TM

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P U B L I C A T I O N

CONCEPTS OF WEB TECHNOLOGY

Jump2Learn - The Online Learning Place

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Unit - 2

Design Web Sites Using Bootstrap 4.0

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2.1 Bootstrap Introduction

- Bootstrap is a front-end framework which utilizes HTML, CSS, and JavaScript.

- It is helpful in creating flexible and responsive web layouts.

- Bootstrap supports forms, buttons, tables, navigation, modals, various plug-ins and many other options.

- It is Mobile first approach.

- Bootstrap is free to download and use.

2.1.1 Advantages of Bootstrap

- **Open Source**: Bootstrap is an open source.

- **Browser Support:** It is supported by most of all browsers.

- **Easy to use** – Anybody can begin with Bootstrap having the knowledge of HTML and CSS.

- **Responsive design:** It creates responsive websites. Responsive means if one open website on any devices such as Tablets, Mobiles, and Desktops, the screen size of website will automatically adjusts according to device.

- **Save time** — Using Bootstrap predefined design templates and classes, developer can save times.

- It works with any editor.
- It works with any server side technology.

2.1.2 How to set bootstrap reference:

To set reference to bootstrap folder, use *href* attribute of <link> element.

Example

   <link rel="stylesheet" href="bootstrap.min.css"> link to bootstrap folder.

2.2 Bootstrap Grid Structure

Bootstrap grid structure makes it simple to design responsive website layouts. It supports up to 12 columns. It is possible to group the columns together to make wider columns. The columns will re-arrange automatically depending on the output device. The figure 2.1 shows grid structure.

Figure 2.1 : Bootstrap grid structure

Grid Classes

- The Bootstrap grid system has following classes:

Class-prefix	Applicable Device	Screen size
col-xs-*	Phones	<768px
col-sm-*	small screen devices like tablets	≥768px
col-md-*	medium size devices like desktops	≥992px
col-lg-*	larger device	≥1200px

Here value of * is 1 to 12.

Example

1) Create three equal Columns

```
<html>
  <head>
    <title>Demo of Bootstrap Grid system </title>
    <link href="bootstrap.min.css" rel="stylesheet">
  </head>
  <body>
<div class="row">
   <div class="col-sm-4"> column1 </div>
   <div class="col-sm-4"> column2 </div>
  <div class="col-sm-4"> column3 </div>
</div>
  </body>

</html>
```

2) Create Row with three columns divided in 1:4:1 ratio

```
    <div class="row">

      <div class="col-md-2"> Column left </div>
```

```
<div class="col-md-8"> Column middle </div>

<div class="col-md-2"> Column right </div>

</div>
```

3) Create Row with three columns divided unevenly

```
<div class="row">
    <div class="col-md-3">  Column left </div>
    <div class="col-md-7"> Column middle </div>
    <div class="col-md-2"> Column right </div>
</div>
```

4) Create two rows with uneven no. of column

```
 <div class="row">
  <div class="col-sm-4"> row-1: 4 column </div>
  <div class="col-sm-4"> row-1: 8 column </div>
 </div>
 <div class="row">
   <div class="col-sm-2"> row-2:2 column </div>
   <div class="col-sm-4"> row-2:4 column</div>
 <div class="col-sm-*" > row-2:6 column</div>     <! Here * indicate remaining
   column / >
 </div>
 </div>
```

2.3 Bootstrap Tables, Colours, Alerts and Form Controls

2.3.1 Bootstrap - Tables
Bootstrap provides classes for tables to improve the appearance of table. A basic Bootstrap table has effect of light padding and contains horizontal separators.

Bootstrap support following Table elements:

Tag	Description
<table>	It display data in a tabular format
<thead>	It specifies header rows (<tr>) of table
<tbody>	It specifies table rows (<tr>) in the body of the table.

<tr>	It specifies single row
<td>	It indicate table cell.
<caption>	It specifies description or summary about table.

Bootstrap <table> Classes

Bootstrap provides classes to make table responsive. Bootstrap Use following classes to give style to table:

Class	Description
table	It is used apply basic appearance to any <table>
table-responsive	It is used to make the table responsive.
table-striped	It is used to apply alternate background like zebra-stripes to table.
table-bordered	It is used to give border on all sides of the table and cells
table-condensed	It is used to makes table more compact
table-hover	It is used to give a hover effect on table rows. Effect will be grey background color.

