Web Technology

Introduction to React

Department of Computer Science and Engineering
Shiv Nadar University

React

- **React – JavaScript Library**

React

- **React – JavaScript Library**
  - o **Front-end Development**

React

- **React – JavaScript Library**
  - o **Front-end Development**
- **Facebook Software Engineer - Jordan Walke**

React

- **React – JavaScript Library**
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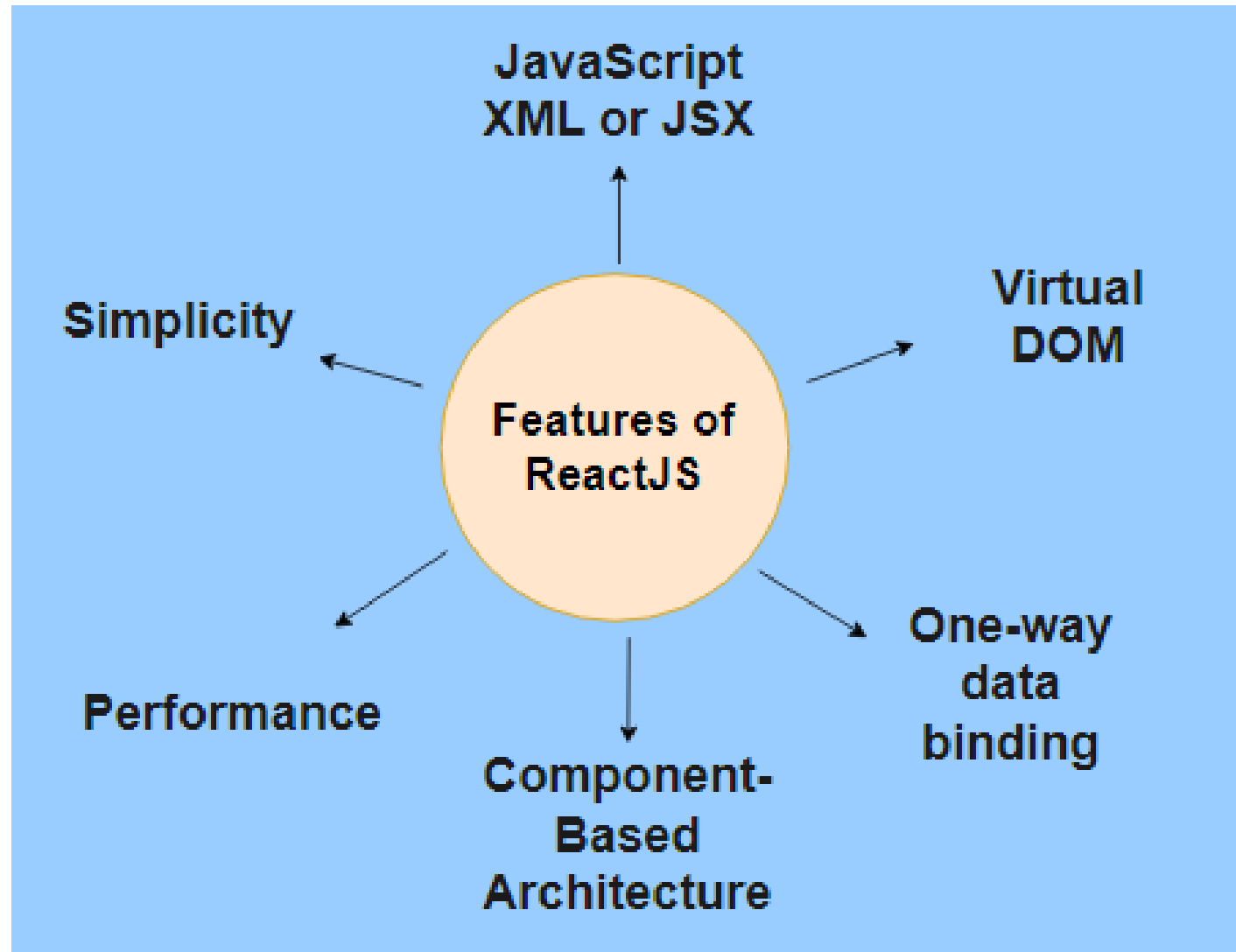- **React – Not a Framework like Angular**

React

- **React – JavaScript Library**
  - **Front-end Development**
- **Facebook Software Engineer - Jordan Walke**
- **React – Not a Framework like Angular**
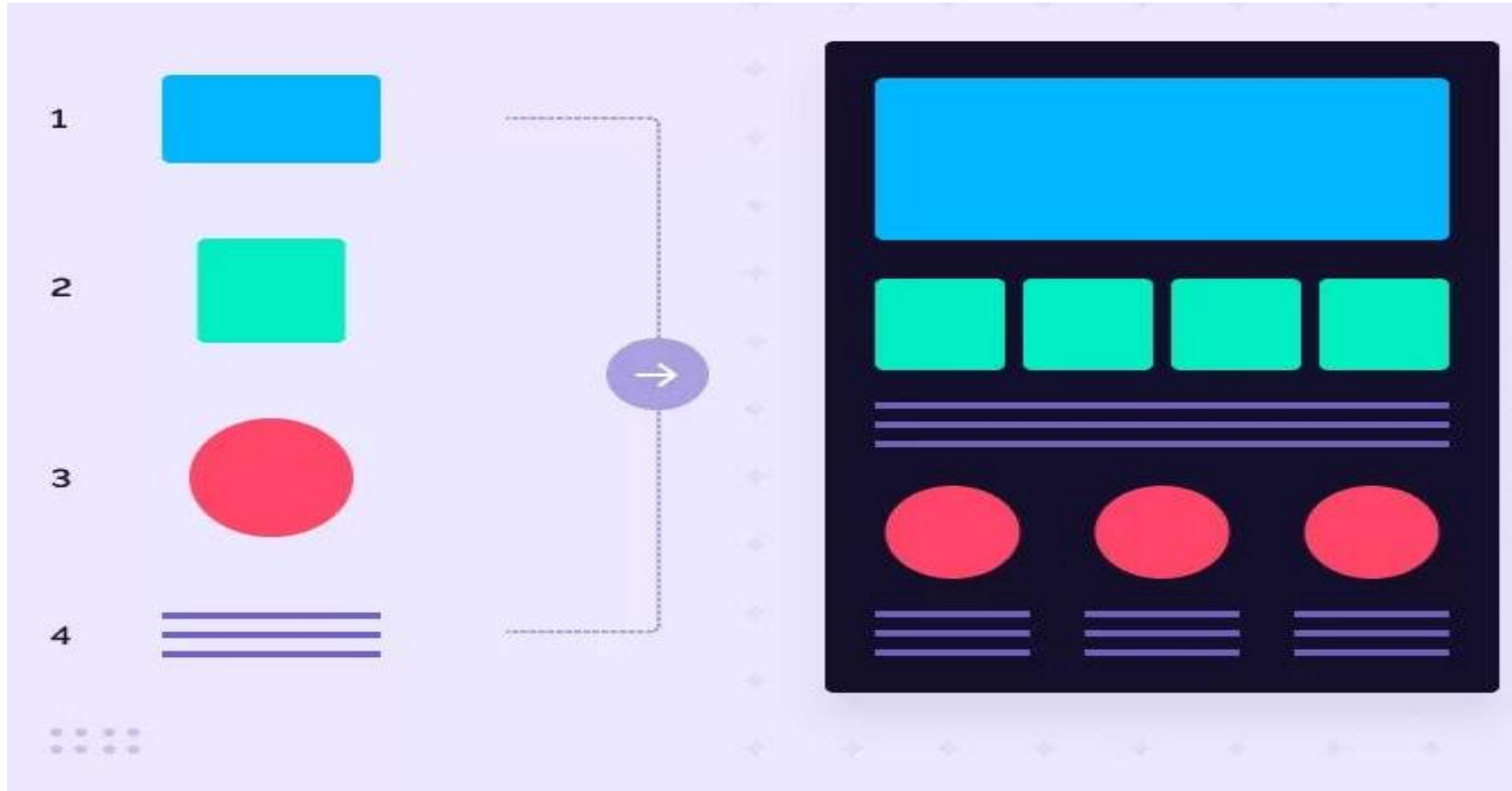- **React.js or ReactJS**

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React

- **React – JavaScript Library**
  - o **Front-end Development**
- **Facebook Software Engineer - Jordan Walke**
- **React – Not a Framework like Angular**
- **React.js or ReactJS**
- **Build and Manage Efficient UI**

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React Features

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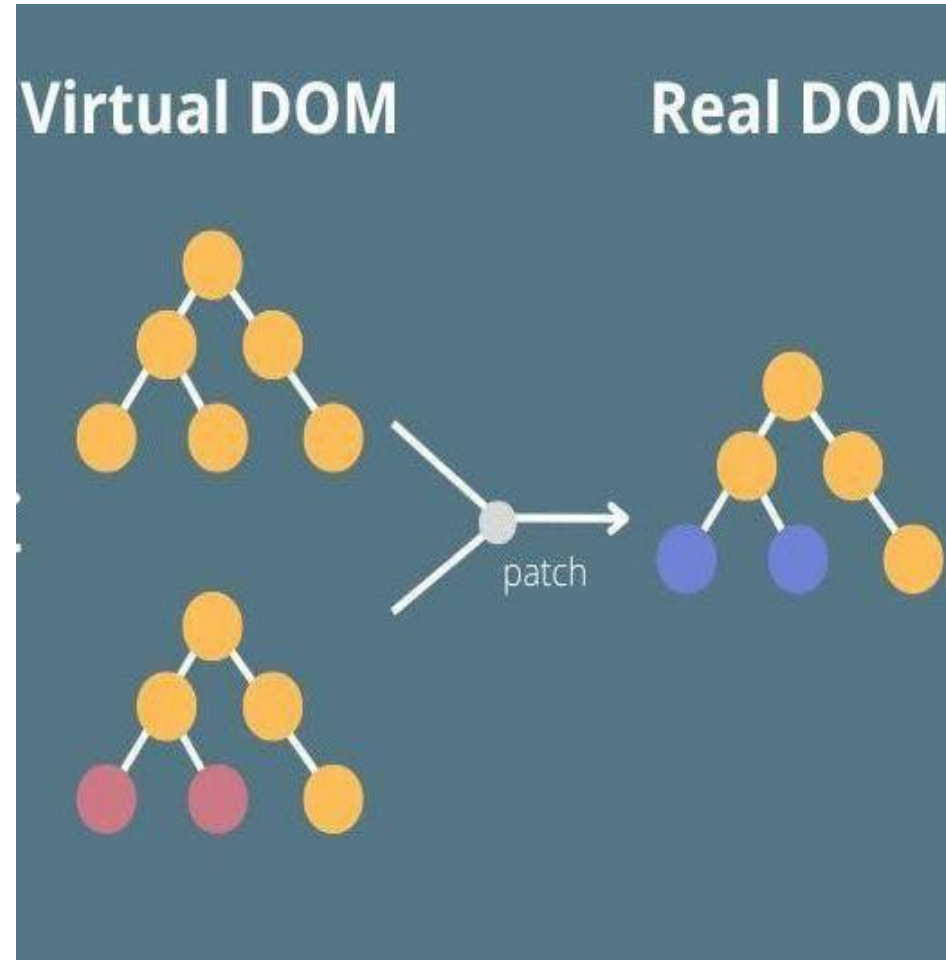# React Features - Components

