

## React in Existing Application

- Create a new folder in your project  
**"ReactSPA"**
- Install following libraries
  - **React Core**  
> npm install react -save
  - **React DOM library**  
> npm install react-dom -save
  - **Babel Stand alone**  
> npm install @babel/standalone -save

### Note:

- React core library provides properties and methods for react environment.
- React-DOM library is used to manipulate Virtual DOM.
- Babel is a compiler for React

### Add a new Page into "ReactSPA" folder

#### Index.html

<!DOCTYPE html>

<html>

<head>

<title>React Demo</title>

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

<script src="../node\_modules/react/umd/react.development.js"></script>

<script src="../node\_modules/react-dom/umd/react-dom.development.js"></script>

<script src="../node\_modules/@babel/standalone/babel.js"></script>

<script type="text/babel">

ReactDOM.render(

```
        <h2>Welcome to React.js</h2>,
        document.getElementById("container")
    )
</script>
</head>
<body class="container-fluid">
    <h1 class="bg-primary text-white text-center p-2">React Application</h1>
    <div id="container">

        </div>
    </body>
</html>
```

## React Components

- React is component based.
- Components are building blocks for react application.
- Component is combination of
  - o Logic
  - o Presentation and
  - o Styles
- **Logic** is defined using JavaScript
- **Presentation** is defined by using HTML
- **Styles** are defined by using CSS
- In react components can be designed by using
  - o JavaScript functions
  - o JavaScript classes
- React components are classified into 2 types
  - o Function Components [JavaScript Functions]
  - o Class Components [JavaScript Classes]

## Ex: Function Component

```
<!DOCTYPE html>

<html>

  <head>

    <title>React Demo</title>

    <link rel="stylesheet"
href="../node_modules/bootstrap/dist/css/bootstrap.css">

    <script src="../node_modules/react/umd/react.development.js"></script>

    <script src="../node_modules/react-dom/umd/react-
dom.development.js"></script>

    <script src="../node_modules/@babel/standalone/babel.js"></script>
    <script type="text/babel">

      function HeaderComponent(){

        const title = "Amazon Shopping";

        return(

          <div className="text-center bg-danger text-white p-1 mt-2">

            <h2>{title}</h2>

            <p>Online Shopping - 60% OFF on Electronics</p>

          </div>

        )

      }

      ReactDOM.render(

        <HeaderComponent />,

        document.getElementById("container")

      )

    </script>

  </head>
```

```
<body class="container-fluid">
  <div id="container">

    </div>
  </body>
</html>
```

### Ex: Function Component as Arrow function

```
<!DOCTYPE html>
<html>
  <head>
    <title>React Demo</title>
    <link rel="stylesheet"
href="../node_modules/bootstrap/dist/css/bootstrap.css">
    <script src="../node_modules/react/umd/react.development.js"></script>
    <script src="../node_modules/react-dom/umd/react-
dom.development.js"></script>
    <script src="../node_modules/@babel/standalone/babel.js"></script>
    <script type="text/babel">
      const HeaderComponent = () => {
        const title = "Amazon Shopping";
        const offer = "Online Shoppine - 70% OFF on Footwear";
        return(
          <div className="text-center text-white bg-danger mt-2 p-2">
            <h2>{title}</h2>
            <p>{offer}</p>
          </div>
        )
      }
    </script>
  </head>
  <body>
    <HeaderComponent />
  </body>
</html>
```

```

    }

    ReactDOM.render(
      <HeaderComponent />,
      document.getElementById("container")
    )
  </script>
</head>
<body class="container-fluid">
  <div id="container">

    </div>
  </body>
</html>

```

### Ex: **Multiple Components**

```

<!DOCTYPE html>
<html>
  <head>
    <title>React Demo</title>
    <link rel="stylesheet"
href="../node_modules/bootstrap/dist/css/bootstrap.css">
    <script src="../node_modules/react/umd/react.development.js"></script>
    <script src="../node_modules/react-dom/umd/react-
dom.development.js"></script>
    <script src="../node_modules/@babel/standalone/babel.js"></script>
    <script type="text/babel">
      const HeaderComponent = () => {

```

```
const title = "Amazon Shopping";
const offer = "Online Shoppine - 70% OFF on Footwear";
return(
  <div className="text-center text-white bg-danger mt-2 p-2">
    <h2>{title}</h2>
    <p>{offer}</p>
  </div>
)
}

const FooterComponent = () => (
  <div className="text-center bg-danger mt-2 text-white">
    &copy; copyright 2021 - Amazon India
  </div>
)

const LoginComponent = () => (
  <div>
    <dl>
      <dt>User Name</dt>
      <dd><input type="text" /></dd>
      <dt>Password </dt>
      <dd><input type="password" /></dd>
    </dl>
    <button>Login</button>
  </div>
)

const MainComponent = () => (
```

```

    <div>
      <h1>User Login</h1>
      <LoginComponent />
    </div>
  )
  const SectionComponent = () => (
    <div style={{height:'400px'}}>
      <div className="row">
        <div className="col-2">
          <ul>
            <li>Home</li>
            <li>Electronics</li>
            <li>Footwear</li>
          </ul>
        </div>
        <div className="col-10">
          <MainComponent />
        </div>
      </div>
    </div>
  )
  ReactDOM.render(
    <div>
      <HeaderComponent />
      <SectionComponent />
      <FooterComponent />
    </div>
  )

```

```

        </div>,
        document.getElementById("container")
    )
</script>
</head>
<body class="container-fluid">
    <div id="container">

        </div>
    </body>
</html>

```

## JSX Rules

- You have to add everything in a container, if it spans multiple lines.