<tr>, <th> and <td> contextual Classes

Bootstrap provides various classes to color rows or cells of table to show various actions:

Class	Description
active	It is used to specify the hover color to a row or cell
danger	It is used to specify a dangerous or potentially negative activity
info	It is used to specify a informative change or activity
success	It is used to specify a successful or positive activity
warning	It is used to specify a warning or activity that might need attention

Example: Simple Bootstrap Table with border

Following code display a simple Bootstrap Table with border.

```
<table class = "table table-bordered">
<caption> Simple Bootstrap Table with
    border </caption>
<thead>
  <tr>
    <th>Name</th>
    <th>Age</th>
  </tr>
</thead>
 <tbody>
  <tr>
    <td>manav</td>
    <td>20</td>
  </tr>
  <tr>
    <td>swara</td>
    <td>16</td>
  </tr>
  <tr>
    <td>manusi</td>
    <td>18</td>
  </tr>
 </tbody>
</table>
```

Output:

Simple Bootstrap Table with border

Name	Age
manav	20
swara	16
manusi	18

Example: Responsive table

To make table responsive, in above example write <table class = "table table responsive">

Example: bootstrap on table row

Following code apply Bootstrap on table row .

```
<table class = "table">
  <thead>
    <tr>
      <th>Name</th>
      <th>Grad</th>

    </tr>
  </thead>

  <tbody>
    <tr class = "active">
      <td>Shubh</td>

      <td>A</td>
    </tr>

    <tr class = "success">
      <td>Shaurya</td>

      <td>B</td>
    </tr>

    <tr class = "warning">
      <td>Ketul</td>

      <td>C</td>
    </tr>

    <tr class = "danger">
      <td>Swara</td>

      <td>D</td>
    </tr>
  </tbody>

</table>
```

2.3.2 Bootstrap colours

• Bootstrap colour classes are used to apply colour to element depending on their context. These classes convey meaning using colorus. They are used for Bootstrap text colour and background colour.

Bootstrap text colour classes:

Bootstrap provides following text colour classes: text-primary, text-secondary, text-success, text-danger, text-warning, text-info, text-light, text-dark, text-muted, text-white.

Bootstrap background colour classes:

Bootstrap provides following background colour classes bg-primary, bg-success, bg-warning, bg-info, bg-danger, bg-secondary, bg-dark and bg-light.

Example:

Following line display light text on danger background colour.

<p class="bg-danger text-light "> light text on danger background color </p>

2.3.3 Bootstrap Alerts

- Bootstrap provides various classes to display alert message to user in various styles.
- Bootstrap Alert support following class.

alert-success	It is used to show a successful or positive activity.
alert-info	It is used to show a informative change or action.
alert-warning	It is used to show a warning that might require attention.
alert-danger	It is used to show a dangerous or potentially negative activity.
alert-primary	It is used to show an important activity
alert-secondary	It is used to show a less important activity
alert-light	It displays dark grey alert box
alert-dark	It displays Light grey alert box.

Example:

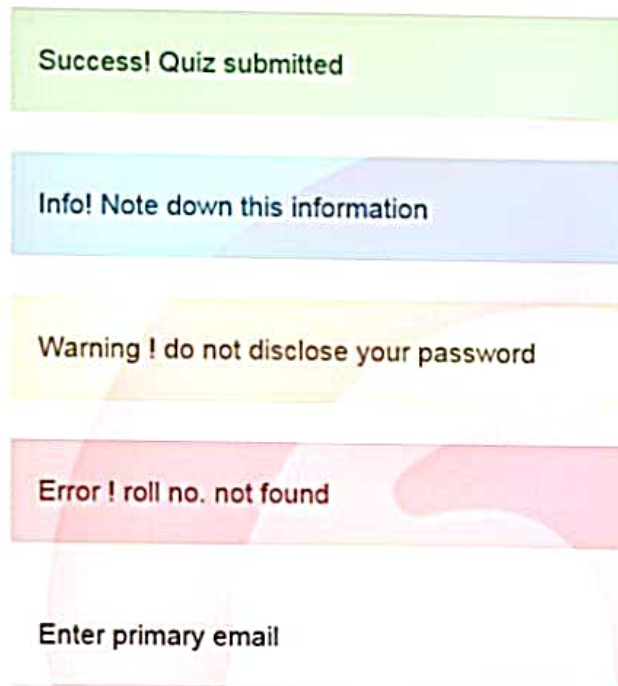The following example demonstrates various Bootstrap Alerts classes.

```
<html>
<head>
  <title>Demo of Bootstrap Alert </title>
  <link href="bootstrap.min.css" rel="stylesheet">
 </head>
<body>

<div class = "alert alert-success"> Success! Quiz submitted </div>
<div class = "alert alert-info">Info! Note down this information</div>
<div class = "alert alert-warning"> Warning ! do not disclose your password</div>
<div class = "alert alert-danger">Error ! roll no. not found</div>
<div class = "alert alert-primary">Enter primary email</div>
</body>
</html>
```

Output will look like:

Success! Quiz submitted

Info! Note down this information

Warning ! do not disclose your password

Error ! roll no. not found

Enter primary email

Closing Alerts box:

- The alert box does not close automatically.
- To close alert box, first, use *alert-dismissible* along with *alert* class. Then use class="close" and *data-dismiss="alert"* with button or link.