React Features - JSX


```
JS firstcomponent.js ⊠

▸ 📂 firstreactproject ▸ 📂 src ▸ 📂 components ▸ JS firstcomponent.js ▸

1
2  function FirstComponent() {
3      return (
4          <h1> My First Component</h1>                    JSX
5      );
6  }
7
8  export default FirstComponent;
```
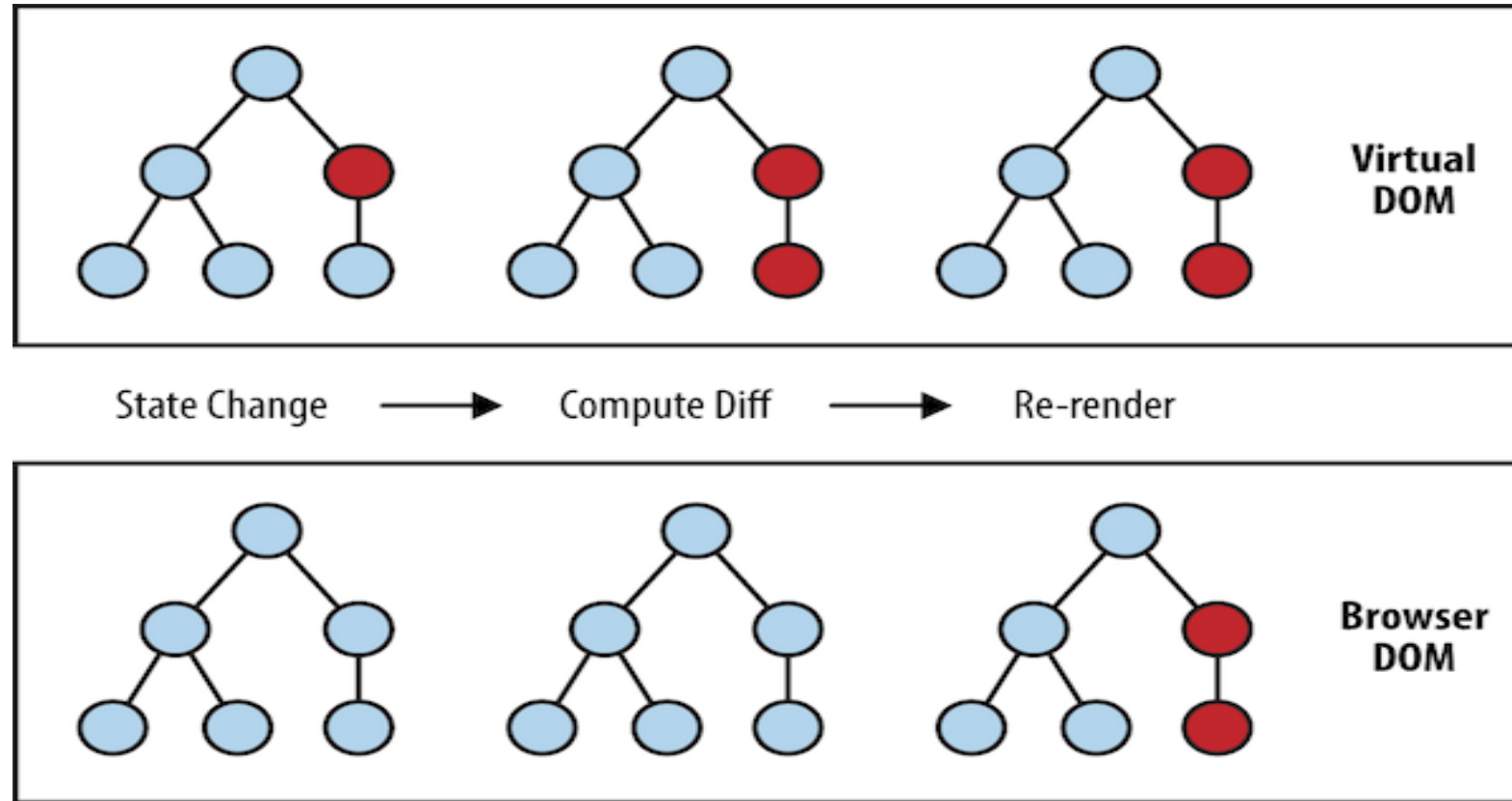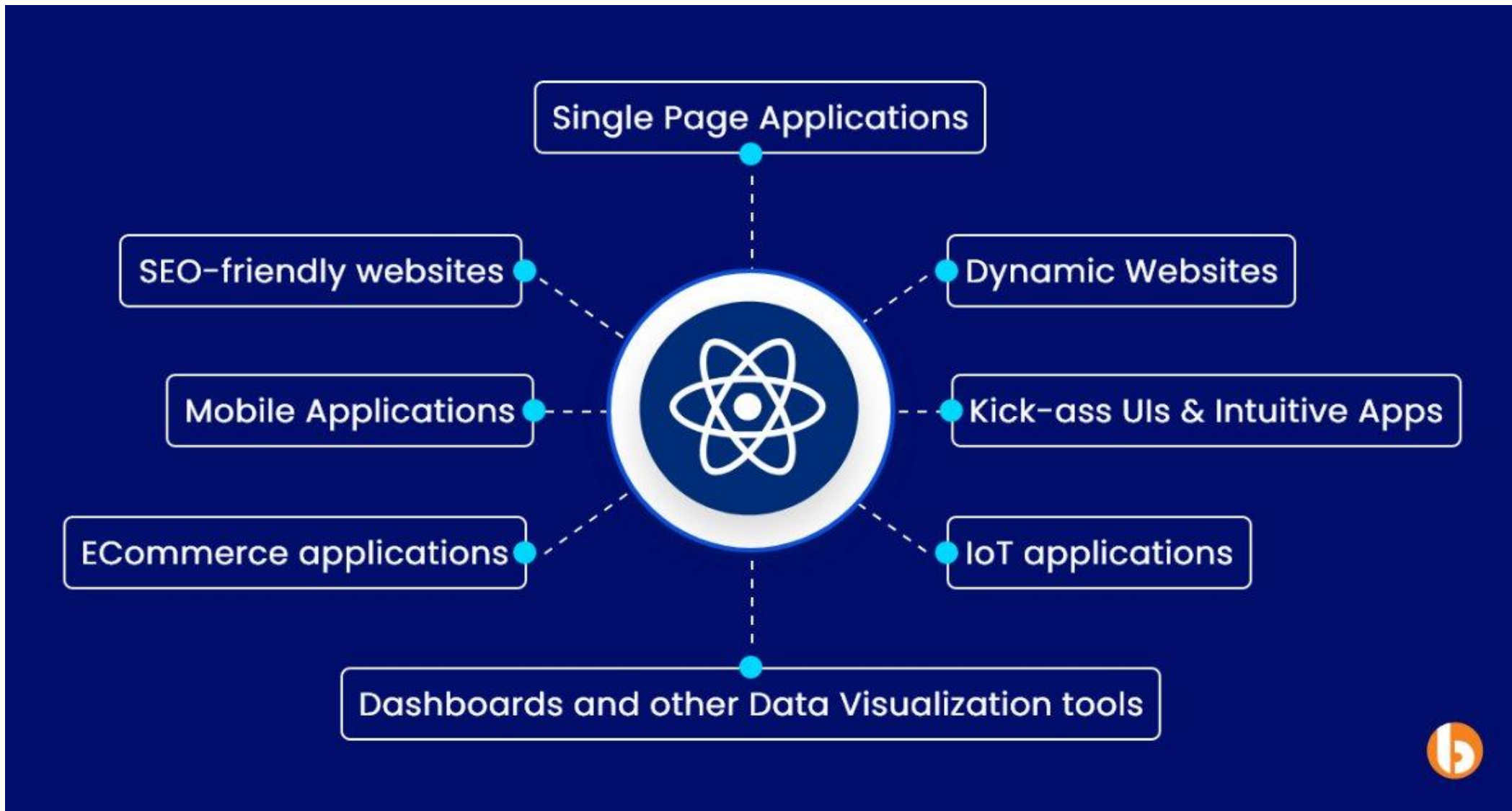
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React Features - Virtual DOM

