>
</head>
<body>
<div class="container">
<!-- <div class="container-fluid"> -->
  <h1>My First Bootstrap Page</h1>
  <p>Rays Technology</p>
</div>
</body>
</html>
```



Bootstrap Grid System

- Bootstrap allow 12 columns across the page.
- We can also group the columns to make wider columns.
- Columns are responsive. It will rearrange according to window size.

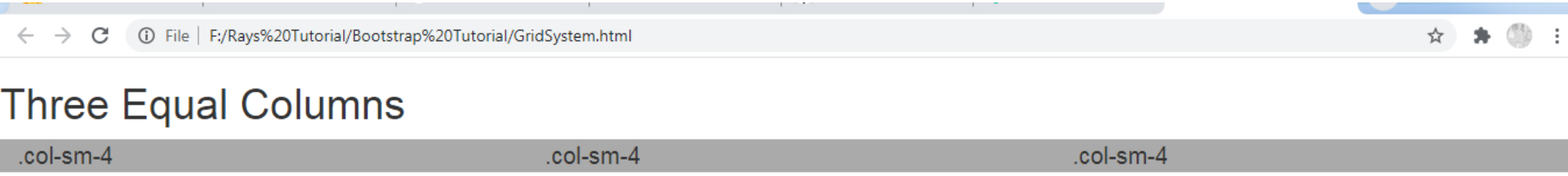


Grid Classes

- The Bootstrap grid system has four classes:
- xs -for phones - screens less than 768px wide
- sm- for tablets - screens equal to or greater than 768px wide
- md- for small laptops - screens equal to or greater than 992px wide
- lg- for laptops and desktops - screens equal to or greater than 1200px wide
- We can combine above classes to make flexible layouts

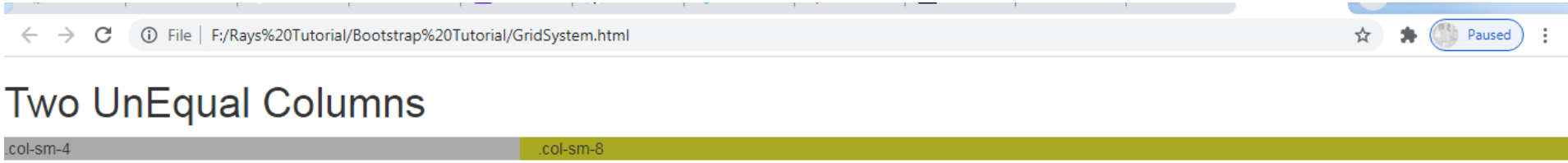
Three Equal Columns

```
<body>
<div class="container-fluid">
<div class="row">
    <h1>Three Equal Columns</h1>
  <div class="col-sm-4">.col-sm-4</div>
  <div class="col-sm-4">.col-sm-4</div>
  <div class="col-sm-4">.col-sm-4</div>
</div>
</div>
```



Two unequal columns

```
<div class="row">
    <div class="col-sm-4">.col-sm-4</div>
    <div class="col-sm-8">.col-sm-8</div>
</div>
```



Bootstrap Auto-layout Columns

- we can also create *equal width columns* for all devices (xs, small, medium, large, and xl) through simply using the class .col, without specifying any column number.

```
<div class="container">
    <!--Row with two equal columns-->
    <div class="row">
        <div class="col">Column one</div>
        <div class="col">Column two</div>
    </div>

    <!--Row with three equal columns-->
    <div class="row">
        <div class="col">Column one</div>
        <div class="col">Column two</div>
        <div class="col">Column three</div>
    </div>
```

Bootstrap Text

- Bootstrap global font size for <body> and <p> tag is 14 px.
- For heading tag
  - h1 Bootstrap heading (36px)
  - h2 Bootstrap heading (30px)
  - h3 Bootstrap heading (24px)
  - h4 Bootstrap heading (18px)
  - h5 Bootstrap heading (14px)
  - h6 Bootstrap heading (12px)

Text Formatting

- `<p><b>This is bold text</b></p>`
- `<p><code>This is computer code</code></p>`
- `<p><em>This is emphasized text</em></p>`
- `<p><i>This is italic text</i></p>`
- `<p><mark>This is highlighted text</mark></p>`
- `<p><small>This is small text</small></p>`
- `<p><strong>This is strongly emphasized text</strong></p>`
- `<p>This is <sub>subscript</sub> and <sup>superscript</sup></p>`
- `<p><ins>This text is inserted to the document</ins></p>`
- `<p><del>This text is deleted from the document</del></p>`

Working with headings

- `<div class="container">`
- `<h1>Heading with faded text <small>Faded secondary Text</small></h1>`
- `<h1>Heading 1</h1>`
- `<h2>Heading 2</h2>`
- `<h3>Heading 3</h3>`
- `<h4>Heading 4</h4>`
- `<h5>Heading 5</h5>`
- `<h6>Heading 6</h6>`

Working with Paragraphs

- By default font size for the <body> and<p> tag is 16px;
- We can stand out a paragraph by adding a .lead class.
- `<div class="container">`
- `<p class="lead">This is how a paragraph can lead in bootstrap</p>`
- `<p>This is a paragraph</p>`
- `</div>`

Text Coloring

- `<p class="text-primary">Primary: Please read the instructions carefully before proceeding.</p>`
- `<p class="text-secondary">Secondary: This is featured has been removed from the latest version.</p>`
- `<p class="text-success">Success: Your message has been sent successfully.</p>`
- `<p class="text-info">Info: You must agree with the terms and conditions to complete the sign up process.</p>`
- `<p class="text-warning">Warning: There was a problem with your network connection.</p>`
- `<p class="text-danger">Danger: An error has been occurred while submitting your data.</p>`
- `<p class="text-muted">Muted: This paragraph of text is grayed out.</p>`

Text Coloring (cont.)

Primary: Please read the instructions carefully before proceeding.

Secondary: This is featured has been removed from the latest version.

Success: Your message has been sent successfully.

Info: You must agree with the terms and conditions to complete the sign up process.

Warning: There was a problem with your network connection.

Danger: An error has been occurred while submitting your data.

Muted: This paragraph of text is grayed out.

Contextual colors and Backgrounds

```
<h2>Contextual Backgrounds</h2>
  <p>Use the contextual background classes to provide "meaning through colors":</p>
  <p class="bg-primary">This text is important.</p>
  <p class="bg-success">This text indicates success.</p>
  <p class="bg-info">This text represents some information.</p>
  <p class="bg-warning">This text represents a warning.</p>
  <p class="bg-danger">This text represents danger.</p>
```

Contextual Backgrounds

Use the contextual background classes to provide "meaning through colors":

This text is important.

This text indicates success.

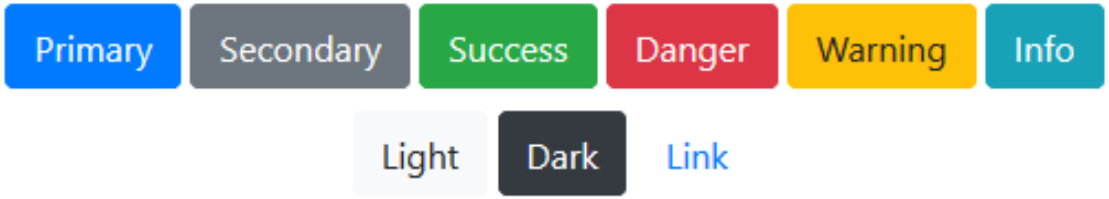
This text represents some information.

This text represents a warning.

This text represents danger.

Bootstrap Buttons

- Bootstrap provides different style of buttons



- We have to use following classes to achieve above style
- .btn
- .btn-default
- .btn-primary
- .btn-success
- .btn-info
- .btn-warning
- .btn-danger
- .btn-link

Bootstrap Buttons (cont).

- `<button type="button" class="btn">Basic</button>`
- `<button type="button" class="btn btn-default">Default</button>`
- `<button type="button" class="btn btn-primary">Primary</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-link">Link</button>`

Button sizes

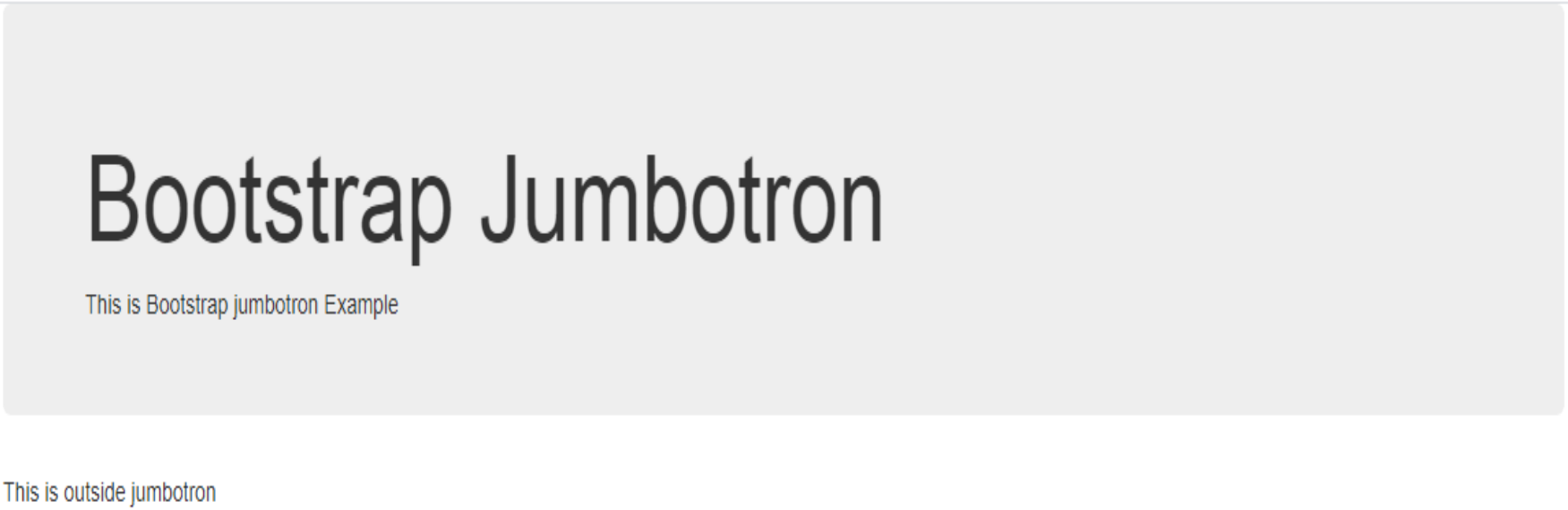
- Bootstrap provides four button sizes:
- The classes that define the different sizes are:
- .btn-lg
- .btn-sm
- .btn-xs
- `<button type="button" class="btn btn-primary btn-lg">Large</button>`
- `<button type="button" class="btn btn-primary">Normal</button>`
- `<button type="button" class="btn btn-primary btn-sm">Small</button>`
- `<button type="button" class="btn btn-primary btn-xs">XSmall</button>`

Active/Disabled Buttons

- The class .active makes a button appear pressed, and the class .disabled makes a button unclickable
- `<button type="button" class="btn btn-primary active">Active Primary</button>`
- `<button type="button" class="btn btn-primary disabled">Disabled Primary</button>`

Bootstrap Jumbotron

- Jumbotron is a grey rectangular box with round corners.
- It is sued to pay attention with large text on page.



Bootstrap Jumbotron (cont.)

