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# React.Js

ReactJs is a declarative, efficient, and flexible Javascript library for building reusable UI components. It is an open-source, component-based front end library which is responsible only for the view layer of the application. It was initially developed and maintained by Facebook.

## Why we use React Js :-

The main objective of React Js is to develop User Interface (UI) that improves the speed of the apps. It uses virtual Dom (Javascript Object), which improves the performance of the app. The javascript virtual Dom is faster than the regular Dom. We can use ReactJs on the client and server-side as well as with other frameworks. It uses component and data patterns that improves readability and maintain larger apps.

## • React create-react-app

The create-react-app is an excellent tool for beginners, which allows you to create and run React project very quickly. It does not take any configuration manually. This tool is wrapping all of the required dependencies like Webpack, Babel for React project itself and then you need to focus on writing code.

## Requirement :-

The create React App is maintained by Facebook and can work on any platform for ex- macOS, Windows, Linux.

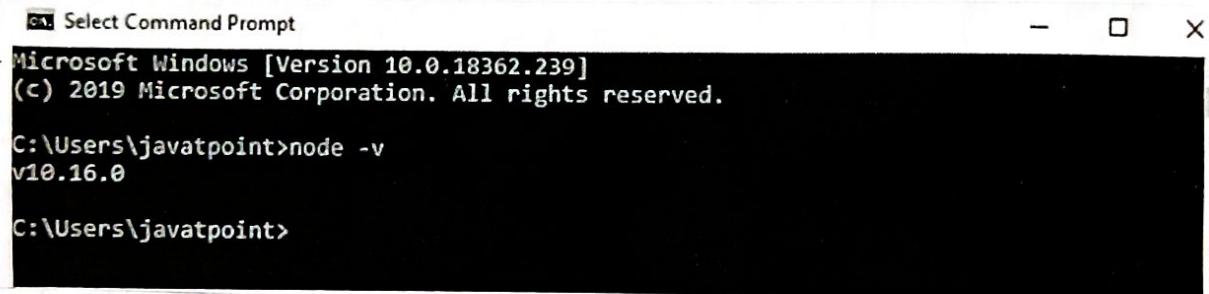
To create a React project using create react app you need to have installed the following things.

1] Node version  $\geq 8.10$

2] NPM version  $\geq 5.6$

- o Run the following code to check the Node version in command prompt.

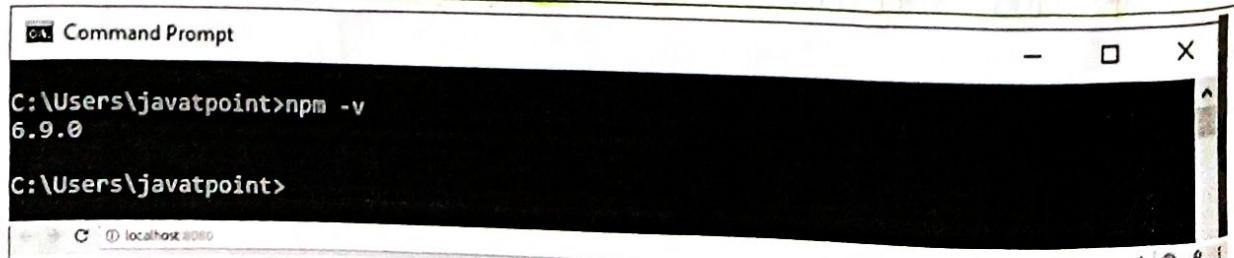
```
$ node -v
```



Microsoft Windows [Version 10.0.18362.239]  
(c) 2019 Microsoft Corporation. All rights reserved.  
C:\Users\javatpoint>node -v  
v10.16.0  
C:\Users\javatpoint>

- o Run the following command to check the NPM version in command prompt.

```
$ npm -v
```



Microsoft Windows [Version 10.0.18362.239]  
(c) 2019 Microsoft Corporation. All rights reserved.  
C:\Users\javatpoint>npm -v  
6.9.0  
C:\Users\javatpoint>

In react application ,there are several files and folders in the root directory, some of them are as follows.

- 1] node-module :- It contains the React library and any other third party libraries needed
- 2] public :- It holds the public assets of the application. It contains the index.html where React will mount the application by default on the `<div id="root"> </div>` element.
- 3] src :- It contains the App.css, App.js, index.js and serviceWorker.js ,Here the App.js file always responsible for displaying the output screen react.
- 4] package-lock.json :- It is generated automatically for any operations where npm package modifiers either the node-module tree or package.json . It cannot be published . It will be ignored, if it finds any other place rather than the top-level package.
- 5] package.json :- It holds various metadata required for the project. It gives information to npm, which allows to identify the project as well as handle projects.
- 6] Readme.md :- It provides the documentation to read about React topics

## • React Features :-

### • JSX :-

JSX stands for Javascript XML. It is a javascript syntax extension. It's an XML or HTML like syntax used by React JS. This syntax is processed into javascript calls of React Framework. It extends the ES6 so that HTML like text can co-exist with Javascript react code. It is not necessary to use JSX, but it is recommended to use in React JS.

### • Component :-

React JS is all about components, React JS application is made up of multiple components and each component has its own logic and control. These components can be reusable which helps you to maintain the code when working on larger scale projects.

### • One-way Data Binding :-

React JS is designed in such manner that follows unidirectional data flow or one-way data binding. The benefits of one-way data binding give you better control over application. If the data flow is in another direction then it requires additional feature. It is because components are supposed to be immutable and the data within them cannot be changed.