Example:

The following code show how to create closing alert box. By clicking on close button, alert box can be closed. "&times" indicate x sign.

```
<div class="alert alert-dismissable">
    <button type="button" class="close" data-dismiss="alert">
      &times;
    </button>
    To close alert box click X
</div>
```

Output: Alert box will look like this:

To close alert box click X   **X**

Alerts can be animated

- It is possible to give animation when closing the alert message. The *fade* and *in* classes are used to adds a fading effect.
- Following line create animated alerts.

```
<div class="alert alert-dismissible fade in">
```

2.3.4 Bootstrap Form controls

- Bootstrap form controls are used to customize from. They allows to give different styles of forms controls like labels, buttons, input, select, checkbox, textarea, etc. With Bootstrap, some global styling automatically applied to form controls.

Rules while using bootstrap form:
1. Wrap form controls in *<div class="form-group">*
2. Add class *form-control* to <input>, <select>, and <textarea> elements

Following is the list of bootstrap form class.

Classes	Description
form-group	It is used to group form controls
form-control	It makes input element full-width i.e. make element width is 100%
form-horizontal	It create horizontal form
form-inline	It create inline form
form-control-file	It is used for File inputs
form-check, form-check-inline	It is used for Checkboxes and radios
input-lg	It is used to set height bigger than default-size
input-sm	It is used to set height smaller than default-size

Bootstrap provides three different types of form layouts:
   a) Vertical Form (default)
   b) Horizontal Form
   c) Inline Form

a) Vertical or Basic Form

This is the default Bootstrap form layout. This layout applied styles to form controls without needing any extra class to the <form> element. Following code display Form in vertical layout.

```
<body>
  <div>
    <h3>Vertical form example</h3>
    <form>
      <div class="form-group">
```

```
      <label>User Id:</label>
      <input type="text" class="form-control" >
    </div>
    <div class="form-group">
      <label>Password:</label>
      <input type="password" class="form-control" >
    </div>
    <button type="submit" >Submit</button>
  </form>
  </div>
</body>
```

Output:

Vertical form example

User Id:

Password:

Submit

b) Horizontal Form Layout

In horizontal form layout, labels are display on the same line as form controls and aligned next to the input field.

Example:

Following code display Form in Horizontal layout.

```
<body>
  <form class="form-horizontal">
    <div class="form-group">
      <label class="control-label col-sm-2"> User id:</label>
      <div class="col-sm-10">
        <input type="text" class="form-control">
      </div>
    </div>
    <div class="form-group">
      <label class="control-label col-sm-2">     Password:</label>
      <div class="col-sm-10">
        <input type="password" class="form-control">
      </div>
    </div>
    <div class="form-group">
      <div class="col-sm-offset-2 col-sm-10">
      </div>
    </div>
    <div class="form-group">
```

```
        <div class="col-sm-offset-2 col-sm-10">
            <button type="submit" class="btn btn-default"> Submit</button>
        </div>
    </div>
  </form>
</body>
```

Output:

User id:

Password:

Submit

3. Inline Form Layout

- In an inline form layout, all elements are inline and left-aligned. All elements display in single line.
- It create compact layout by placing the form controls side-by-side.
- It will be stacked automatically.
- It is created using Bootstrap class *form-inline* with the <form> element.

Example:

Following code display Inline Form layout.

```
<body>
  <form class="form-inline">
  <div class="form-group">
    <label>User Id:</label>
      <input type="text" class="form-control">
  </div>
  <div class="form-group">
    <label>Password:</label>
      <input type="password" class="form-control">
  </div>
</body>
```
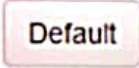
output

| User Id: [   ] | Password: [   ] |

2.4 Working with Buttons and Button Groups

2.4.1 Buttons

Buttons are used for a variety of purposes including submit form, reset form, performing interactive activities, and so on. The Bootstrap buttons classes apply different styles to buttons.

