

Introduction to React JS



Agenda

- Prerequisites
- What is React?
- Why React?
- Single Page Applications
- Local Setup
- Create React App
- Next Generation JavaScript
- Basics of React



Prerequisites

- HTML
 - Basic Tags
 - o Ex: <div>, , etc
- CSS
 - Basic Styling
 - Selectors
- JavaScript
 - Objects
 - Functions
 - Control Flow
 - DOM Manipulation
 - Serpricaryament. In the service of t



What is React?

- JavaScript library for building user interfaces.
- Library is a pre-written code that is developed already and is readily available.
- Ex: math.js, day.js etc.



Why React?

- Alternatives of React :- Angular.js.
- More control over the flow of application.
- Reusing the components(optimization).
- Easy to learn.
- Trusted by some leading companies Facebook, Netflix, PayPal, Tesla etc.
- More job opportunities.
- Mainly used for single page application.



Single Page Application

- Single request to server.
- HTML, CSS and JS as response from the server.
- Virtual DOM is created then any further requests are handled by React.
- React only updates that object in actual DOM
- Saves a lot of time, bandwidth, etc.
- Improves performance.
- Some SPA are Gmail, Facebook, Twitter etc.



Local Setup

1. Download and Install NodeJS

Npm or Yarn (Helps to manage JS packages)

Development Server



2. Download and Install Any Editor

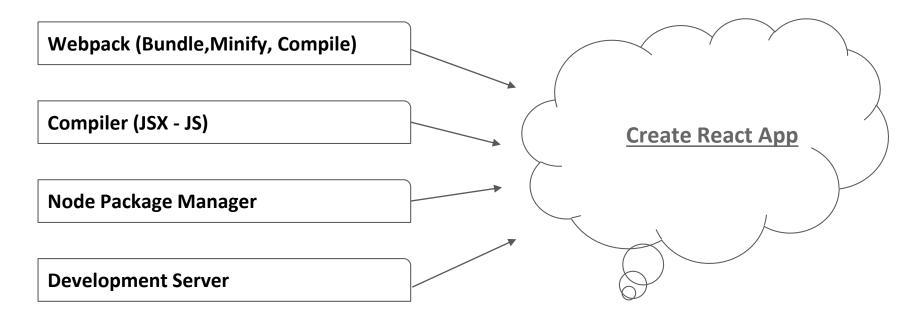


Create React App

- Create React App is the best practise to create single-page React applications.
- Don't need install or configure tools.
- We don't require Webpack or Babel.
- Built by developers at Facebook.
- Giving a head start thus saving a lot of time.



What if we didn't use this tool?





Getting Started With Create React App



Open Node.js command prompt.

```
Node.js command prompt
Your environment has been set up for using Node.js 12.16.3 (ia32) and npm.
C:\Users\Faizan>
```

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Run this command on the terminal to install create react app globally.

```
Node is command prompt
Your environment has been set up for using Node.js 12.16.3 (ia32) and npm.
C:\Users\Faizan>npm install create-react-app -g
C:\Users\Faizan\AppData\Roaming\npm\create-react-app -> C:\Users\Faizan\AppData\
Roaming\npm\node_modules\create-react-app\index.js
 create-react-app@3.4.1
removed 1 package and updated 8 packages in 36.758s
C:\Users\Faizan>
C:\Users\Faizan>
```



Navigate to path where we want to create our app.

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Node is command prompt
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+ create-react-app@3.4.1
removed 1 package and updated 8 packages in 36.758s
C:\Users\Faizan>
C:\Users\Faizan>cd/
C:\>d:
D:\>cd React App
D:\React App>
```

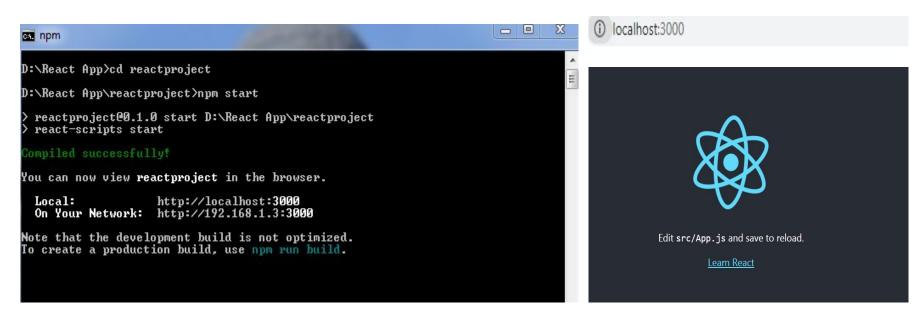


Run the create-react-app command along with project name.

