React Js

MODULE: 3 (JavaScript Essentials)

1. What is React Js ?

Ans : React is a **JavaScript library** created by **Facebook**.

- ➔ React is a **User Interface (UI)** library.
- ➔ React is a tool for building **UI components**.
- ➔ React is used to build **single-page** application .
- ➔ React allows us to create **reusable UI component**.

2. What is NPM in React Js ?

Ans : NPM is the world's largest Software Registry.

- ➔ The registry contains over **800,000 code packages**.
- ➔ Open-source developers use npm to share software.
- ➔ Many organizations also use npm to manage private development.
- ➔ npm is free to use.
- ➔ npm includes a CLI (Command Line Client) that can be used to download and install software:

Windows Example :

```
C:\>npm install <package>
```

- ➔ npm is installed with Node.js
- ➔ This means that you have to install Node.js to get npm installed on your computer.

3. What is Role of Node Js in react Js?

Ans : NodeJS is a framework of JavaScript which is mainly used for working with the backend of our application or building the backend using JavaScript, whereas ReactJS is a JavaScript front-end library. It is mainly used for building the user interface or the frontend of our application.

4. What is CLI command In React Js?

Ans : CLI stands for:

- Command Line Interface
- Command Line Interpreter
- Command Line Input

- CLI is a command line program that accepts text input to execute operating system functions.

Examples :

➔ The software package manager npm uses command line input to install software:

```
C:\>npm install mysoftware
```

Basic Linux CLI Commands

Command	Description
ls	**List the directory (folder) system.**
cd *pathname*	**Change directory (folder) in the file system.**
cd ..	**Move one level up (one folder) in the file system.**
cp	**Copy a file to another folder.**
mv	**Move a file to another folder.**

mkdir	**Creates a new directory (folder).**
rmdir	**Remove a directory (folder).**
clear	**Clears the CLI window.**
exit	**Closes the CLI window.**
man *command*	**Shows the manual for a given command.**

5. What is Components in React Js?

Ans : A React Component is one of the core building blocks of React Apps.

- In other words, we can say that every application you will develop in React will be made up of pieces called components.
- Components make the task of building UIs much easier.
- Component independent and Reusable bits of code
- Component are JavaScript files means .js or jsx
- jsx :JSX stands for **JavaScript XML**. JSX allows us to write HTML in React. JSX makes it easier to write and add HTML in React.
-
- But Work in isolation and returns HTML via a render function.

React Components Types :

1] Functional Components:

- ➔ In simple words, For Shirt functionality Functional components are javascript functions.
- ➔ By writing a javascript function, we can create a functional component in React Apps.
- ➔ To make React app efficient, we use functional component only when we are sure that our component does not require to interact with any other components.

- ➔ Functional components do not require data from other components.
- ➔ Below shows an example of functional component in React:

```
1)
function Title()
{
  return <h1>I am Title</h1>;
}
export default Title
```

2] Class Components

- ➔ Class component work as ES6 and manage states in class component

- ➔ Used for big functionality , The class components are similar to the functional component but has some additional features that makes class component a little more complex than the functional components.

- ➔ The functional components do not care about the other components in your app whereas the class components can work with each other.

```
import React from 'react';

import React, {Component } from 'react';

class Title extends React.Component  / Component
{

 constructor(props){}
  render(){
```

```
        return <h1>I am Title</h1>;
    }
}

export default Title
```

6. What is Header and Content Components in React Js?

- ➔ **Ans.** In React JS, a component is a modular and reusable piece of code that encapsulates functionality and data. There are two main types of components in React JS: functional components and class components.
- ➔ When it comes to building web applications with React, the header and content components are commonly used to structure the page layout.
- ➔ The Header component typically includes the website's logo, navigation menu, and any other information that is displayed at the top of the page. It usually remains static and is visible on every page of the website.
- ➔ The Content component contains the main content of the page, such as text, images, forms, and other UI elements. The content of this component changes dynamically based on user interactions, data from APIs, or other sources.
- ➔ To build these components in React, you can create a separate file for each component and then import and render them in your main application file. This approach allows you to reuse the same components across multiple pages of your website and makes your code more modular and easy to maintain.