Button Styles

Bootstrap support following classes to apply styles to button:

Button	Class	Description
Default	btn btn-default	It display default gray button with gradient.
Primary	btn btn-primary	It specify primary action button in a set of buttons.
Info	btn btn-info	It is used to display informative button.
Success	btn btn-success	It is used to specify a successful or positive activity.
Warning	btn btn-warning	It is used to indicate warning.
Danger	btn btn-danger	It is used to indicate a dangerous or negative action.
Link	btn btn-link	It is used to display link button

Following line apply success style to button:

```
<button type="button" class="btn btn-success"> Success </button>
```

Change the Sizes of Buttons

Bootstrap allows changing button size. It supports following classes to change button size.

Class	Description

btn-lg	It is used to make the button larger.
btn-md	It is used to make the button size medium.
btn-sm	It is used to make the button smaller.
btn-xs	It is used to make the button size extra small
btn-block	It is used to create block level buttons. It spans the full width of a parent.

Following line display button in large size

```
<button type="button" class="btn  btn-lg"> large button </button>
```

Button State

Any button has two states. It may be active or a disabled.

(i) Active State

- Active button will appear pressed. It appears with a darker background, darker border, and shadow.

- To show that button is active, Use *active* attribute with *<button>*.

ii) Disabled State

- Sometimes it is necessary to disable a button for certain reason. For example, we want to make sure that user should enter all information before submitting form. In this situation login button will be enable after filling all information.

- Disable button is unclickable. It loses the gradient and fades in color by 50%

- To make button disable, use *disabled* attribute with *<button>*

Example:

```
<button type="button" class="btn  active">This is Active button</button>
<button type="button" class="btn  disabled">This is Disabled button</button>
```

Button will display as shown in figure:

> This is Active button   This is Disabled button

2.4.2 Button Groups

Button group is used to group multiple buttons on a single line. Bootstrap provides following button groups class:

Class	Description
btn-group	It is used to group buttons.
btn-group-lg, btn-group-xs, btn-group-sm,	This class helpful to apply button sizing classes to each button in group.
btn-group-vertical	It helps to create a vertical button group. i.e. buttons appear vertically stacked instead of horizontally.
btn-toolbar	It is used to combine sets of button groups into button toolbars

Example:
The following example demonstrates the use of class *btn-group*

```
<body>
<div class = "btn-group btn-group-lg">
    <button type = "button" class = "btn btn-default"> Button 1 </button>
    <button type = "button" class = "btn btn-default"> Button 2 </button>
    <button type = "button" class = "btn btn-default"> Button 3 </button>
</div>
</body>
```
Output:
Button will display as shown in figure:

Button 1	Button 2	Button 3

2.5 Bootstrap Images, Media object

2.5.1 Images

- Images are very helpful in designing web pages. So, it is necessary to styling images and makes them responsive.
- Bootstrap offer three classes to styles the images. Image can be displayed in circle, thumbnail or Rounded Corners. Following is the list of classes that give style to image.

Class	Description
img-circle	It display image in circle.
img-rounded	It display image in Rounded corners.

img-thumbnail	It gives effect of Thumbnail. It adds padding and a gray border. The Bootstrap thumbnail is very helpful for displaying grids of images or videos. It is also helpful in creating images or videos gallery.

Example:

```
<img class="img-circle"    src="image1.jpg" height=200 width=200 >
<img class="img-rounded"   src="image1.jpg" height=200 width=200 >
<img class="img-thumbnail" src="image1.jpg" height=200 width=200 >
```

Output:

Circle   Rounded corner   Thumbnail

Responsive Images

- In Bootstrap it is possible to make the images responsive. Responsive images automatically resize so it fit into the dimension of the screen. Use *img-responsive* class to make image responsive.

Example: following code make image responsive.

```
<img class="img-responsive" src="image1.jpg" >
```

2.5.2 Media Objects

Bootstrap gives simple way to align media objects such as images or videos, so media objects appear to the left (left-aligned) or to the right (right-aligned) of some content. This type of alignment is necessary while writing blog comments, tweets and so on. The media object is used to make the code for creating this type of alignment shorter.

Media objects provide following classes:

Class	Description

media	Define media group
media-body	Define body for media object
media-object	Define media object
media-heading	Set heading
media-left	Set media object left align to text
media-right	Set media object right align to text
media-top	Set media object align to top
media-bottom	Set media object align to bottom
media-middle	Set media object align to middle
Media-list	Define media list

Steps for using media objects:

Step 1: Add *media* class to the *<div>* element.

Step 2: Use second *<div>* inside *media* *<div>*. Use the *media-left* class to align the media object.