```
<div class="container">
    <div class="jumbotron">
        <h1>Bootstrap Jumbotron</h1>
        This is Bootstrap jumbotron Example
    </div>
    <p>This is outside jumbotron</p>
</div>
```

Bootstrap Page Header

- A page header is like a section divider.
- The .page-header class adds a horizontal line under the heading and also adds extra space around the element.

Example Page Header

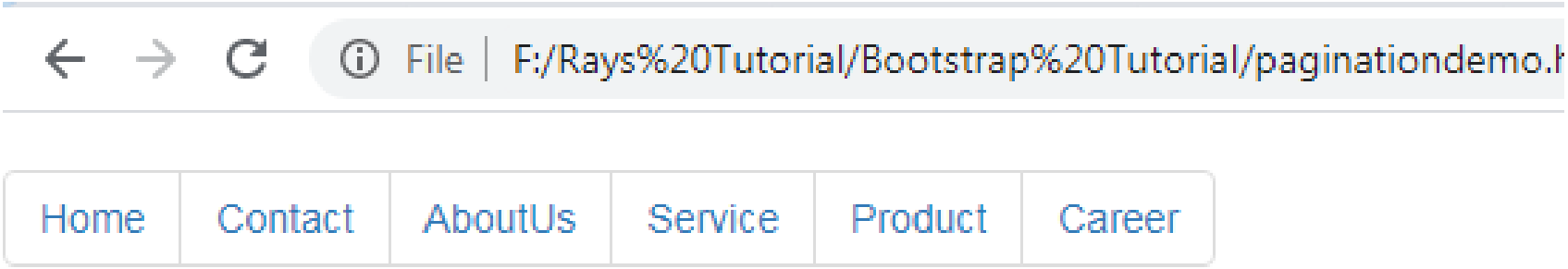
```
<div class="page-header">
  <h1>Example Page Header</h1>
</div>
```

Bootstrap Pagination

- It is used to divide the multiple pages of website.
- To create a basic pagination, add the .pagination class to an <ul> element
- ```
  <ul class="pagination">
    <li><a href="#">1</a></li>
    <li><a href="#">2</a></li>
    <li><a href="#">3</a></li>
    <li><a href="#">4</a></li>
    <li><a href="#">5</a></li>
  </ul>
  ```
  ```

Basic Pagination in Bootstrap

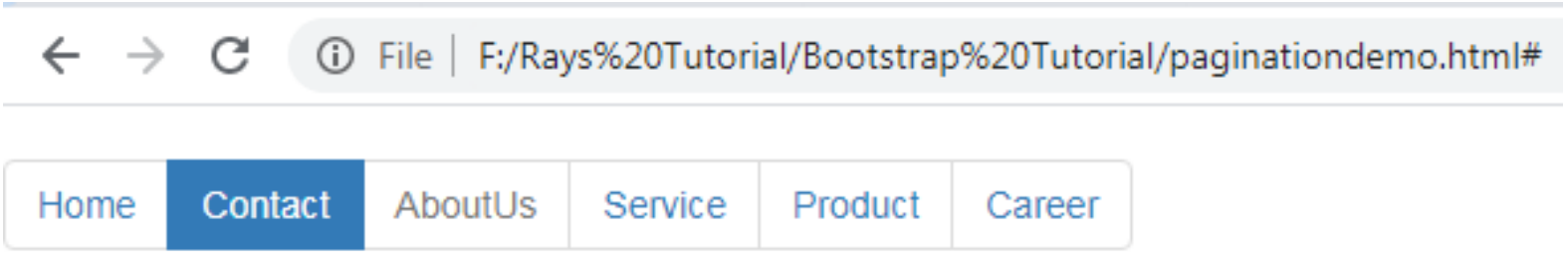
```
<ul class="pagination">
    <li><a href="#">Home</a></li>
    <li><a href="#">Contact</a></li>
    <li><a href="#">AboutUs</a></li>
    <li><a href="#">Service</a></li>
    <li><a href="#">Product</a></li>
    <li><a href="#">Career</a></li>
</ul>
```



Active and disable pages

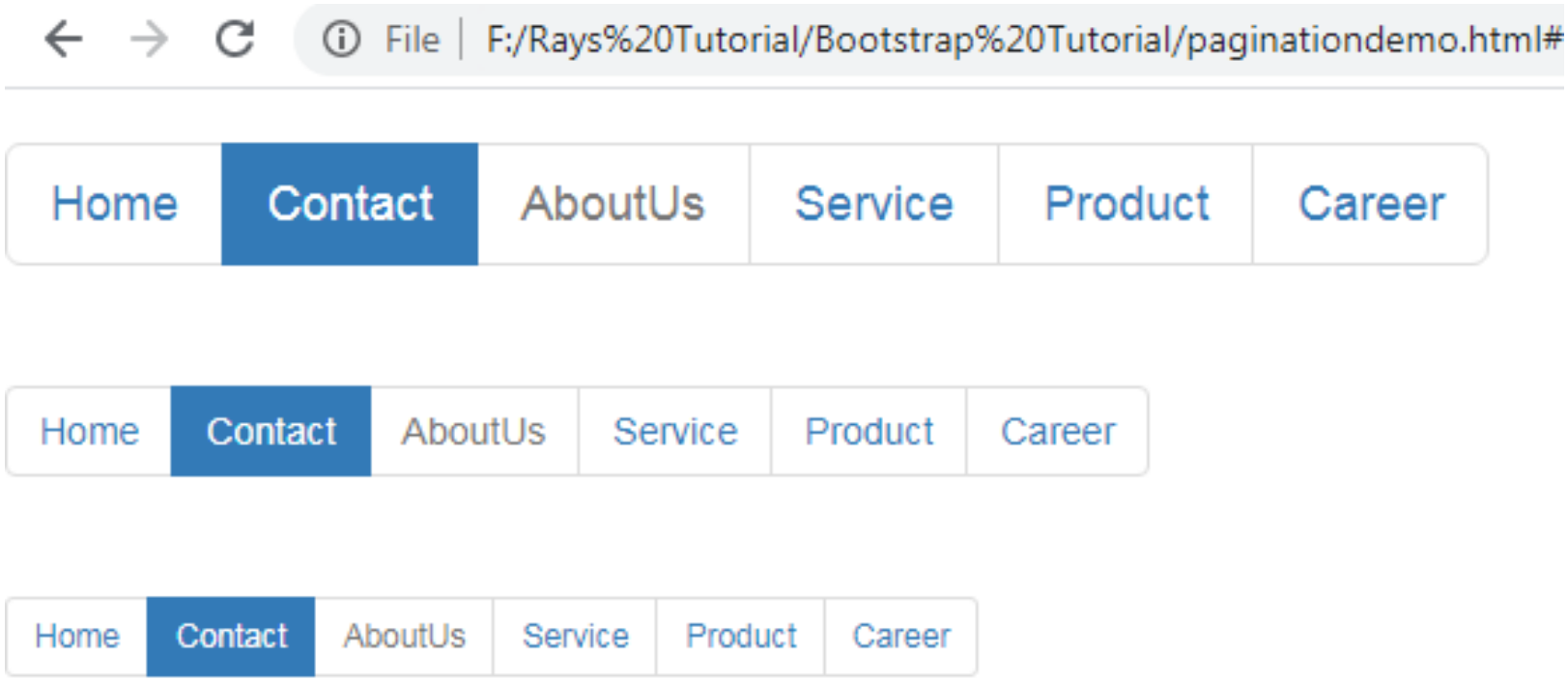
- Add class .disabled if a link is not available or not clicked for some reason.
- A disabled link cannot be clicked
- The active state shows what is the current page
- Add class .active to let the user know which page he/she is using.

```
<ul class="pagination">
  <li><a href="#">Home</a></li>
  <li class="active"><a href="#">Contact</a></li>
  <li class="disabled"><a href="#">AboutUs</a></li>
  <li><a href="#">Service</a></li>
  <li><a href="#">Product</a></li>
  <li><a href="#">Career</a></li>
</ul>
```