Ex1:

```

(
  <h2> Welcome to React JS </h2>
  <p> Paragraph </p>
)
// Invalid

```

Ex2:

```

(
  <div>
    <h2>Welcome to React </h2>
    <p> Paragraph </p>
  </div>
)
//valid

```

Ex3:

```

(
  <>
    <h2>Welcome to React </h2>
    <p> Paragraph </p>
  </>
)
//valid

```



```
</>  
)
```

- JSX will not allow void elements
- Every element must have end tag or defined as self-ending.  
    <img>    // invalid in react  
    <img> </img>  
    <img />  
    <input type="text" />

## Data Binding

- It is a technique used to **bind the data with UI**.
- **Access the data from source and render into UI.**
- React supports **"One-Way-Binding"**

### Ex: Object Data

- Add a new folder by name **"Components"**
- Add a new file into component folder  
    **"DataBindingComponent.js"**

```
const DataBindingComponent = () => {  
  let product = {  
    Name: 'JBL Speaker',  
    Price: 6000.44,  
    Stock: true,  
    Photo: '../assets/speaker.jpg'  
  }  
  return(  
    <>  
    <h2>Product Details</h2>  
    <dl>
```

```

    <dt>Name</dt>
    <dd>{product.Name}</dd>
    <dt>Price</dt>
    <dd>{product.Price}</dd>
    <dt>Stock</dt>
    <dd>{(product.Stock==true)?"Available":"Out of Stock"}</dd>
    <dt>Preview</dt>
    <dd>
      <img src={product.Photo} width="100" height="100"/>
    </dd>
  </dl>
</>
)
}

```

## Index.html

```

<!DOCTYPE html>
<html>
  <head>
    <title>React Demo</title>
    <link rel="stylesheet"
href="../node_modules/bootstrap/dist/css/bootstrap.css">
    <script src="../node_modules/react/umd/react.development.js"></script>
    <script src="../node_modules/react-dom/umd/react-
dom.development.js"></script>
    <script src="../node_modules/@babel/standalone/babel.js"></script>

```

```

    <script type="text/jsx"
src="components/DataBindingComponent.js"></script>

    <script type="text/jsx">

        ReactDOM.render(

            <DataBindingComponent />,

            document.getElementById("container")

        )

    </script>

</head>

<body class="container-fluid">

    <div id="container">


        </div>

    </body>

</html>

```

### **Return Array Elements using map()**

```

const DataBindingComponent = () => {

    let categories = ["All", "Electronics", "Footwear", "Fashion"];

    return(

        <>

            <h2>Categories</h2>

            <ol>

                {

                    categories.map(function(category){

                        return <li>{category}</li>

                    })

                }

            </ol>

        </>

    )
}

```

```

    }
  </ol>
</>
)
}

```

### Ex: Using Short hand LMBDA

```

const DataBindingComponent = () => {
  let categories = ["All", "Electronics", "Footwear", "Fashion"];
  return(
    <>
      <h2>Categories</h2>
      <ol>
        {
          categories.map(category=>
            <li>{category}</li>
          )
        }
      </ol>
    </>
  )
}

```

### Ex: Dynamic Dropdown list

```

const DataBindingComponent = () => {
  let categories = ["All", "Electronics", "Footwear", "Fashion"];
  return(

```

```

<>
<h2>Categories</h2>
<select>
  {
    categories.map(category =>
      <option key={category} >{category}</option>
    )
  }
</select>
</>
)
}

```

### Ex: Generating Row dynamically

```

const DataBindingComponent = () => {

  let data = [
    {Name: "JBL Speaker", Price: 4600.44, Photo: "../assets/speaker.jpg"},
    {Name: "Nike Casuals", Price: 7600.44, Photo: "../assets/shoe.jpg"},
    {Name: "Lee Boot", Price: 2400.44, Photo: "../assets/shoe1.jpg"},
    {Name: "Shirt", Price: 1600.44, Photo: "../assets/shirt.jpg"},
  ]

  return(
    <>
      <h2>Product Table</h2>

