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Full-Stack Software Development

Course: Introduction to Web Development

Lecture On: Bootstrap

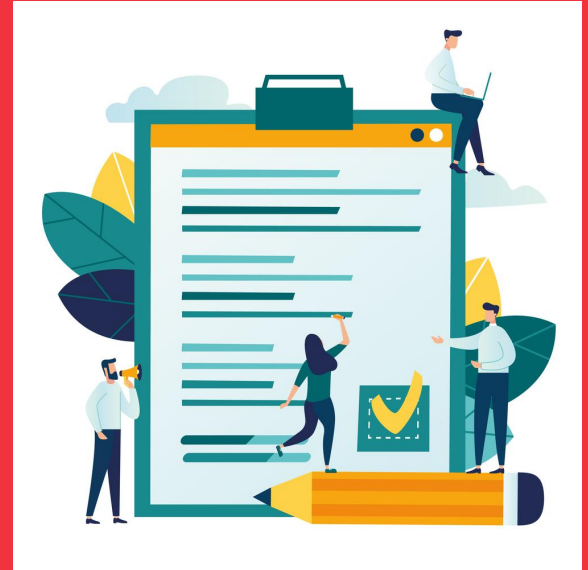**Instructor:** Siddhesh Prabhugaonkar

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In the previous class, we covered....

- CSS3

- CSS Transform

- CSS Transition

- CSS Animation

Today's Agenda
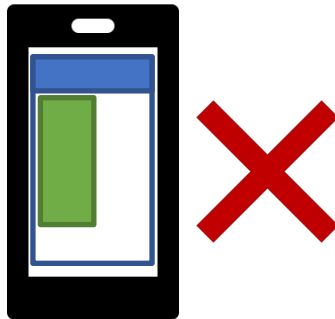
- Responsive Web Design

- Bootstrap

Responsive Web Design

Introduction to Responsive Web Design (RWD)

- Web pages can be viewed on various devices, such as desktops, large screens, laptops, tablets and mobile phones.

- It is important to develop a web page that is legible and looks good on every device. Web pages should not truncate crucial information if the device is small in size.

- Responsive Web Design (RWD) is the process of using HTML and CSS to hide, shrink, resize or move the content of a web page so it looks good on every device.

Responsive Web Design

Viewport

The viewport is the area of a web page that is visible to a user. The viewport size varies from device to device. Desktops and laptops will have large viewports, whereas mobile phones will have smaller viewports.

```
<meta name="viewport" content="width=device-width, initial-scale=1.0" >
```

- HTML5 allows web designers to control the viewport using the <meta> tag, as shown in the code above.

- The **width=device-width** property is used for setting the width of a web page to match the device's width.

- The **initial-scale=1.0** property sets the initial zoom level of the web page to 1.0.

- As a rule of thumb in the context of RWD, users should not have to pinch and zoom or scroll horizontally to view a web page.

- To ensure RWD, web designers should not use large fixed-width elements, write styles based on a particular viewport or use media queries.
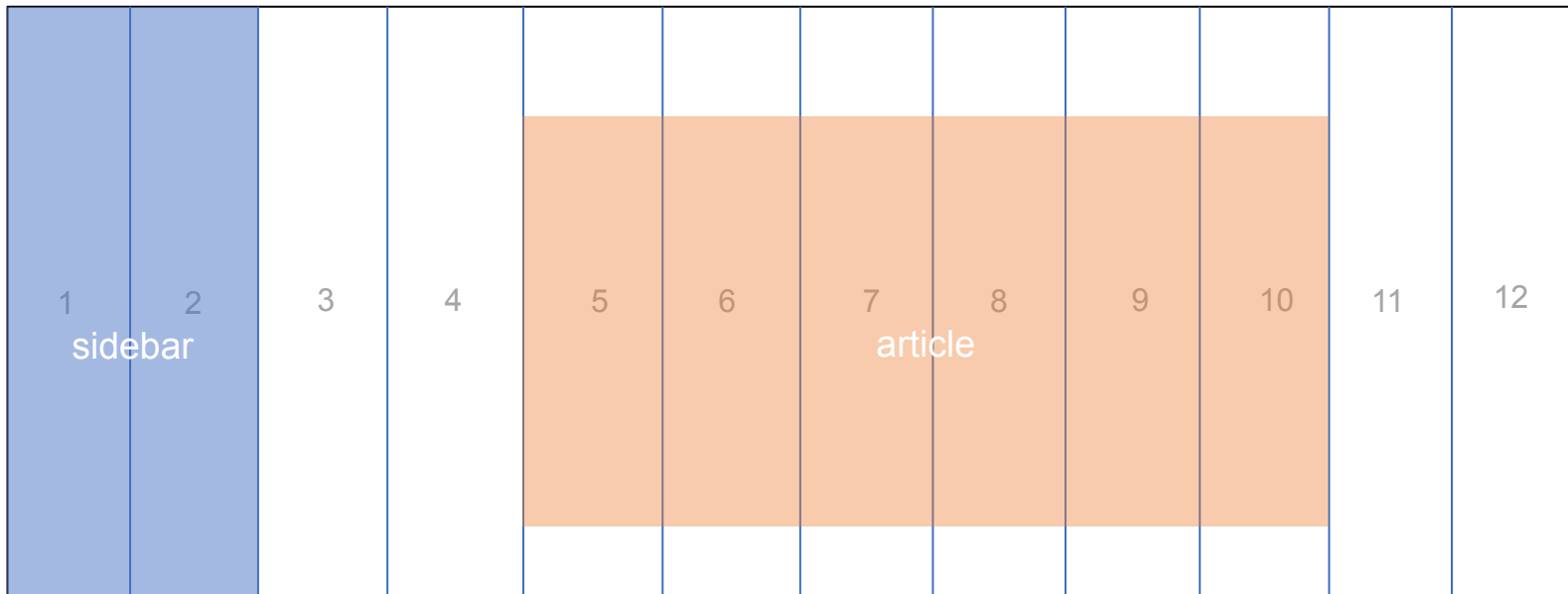
Without RWD