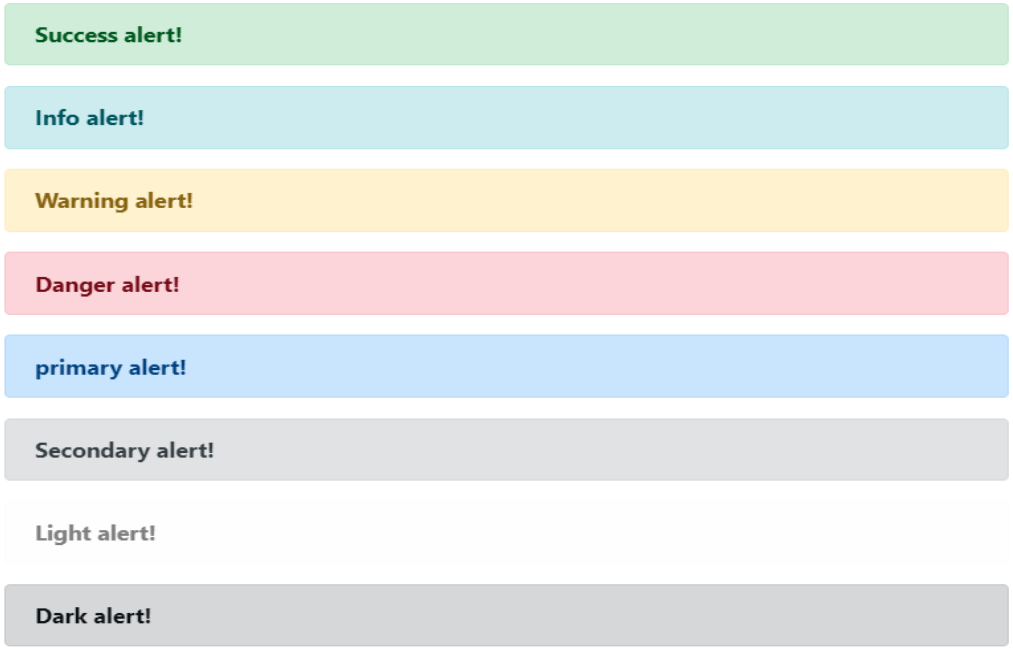
Pagination sizes

- We can resize the pagination blocks to a larger size or a smaller size using `pagination-lg` ,`pagination-md` and.`pagination-sm` class



Bootstrap alerts

- Bootstrap provides an easy way to create predefined alert messages:
- Alerts are created with the .alert class, followed by one of the four contextual classes .alert-success, .alert-info, .alert-warning or .alert-danger:



Bootstrap alerts (cont.)

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

<div class="alert alert-info">
  <strong>Info!</strong> Indicates a neutral informative
change or action.
</div>

<div class="alert alert-warning">
  <strong>Warning!</strong> Indicates a warning that might
need attention.
</div>