```

```
<table className="table table-hover">
  <thead>
    <tr>
      <th>Name</th>
      <th>Price</th>
      <th>Preview</th>
    </tr>
  </thead>
  <tbody>
    {
      data.map(product =>
        <tr key={product.Name}>
          <td>{product.Name}</td>
          <td>{product.Price}</td>
          <td><img src={product.Photo} width="100"
height="100"></img></td>
        </tr>
      )
    }
  </tbody>
</table>
</>
)
```

## Class Components

- Class components are created by using JavaScript class.
- Class can be configured with “State”
- Hence it is by default stateful component.
- It allows extensibility.
- React class component extends “React.Component” base class

Ex:

### **DataBindingComponent.js**

```
class DataBindingComponent extends React.Component
```

```
{  
  constructor(props) {  
    super(props);  
    this.state = {  
      title: "Categories List",  
      categories: ["Electronics", "Footwear", "Fashion"],  
      product: {  
        Name: "JBL Speaker",  
        Price: 4500.55,  
        Photo: '../assets/speaker.jpg'  
      }  
    }  
  }  
}
```

```
render(){  
  return(  
    <>  
    <h2>{this.state.title}</h2>
```

```

<ol>
  {
    this.state.categories.map(category =>
      <li>{category}</li>
    )
  }
</ol>
<hr/>
<h2>Product Details</h2>
<dl>
  <dt>Name</dt>
  <dd>{this.state.product.Name}</dd>
  <dt>Price</dt>
  <dd>{this.state.product.Price}</dd>
  <dt>Preview</dt>
  <dd><img src={this.state.product.Photo} width="100" height="100"
/></dd>
</dl>
</>
)
}
}

```

### Index.html

```

<!DOCTYPE html>
<html>
  <head>
    <title>React Demo</title>

```



```
<link rel="stylesheet"
href="../node_modules/bootstrap/dist/css/bootstrap.css">

<script src="../node_modules/react/umd/react.development.js"></script>

<script src="../node_modules/react-dom/umd/react-
dom.development.js"></script>

<script src="../node_modules/@babel/standalone/babel.js"></script>

<script type="text/jsx"
src="components/DataBindingComponent.js"></script>

<script type="text/jsx">

  ReactDOM.render(

    <DataBindingComponent />,

    document.getElementById("container")

  )

</script>
</head>

<body class="container-fluid">

  <div id="container">

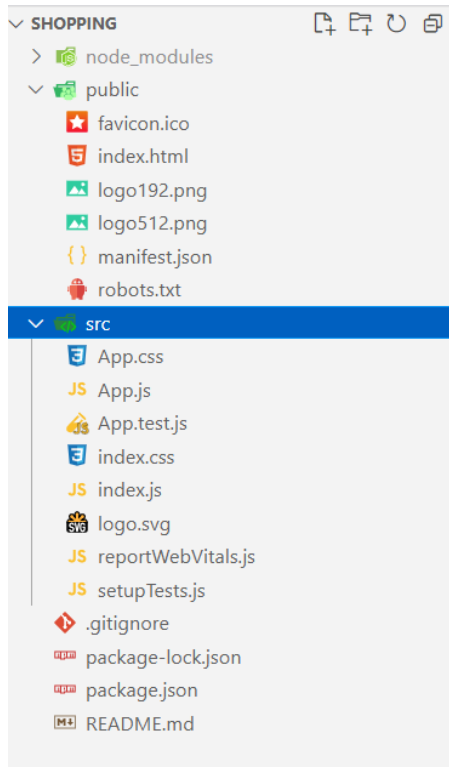

    </div>

  </body>
</html>
```

## Creating a new React Application

- Add a new folder “C:\React-Projects”
- Open folder location in command prompt

**C:\React-Projects> npx create-react-app shoppingonline**



- **Public** folder comprises of all static resources [HTML, Images, Text etc.]
- **Src** folder comprises of all dynamic resources [JS, TS, CSS, Sass etc]
- **To Start Project**  
> npm start

**Ex:**

- Install Bootstrap for Project  
> npm install bootstrap
- Add a new folder “components” into “src”
- Add a new file into components folder

### **HomeComponent.js**

```
import React from 'react';
```

```
export default class HomeComponent extends React.Component  
{  
  render(){
```

```

    return(
      <>
        <div className="container">
          <h1 className="text-primary text-center">Shopping Home</h1>
          <p className="text-center">50% OFF - Special Offers on
Electronics</p>
        </div>
      </>
    )
  }
}

```

- **Go to “Index.js”**

```

import React from 'react';
import ReactDOM from 'react-dom';
import './index.css';
import './node_modules/bootstrap/dist/css/bootstrap.css';
import App from './App';
import reportWebVitals from './reportWebVitals';
import HomeComponent from './components/HomeComponent';

```

```

ReactDOM.render(
  <React.StrictMode>
    <HomeComponent />
  </React.StrictMode>,
  document.getElementById('root')
);

```

```

// If you want to start measuring performance in your app, pass a
function
// to log results (for example: reportWebVitals(console.log))
// or send to an analytics endpoint. Learn more: https://bit.ly/CRA-vitals
reportWebVitals();

```