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With RWD

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RWD Grids

Essentially, grids are used on web pages to simplify the task of placing elements on a web page. They are generally divided into columns. A responsive web-grid normally has 12 columns, which have a total width of 100% each, so that designers can shrink or increase the size as per the device. For instance, using the grid given below, you can easily observe that the sidebar needs only 2 columns, whereas the article content needs 6 columns.

- Media queries are conditional block statements for styling. If the condition specified is met, only then the CSS properties mentioned inside the block will be executed.

- Media queries are specified using the **@media** keyword followed by a condition.

```
h4 { color: green; }

@media only screen and (max-width: 500px) {
  h4 { color: red; }
}
```

- As you can see in the code given above, under normal circumstances, the <h4> color is green. However, if the width is smaller than 500px, then the color of <h4> will be red.

- Adding the max-width property creates a breakpoint in your style. When the device width keeps reducing from, say, 1208px, it will keep showing <h4> color as green until its size falls below 500px, which is when it will apply a different style to h4. This is process is known as a breakpoint.

- You can add multiple breakpoints for various device widths. This will ensure every device has a specific style.

Responsive Web Design

RWD Mobile-first

While creating websites with RWD, you should always design for **mobile-first**. Your styles should be initially designed for a mobile view.
Hence, the conditions should be *min-width,* which will target sizes greater than a mobile screen.

Typical breakpoints are as follows:

```css
@media only screen and (max-width: 576px) {…} /*Extra small devices like phones; width < 600px*/

@media only screen and (min-width:576px) {…} /*Small devices like portrait tablets; width > 600px*/

@media only screen and (min-width: 768px) {…} /*Landscape tablets; width > 768px*/

@media only screen and (min-width: 992px) {…} /*Laptops and desktops; width > 992px*/

@media only screen and (min-width: 1200px) {…} /*Large laptops and screens; width > 1200px*/
```

You can also check for the orientation of a device using the following syntax:

```css
@media only screen and (orientation: landscape) {…}
```

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RWD Media

- To make media elements responsive, you can use the *width* and *height* properties.

- By setting *width: 100%* and *height: auto*, you can ensure that an image or a video will be responsive and scale up/down.

- However, the downside of the case mention above is that sometimes, you would not want the image to scale up as it could pixelate the image. In this case, you can use the *max-width: 100%* property to ensure that the image does not scale up more than its original size.

```
img, video {
    height: auto;
    width: 100%;
}
```

Responsive image will scale more than its actual width.

```
img, video {
    height: auto;
    max-width: 100%;
}
```

Responsive image will scale only till its maximum width.

Poll 1 (15 Sec)

Which of the following statements about the viewport is true?
(More than one option may be correct.)

1. The viewport is the visible area on the web page.

2. The viewport will be different for different screen sizes.

3. The viewport is fixed.

4. All of the above

Poll 1 (Answer)

Which of the following statements about the viewport is true?
(More than one option may be correct.)

1. **The viewport is the visible area on the web page.**

2. **The viewport will be different for different screen sizes.**

3. The viewport is fixed.

4. All of the above

Poll 2 (15 Sec)

What is the use of a media query in CSS?

1. It is used to introduce certain CSS properties on the web page only if certain conditions are met.

2. It is primarily used for including the media elements on the web page.

3. It does not check for any condition and uses a default value.

4. All of the above

Poll 2 (Answer)

What is the use of a media query in CSS?