<div class="alert alert-danger">
  <strong>Danger!</strong> Indicates a dangerous or
potentially negative action.
</div>
```

Animated alerts

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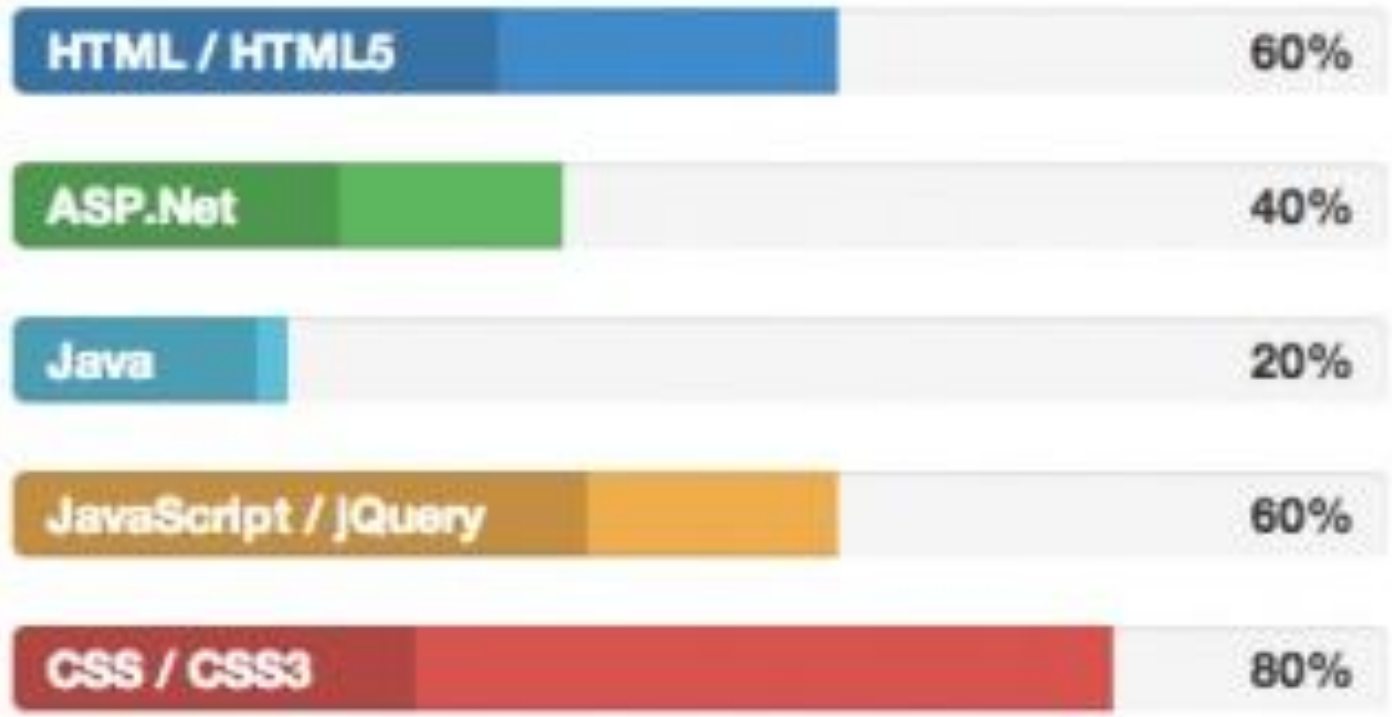
```
<div class="container">
  <h2>Animated Alerts</h2>
  <p>The .fade and .in classes adds a fading effect when closing the alert message.</p>
  <div class="alert alert-success alert-dismissible fade in">
    <a href="#" class="close" data-dismiss="alert" aria-label="close">&times;</a>
    <strong>Success!</strong> This alert box could indicate a successful or positive action.
  </div>
  <div class="alert alert-info alert-dismissible fade in">
    <a href="#" class="close" data-dismiss="alert" aria-label="close">&times;</a>
    <strong>Info!</strong> This alert box could indicate a neutral informative change or action.
  </div>
  <div class="alert alert-warning alert-dismissible fade in">
    <a href="#" class="close" data-dismiss="alert" aria-label="close">&times;</a>
    <strong>Warning!</strong> This alert box could indicate a warning that might need attention.
  </div>
  <div class="alert alert-danger alert-dismissible fade in">
    <a href="#" class="close" data-dismiss="alert" aria-label="close">&times;</a>
    <strong>Danger!</strong> This alert box could indicate a dangerous or potentially negative action.
  </div>
</div>
```

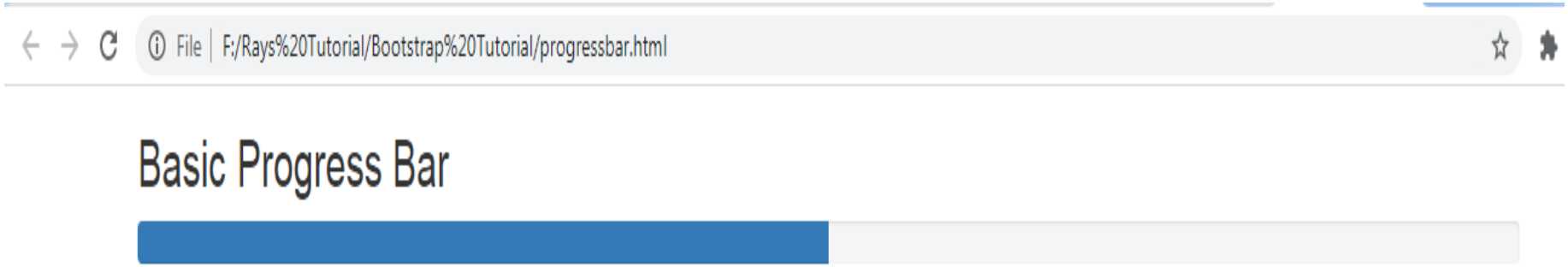
Bootstrap Progress bar

- progress bar can be used to show a user progress on some process.
- We can use different style of progress bar in bootstrap.



Basic Progress bar

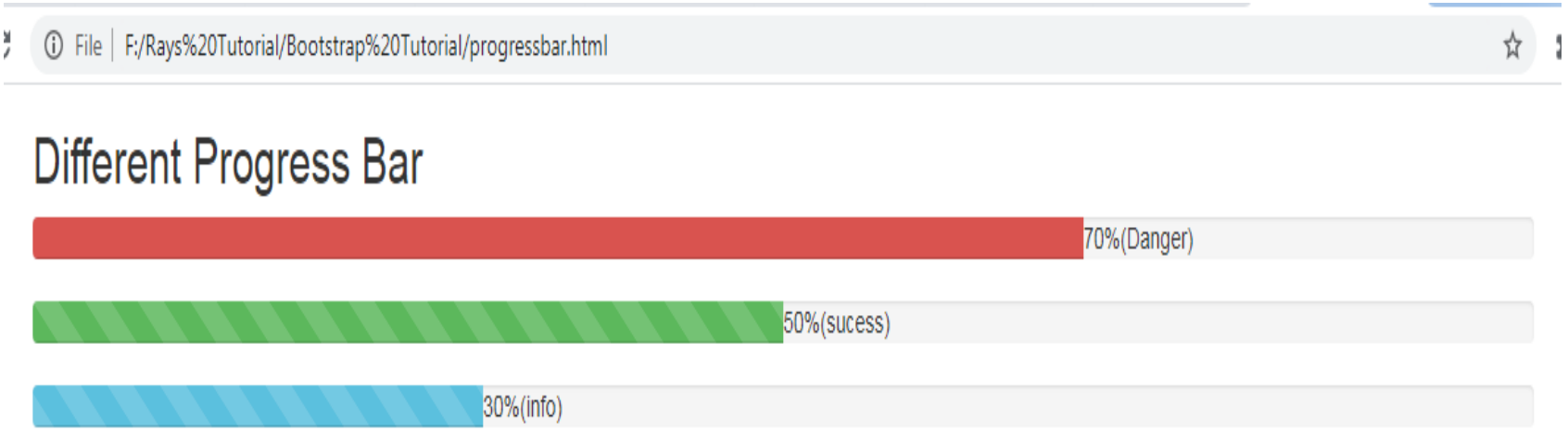
```
<h2>Basic Progress Bar</h2>
  <div class="progress">
    <div class="progress-bar"  aria-valuenow="50" aria-valuemin="0" aria-valuemax="100" style="width:50%">
    </div>
  </div>
```



Colored/striped/active Progress Bars

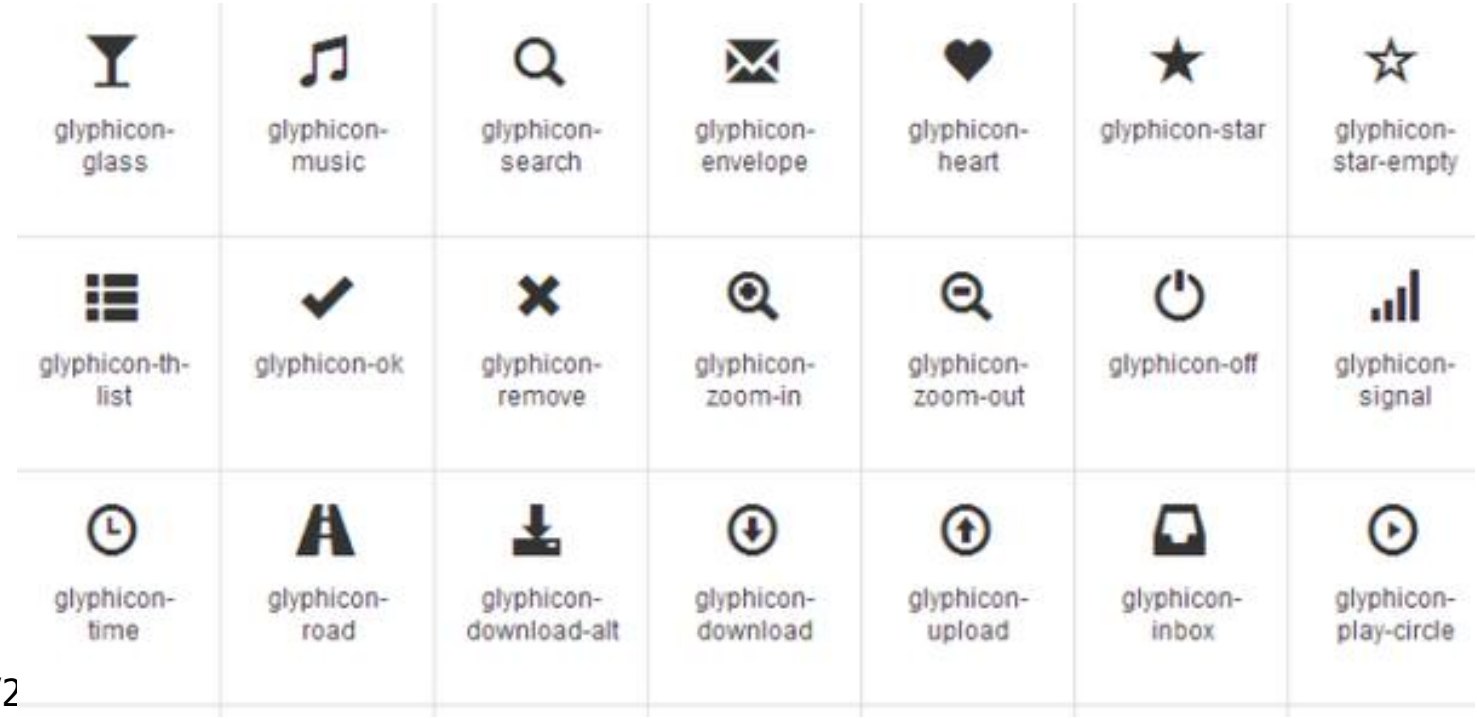
```
<div class="container">
  <h2>Different Progress Bar</h2>
  <div class="progress ">70%(Danger)
    <div class="progress-bar progress-bar-danger"  aria-valuenow="70" aria-valuemin="0" aria-valuemax="100" style="width:70%">
    </div>
  </div>
  <div class="progress ">50%(sucess)
    <div class="progress-bar progress-bar-success progress-bar-striped"  aria-valuenow="50" aria-valuemin="0" aria-valuemax="100" style="width:50%">
    </div>
  </div>
  <div class="progress ">30%(info)
    <div class="progress-bar progress-bar-info progress-bar-striped active"  aria-valuenow="30" aria-valuemin="0" aria-valuemax="100" style="width:30%">
    </div>
  </div>
</div>
```

Colored/striped/active Progress Bars



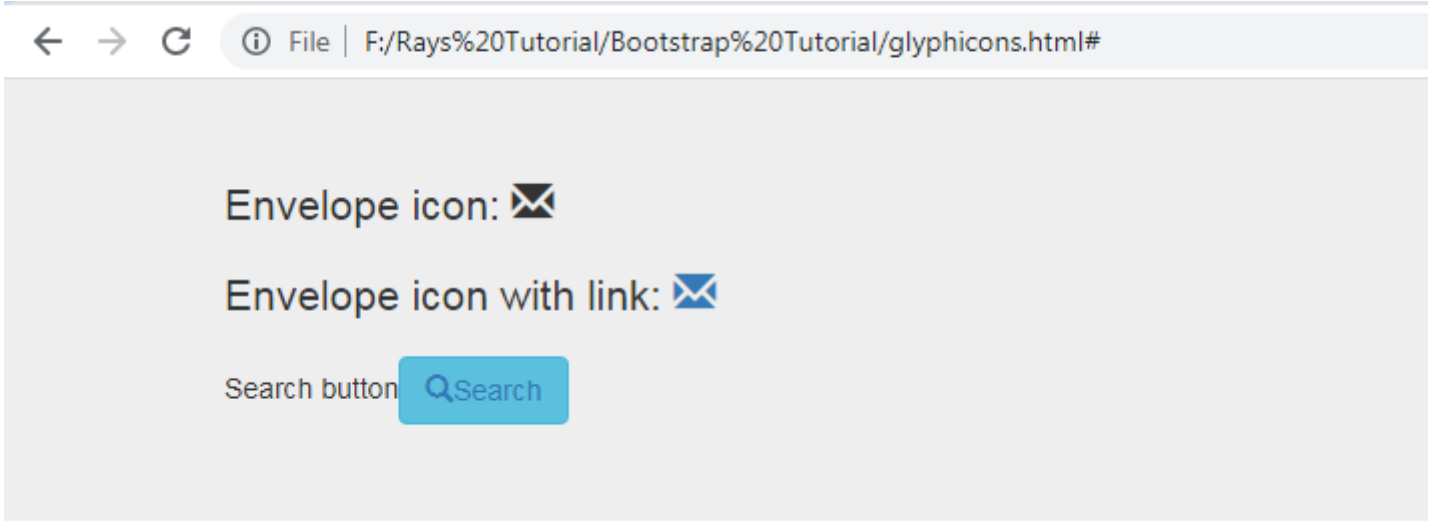
Bootstrap Glyphicons

- Glyphicons are icons. Which is used on text,buttons,links etrc.
- Bootstrap provides 260 glyphicons from the Glyphicons Halflings set.
- A glyphicon is inserted with the following syntax:
  -



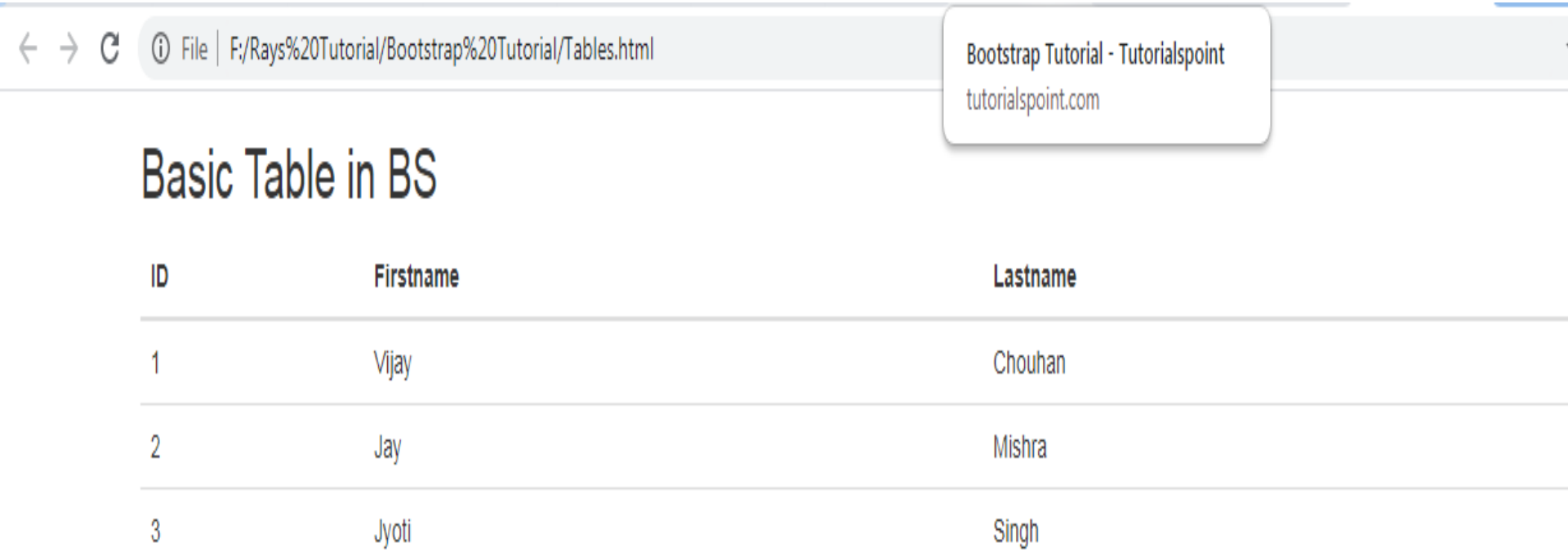
Some glyphicons example

- `<p>Envelope icon: <span class="glyphicon glyphicon-envelope"></span></p>`
- `<p>Envelope icon with link: <a href="#"><span class="glyphicon glyphicon-envelope"></span></a></p>`
- `Search button<button class="btn btn-info"><a href="#" style="text-decoration: none;"><span class="glyphicon glyphicon-search"></span>Search</a></button>`



Bootstrap tables

- A basic Bootstrap table has a light padding and only horizontal dividers.
- The .table class adds basic styling to a table:



Basic Table Example

