

Experiment No. 08

Title: Design a web page using React JS.

Batch: Roll No: Experiment No:

Aim: To design a web page using React JS.

Resources needed: Notepad, any Web Browser and Internet.

Theory:

React (also known as React.js or ReactJS) is an open-source, front end, JavaScript library for building user interfaces or UI components. It is maintained by Facebook and a community of individual developers and companies. React can be used as a base in the development of single-page or mobile applications. However, React is only concerned with state management and rendering that state to the DOM(Document Object Model), so creating React applications usually requires the use of additional libraries for routing, as well as certain client-side functionality. ReactJS is JavaScript library used for building reusable UI components.

Features of React

- **JSX** JSX is JavaScript syntax extension. It isn't necessary to use JSX in React development, but it is recommended.
- **Components** React is all about components. You need to think of everything as a component. This will help you maintain the code when working on larger scale projects.
- Unidirectional data flow and Flux React implements one-way data flow which makes it easy to reason about your app. Flux is a pattern that helps keeping your data unidirectional.
 - License React is licensed under the Facebook Inc. Documentation is licensed under CC BY 4.0.

ReactJS - Environment Setup

- 1. First you need to install NodeJS
- 2. Second install ReactJS

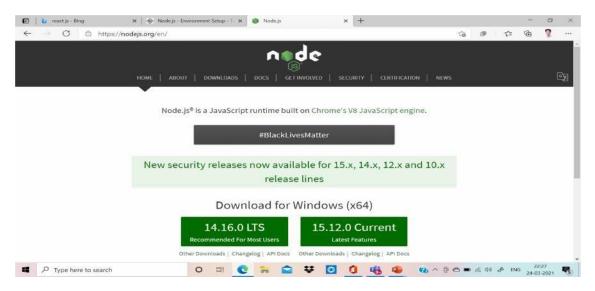
Install NodeJS:

Step 1:

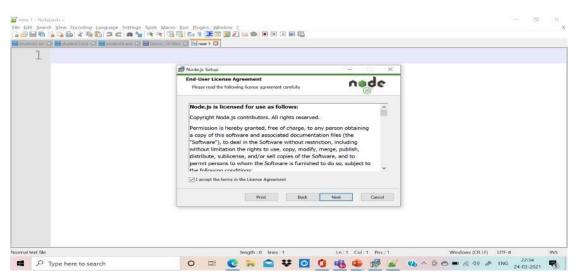
Visit the website www.Nodejs.org/en/. For installation on Windows ,you use the MSI file and follow the prompts to install the Node.js. By default, the installer uses the Node.js distribution in C:\Program Files\nodejs\bin directory in window's PATH environment variable. Restart any open command prompts for the change to take effect. The source code written in source file is simply javascript. The Node.js interpreter will be used to interpret and execute your javascript code. Node.js distribution comes as a binary installable for SunOS, Linux, Mac OS X, and Windows operating systems with the 32-bit (386) and 64-bit (amd64) x86 processor architectures. Next step will guide to install Node.js binary distribution on windows OS.



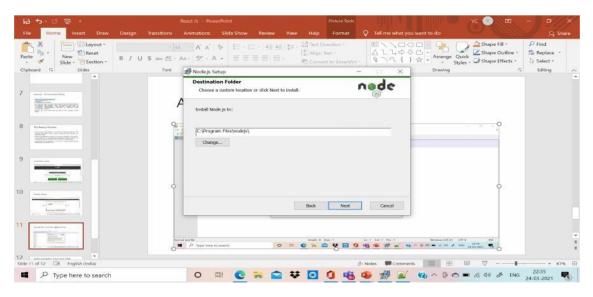
Step3:



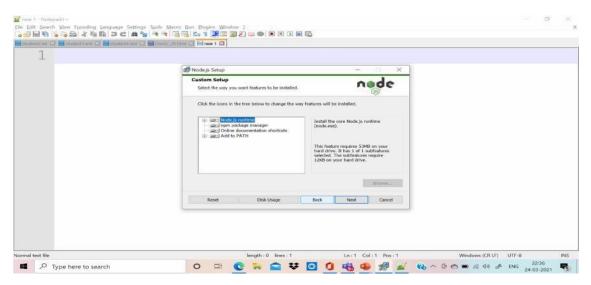
Step4: Accept the Agreement



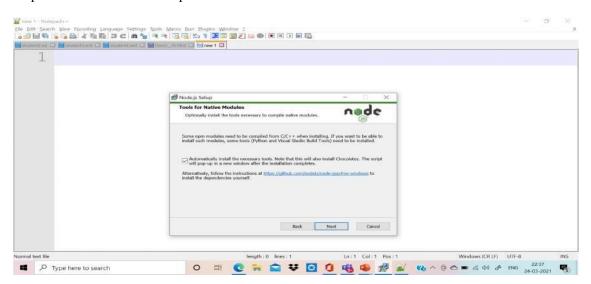
Step5: Choose Destination Folder



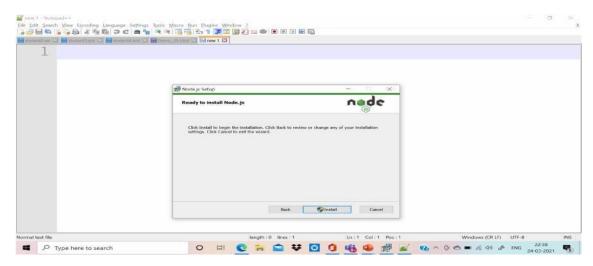
Step6: Custom Installation setup



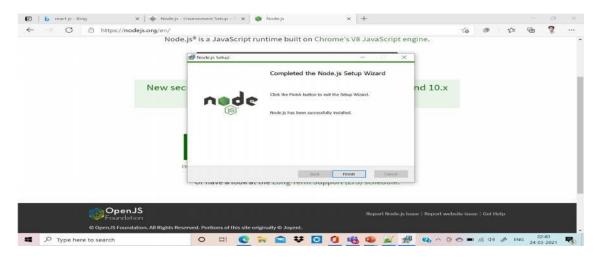
Step 7: Additional Tools Setup



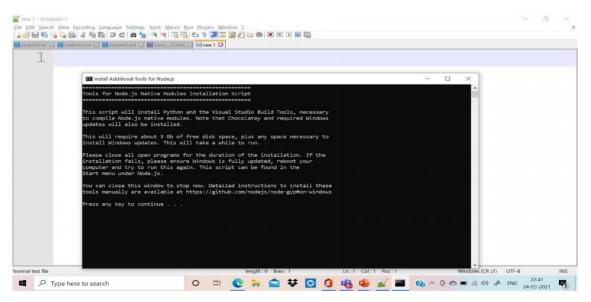
Step8: Ready to install Nodejs



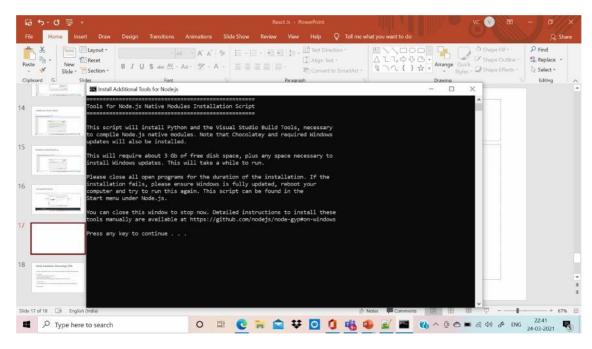
Step9: Completed Setup



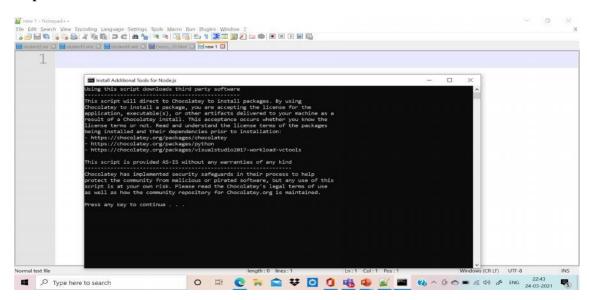
Step 10: Ready to start



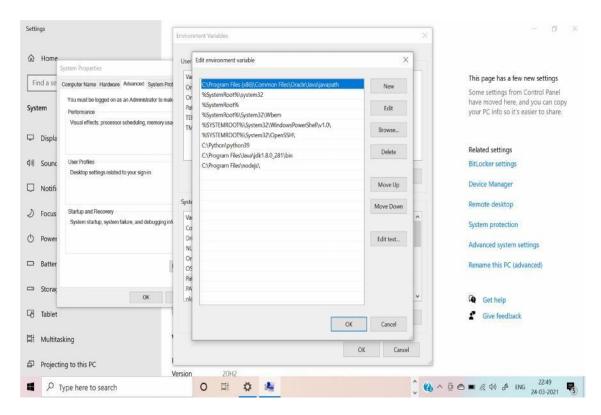
Step11: Install Native Module



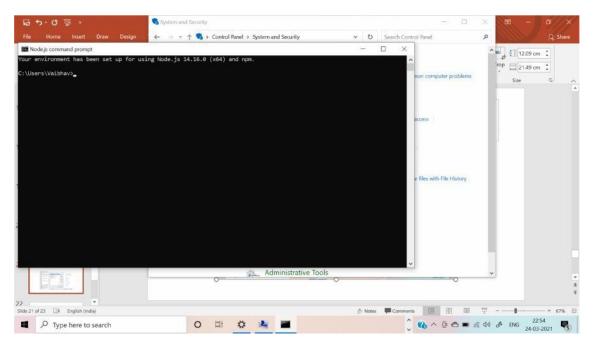
Step 12: Additional Installation



Step 13: Verify the setup



Step 14: Setup Message on Command Prompt: For this message go start menu and click the button you will find command prompt menu available with cmd.



Step 15: Check the version

- ·C:\>node -v
- ·→v14.16.0

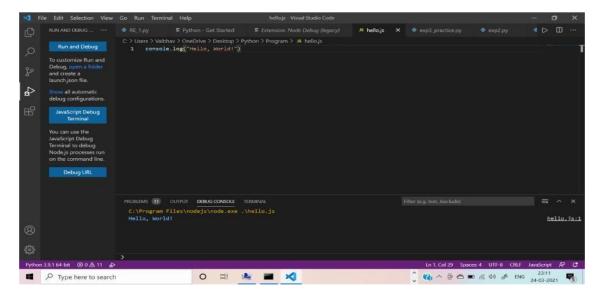
Step 16: Type the Hello World and execute

Type the command and install gyrescipt:

C:\>npm install -g typescript

- Create a js file named main.js on your machine (Windows) having the following code.
- · Live Demo
- /* Hello, World! program in node.js */
- console.log("Hello, World!")
- Now execute main.js file using Node.js interpreter to see the result –
- \$ node main.js
- If everything is fine with your installation, this should produce the following result –
- Hello, World!

Step 17: Install VS Code: Editor Tool



Install ReactJS:

There are 3 ways to install ReactJS:

- 1) webpack
- 2) Babel
- 3) create-react-app

Webpack:

Webpack is a module bundler (manages and loads independent modules). It takes dependent modules and compiles them to a single (file) bundle. You can use this bundle while developing apps using command line or, by configuring it using webpack.config file.

Steps:

- 1) Since we are using webpack to generate bundler install webpack, webpack-dev-server and webpack-cli.
- 2) C:\Users\username\Desktop\reactApp>npm install webpack --save

- 3) C:\Users\username\Desktop\reactApp>npm install webpack-dev-server --save
- 4) C:\Users\username\Desktop\reactApp>npm install webpack-cli --save
- 5) Or, you can install all of them in single command as –
- $6) \ C: \ \ Users \ \ \ install \ we bpack \ we bpack-dev-server--save$

Babel:

Babel is a JavaScript compiler and transpiler. It is used to convert one source code to other. Using this you will be able to use the new ES6 features in your code where, babel converts it into plain old ES5 which can be run on all browsers.