React Features - Virtual DOM

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React Applications

References

1. Paul J Deitel, Harvey M Deitel, and Abbey Deitel, "Internet and the world wide web: How to program," Pearson, Fifth Edition, 2012.
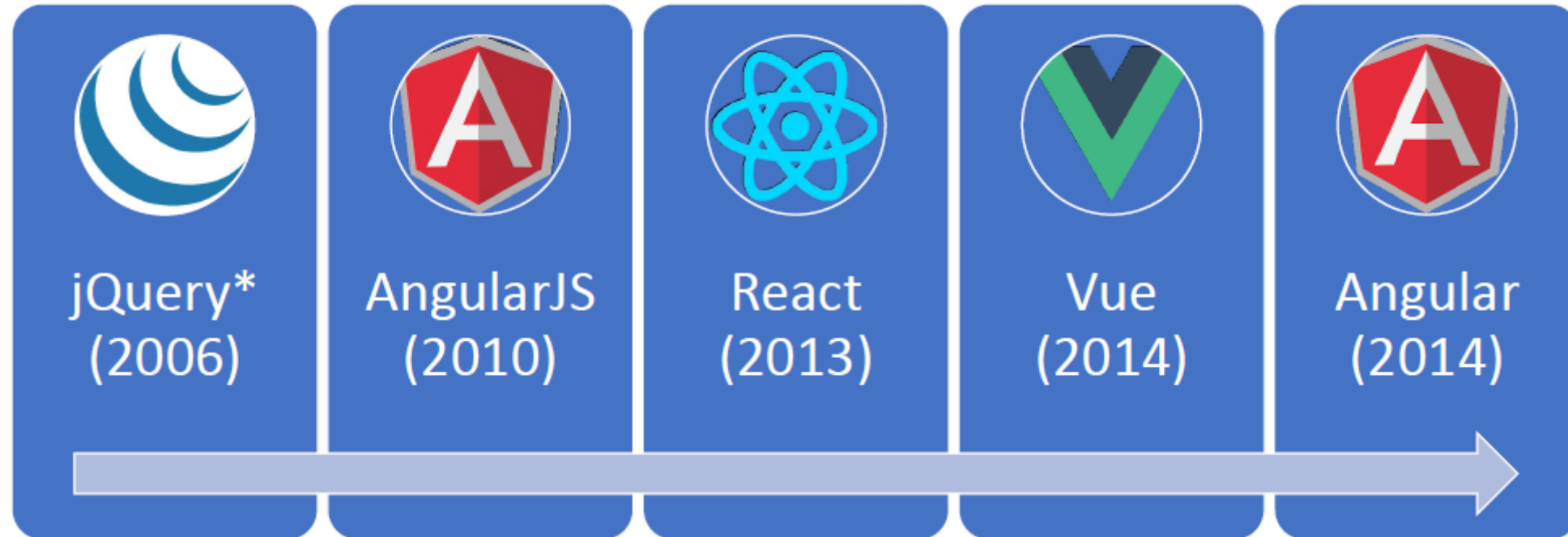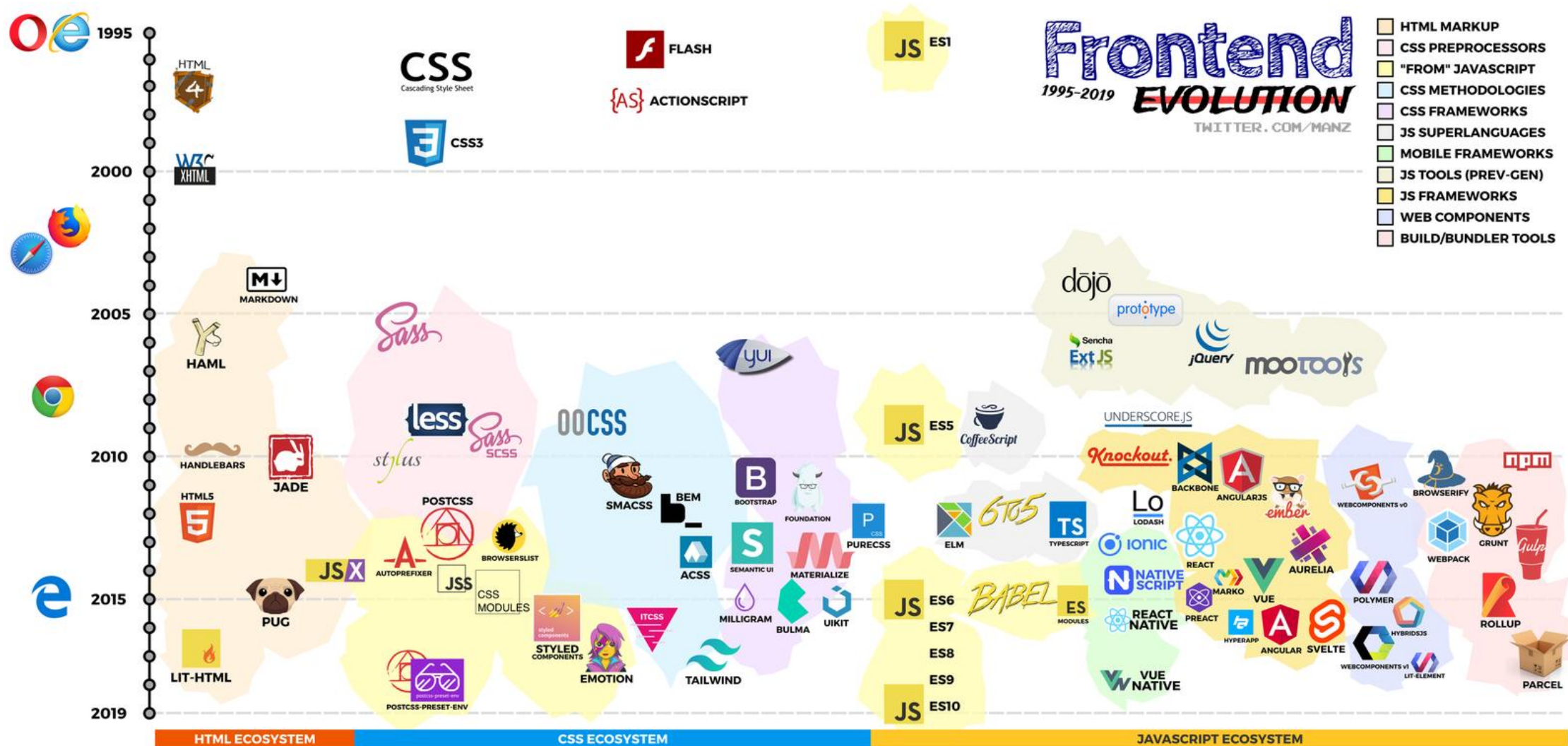
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Web Technology

React – SPA Components and Props

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Front End Timeline

jQuery* (2006) • AngularJS (2010) • React (2013) • Vue (2014) • Angular (2014)

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Front End Timeline

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Single Page Application (SPA)

- **Single HTML file**

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Single Page Application (SPA)

- **Single HTML file**
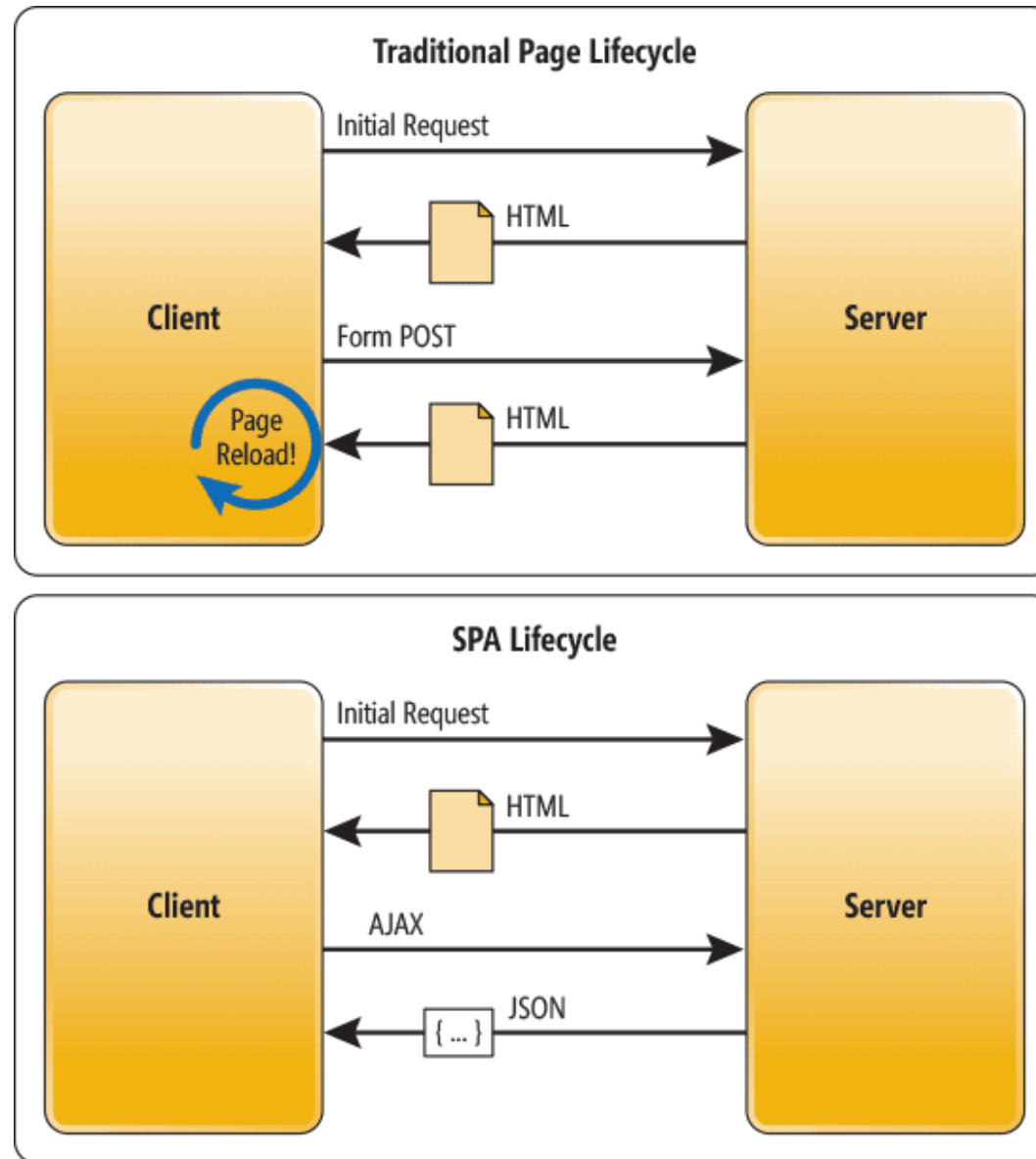
- **Dynamic content updates**

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Single Page Application (SPA)

- **Single HTML file**

- **Dynamic content updates**

- **Component-based structure**

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Single Page Application (SPA)

- **Single HTML file**

- **Dynamic content updates**

- **Component-based structure**

- **Client-side routing**

Single Page Application (SPA)