```
<div class="container">
  <h2>Basic Table in BS</h2>
    <table class="table">
    <thead>
      <tr>
        <th>ID</th>
        <th>Firstname</th>
        <th>Lastname</th>
       </tr>
    </thead>
    <tbody>
      <tr>
        <td>1</td>
        <td>Vijay</td>
        <td>Chouhan</td>
      </tr>
      <tr>
        <td>2</td>
        <td>Jay</td>
        <td>Mishra</td>
      </tr>
</tbody>
  </table>
</div>
```

Striped Rows/Bordered Table/Hover Rows

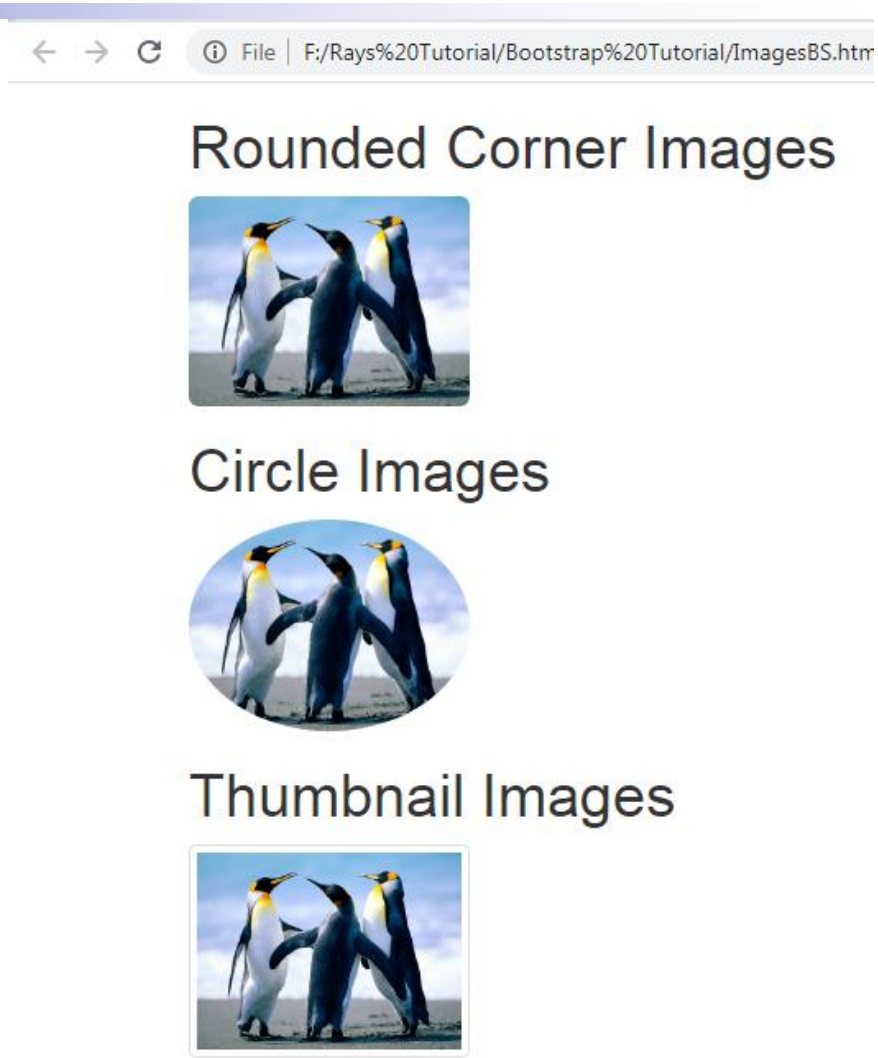
- Striped Rows
- The .table-striped class adds zebra-stripes to a table.
  - `<table class="table table-striped">`
- Bordered Table
- The .table-bordered class is used to add border on all sides of the table.
  - `<table class="table table-bordered">`
- Hover Rows
- The .table-hover class is used to get hover effects(Grey Color) on rows.
- `<table class="table table-hover">`

Bootstrap Images

- Bootstrap Image Shapes.
  - Rounded Corners.
  - Circle
  - Thumbnail

Bootstrap Images

```
<div class="container">
<h1>Rounded Corner Images</h1>
<img src="Penguins.jpg" class="img-rounded">
<h1>Circle Images</h1>
<img src="Penguins.jpg" class="img-circle">
<h1>Thumbnail Images</h1>
<img src="Penguins.jpg" class="img-thumbnail">
</div>
```



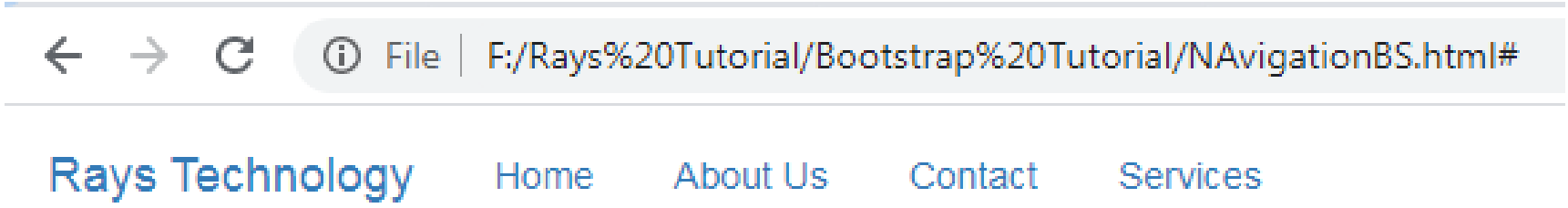
Bootstrap Dropdowns

- Basic Dropdown in Bootstrap
- A dropdown menu is a toggleable menu.
- It is used to select 1 item from predefined list.

```
<div class="dropdown">
  <button class="btn btn-info dropdown-toggle"  data-toggle="dropdown">Dropdown Example
  <span class="caret"></span></button>
  <ul class="dropdown-menu">
    <li ><a href="#">HTML</a></li>
    <li ><a href="#">CSS</a></li>
    <li class="divider"></li>
    <li><a href="#">Bootstrap</a></li>
  </ul>
</div>
```

Bootstrap Navigation Bar

- A navigation bar is a navigation header that is placed at the top of the page
- A default navigation bar is created with
  - `<nav class="navbar navbar-default">.`

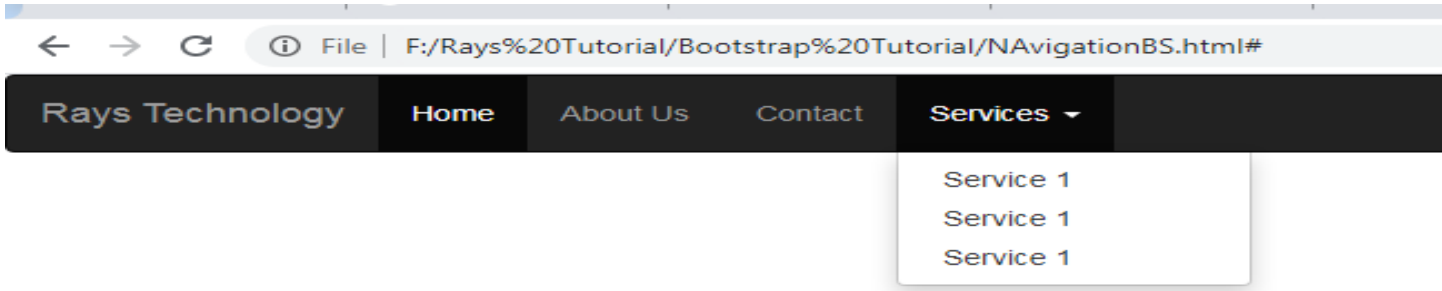


Default Navigation Bar

