**Setup Environment for Building React Application**

* You need a **Package Manager**
  + Package Manager is a software tool used by web developers to download and install various libraries required for project.
    - NPM [Node Package Manager]
    - Yarn
    - NuGet
    - Bower etc..
  + **Download and install “NPM”**
  + **You can get NPM from “Node.js”**<https://nodejs.org/en/download/>
  + **Check Version from Command Prompt  
    C:\>** node -v  
    **C:\>** npm -v
* You need an Editor
  + Download and install “**Visual Studio Code**” editor  
    <https://code.visualstudio.com/>
  + Install the following extensions in Visual Studio Code
    - Live Server
    - Vscode-icons [optional]

**Using React in an Existing Web Application**

* Open your PC locations
* Create a new folder for project “**C:\WebApp”**
* Open “WebApp” folder in “Visual Studio Code”
* Open Terminal in VS-Code
* Run the command  
  **> npm init -y**
* This will generate “package.json”
* Add a new folder by name **“public”**
* Add following file into “public” folder
  + Index.html
  + Home.html

**Index.html**

<!DOCTYPE html>

<html>

<head>

<title>Index</title>

</head>

<body>

<h2>Welcome to React JS</h2>

<p>This is an ordinary HTML page [without any React]</p>

<p>React is interated into Home Page - Click Below</p>

<a href="home.html">Home</a>

</body>

</html>

* **To Integrate React environment into a HTML page you need following libraries**
  + React **It is React Core Library**
  + React DOM **It is used for Virtual DOM manipulations**
  + Babel Standalone **It is a compiler used to compile react code written in “JSX”**
* You can use **CDN** [Content Distribution Network] for Libraries or you can download using NPM
* Get the CDN of all 3 libraries and Add to your Home Page.

**Home.html**

<!DOCTYPE html>

<html>

<head>

<title>React Page</title>

<link rel="stylesheet" href="../node\_modules/bootstrap/dist/css/bootstrap.css">

<link rel="stylesheet" href="../node\_modules/bootstrap-icons/font/bootstrap-icons.css">

<script crossorigin src="https://unpkg.com/react@17/umd/react.development.js"></script>

<script crossorigin src="https://unpkg.com/react-dom@17/umd/react-dom.development.js"></script>

<script src="https://unpkg.com/@babel/standalone/babel.min.js"></script>

**<script type="text/babel">**

**ReactDOM.render(**

**"React JS - Shopping Store",**

**document.getElementById("container")**

**)**

**</script>**

</head>

<body class="container-fluid">

<h2 class="bg-primary text-white text-center p-2">

<span class="bi bi-cart4"></span> Amazon Shopping

</h2>

<div id="container"></div>

</body>

</html>

**Web Pack**

* It is a module bundler.
* It is responsible for bundling all modules required for your application.
* So that your application can run and can be deployed on server.
* Web Pack is a module bundler used for various types of application.

**Create a React application using Web Pack**

* Create a new folder for project **“React-Shopping-App”**
* Open in VS-Code
* Open Terminal
* Run the command to initialize your “**React-Shopping-App**” as a web application.  
  **> npm init -y**
* This will generate “package.json”
* Run the command to install “React core” and “Virtual-DOM” library   
  **> npm install react react-dom**
* This will generate **“node\_modules”** folder and will copy your library into folder.
* Run the following commands to install compiler, file loader and web pack  
  **> npm install -D @babel/core @babel/preset-env @babel/preset-react babel-loader  
  > npm install file-loader css-loader sass sass-loader   
  > npm install webpack webpack-cli**

**package.json**

{

"name": "React-Shopping-App",

"version": "1.0.0",

"description": "",

"main": "index.js",

"scripts": {

"test": "echo \"Error: no test specified\" && exit 1"

},

"keywords": [],

"author": "",

"license": "ISC",

"dependencies": {

**"react": "^17.0.2",**

**"react-dom": "^17.0.2"**

},

"devDependencies": {

**"@babel/core": "^7.14.6",**

**"@babel/preset-env": "^7.14.7",**

**"@babel/preset-react": "^7.14.5",**

**"babel-loader": "^8.2.2",**

**"css-loader": "^5.2.7",**

**"file-loader": "^6.2.0",**

**"sass": "^1.35.2",**

**"sass-loader": "^12.1.0",**

**"webpack": "^5.44.0",**

**"webpack-cli": "^4.7.2"**

}

}

* **You have to add babel configuration file** 
  + Add a new file into project by name   
    **“.babelrc”**
  + Add the following code into “.babelrc” file

{

"presets": ["@babel/preset-env", "@babel/preset-react"]

}



* **You have to add webpack configuration file**
  + Add a new file into project by name  
    **“webpack.config.js”**

const path = require('path');

module.exports = {

output : {

path: path.join(\_\_dirname, '/dist'),

filename: 'index.bundle.js'

},

devServer: {

port : 3010,

watchContentBase: true

},

module : {

rules : [

{

test: /\.(js|jsx)$/,

exclude: /node\_modules/,

use : {

loader: 'babel-loader'

}

},

{

test: /\.scss$/,

use: [

'css-loader',

'sass-loader'

]

}

]

}

}

* **Go to “package.json”**

"scripts": {

"serve": "webpack serve --mode development",

"build": "webpack --mode production"

},

* **Add a new folder “src”**
* **Add following files into “src” folder  
  *app.js***

import React from 'react';

export function App(){

return(

<div>

<h2>React Application</h2>

<p>App Designed with Webpack</p>

</div>

)

}

**Index.js**

require('file-loader?name=[name].[ext]!./index.html');

import React from 'react';

import ReactDOM from 'react-dom';

import { App } from './app';

ReactDOM.render(

<App/>,

document.getElementById("container")

)

**Index.html**

<!DOCTYPE html>

<html>

<head>

<title>React App</title>

</head>

<body>

<div id="container"></div>

<script src="index.bundle.js"></script>

</body>

</html>

* **Now open terminal and run the command**> npm run serve  
   [it requires server library – choose ‘yes’]
* **Your Application runs on**<http://localhost:3010>
* **Open any browser and request the given URL**<http://localhost:3010>