- 1) Install babel, and its plugins babel-core, babel-loader, babel-preset-env, babel-preset-react and, html-webpack-plugin
 - 2) C:\Users\username\Desktop\reactApp>npm install babel-core --save-dev
 - 3) C:\Users\username\Desktop\reactApp>npm install babel-loader --save-dev
 - 4) C:\Users\username\Desktop\reactApp>npm install babel-preset-env --save-dev
 - 5) C:\Users\username\Desktop\reactApp>npm install babel-preset-react --save-dev
 - 6) C:\Users\username\Desktop\reactApp>npm install html-webpack-plugin --save-dev
 - 7) Or, you can install all of them in single command as –
 - 8) C:\Users\username\Desktop\reactApp>npm install babel-core babel-loader babel-preset-env
 - 9) babel-preset-react html-webpack-plugin --save-dev

Working with ReactJS

In this experiment, we are going to use this steps of create react app

Steps are as follows:

1) Create a folder with name reactApp on the desktop to install all the required files, using the mkdir command.

C:\Users\username\Desktop>mkdir reactApp

2) Change the directory:

C:\Users\username\Desktop>cd reactApp

C:\Users\vaibhav>cd C:\Users\vaibhav\reactapp\

3) Install ReactJS:

C:\Users\vaibhav\reactapp>npx create-react-app my-app

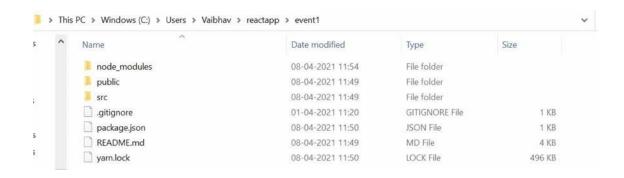
This will create a folder named my-app on the desktop and installs all the required files in it.

npm (node package manager) is the dependency/package manager you get out of the box when you install Node.js. It provides a way for developers to install packages both globally and locally

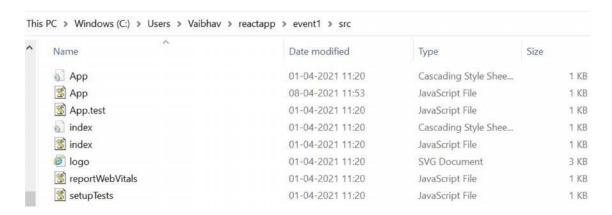
npx: The npx stands for Node Package Execute and it comes with the npm, when you installed npm above 5.2.0 version then automatically npx will installed. It is an npm package runner that can execute any package that you want from the npm registry without even installing that package. The npx is useful during a single time use package. If you have installed npm below 5.2.0 then npx is not installed in your system.

4) Delete all source files

- Browse through the src folder in the generated my-app folder and remove all the files in it as shown below –
- C:\Users\Desktop>cd my-app/src
- C:\Users\Desktop\my-app\src>del *
- C:\Users\Desktop\my-app\src*, Are you sure (Y/N)? y
- 5) Add files with names index.css and index.js in the src folder as
 - C:\Users\Desktop\my-app\src>type nul > index.css
 - C:\Users\Tutorialspoint\Desktop\my-app\src>type nul > index.js
- 6) Skip step 4 and 5 and only delete the file called App.js
- 7) Locate your code into these folder as event1 as shown below:



8) Open the src folder as shown below:



9) Choose the App.js file and indite code which is given below.

```
import React, {Component} from 'react';
class App extends React.Component {
  constructor(props) {
    super(props);
    this.state = {
       companyName: "
    };
  }
  changeText(event) {
    this.setState({
       companyName: event.target.value
    });
  render() {
    return (
       <div>
         <h2>Simple Event Example</h2>
         <label htmlFor="name">Enter company name: </label>
```