```
<nav class="navbar navbar-dfault">
  <div class="container-fluid">
    <div class="navbar-header">
      <a class="navbar-brand" href="#">Rays Technology</a>
    </div>
    <ul class="nav navbar-nav">
      <li class="active"><a href="#">Home</a></li>
      <li><a href="#">About Us</a></li>
      <li><a href="#">Contact</a></li>
      <li><a href="#">Services</a></li>
    </ul>
  </div>
</nav>
```

Inverted Navigation bar with dropdowns

```
<nav class="navbar navbar-inverse">
  <div class="container-fluid">
    <div class="navbar-header">
      <a class="navbar-brand" href="#">Rays Technology</a>
    </div>
    <ul class="nav navbar-nav">
      <li class="active"><a href="#">Home</a></li>
      <li><a href="#">About Us</a></li>
      <li><a href="#">Contact</a></li>
      <li class="dropdown">
        <a class="dropdown-toggle" data-toggle="dropdown" href="#">Services
        <span class="caret"></span></a>
        <ul class="dropdown-menu">
          <li><a href="#">Service 1</a></li>
          <li><a href="#">Service 1</a></li>
          <li><a href="#">Service 1</a></li>
        </ul>
      </li>
    </ul>
  </div>
</nav>
```



Navbar forms

- To add form elements inside the navbar, add the .navbar-form class to a form element and add an input(s).
  - ```
    <nav class="navbar navbar-inverse">

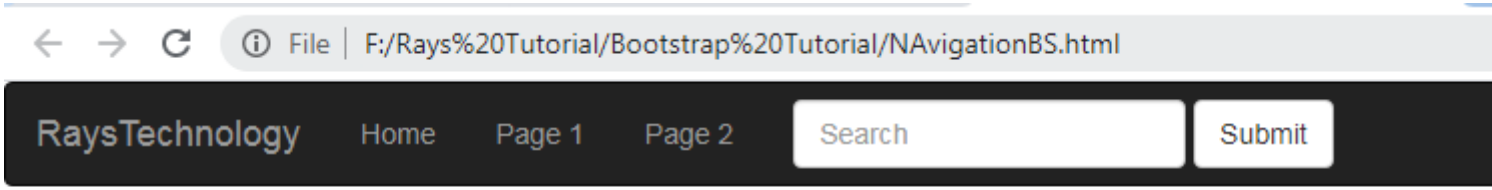
          <a class="navbar-brand" href="#">RaysTechnology</a>

        <ul class="nav navbar-nav">
          <li class="active"><a href="#">Home</a></li>
          <li><a href="#">Page 1</a></li>
          <li><a href="#">Page 2</a></li>
        </ul>
        <form class="navbar-form navbar-left" action="/action_page.php">

            <input type="text" class="form-control" placeholder="Search">

          <button type="submit" class="btn btn-default">Submit</button>
        </form>

    </nav>
    ```


    ```

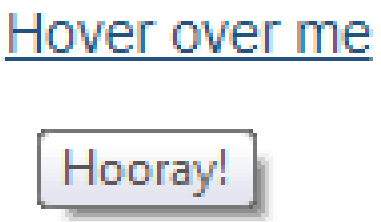
Right-Aligned Navigation Bar

SunilOS

```
<nav class="navbar navbar-inverse">
  <div class="container-fluid">
    <div class="navbar-header">
      <a class="navbar-brand" href="#">Rays Technology</a>
    </div>
    <ul class="nav navbar-nav">
      <li><a href="#">Home</a></li>
      <li><a href="#">Page 1</a></li>
      <li><a href="#">Page 2</a></li>
    </ul>
    <ul class="nav navbar-nav navbar-right">
      <li><a href="#"><span class="glyphicon glyphicon-user"></span> Sign Up</a></li>
      <li><a href="#"><span class="glyphicon glyphicon-log-in"></span> Login</a></li>
    </ul>
  </div>
</nav>
```

Bootstrap Tooltip

- The Tooltip is small pop-up box that appears when the user moves the mouse pointer over an element.
  - `<a href="#" data-toggle="tooltip" title="Hooray!">Hover over me</a>`



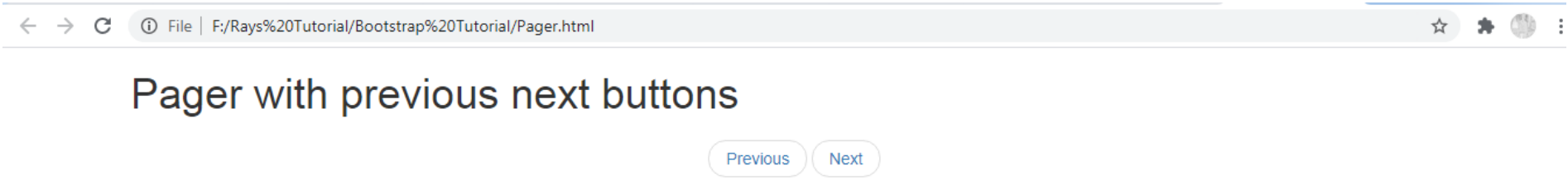
Positioning Tooltips

- By default, the tooltip will appear on top of the element.
- Use the data-placement attribute to set the position of the tooltip on top, bottom, left or the right side of the element
  - `<a href="#" data-toggle="tooltip" data-placement="top" title="Hooray!">Hover</a>`
  - `<a href="#" data-toggle="tooltip" data-placement="bottom" title="Hooray!">Hover</a>`
  - `<a href="#" data-toggle="tooltip" data-placement="left" title="Hooray!">Hover</a>`
  - `<a href="#" data-toggle="tooltip" data-placement="right" title="Hooray!">Hover</a>`

Bootstrap Pager

- It is some form of pagination.
- It provides previous and next buttons.
- We can create previous/next buttons, by adding the .pager class to an <ul> element.
- Use the .previous and .next classes to align each button to the sides of the page:

```
<ul class="pager">
    <li class="previous><a href="#">Previous</a></li>
    <li class="next><a href="#">Next</a></li>
  </ul>
```

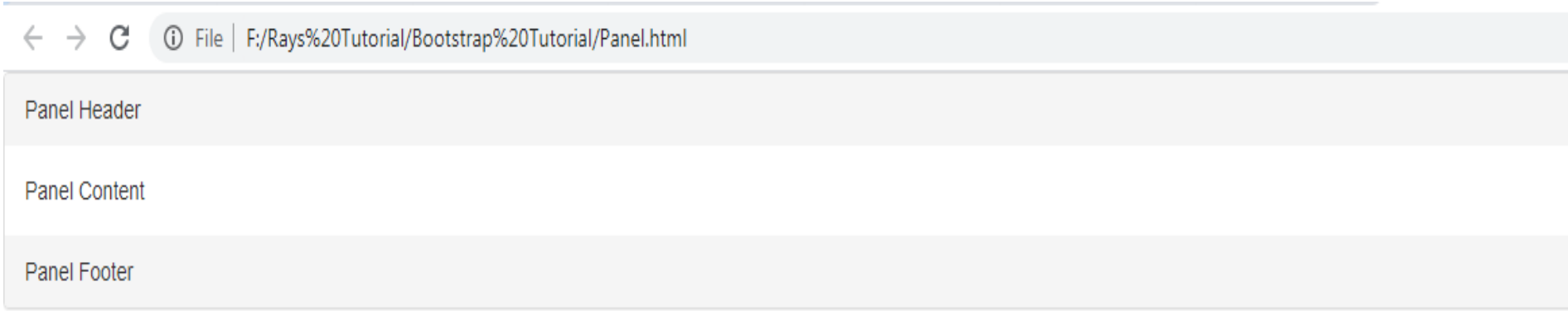


Bootstrap Panel

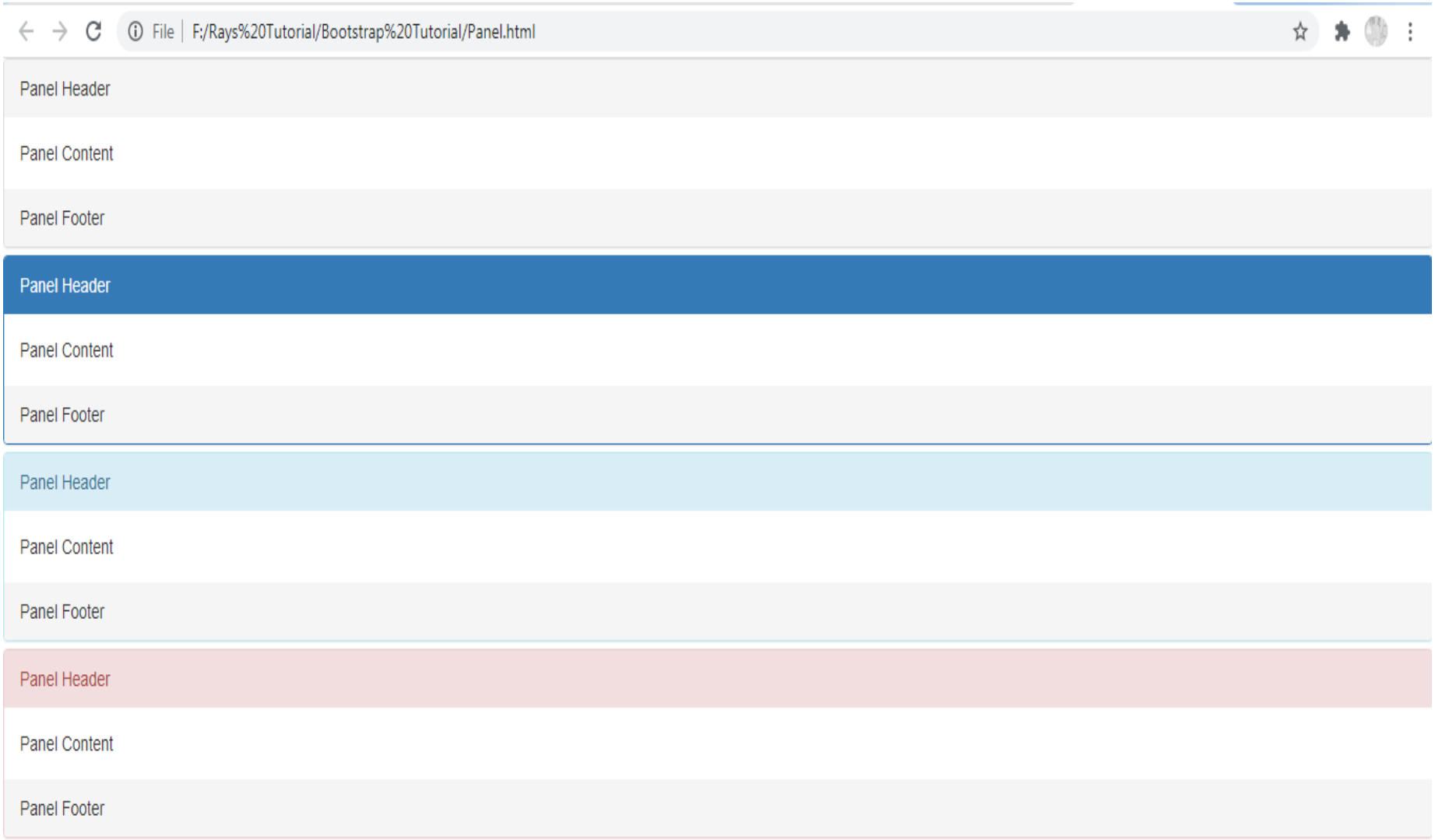
- Panels are created with the .panel class, and content inside the panel has a .panel-body class.
- It is a block which contains some padding around its content.
- The .panel-heading class is sued to add header to the panel.
- The .panel-footer class is used to add footer.
- To color the panel, use contextual classes (.panel-default, .panel-primary, .panel-success, .panel-info, .panel-warning, or .panel-danger):