1. **It is used to introduce certain CSS properties on the web page only if certain conditions are met.**

2. It is primarily used for including the media elements on the web page.

3. It does not check for any condition and uses a default value.

4. All of the above

Bootstrap Framework

The Bootstrap Framework

Introduction to Bootstrap

- Bootstrap is a widely popular front-end framework for creating websites with responsive web design.

- It is fairly lightweight in terms of its size and comes with a host of inbuilt CSS properties and components, such as alert boxes, dialog boxes, tables, buttons, navigation bars, dropdowns, cards and many more, which are already styled.

```html
<!DOCTYPE html>
<html>
<head>
<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/css/bootstrap.min.css"
integrity="sha384-9aIt2nRpC12Uk9gS9baDl411NQApFmC26EwAOH8WgZl5MYYxFfc+NcPb1dKGj7Sk" crossorigin="anonymous">
</head>
<body></body>
</html>
```

You can check out more about Bootstrap here.

You can include the pre-styled Bootstrap components by simply creating an element and giving the element a class name that is specified by Bootstrap. As shown in the example below, adding the classes *btn and btn-primary* will give the button a blue background-color and white text.

```
<button class="btn btn-primary" type="button">Primary Button</button>
```
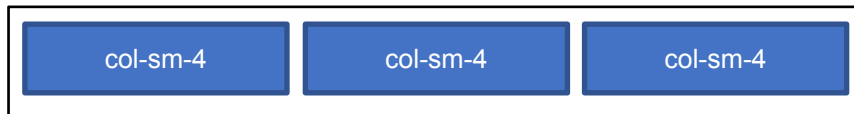
Primary Button

You can check out more about Bootstrap here.

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Bootstrap Grid and Layout

- Apart from a large variety of <u>components</u>, Bootstrap is popular for its grid system, which makes placement of elements simpler.

- Bootstrap provides a grid of 12 columns. However, these 12 columns need to be nested inside a row, and every row should be nested inside a container. Thus, **container > row(s) > column(s).**

- Furthermore, Bootstrap has introduced classes for various <u>breakpoints</u>, such as extra-small(<576px), **sm** (>=576px), **md** (>=768px), **lg** (>=992px) and **xl** (>=1200px)**.**

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

This code creates a grid in which every div inside the row takes 3 columns as width on devices with width greater than 576px (sm).

| col-sm-4 | col-sm-4 | col-sm-4 |

You can check out the Bootstrap layout <u>here</u>.

Bootstrap Components

Alerts

As you already know, alerts provide feedback message for the user action.

A simple primary alert—check it out!

A simple secondary alert—check it out!

A simple success alert—check it out!

A simple danger alert—check it out!

A simple warning alert—check it out!

A simple info alert—check it out!

A simple light alert—check it out!

A simple dark alert—check it out!

You can find the example code for Bootstrap Alerts here.

You can read more about Bootstrap Alerts here.

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Buttons

- Bootstrap also allows you to add different button styles with each style serving its own semantic purpose.

You can find the example code for Bootstrap Buttons <u>here</u>.

You can read more about Bootstrap Buttons <u>here</u>.

Cards

- Bootstrap cards can be used to create a flexible container that can consist of different components.

  You can find the example code for Bootstrap Cards here.

  You can read more about Bootstrap Cards here.

Bengal White Tiger

They are white because of the lack of pigment. They are found in different parts of India and are well known as bengal white tigers.

Read More

Elephant

Elephants are found in different regions around the globe. They belong to mammal family.

Read More

Carousel

- You can create a slideshow effect on your web page using the Bootstrap carousel.
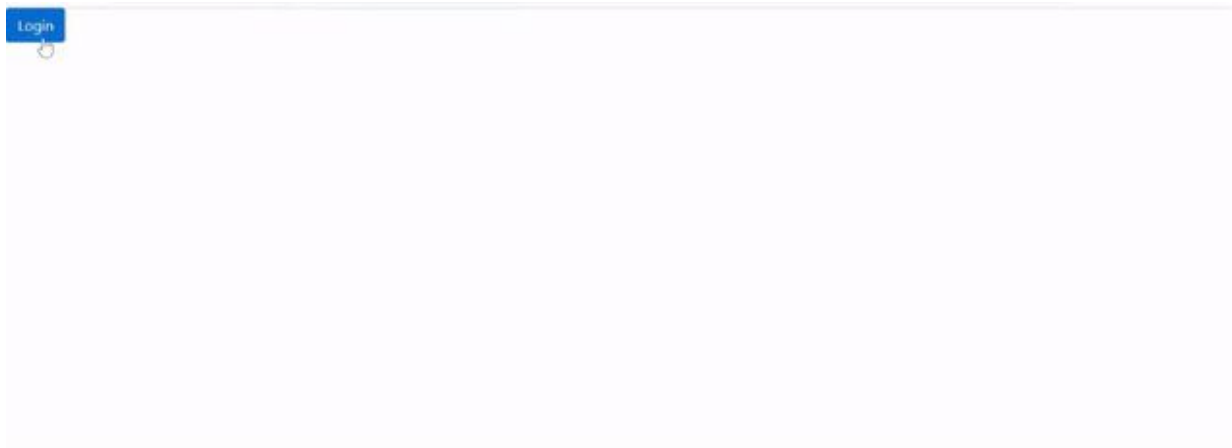
  You can find the example code [here](#).