7. How to install React Js on Windows, Linux Operating System? How to install NPM and How to check version of NPM?

Ans. React JS -React is an open-source component-based front-end JavaScript library. It is used to create fast and interactive user interfaces for web and mobile applications. It is easy to create a dynamic application in React because it requires less coding and offer more functionality. It is used by big MNC and fresh new startups

Features of React:

- **Reusable Components: A single React app consists of many components each component have their own logic and code but we can easily reuse components any number of time hence reducing the developers time and increasing the efficiency of work**

- **Debugging: React app can be easily debug using "react developer tools".It's a browser extension that can be used for both chrome as well as Firefox.**

Installation Reactjs on Windows:

Step 1: Install Node.js installer for windows. Click on this link. Here install the LTS version (the one present on the left). Once downloaded open NodeJS without disturbing other settings, click on the Next button until it's completely installed.

Install the 14.18.1 LTS

Step 2: Open command prompt to check whether it is completely installed or not type the command –>

```
node -v
```

Node Version is v14.15.3

If the installation went well it will give you the version you have installed

Step 3: Now in the terminal run the below command:

```
npm install -g create-react-app
```

Installation will take few seconds

It will globally install react app for you. To check everything went well run the command

```
create-react-app --version
```

```
version  4.0.3
```

If everything went well it will give you the installed version of react app

Step 4:Now Create a new folder where you want to make your react app using the below command:

mkdir newfolder

Note: The newfolder in the above command is the name of the folder and can be anything.

Move inside the same folder using the below command:

cd newfolder (your folder name)

Step 5: Now inside this folder run the command –>

create-react-app reactfirst YOUR_APP_NAME

It will take some time to install the required dependencies

NOTE: Due to npm naming restrictions, names can no longer contain capital letters, thus type your app's name in lowercase.

Step 6: Now open the IDE of your choice for eg. Visual studio code and open the folder where you have installed the react app newfolder (in the above example) inside the folder you will see your app's name reactapp (In our example). Use the terminal and move inside your app name folder.Use command cd reactapp (your app name)

Step 7: To start your app run the below command :

npm start

Once you run the above command a new tab will open in your browser showing React logo as shown below :

Congratulation you have successfully installed the react-app and are ready to build awesome websites and app

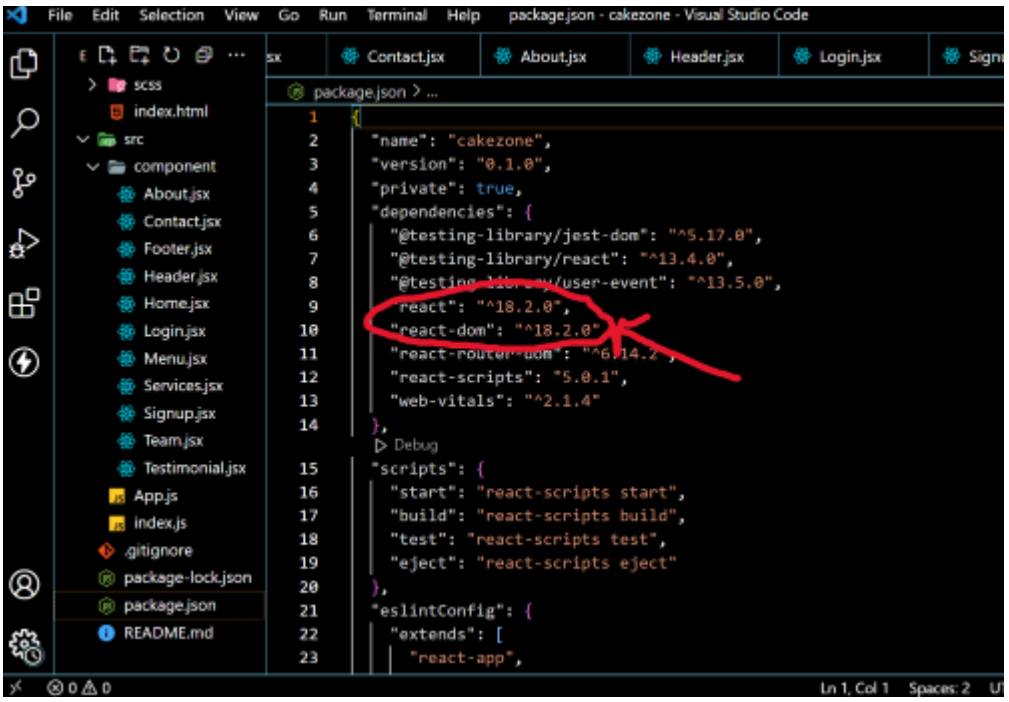
8. How to check version of React Js?

Ans : Three ways to find out the React version.

1. Using package.json file

The package.json contains metadata about our project. It is created by default when we create our React project. We can create a react app using the command mentioned below.

