

ReactJS Introduction

What is ReactJS?

ReactJS is an open-source JavaScript library used to create user interfaces in a declarative and efficient way. It is a component-based front-end library responsible only for the view layer of a **Model View Controller(MVC)** architecture. React is used to create modular user interfaces and promotes the development of reusable UI components that display dynamic data.

Concept of ReactJS

Let's say one of your friends posted a photo on Facebook. If you like the photo and then you started checking out the comments too. Now as you browsing over comments you can see that the likes count has increased by 100 since you liked the picture, even without reloading the page. This magical change in count is due to ReactJS.

Note: React is not a framework. It is just a library developed by Facebook to solve some problems that we were facing earlier. To know more about the ReactJS feature please read [Features of ReactJS](#) article.

Reason to choose ReactJS

ReactJS uses a declarative paradigm that allows for applications to be both effective and flexible. It creates simple views for each state in your application and efficiently updates and renders just the right component as your data changes. The declarative view makes your code more predictable and easier to debug. Each component in a React application is responsible for rendering a

separate, reusable piece of HTML code. The ability to nest components within other components allows you to build complex applications from simple building blocks. A component can also keep track of its internal state, for example, a TabList component can hold a variable for the open tab in memory.

History of ReactJS

While building client-side application, a team of Facebook developers found that DOM is slow. Document Object Model (DOM) is an application programming interface(API) for HTML and XML documents. It defines the logical structure of documents and how a document is accessed and manipulated). To make it faster, React implements a virtual DOM which is basically a DOM tree representation in JavaScript, and React was invented.

ReactJS is updated so frequently, that it is quite difficult to navigate the version, which comes with new features every time, each time it comes with new features. The current stable version of ReactJS is **18.2.0** and released on June 14, 2022 and the first release was on May 29, 2013.

How does ReactJS work?

React creates a virtual DOM in memory to update the browser's DOM. The virtual DOM will try to find the most efficient way to update the browser's DOM.

ReactJS Environment Setup

To run any React application, we need to first setup a ReactJS Development Environment. In this article, we will show you step-by-step how to install and configure a working React development environment.

Pre-requisite: We must have NodeJS installed on our PC. So, the very first step will be to install NodeJS. Once we have set up NodeJS on our PC, the next thing we need to do is set up React Boilerplate.

- [Installation of Node.js on Windows](#)
- [Installation of Node.js on Linux](#)

ReactJS Installation: There are basically two methods

- Using create-react-app(faster method)
- Using webpack and babel

Let us implement the above-mentioned methods

Method 1: Using create-react-app

Step 1: Navigate to the folder where you want to create the project and open it in terminal

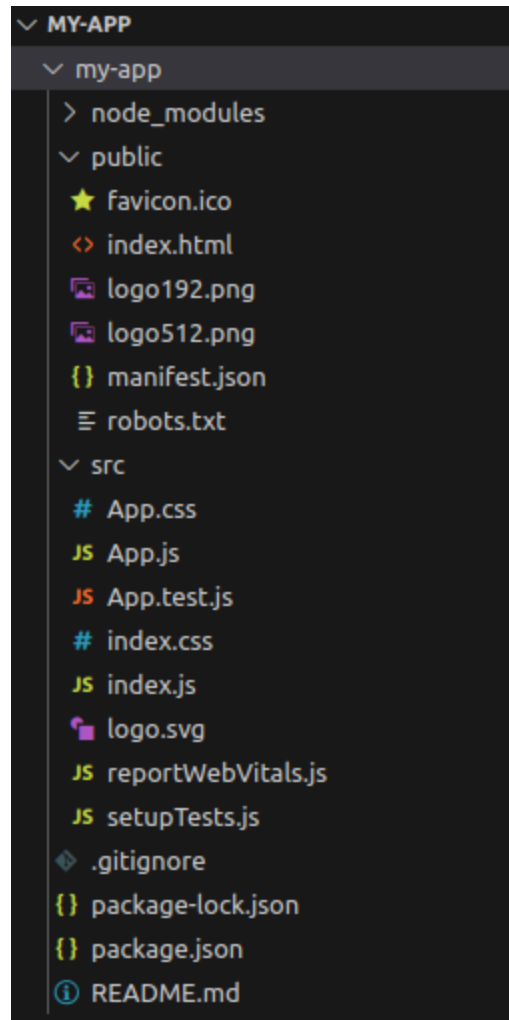
Step 2: In the terminal of the application directory type the following command

```
npx create-react-app <<Application_Name>>
```

Step 3: Navigate to the newly created folder using the command

```
cd <<Application_Name>>
```

Step 4: A default application will be created with the following project structure and dependencies



It will install some packages by default which can be seen in the dependencies in package.json file as follows:

```
"dependencies": {  
  
  "@testing-library/jest-dom": "^5.17.0",  
  
  "@testing-library/react": "^13.4.0",  
  
  "@testing-library/user-event": "^13.5.0",  
  
  "react": "^18.2.0",
```

```
"react-dom": "^18.2.0",  
  
"react-scripts": "5.0.1",  
  
"web-vitals": "^2.1.4"  
  
}
```

Step 5: To run this application type the following command in terminal

```
npm start
```

Step 6: The following output will be displayed in the browser

You can modify the application according to your preferences and change the code accordingly.

Method 2: Using webpack and babel

To setup a react development environment using webpack and babel is a long process and we have to import each package and create setup files ourselves.

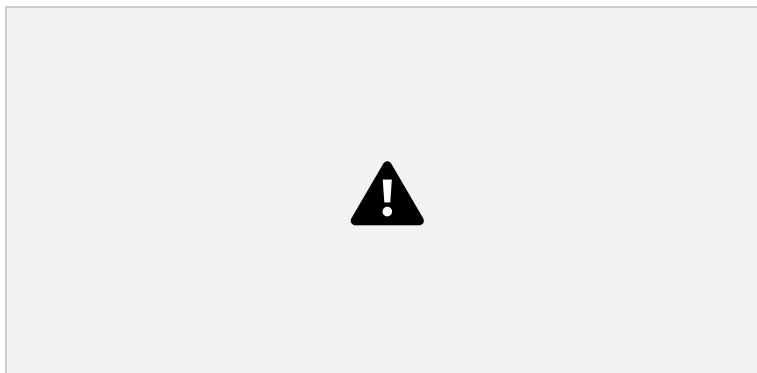
We have to create the setup using '*npm init -y*' command and then import the necessary packages in the folder and then install react using the command.

```
npm i react react-dom
```

To install the necessary packages in our project use the command

P.S.: This tutorial covers only the steps to install the packages. To understand how to configure these packages refer to the [Introduction to babel](#) article.

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Unlike browser DOM elements, React elements are simple objects and are cheap to create. React DOM takes care of updating the DOM to match the React elements. The reason for this is that JavaScript is very fast and it's worth keeping a DOM tree in it to speed up its processing.

Although React was designed to be used in the browser, because of its design allows it to be used on the server with Node.js as well.

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