```
D:\React App>create-react-app reactproject
                                                                         58 packages are looking for funding
                                                                           run 'nom fund' for details
Creating a new React app in D:\React App\reactproject.
                                                                         found 1 low severity vulnerability
                                                                           run 'npm audit fix' to fix them, or 'npm audit' for details
Installing packages. This might take a couple of minutes.
Installing react, react-dom, and react-scripts with cra-template...
                                                                         Created git commit.
                                                                         Success! Created reactproject at D:\React App\reactproject
core-js02.6.11 postinstall D:\React App\reactproject\node_modules\babel-runtim Inside that directory, you can run several commands:
e\node_modules\core-js
> node -e "try{require('./postinstall')}catch(e){}"
                                                                             Starts the development server.
                                                                           nom run build
> core-js@3.6.5 postinstall D:\React App\reactproject\node_modules\core-js
                                                                              Bundles the app into static files for production.
 node -e "try{require('./postinstall')}catch(e){}"
                                                                           npm test
                                                                             Starts the test runner.
 · core-js-pure@3.6.5 postinstall D:\React App\reactproject\node_modules\core-js-
                                                                              Removes this tool and copies build dependencies, configuration files
 node -e "try{require('./postinstall')}catch(e){}"
                                                                              and scripts into the app directory. If you do this, you can't go back!
                                                                         We suggest that you begin by typing:
 react-dom@16.13.1
 react@16.13.1
                                                                           cd reactproject
 cra-template@1.0.3
                                                                           npm start
 react-scripts@3.4.1
added 1613 packages from 750 contributors and audited 921730 packages in 477.819 Happy hacking!
```



Navigate to the project and run npm start command.





Next Gen. JavaScript



Let Keyword



Block scope of Let

```
console.log("Global Scope");
for(var g_scope=1;g_scope<5;g_scope++)
{
    console.log(g_scope);
}
console.log(g_scope); //Global Scope

console.log("Block Scope");
for(let b_scope=1;b_scope<5;b_scope++)
{
    console.log(b_scope);
}
console.log(b_scope); // Error (Block Scope)</pre>
```

Global Scope	practise.js:2	
1	practise.js:5	
2	<pre>practise.js:5</pre>	
3	<pre>practise.js:5</pre>	
4	<pre>practise.js:5</pre>	
5	<pre>practise.js:7</pre>	
Block Scope	practise.js:10	
1	practise.js:13	
2	practise.js:13	
3	practise.js:13	
4	practise.js:13	
►Uncaught ReferenceError: b_scope is not defined at practise.js:15	practise.js:15	



Let Declaration

```
for(let declare_again=1;declare_again<5;declare_again++)</pre>
                                                                                                                        practise.js:5
     console.log(declare again);
                                                                                                                        practise.js:5
var declare again=1;
     console.log(declare_again); // Different block No ERROR.
                                                                                                                        practise.js:5
                                                                                                                        practise.js:8
var declare = 5;
   console.log(declare);
                                                                                                                        practise.js:11
let declare = 5:
                                       // Same block ERROR.
                                                                            O Uncaught SyntaxError: Identifier 'declare' has already been
                                                                                                                              practise.is:13
   console.log(declare);
                                                                              declared
```



Constant Keyword



Const Keyword

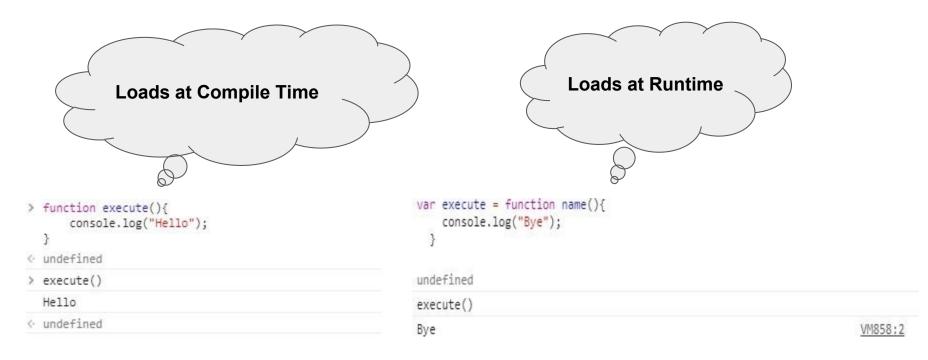
Const Reference and value though property can be changed.



Functions



Function-Declaration & Expression





Arrow Function



Export

Export keyword helps us to use one JavaScript file in another JavaScript file.

With Default:

```
const academy = {
   name:"GL";
}
export default academy;
```

Without Default:

```
export const subject ="React";

export const status=()=>{
    console.log("Completed");
}
```



Import

To include the exported file we use "Import" keyword in the destination JS file.

With Default:

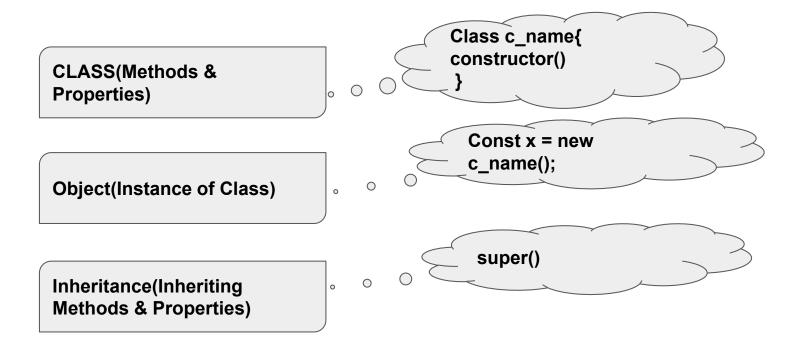
```
import academy from'./file_name.js';
    or
import acad from'./file_name.js';
```

Without Default:

```
import {subject} from'./file_name.js';
import {status} from'./file_name.js';
```



Class





Spread

- Spread operator is used with arrays or objects.
- Spread operator is used to retrieve all values or properties from one array/object into other.
- Represented by three dots(...).

```
const arr =[1,2,3];
undefined
const new_arr=[...arr,4];
undefined
new_arr
▶ (4) [1, 2, 3, 4]
arr
▶ (3) [1, 2, 3]
```



Rest

- Rest operator is used with functions.
- Rest operator forms an array of arguments passed to the function.
- Represented as (...).

```
function find_sum(...numbers)
{
    var sum = 0;
    for(let n of numbers){
        sum=sum+n;
    }
    return sum;
}
undefined
find_sum(10,20,30,40);
100
```



Destructuring

Destructuring is a way with which we can extract few elements from the array or few properties from the object.



Basics of React



Package.json Folder

Dependencies created by Create-React-App

```
"dependencies": {
    "@testing-library/jest-dom": "^4.2.4",
    "@testing-library/react": "^9.5.0",
    "@testing-library/user-event": "^7.2.1",
    "react": "^16.13.1",
    "react-dom": "^16.13.1",
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}.
```



Public Folder

- In this folder we will always have single html file (index.html) which runs on the server and we will edit this file.
- All the components are rendered on index file
- In the div with id root and displayed on the browser.



Source Folder

This is our react application.

All the script files are added in the source folder.

App.css	10/26/1985 1:45 PM	Cascading Style S	1 KB
₹ App.js	10/26/1985 1:45 PM	JScript Script File	1 KB
Name of the state	10/26/1985 1:45 PM	JScript Script File	1 KB
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logo.svg	10/26/1985 1:45 PM	SVG Document	3 KB



Files After Removal

Remove the logo, css and make changes to App.js and index.js file.