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Traditional vs React

HTML   CSS   JS

Traditional
approach

JSX   CSS or JSS

React
approach

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Front End Development Tasks

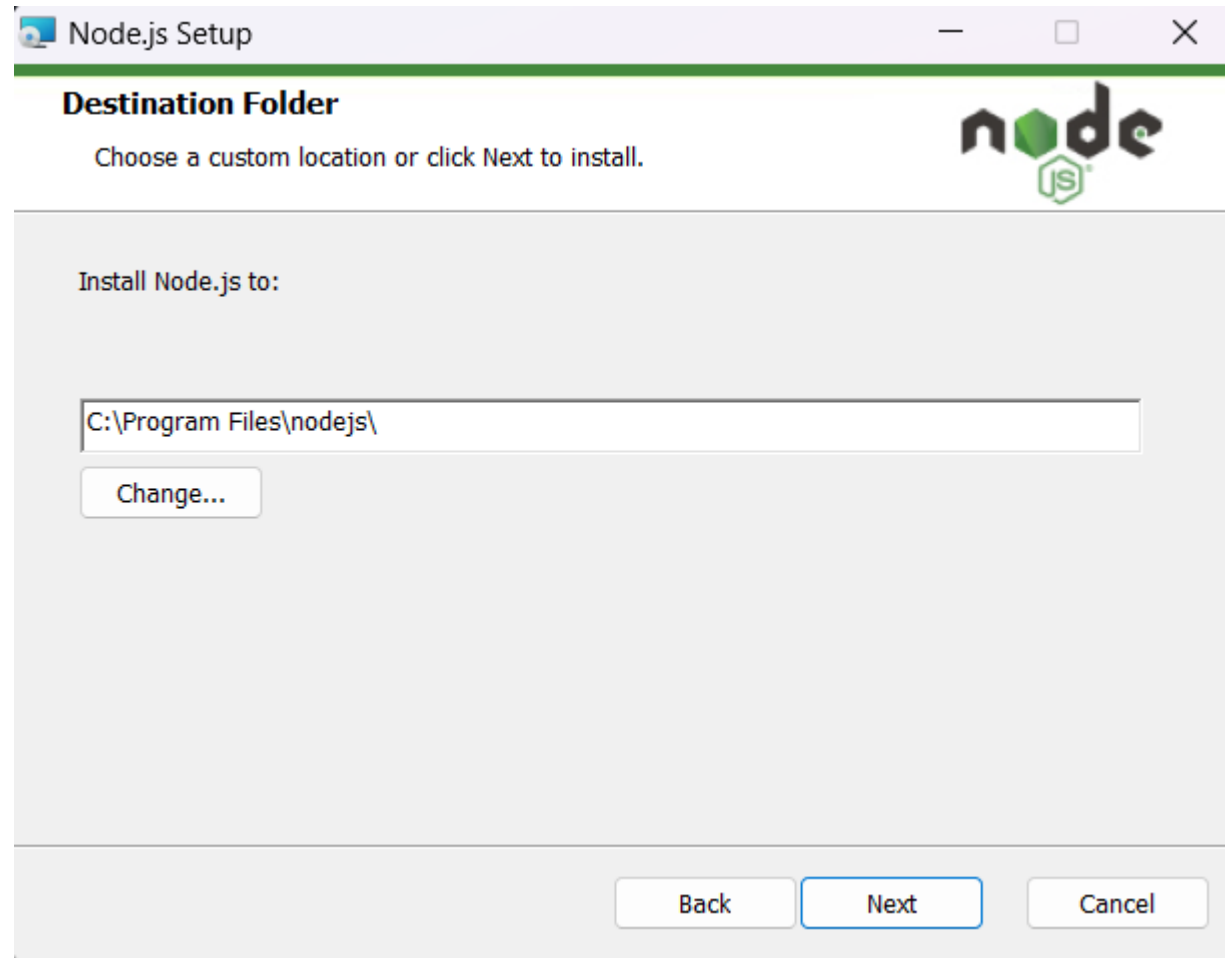|	
App state	Data definition, organization, and storage
User actions	Event handlers respond to user actions
Templates	Design and render HTML templates
Routing	Resolve URLs
Data fetching	Interact with server(s) through APIs and AJAX

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Running React

- **Install Node.js**

Running React

- **Install Node.js**

  - [Download and Install - Node.js — Download Node.js®](#)

- **Open a Terminal**

  - *npx create-react-app app-name or npx create-react-app@latest app-name*

  - **Change directory/folder to app-name**
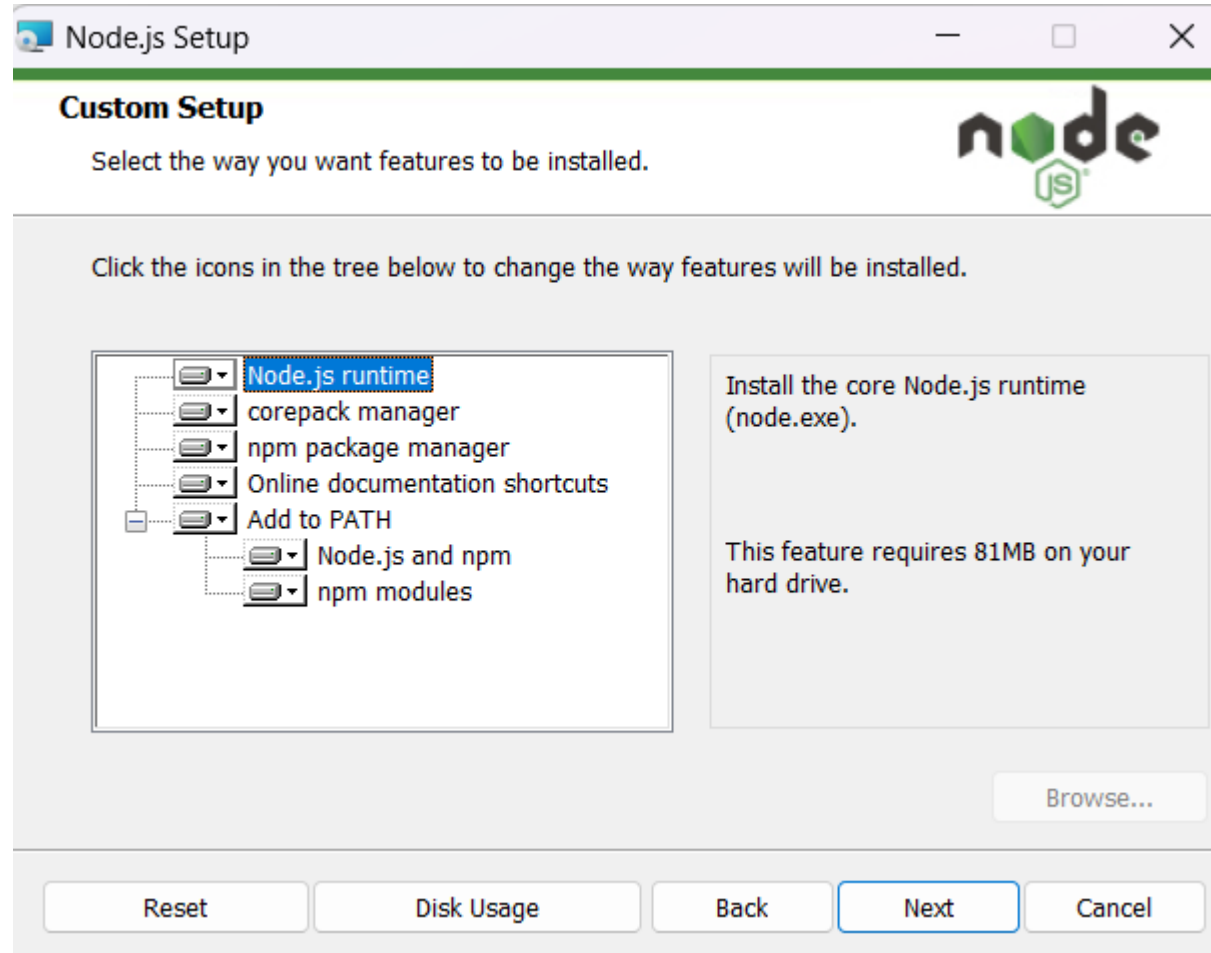
  - *npm start*

- **Code in App.js**

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Running React

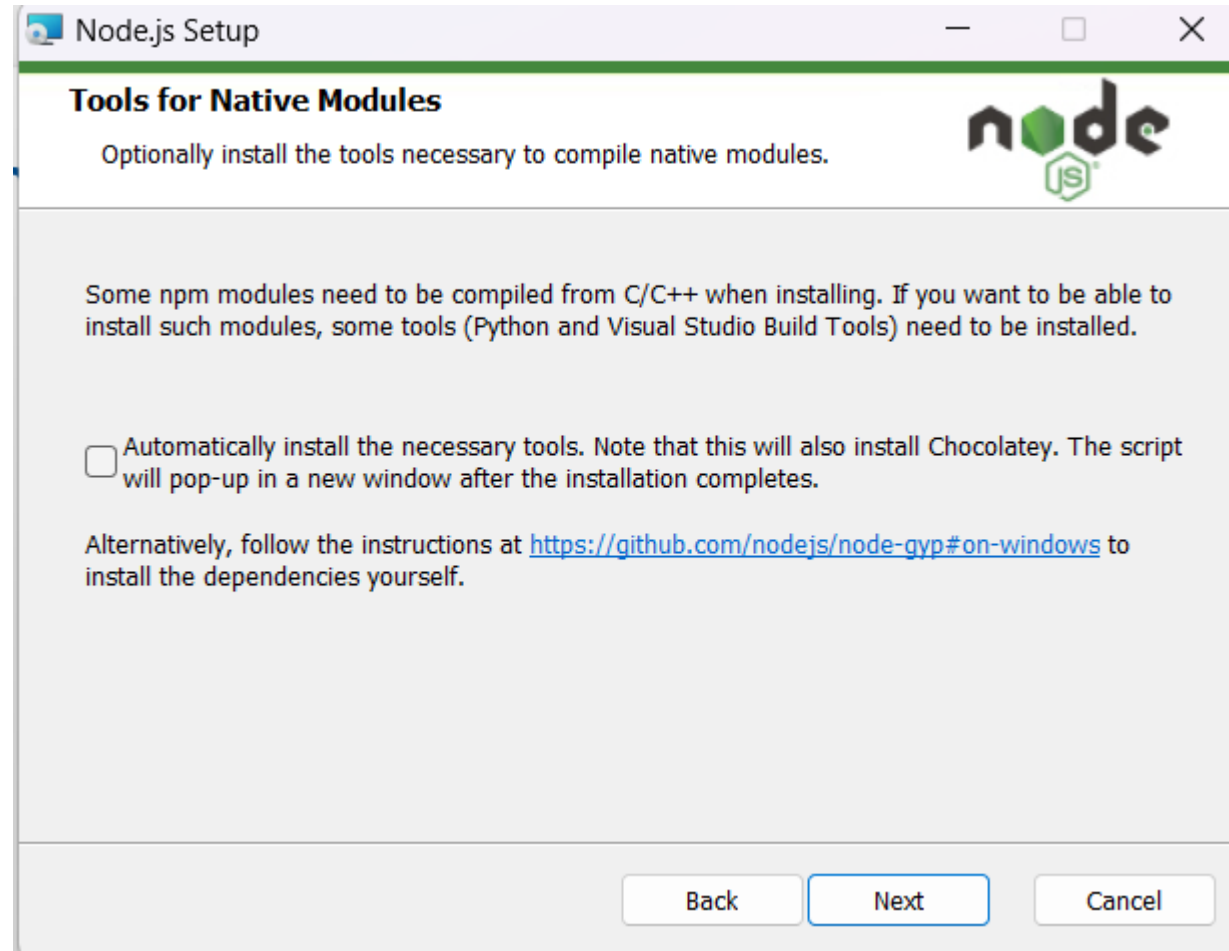- [Download and Install - Node.js — Download Node.js®](#)