The package.json file contains a lot of information in the name/value pairs in JSON format. We can easily check our React version under the list of dependencies as shown in the image given below.



2. Using the command line:

➔ We can easily check the React version by using the command mentioned below on our command line.

```
npm view react version
```

➔ The output demonstrating the use of the above command on the command line is mentioned below.

```
C:\Desktop\React Tranning\cakezone>npm view react version
18.2.0
```

3. Using the version property of default import from React

9. How to change in components of React Js?

Ans. To change the state of the React component is useful when you are working on a single page application, it simply replaces the content of the existing component for the user without reloading the webpage.

We have to set initial state value inside constructor function and set click event handler of the element upon which click, results in changing state. Then pass the function to the click handler and change the state of the component inside the function using setState. The setState function used to change the state of the component directly or with the callback approach as mentioned below.

Example 1:

index.js:

- **Javascript**

```
import React from 'react'

import ReactDOM from 'react-dom'

import App from './App'


ReactDOM.render(<App />, document.querySelector('#root'))
```

App.js:

- **Javascript**

```
import React, { Component } from 'react'


class App extends Component {

  constructor(props){

    super(props)
```

```
    // Set initial state
    this.state = {msg : 'Hi, There!'}

    // Binding this keyword
    this.handleClick = this.handleClick.bind(this)
  }

  handleClick(){

    // Changing state
    this.setState({msg : 'Welcome to the React world!'})
  }

  render(){
    return (
      <div>
        <h2>Message :</h2>

<p>{this.state.msg}</p>
```

```
        {/* Set click handler */}
        <button onClick={this.handleClick}>
          Click here!
        </button>
      </div>
    )
  }
}

export default App
```

Output:

10. How to Create a List View in React Js?

Ans:

```
import React from 'react'
import styles from './my-style.module.css'

function ChekboxList() {
  return (
    <div>
```

```
    {/* chekbox start function */}

    <div className="col-md-5 mt-5 offset-4">

    <h1>The "React way" to Reander a list</h1>

    </div>

    <div className="col-md-3 mt-5 offset-4">

      <div className="input-group">

        <div className="input-group-text">

          <input className="form-check-input mt-0" type="checkbox"
defaultValue aria-label="Checkbox for following text input" />

        </div>

        <input type="text" className="form-control" aria-label="Text
input with checkbox" />

      </div>

    </div>

    <div className="col-md-3 mt-5 offset-4">

      <div className="input-group">

        <div className="input-group-text">

          <input className="form-check-input mt-0" type="checkbox"
defaultValue aria-label="Checkbox for following text input" />

        </div>

        <input type="text" className="form-control" aria-label="Text
input with checkbox" />

      </div>

    </div>
```

```
      <div className="col-md-3 mt-5 offset-4">

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defaultValue aria-label="Checkbox for following text input" />

          </div>

          <input type="text" className="form-control" aria-label="Text
input with checkbox" />

        </div>

      </div>

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        <div className="input-group">

          <div className="input-group-text">

            <input className="form-check-input mt-0" type="checkbox"
defaultValue aria-label="Checkbox for following text input" />

          </div>

          <input type="text" className="form-control" aria-label="Text
input with checkbox" />

          {/* chekbox end function */}

        </div>

      </div>

    </div>

  )

}
```

```
export default ChekboxList
```

my-style.module.css

```
div{
    background-color: rgb(115, 222, 115);
}
```

App.js

```
import React from "react";
import ChekBoxList from "./ChekBoxList"

function App() {
  return (

      <ChekBoxList />

  );
```

}

export default App;

Output:

11. Create Increment decrement state change by button click?

Ans.

```
import React, { useState } from "react";

function App() {
  //Increment decrement function
  const [count, setCount] = useState(0);
  return (
    <>
      <div className="container my-5">
        <div className="card text-center my-5">
          <div className="card-body">
            <h1>Counter app</h1>
            <div className="my-5">
              <h2 className="my-5">{count}</h2>
              {/* button start */}
              <button className="btn btn-success mx-3" onClick={() =>
setCount(count + 1)}>Increment</button>
```

```
              <button className="btn btn-danger mx-3" onClick={() =>
setCount(count - 1)} disabled={count === 0}>Decrement</button>

              <button className="btn btn-secondary mx-3" onClick={() =>
setCount(0)} disabled={count === 0}>Reset</button>

              {/* button end */}

            </div>

          </div>

        </div>

      </div>

    </>

  );

}




export default App
```

Output:

Counter app

0

Increment Decrement Reset