### ④ Virtual Dom:-

A virtual Dom object is a representation of the original Dom object. It works like a one-way data binding. Whenever any modifications happen in the web application. The entire UI is re-rendered in virtual Dom representation and new Dom. Once it has done, the real Dom will update only the things that have actually changed.

### ⑤ Simplicity :-

ReactJS uses JSX file which makes the application simple and to code as well as understand. We know that ReactJS is component based approach which makes the code reusable as your need. This makes it simple to use and learn.

### ⑥ Performance:-

ReactJS is known to be a great performer. This feature makes it much better than other framework out there today. The reason behind this is that it manages virtual Dom. The Dom is a cross platform and programming API which deals with HTML, XML & XHTML. The Dom exists entirely in memory. Due to this when we create a component. We did not write directly to Dom.

## Pros and Cons React Js:-

### Advantage of React Js:-

#### ① Easy to learn and use:-

→ React Js is much easier to learn and use. It comes with a good supply of documentation, tutorial and training resource.

#### ② Creating Dynamic Web Application Becomes Easier:-

To create a dynamic web application specifically with HTML strings was tricky because it requires a complex coding, but React Js solved that issue and makes it easier. It provides less coding and gives more functionality. It makes use of JSX, which is a particular syntax letting HTML quotes.

#### ③ Reusable Component:-

A React Js web application is made up of multiple components. And each component has its own logic and controls. These components are responsible for outputting small and reusable code helps to make your apps easier to develop and maintain.

#### ④ Performance Enhancement:-

React Js improves performance due to virtual Dom. The Dom is a cross platform and programming API which deals with HTML, XML or XHTML. Most of the developers faced the problem when the Dom was

updated. which slowed down the performance of the application. React Js solved this problem by introducing virtual Dom.

#### ⑤ The Support of Handy Tools:-

React Js has also gained popularity due to the presence of handy set of tools. These tools make the task of developer understandable and easier. The React Developer Tool have been designed as chrome and Firebox dev extension and allow you to inspect the React component hierarchies in the virtual Dom.

#### ⑥ Known to be SEO Friendly:-

Traditional Javascript framework have an issue in dealing with SEO. The search engines generally having trouble in reading JS application. Many web developers have often complained about this problem. React Js overcomes this problem that helps developers to be easily navigated on various search engines.

#### ⑦ The Benefits of having Javascript Library:-

React Js is chosen by most of the web developers. It is because it is offering very rich Javascript library. The javascript library provides more flexibility to the web developers to choose the way they want.

## Disadvantage of ReactJS

### ① The high pace of development:-

The high pace of development has an advantage and disadvantage both. In case of disadvantage since the Environment continuously changes so fast, some of the developers not finding comfortable to relearn the new ways of doing things regularly.

### ② Poor documentation:-

It is another cons which are common for constantly updating technology. React technology is accelerating so fast that there is no documentation properly.

### ③ View Part:-

React Js cover only the UI layers of the app nothing else, so you still need to choose some other technologies to get complete tooling set for development in project.

### ④ JSX is barrier:-

React Js uses JSX. Its syntax extension that allows HTML with Javascript mixed together. This approach has its own benefits, but some members of the development community consider JSX as a barrier especially for new developers. Developers complain about its complexity in the learning curve.

## ReactJS vs AngularJS :-

	AngularJS	ReactJS
Author	Google	Facebook community
Developer	Misko Hevery	Jordan Walke
Initial Release	October 2010	March 2013
Latest Version	Angular 1.7.8 on 11 March 2019	React 16.8.6 on 27 March 2019
Language	Javascript, HTML	JSX
Type	Open Source MVC Framework	Open Source JS Framework.
Rendering	Client-Side	Server-Side
Packaging	Weak	Strong
Data-Binding	Bi-directional	Unidirectional
Testing	Unit and Integration Testing	Unit Testing
App Architecture	MVC	Flux

Dependencies	It manages dependencies automatically.	It requires additional tools to manage dependencies.
Routing	It requires a template or controller to its router configuration, which has to be managed manually.	It doesn't handle routing but has a lot of modules for routing.
Performance	Slow	Fast, due to virtual DOM.
Best For	It is best for single page application that update a single view at a time.	It is best for single page applications that update multiple views at a time.

## React Js Vs React Native (Difference)

	React Js	React Native
①	The React Js initial release was in 2013.	The react Native initial release was in 2015.
②	It is used for developing web applications.	It is used for developing mobile applications.

## web application

③ It can be executed on all platform

④ It uses a Javascript library and CSS for animations

⑤ It uses React-router for navigating web pages

⑥ It uses HTML tags

⑦ It can HTML tags

⑧ It can use code components, which saves a lot of valuable time

⑨ It provides high security

## mobile applications

It is not platform independant. It takes more effort to be executed on all platform

It comes with built-in animation libraries.

It has built-in animation libraries.

It does not use HTML tags.

It does not use HTML tags

It can reuse React Native UI component & modules which allow hybrid apps to render natively.

It provides low security in comparison to ReactJS

## React Vs Vue

	React	Vue.
Defination	React is declarative efficient , flexible open-source JS library for building reusable UI Component	Vue is an Open-source JS library for building reusable user interfaces and single page application
History	It was created by Jordan Walke, a software engineer at Facebook. It was initially developed and maintained by Facebook and later used in its products like Whatsapp & Insta.	Vue was created by Evan You, a former employee of Google working on many Angular project. He wanted to better version of Angular, just extracting the part which he liked about Angular and making it lighter.
Preferred language	Javascript / XML	HTML / Javascript
Size	The size of the React library is 100 kilobytes	The size of the Vue library is 60 kb.