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Running React

- [Download and Install - Node.js — Download Node.js®](#)

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Running React

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Running React

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```
C:\Windows\System32>npm -v
8.5.0


C:\Windows\System32>
```

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Running React

-

```
D:\react>npm create vite@latest myapp -- --template react
Need to install the following packages:
create-vite@7.0.3
Ok to proceed? (y) y


> npx
> create-vite myapp --template react


|
o   Scaffolding project in D:\react\myapp...
|
—   Done. Now run:

  cd myapp
  npm install
  npm run dev
```

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Running React

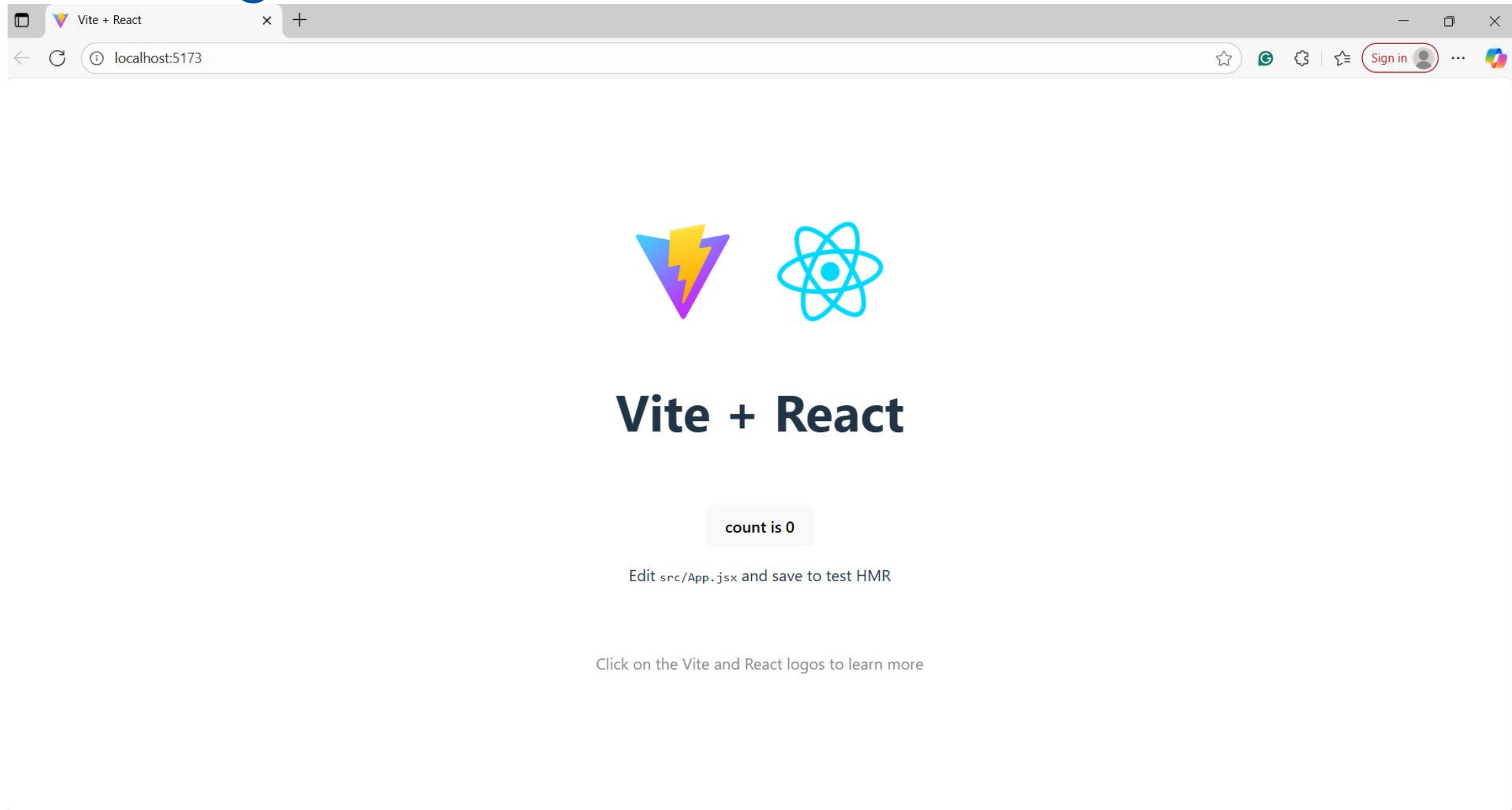- [Download and Install - Node.js — Download Node.js®](#)

```
D:\react>cd myapp

D:\react\myapp>npm install

added 197 packages, and audited 198 packages in 25s

33 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
```
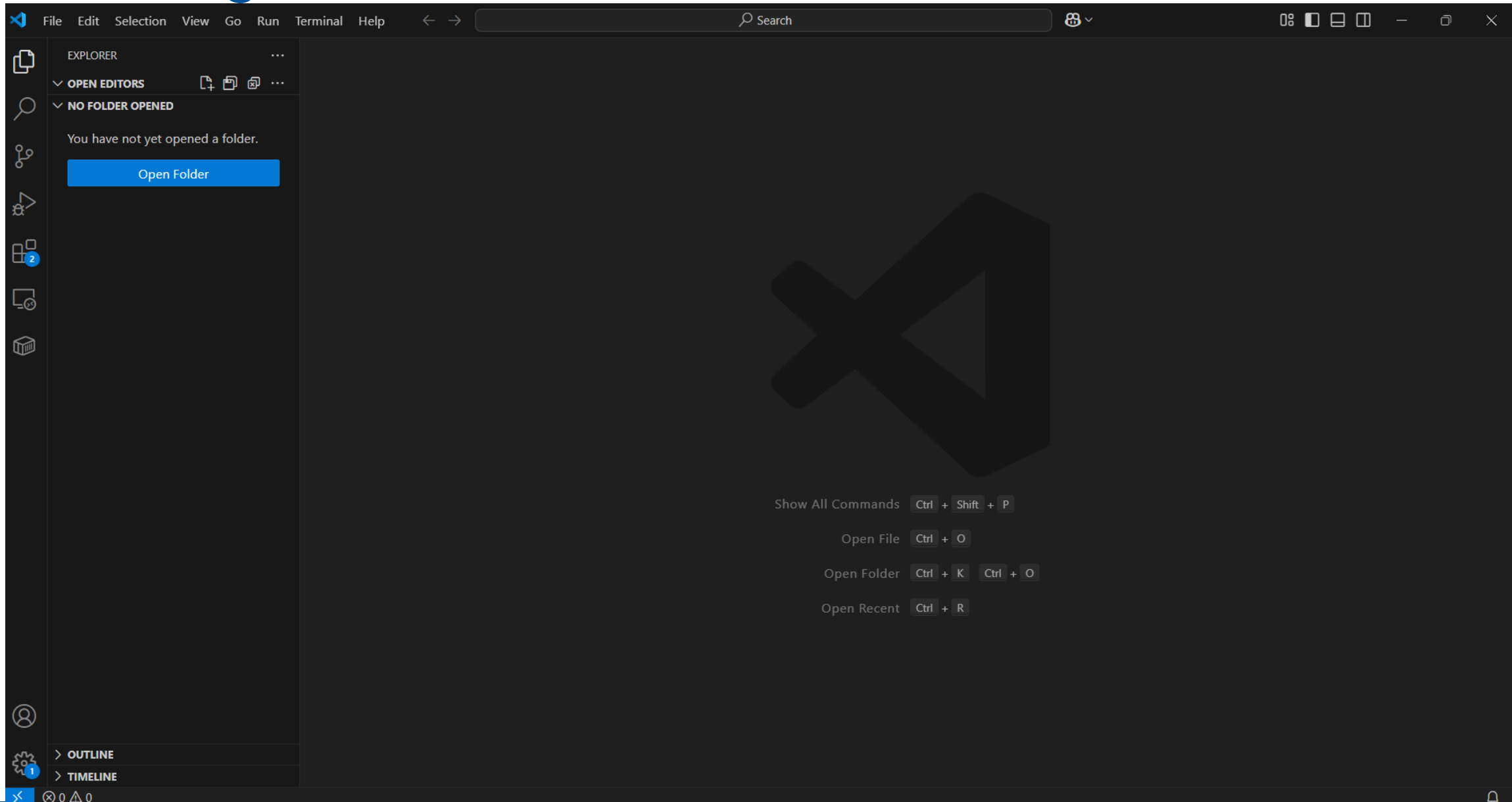
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Running React

- [Download and Install - Node.js — Download Node.js®](#)