You can read more about Bootstrap Carousels [here](#).

Bootstrap Components

- Bootstrap's modal plugin allows you to add a dialog box on your web page.
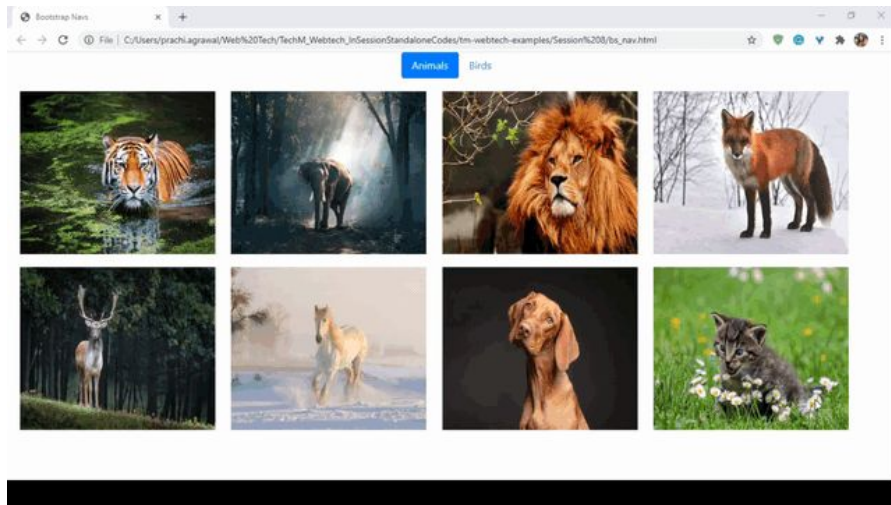
  You can find the example code [here](#).

  You can read more about Bootstrap Modals here.

Bootstrap Components

Bootstrap Navs

- Bootstrap nav can be used to have navigation tabs on the web page.

- You can find the example code [here](#).

You can read more about Bootstrap nav [here](#)

Project Work

(You will add Bootstrap to your project)
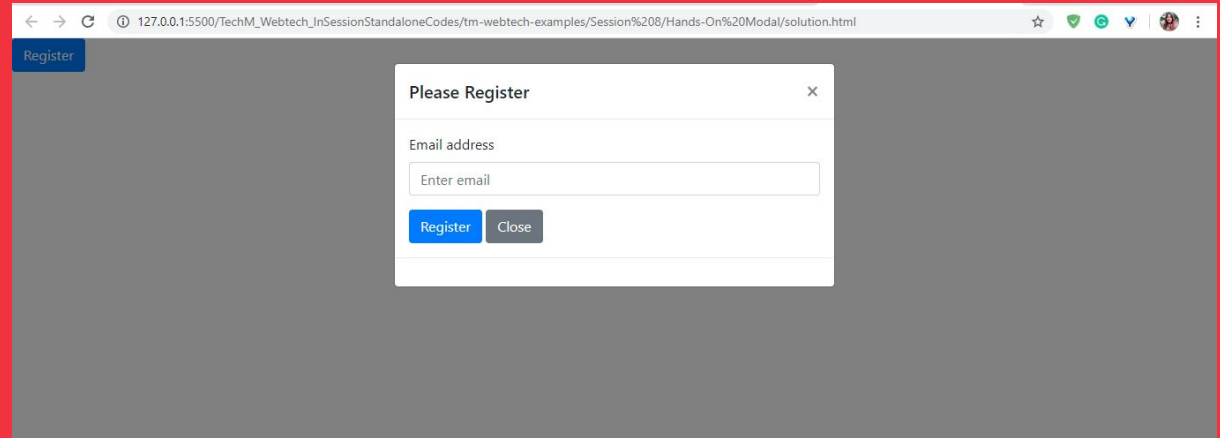

You can refer to the solution [here](#)

Hands-On Exercise 2 (3 mins)

Write a Bootstrap modal such that it looks similar to the one in the screenshot when the '**Register**' button is clicked.

Follow the TODOs in the given Stub Code.

Stub Code: here

Solution Code: here

Key Takeaways

- Responsive Web Design (RWD) is a principle using which you can make websites look elegant and legible on all kinds of devices, whether they are big or small.

- Bootstrap is a type of RWD framework that incorporates the feature of grids to place elements in a web page. It comes with a host of inbuilt CSS components.

Task to complete after today's session

MCQs
Coding Questions
Project: Checkpoint 9

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Thank You!