Step 3: Place Text inside a *<div>* with *class="media-body"*.

Step 4: Inside this *<div>*, place headline using *media-heading* class. This is optional.

Example:

Following example demonstrate how media object left and right align.

```
<body>
    <div class="container">
        <!-- Left-aligned -->
        <div class="media">
            <div class="media-left">
                <img  class="media-object"  src="image1.jpg"  height=50 width=50>
            </div>
            <div class="media-body">
                <h3 class="media-heading"> Media object: left align</h3>
                <p> Concept of web technology html css javascript</p>
            </div>
        </div>
        <hr>
        <!-- Right-aligned -->
        <div class="media">
            <div class="media-body">
                <h3 class="media-heading"> Media object: right align</h3>
```

```
        <p> Concept of web technology html css javascript</p>
     </div>
     <div class="media-right">
        <img  class="media-object" src="image2.jpg" height=50  width=50>
     </div>
    </div>
   </div>
  </body>
```

Output:

Media object: Left align

Concept of web technology html css javascript

Media object: Right align

Concept of web technology html css javascript

Nesting of media object:

It is possible to nest media object, i.e. media objects inside another media objects. It is useful for creating comment threads such as in blog post or social media.

Example:

Following example shows nesting of media object.

```
  <body>
    <div class="media">
      <div class="media-left">
        <img  class="media-object"  src="image1.jpg" height=50 width=50 >
      </div>
      <div class="media-body">
        <h3 class="media-heading"> Shaurya</h3>
        <p>Which book is good to learn HTML 5, CSS, JavaScript & BootStrap.?</p>
        <!-- nesting -->
```

```
<div class="media">
    <div class="media-left">
        <img class="media-object" src="image2.jpg"  height=50 width=50>
    </div>
    <div class="media-body">
        <h3 class="media-heading"> Shubh</h3>
        <p> Concept of Web Technology is very good book to learn all this
concept.</p>
    </div>
  </div>
 </div>
</div>
</body>
```

Output:

Shaurya
Which book is good to learn HTML 5, CSS, JavaScript & BootStrap.?
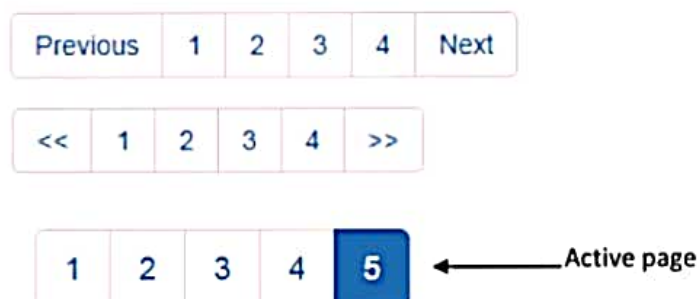
Shubh
Concept of Web Technology is very good book to learn all this concept.

2.6 Pagination

- Pagination is the links given to multiple pages within website or application.
- Bootstrap pagination is used to specify that related content exist across multiple pages and create links to navigate across them.
- Bootstrap pagination looks like this:

| Previous | 1 | 2 | 3 | 4 | Next |

| << | 1 | 2 | 3 | 4 | >> |

| 1 | 2 | 3 | 4 | **5** | ←———— Active page |

- Bootstrap provides following pagination classes. *disabled* and *active* classes are used to customize link or show status of link. *pagination-lg* and *pagination-sm* are used for sizing.

Class	Description
pagination	It adds the pagination on page.
disabled	It make link disabled. A disabled link cannot be click.
active	It specifies the current or active page.
pagination-lg	It makes pagination block larger size.
pagination-sm	It makes pagination block smaller size.

- Pagination is built with list HTML elements.

Example

Following example demonstrate various pagination.

```
<h3>Pagination demo</h3>
<p> smaller size: </p>
<ul class="pagination pagination-sm">
    <li class="active"> <a href="#">1</a></li>
    <li><a href="#">2</a></li>
    <li><a href="#">3</a></li>
</ul>
<p> normal size </p>
<ul class="pagination">
    <li><a href="#">1</a></li>
    <li><a href="#">2</a></li>
    <li><a href="#">3</a></li>
</ul>
<p> larger size: </p>
<ul class="pagination pagination-lg">
    <li><a href="#">1</a></li>
    <li><a href="#">2</a></li>
    <li><a href="#">3</a></li>
</ul>
```

Output:

Pagination demo

smaller size:

| 1 | 2 | 3 |

normal size

| 1 | 2 | 3 |

larger size:

| 1 | 2 | 3 |

****