```
D:\react\myapp>npm run dev

> myapp@0.0.0 dev
> vite


  VITE v7.0.6  ready in 2744 ms

  →  Local:   http://localhost:5173/
  →  Network: use --host to expose
  →  press h + enter to show help
```
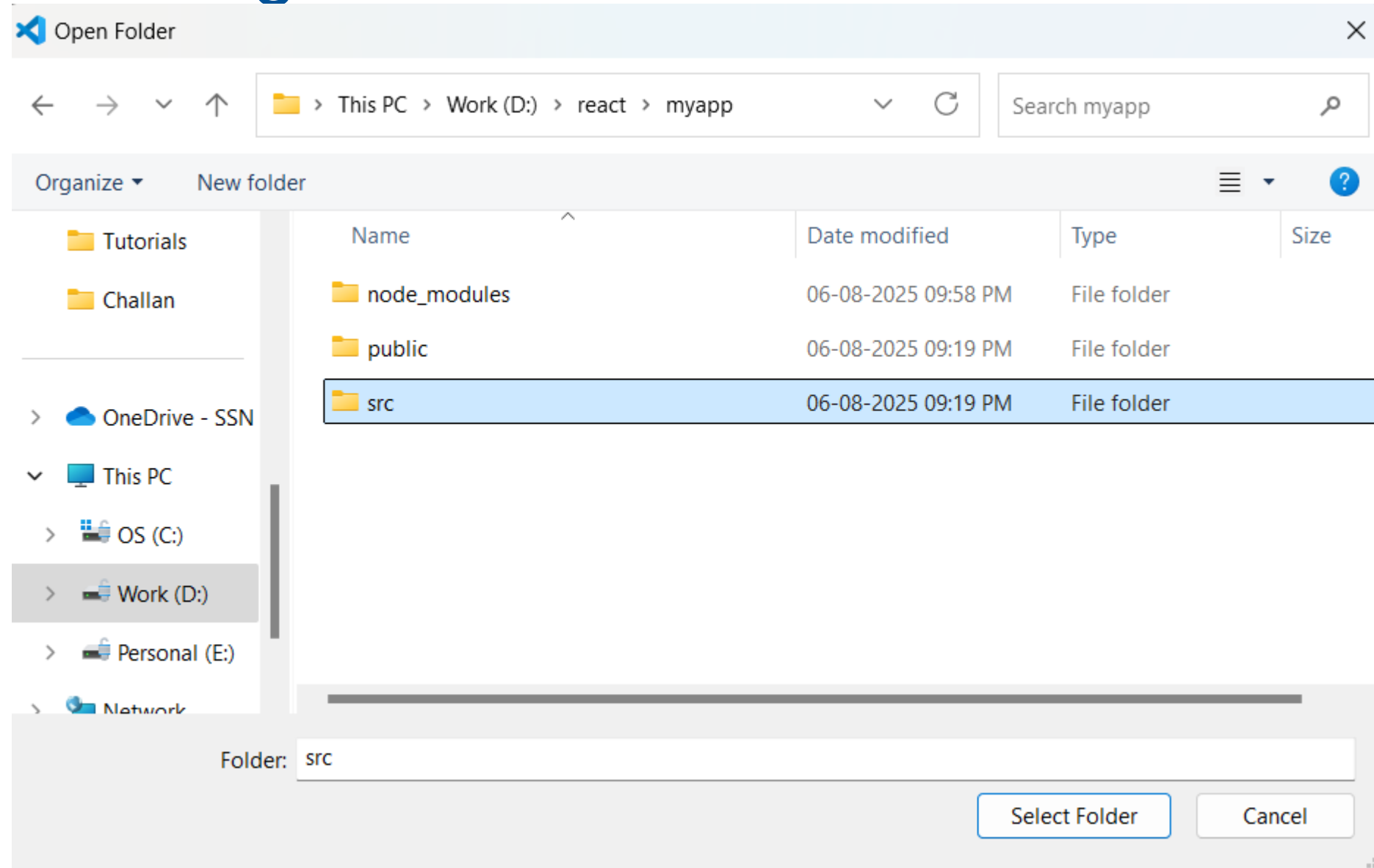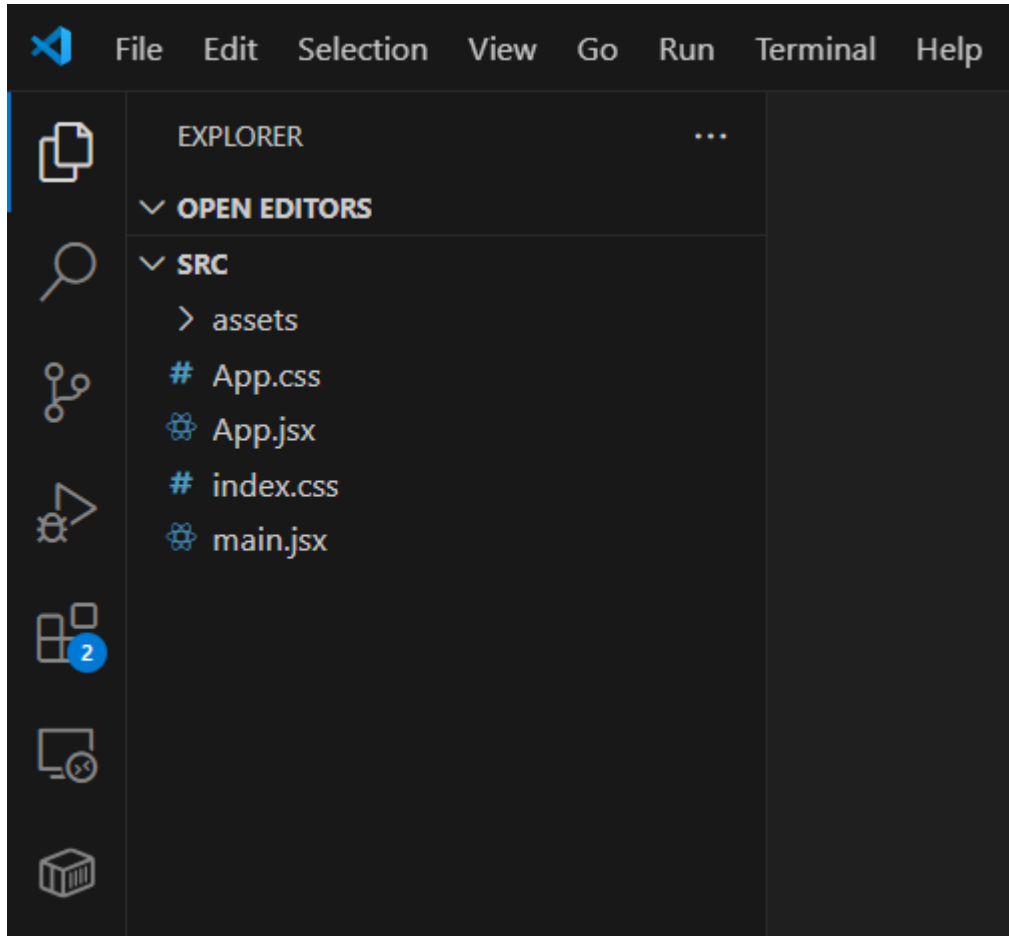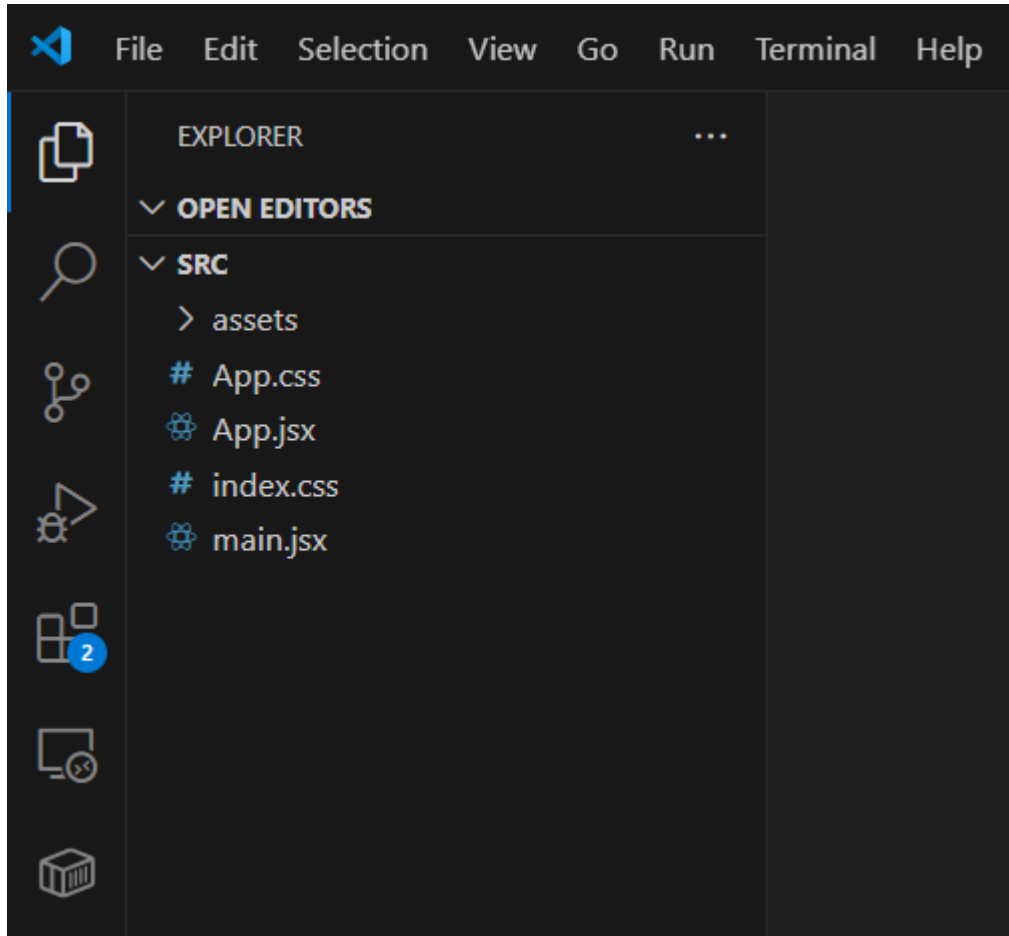
Running React

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Running React

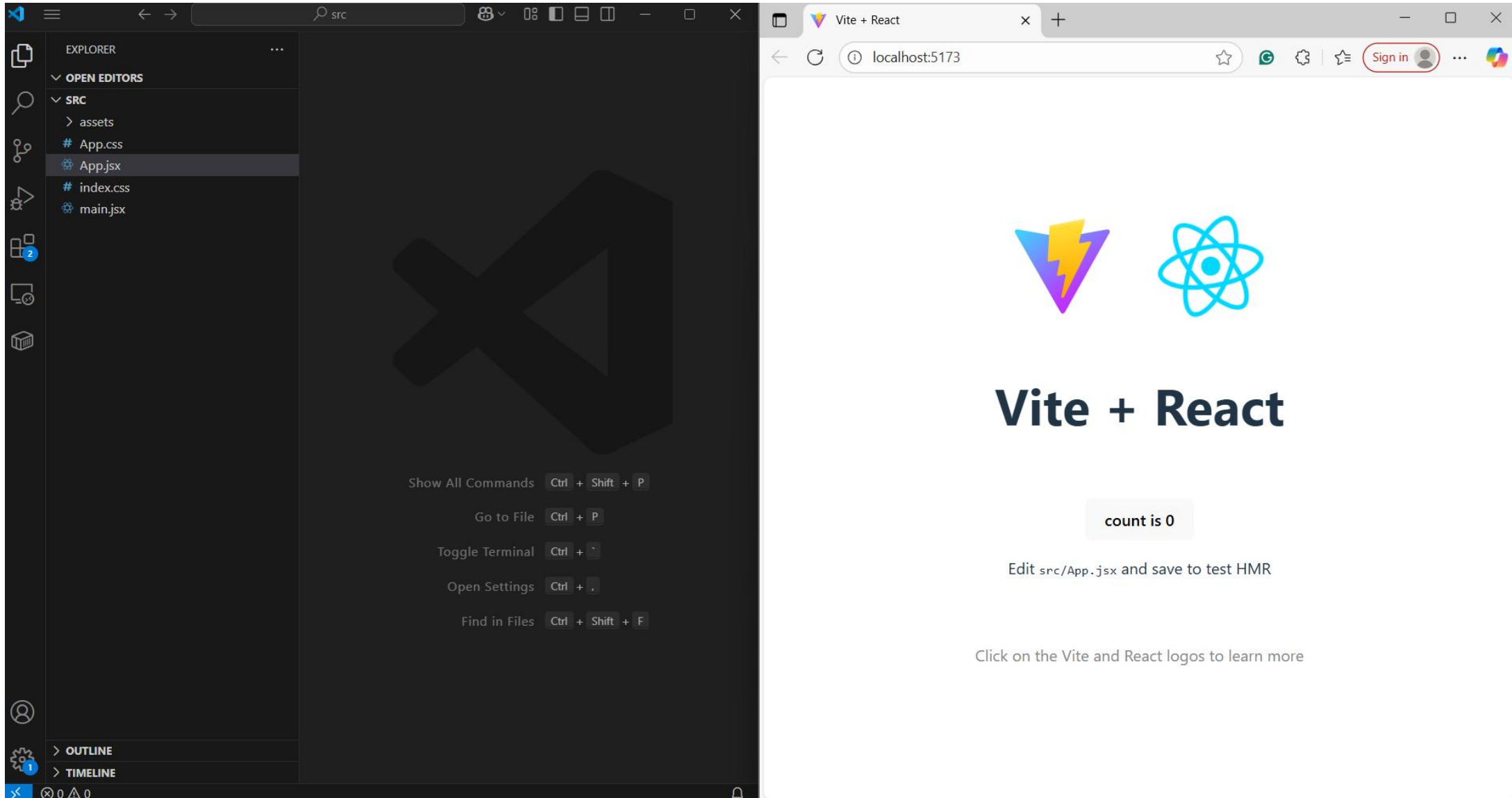# Running React

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Running React

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Running React

- An `assets` folder (usually for images or static files)

- `App.css` – styles for your main app component

- `App.jsx` – your main React function component

- `index.css` – global stylesheet often imported in `main.jsx`

- `main.jsx` – the entry point that renders your React app

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Running React

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Running React