Panel Demo

```
<div class="panel panel-default">
    <div class="panel-heading">Panel Header</div>
  <div class="panel-body">Panel Content</div>
  <div class="panel-footer">Panel Footer</div>
</div>
```



Panel Group with contexual color



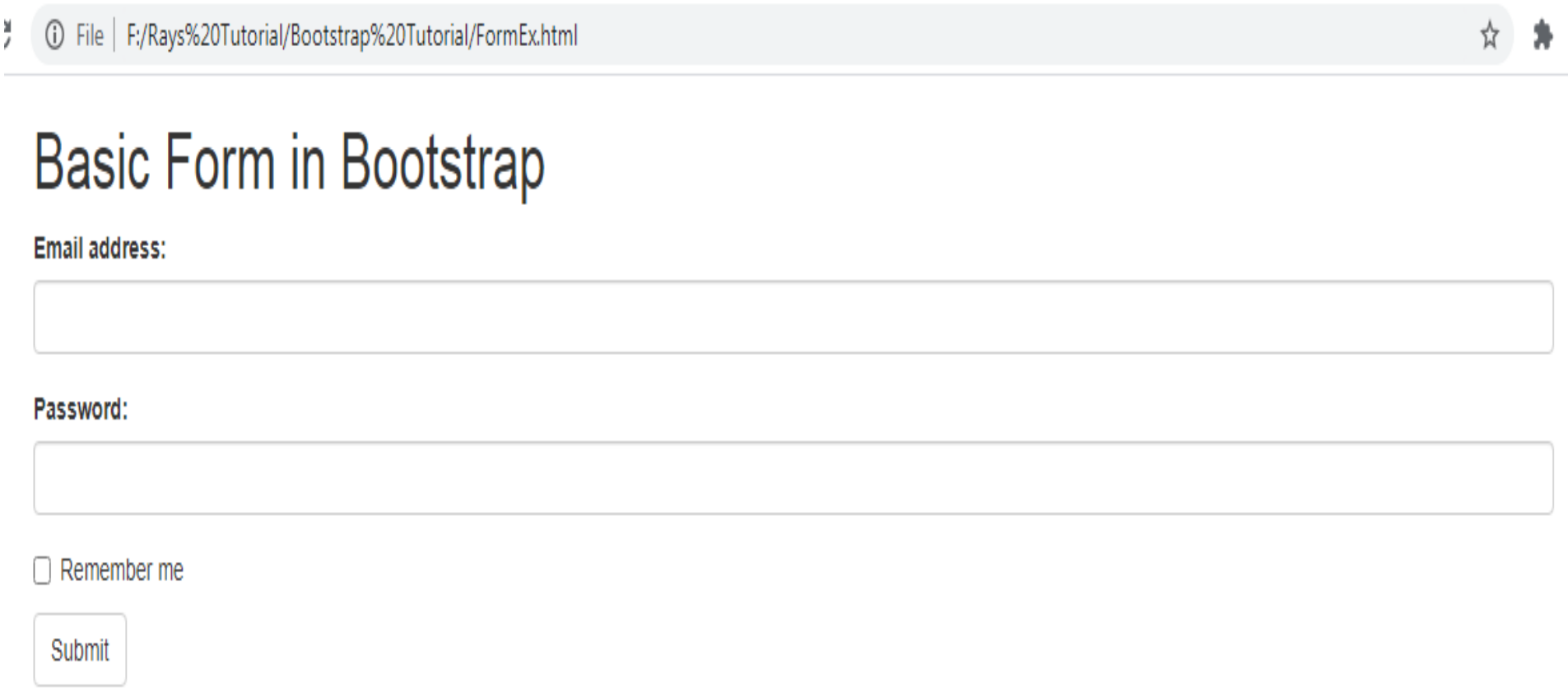
Bootstrap Forms

- Form controls automatically receive some global styling with Bootstrap
- All textual <input>, <textarea>, and <select> elements with class .form-control have a width of 100%.
- Bootstrap Form Layouts:
  - Vertical form (this is default)
  - Horizontal form
  - Inline form
- Standard rules for all three form layouts:
  - Wrap labels and form controls in
  - Add class .form-control to all textual <input>, <textarea>, and <select> elements

Bootstrap Forms

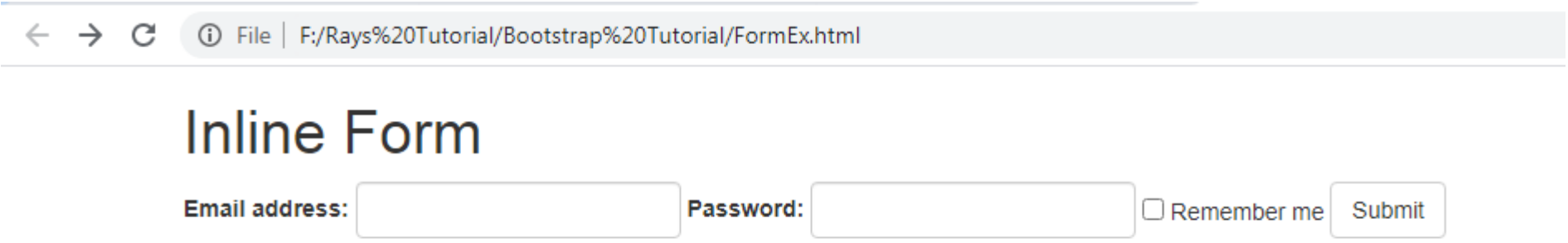
```
<div class="container">
            <h1>Basic Form in Bootstrap</h1>
<form action="action_page">
  <div class="form-group">
    <label for="email">Email address:</label>
    <input type="email" class="form-control" id="email">
  </div>
  <div class="form-group">
    <label for="pwd">Password:</label>
    <input type="password" class="form-control" id="pwd">
  </div>
  <div class="checkbox">
    <label><input type="checkbox"> Remember me</label>
  </div>
  <button type="submit" class="btn btn-default">Submit</button>
</form>
</div>
```

Bootstrap Forms (cont.)



Bootstrap Inline Form

- In an inline form, all of the elements are inline, left-aligned, and the labels are alongside.
- Additional rule for an inline form:
  - Add class .form-inline to the <form> element



Bootstrap Inline Form

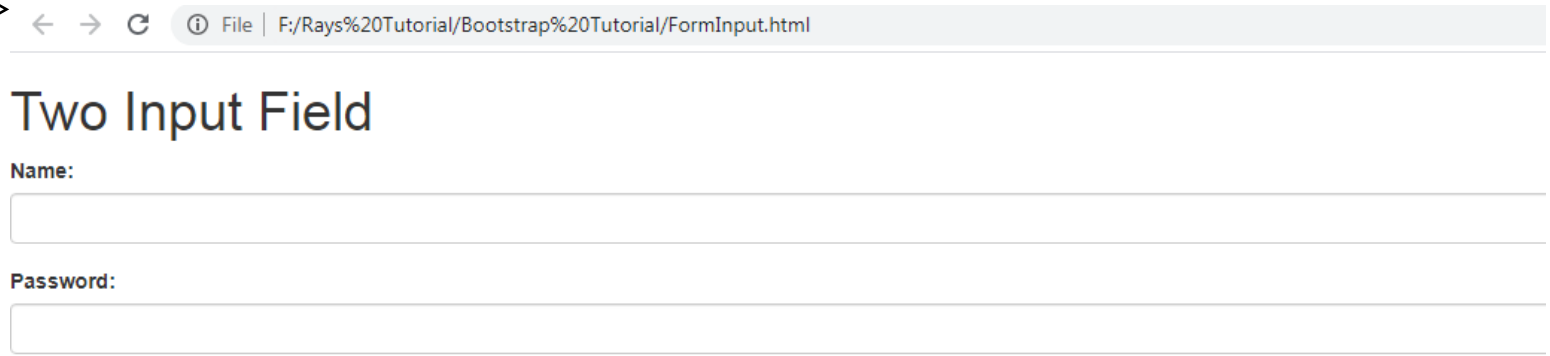
```
<div class="container">
     <h1>Inline Form</h1>
<form class="form-inline" action="action_page">
  <div class="form-group">
    <label for="email">Email address:</label>
    <input type="email" class="form-control" id="email">
  </div>
  <div class="form-group">
    <label for="pwd">Password:</label>
    <input type="password" class="form-control" id="pwd">
  </div>
  <div class="checkbox">
    <label><input type="checkbox"> Remember me</label>
  </div>
  <button type="submit" class="btn btn-default">Submit</button>
</form>
</div>
```

Bootstrap Form Inputs

- Bootstrap supports the following form controls:
  - input
  - textarea
  - checkbox
  - radio
  - select
- Bootstrap supports all the HTML5 input types: text, password, datetime, datetime-local, date, month, time, week, number, email, url, search, tel, and color.