10 .Execute the React Code:

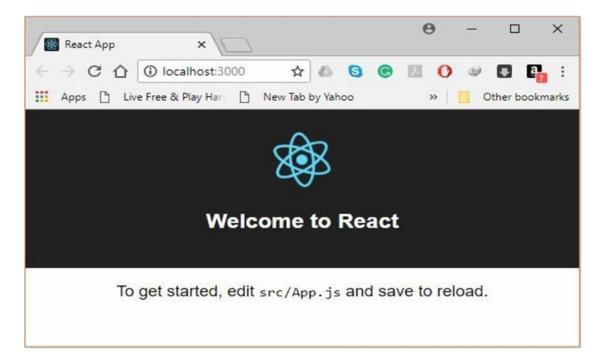
To run the react code you have to type the command on Vs Code Terminal as it is:

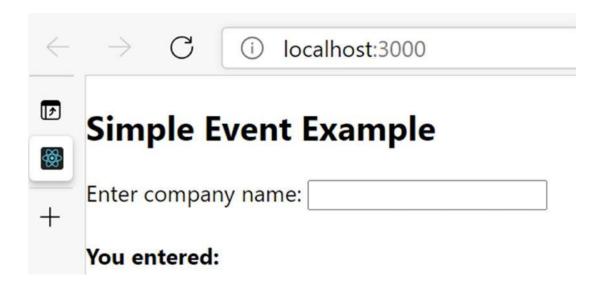
- npm start
- yarn start(if you install yarn utility)

To do this on, terminal of VSCODE,

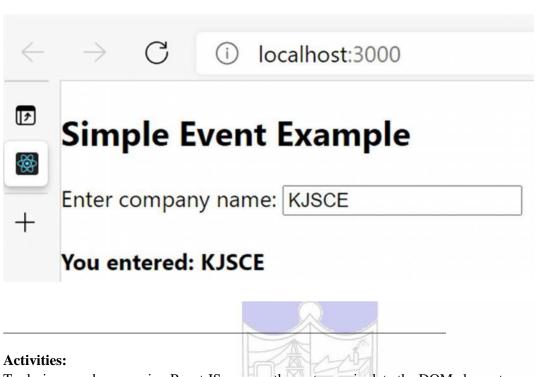
C:\Users\Vaibhav\reactapp\myevent\npm start.

By default port number 3000 will start on web browser with the code execution.





11. After running the event the outlook:



• To design a web page using React JS on your theme to manipulate the DOM elements.

Results: (Document printout as per the format discussed by the faculty t)

Display of the designed webpage along with the code.

Questions:

- 1. What are the different components of ReactJS?
- 2. What is Virtual DOM? How virtual DOM Works? What is the purpose of render of react DOM?

Outcomes:

Conclusion:

(Conclusion to be based on objectives and outcomes achieved)

Grade: AA/AB/BB/BC/CC/CD/DD/FF

Signature of faculty in-charge with date

References: Books/ Journals/Websites:

1. React – A JavaScript library for building user interfaces (reactjs.org)

- 2. "React A JavaScript library for building user interfaces". *React*. Retrieved 7 April 2018.
- 3. Krill, Paul (May 15, 2014). "React: Making faster, smoother UIs for data-driven Web apps". InfoWorld.
- 4. Hemel, Zef (June 3, 2013). "Facebook's React JavaScript User Interfaces Library Receives Mixed Reviews". InfoQ.
- 5. Dawson, Chris (July 25, 2014). "JavaScript's History and How it Led To ReactJS". The New Stack.
- 6. *Dere, Mohan (2018-02-19).* "How to integrate create-react-app with all the libraries you need to make a great app". *freeCodeCamp*. Retrieved 2018-06-14.
- 7. React Tutorial (w3schools.com)
- 8. ReactJS Overview Tutorialspoint
- 9. ReactJS Tutorials GeeksforGeeks