```jsx
1   import { useState } from 'react'
2   import reactLogo from './assets/react.svg'
3   import viteLogo from '/vite.svg'
4   import './App.css'
5
6   function App() {
7     const [count, setCount] = useState(0)
8
9     return (
10      <>
11        <div>
12          <a href="https://vite.dev" target="_blank">
13            <img src={viteLogo} className="logo" alt="Vite logo" />
14          </a>
15          <a href="https://react.dev" target="_blank">
16            <img src={reactLogo} className="logo react" alt="React logo" />
17          </a>
18        </div>
19        <h1>Vite + React</h1>
20        <div className="card">
21          <button onClick={() => setCount((count) => count + 1)}>
22            count is {count}
23          </button>
24          <p>
25            Edit <code>src/App.jsx</code> and save to test HMR
26          </p>
27        </div>
28        <p className="read-the-docs">
29          Click on the Vite and React logos to learn more
30        </p>
31      </>
32    )
33  }
34
35  export default App
36
```
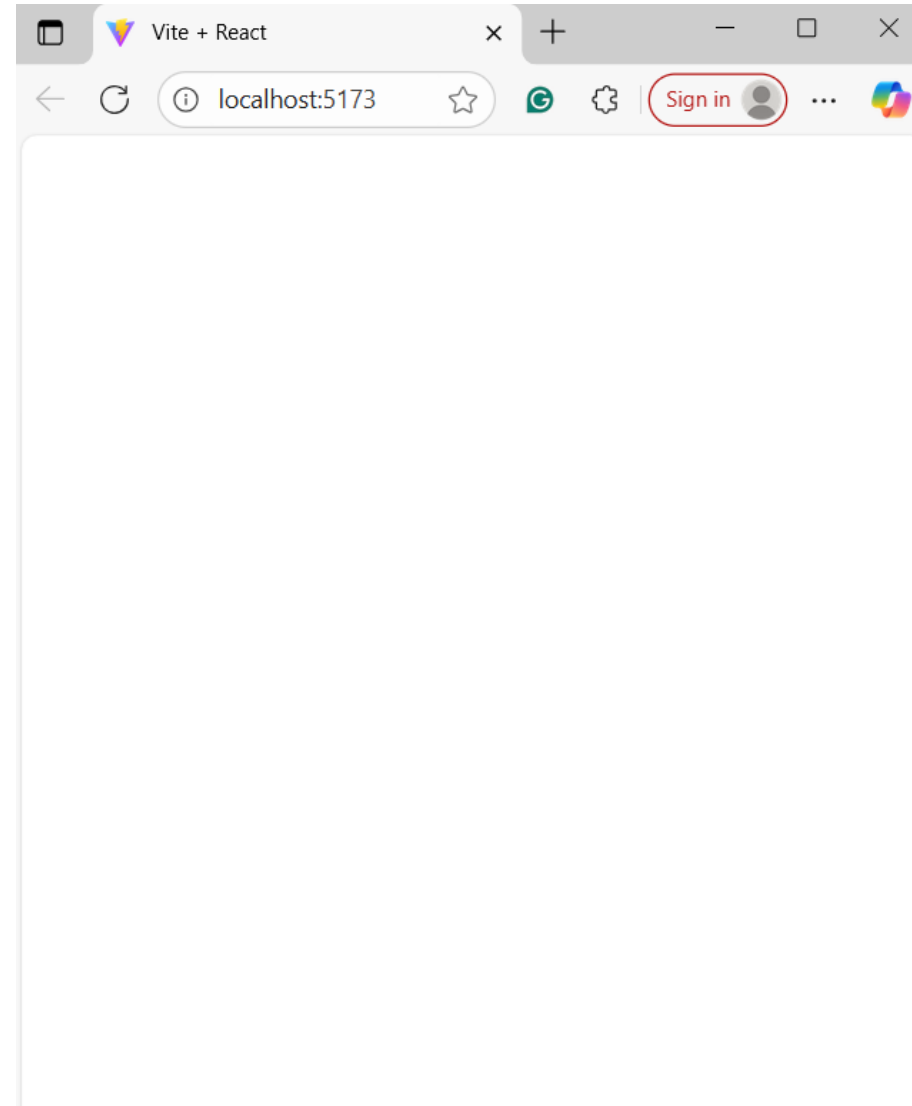
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Running React

```jsx
main.jsx    ✕

main.jsx
1    import { StrictMode } from 'react'
2    import { createRoot } from 'react-dom/client'
3    import './index.css'
4    import App from './App.jsx'
5
6    createRoot(document.getElementById('root')).render(
7      <StrictMode>
8        <App />
9      </StrictMode>,
10   )
```
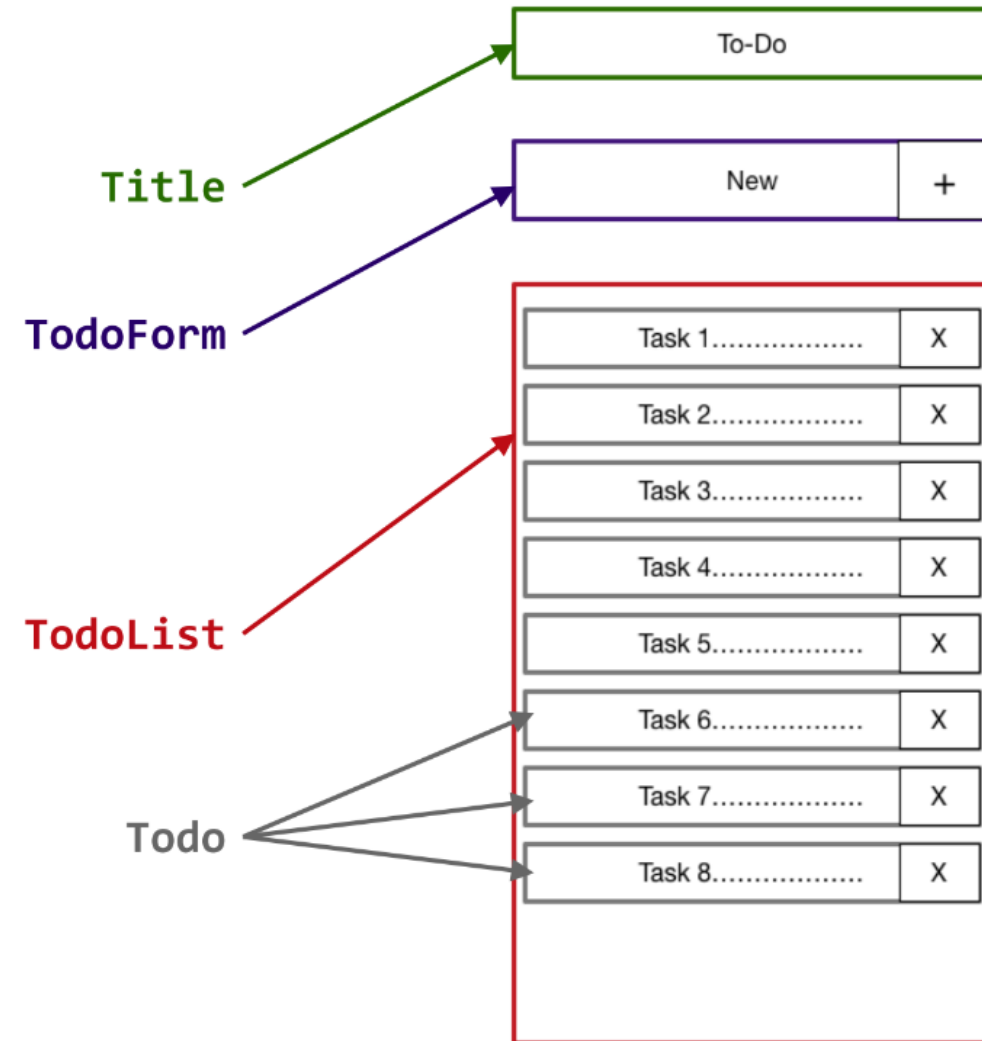
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Running React