Bootstrap Form Inputs

```
<div class="form-group">
  <label for="usr">Name:</label>
  <input type="text" class="form-
control" id="usr">
</div>
<div class="form-group">
  <label for="pwd">Password:</label>
  <input type="password" class="form-
control" id="pwd">
</div>
```



Form inputs

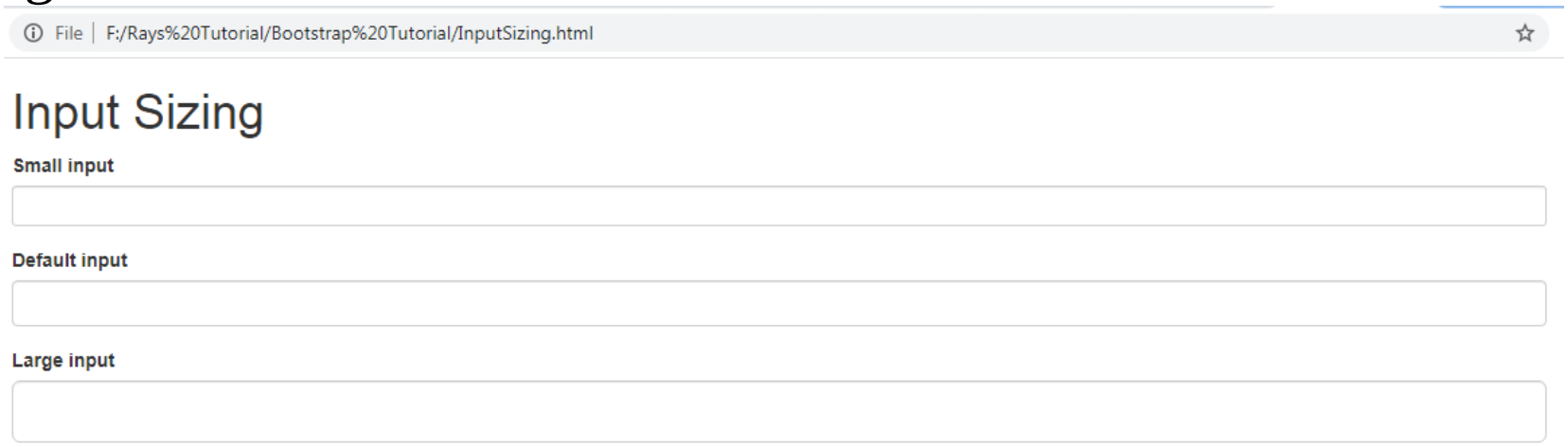
```
<div class="container">
      <h1> Inputs in BS</h1>
<div class="form-group">
  <label for="usr">Name:</label>
  <input type="text" class="form-control" id="usr">
</div>
<div class="form-group">
  <label for="pwd">Password:</label>
  <input type="password" class="form-control" id="pwd">
  <label for="comment">Comment:</label>
  <textarea class="form-control" rows="5" id="comment"></textarea>
</div>
<h3>Check Boxes</h3>
 <label class="checkbox-inline"><input type="checkbox" value="">Option 1</label>
  <label class="checkbox-inline"><input type="checkbox" value="">Option 2</label>
  <label class="checkbox-inline"><input type="checkbox" value="" disabled>Option 3</label>
```

Form inputs (cont.)

```
<h3>Radio Buttons</h3>
<label class="radio-inline"><input type="radio" name="optradio" checked>Option 1</label>
<label class="radio-inline"><input type="radio" name="optradio">Option 2</label>
<label class="radio-inline"><input type="radio" name="optradio">Option 3</label>
<h3>Select </h3>
<select class="form-control" id="sel1">
    <option>1</option>
    <option>2</option>
    <option>3</option>
    <option>4</option>
  </select>
<div>
```

Bootstrap Input Sizing

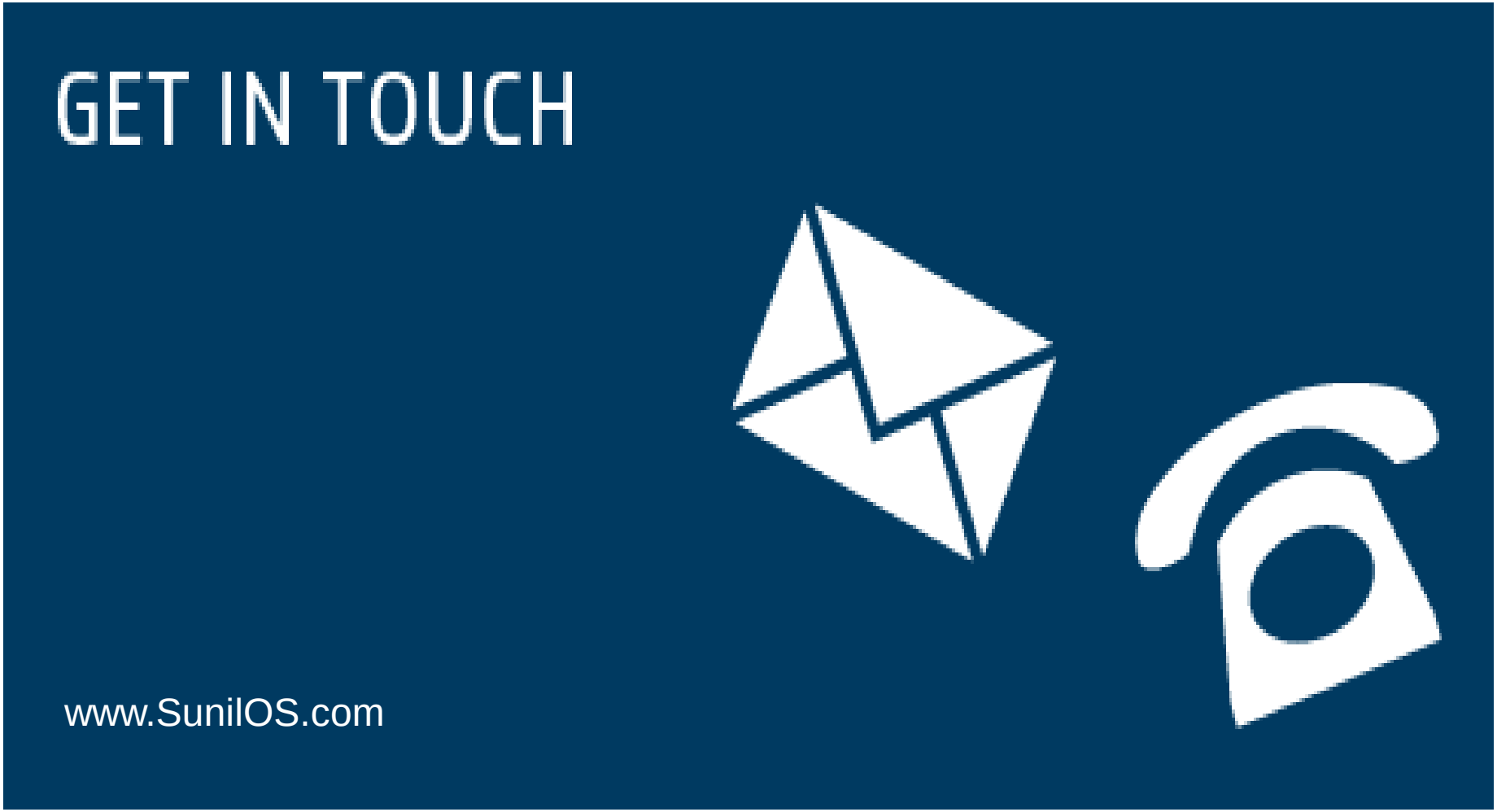
- set the heights of input elements using classes like .input-lg and .input-sm.
- we can quickly size labels and form controls within a **Horizontal form** by adding .form-group-* to the element
- We can also quickly size all inputs and other elements inside an .input-group with the .input-group-sm or .input-group-lg classes:



Bootstrap Input Sizing example


```
<div class="container">
            <h1>Input Sizing</h1>
  <div class="form-group">
    <label for="inputsm">Small input</label>
    <input class="form-control input-sm" id="inputsm"
type="text">
  </div>
   <div class="form-group">
    <label for="inputdefault">Default input</label>
    <input class="form-control" id="inputdefault" type="text">
  </div>
  <div class="form-group">
    <label for="inputlg">Large input</label>
    <input class="form-control input-lg" id="inputlg"
type="text">
  </div>
  </div>
```

Disclaimer

- This is an educational presentation to enhance the skill of computer science students.
- This presentation is available for free to computer science students.
- Some internet images from different URLs are used in this presentation to simplify technical examples and correlate examples with the real world.
- We are grateful to owners of these URLs and pictures.

Thank You!