```
import React from 'react';
import './App.css';
function App() {
 return (
    <div className="App">
    <h1>Your First React App</h1>
   </div>
export default App;
```

```
import React from 'react';
import ReactDOM from 'react-dom';
import App from './App';
ReactDOM.render(
    <App />,document.getElementById('root')
```



Functional Component

- To render anything to DOM, we require React file from react library.
- Functional Component is created.



Class Component

In class based component render method is used to return html element to DOM which can rendered to the browser.



JSX

- Everything written lowercase is treated as JSX which looks like HTML but is JavaScript with syntax extension.
- Alternatively you can use React.createElement(...) with at least 3 arguments (element,config,text).



Summary

- Introduction to React
- Single Page Applications like Facebook, Gmail, etc
- Local Setup and steps involved in Create React App
- Next Generation JavaScript (Let, const, etc)
- Basics of React



Thank You



Introduction to React JS



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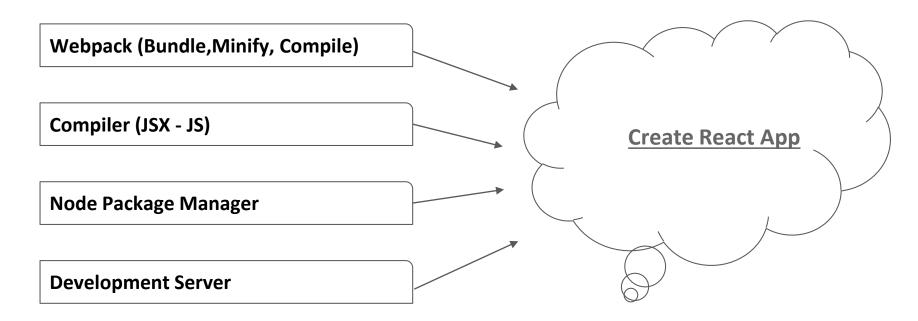


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 create-react-app@3.4.1
removed 1 package and updated 8 packages in 36.758s
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```



Navigate to path where we want to create our app.

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C:\Users\Faizan>
C:\Users\Faizan>cd/
C:\>d:
D:\>cd React App
D:\React App>
```

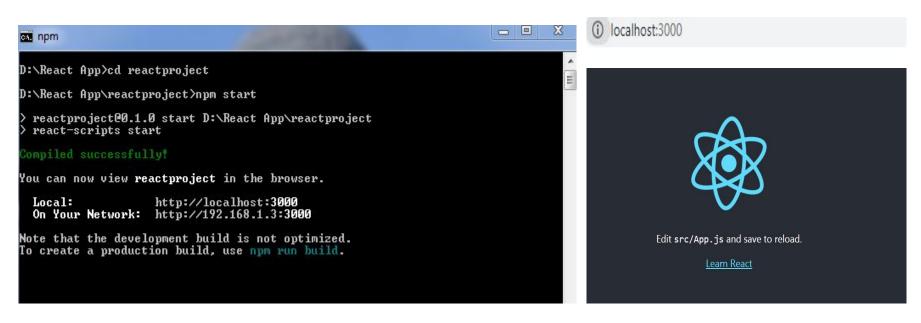


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```
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                                                                         Created git commit.
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e\node_modules\core-js
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                                                                             Starts the development server.
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                                                                              Removes this tool and copies build dependencies, configuration files
 node -e "try{require('./postinstall')}catch(e){}"
                                                                              and scripts into the app directory. If you do this, you can't go back!
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 cra-template@1.0.3
                                                                           npm start
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```



Navigate to the project and run npm start command.





Next Gen. JavaScript



Let Keyword



Block scope of Let

```
console.log("Global Scope");
for(var g_scope=1;g_scope<5;g_scope++)
{
    console.log(g_scope);
}
console.log(g_scope); //Global Scope

console.log("Block Scope");
for(let b_scope=1;b_scope<5;b_scope++)
{
    console.log(b_scope);
}
console.log(b_scope); // Error (Block Scope)</pre>
```

```
Global Scope
                                                                       practise.js:2
                                                                       practise.js:5
                                                                       practise.js:5
                                                                       practise.js:5
                                                                       practise.js:5
                                                                       practise.is:7
  Block Scope
                                                                      practise.js:10
                                                                      practise.js:13
                                                                      practise.js:13
                                                                      practise.js:13
                                                                      practise.js:13

    ▶Uncaught ReferenceError: b_scope is not defined

                                                                      practise.is:15
      at practise.js:15
```