```
App.jsx    ×

App.jsx > ...
  1      import './App.css'
  2
  3   ∨ function App() {
  4
  5   ∨   return (
  6          <>
  7          </>
  8        )
  9      }
 10
 11      export default App
```
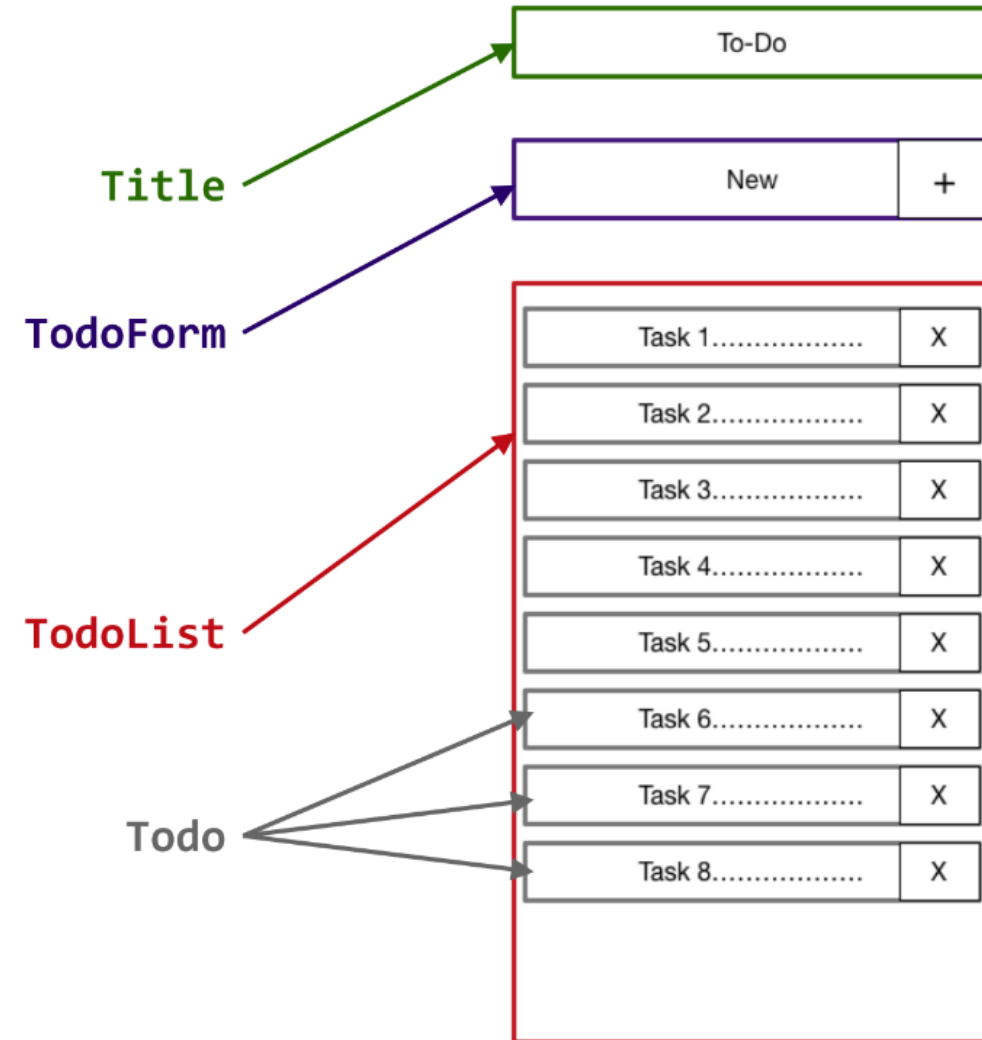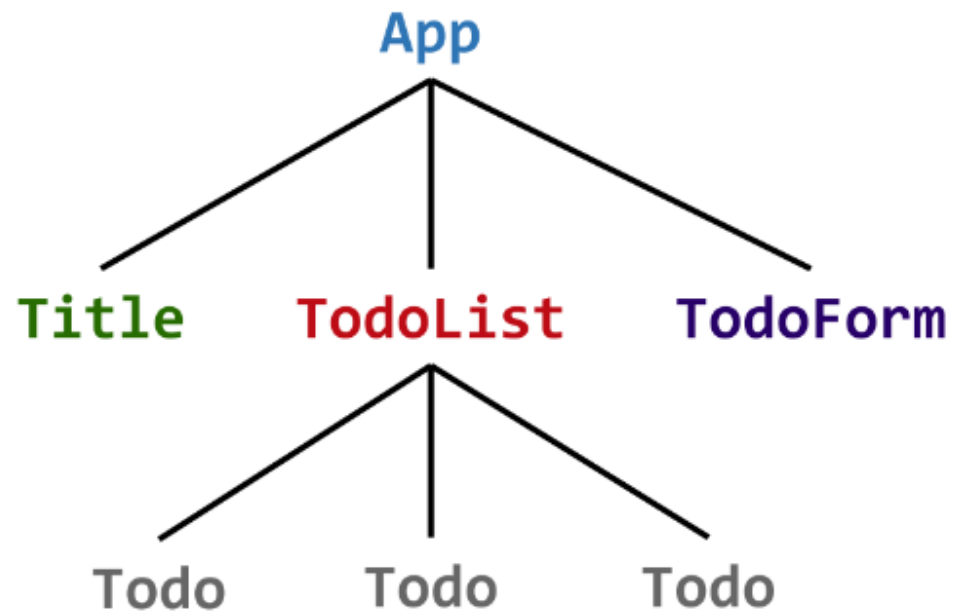
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Running React

```jsx
import './App.css'

function App() {

  return (
    <>
    </>
  )
}

export default App
```

React Component – Todo list

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React Component Hierarchy – Todo list

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React Props

1. **Props?**

React Props

1. **Props**

    - **Properties**

    - **Object**

React Props

1. **Props**
   - **Properties**
   - **Object**
   - **Function Arguments – Javascript**

```
//Welcome Functional Component
function Welcome(props) {
  return <h1>Hello, {props.name} </h1> ;
}
```

React Props

1. **Props**
   - **Properties**
   - **Object**
   - **Function Arguments – Javascript**
   - **Attributes – HTML**

```
//Welcome Functional Component
function Welcome(props) {
  return <h1>Hello, {props.name} </h1> ;
}
```

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React Props

1. **Props**

   - **Properties**

   - **Object**

   - **Function Arguments – Javascript**

     - **Syntax: function identifier(props) {function body};**

   - **Attributes – HTML**

```
//Welcome Functional Component
function Welcome(props) {
  return <h1>Hello, {props.name} </h1> ;
}
```

```
<Welcome name="John"></Welcome>
Ctrl+L to chat, Ctrl+K to generate
```

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React Props

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1. **Props**

    • **Properties**

    • **Object**

    • **Function Arguments – Javascript**

        • **Syntax: function identifier(props) {function body}**

    • **Attributes – HTML**

        • **Syntax: <start_tag attribute="value">**

```
//Welcome Functional Component
function Welcome(props) {
  return <h1>Hello, {props.name} </h1> ;
}
```
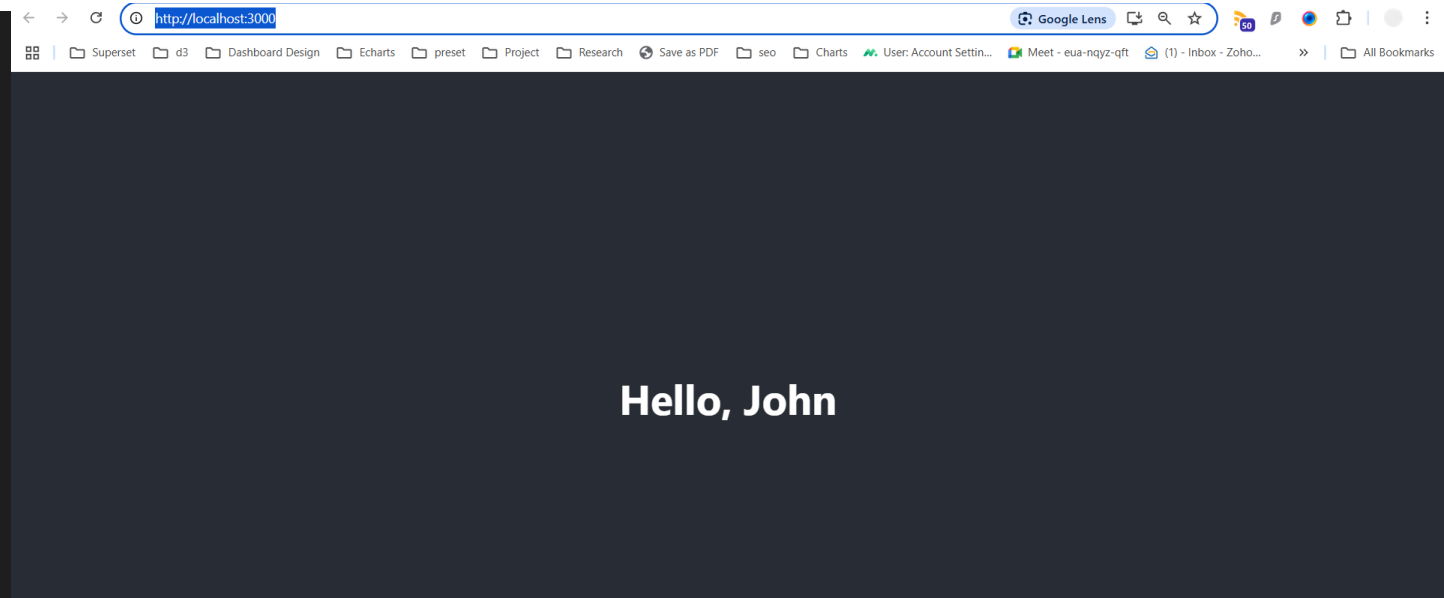
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React Props

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References

1. Paul J Deitel, Harvey M Deitel, and Abbey Deitel, "Internet and the world wide web: How to program," Pearson, Fifth Edition, 2012.
2. Robin Wieruch, "The Road to React: The ReactJS with Hooks", Lean Publishing,2023 Edition.

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