Let Declaration

```
for(let declare_again=1;declare_again<5;declare_again++)</pre>
                                                                                                                        practise.js:5
     console.log(declare again);
                                                                                                                        practise.js:5
var declare again=1;
     console.log(declare_again); // Different block No ERROR.
                                                                                                                        practise.js:5
                                                                                                                        practise.js:8
var declare = 5;
   console.log(declare);
                                                                                                                        practise.js:11
let declare = 5:
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                                                                            O Uncaught SyntaxError: Identifier 'declare' has already been
                                                                                                                              practise.is:13
   console.log(declare);
                                                                              declared
```



Constant Keyword



Const Keyword

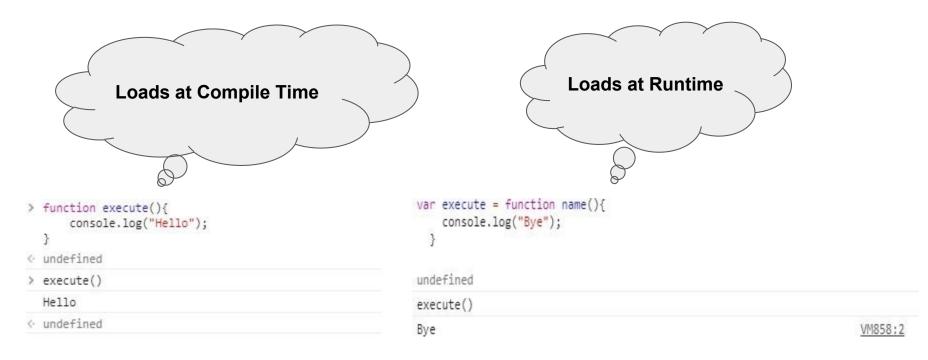
Const Reference and value though property can be changed.



Functions



Function-Declaration & Expression





Arrow Function



Export

Export keyword helps us to use one JavaScript file in another JavaScript file.

With Default:

```
const academy = {
   name:"GL";
}
export default academy;
```

Without Default:

```
export const subject ="React";

export const status=()=>{
    console.log("Completed");
}
```



Import

To include the exported file we use "Import" keyword in the destination JS file.

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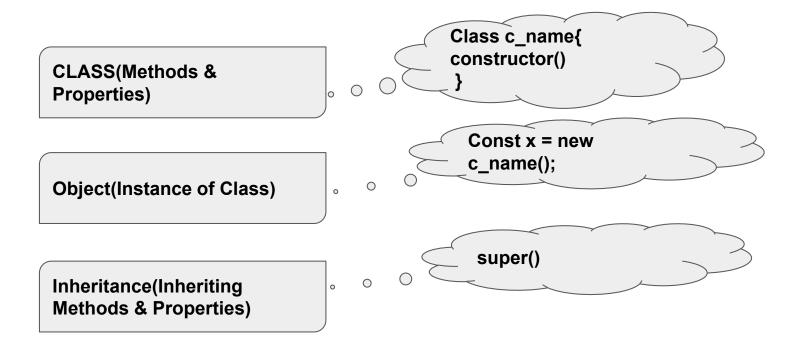
```
import academy from'./file_name.js';
    or
import acad from'./file_name.js';
```

Without Default:

```
import {subject} from'./file_name.js';
import {status} from'./file_name.js';
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Class





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- Spread operator is used with arrays or objects.
- Spread operator is used to retrieve all values or properties from one array/object into other.
- Represented by three dots(...).

```
const arr =[1,2,3];
undefined
const new_arr=[...arr,4];
undefined
new_arr
▶ (4) [1, 2, 3, 4]
arr
▶ (3) [1, 2, 3]
```



Rest

- Rest operator is used with functions.
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function find_sum(...numbers)
{
    var sum = 0;
    for(let n of numbers){
        sum=sum+n;
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Basics of React



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Source Folder

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₹ App.js	10/26/1985 1:45 PM	JScript Script File	1 KB
Name : App.test.js	10/26/1985 1:45 PM	JScript Script File	1 KB
📆 index.css	10/26/1985 1:45 PM	Cascading Style S	1 KB
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import './App.css';
function App() {
 return (
    <div className="App">
    <h1>Your First React App</h1>
   </div>
export default App;
```

```
import React from 'react';
import ReactDOM from 'react-dom';
import App from './App';
ReactDOM.render(
    <App />,document.getElementById('root')
```



Functional Component

- To render anything to DOM, we require React file from react library.
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Class Component

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