Routing in React JS

#React Notes

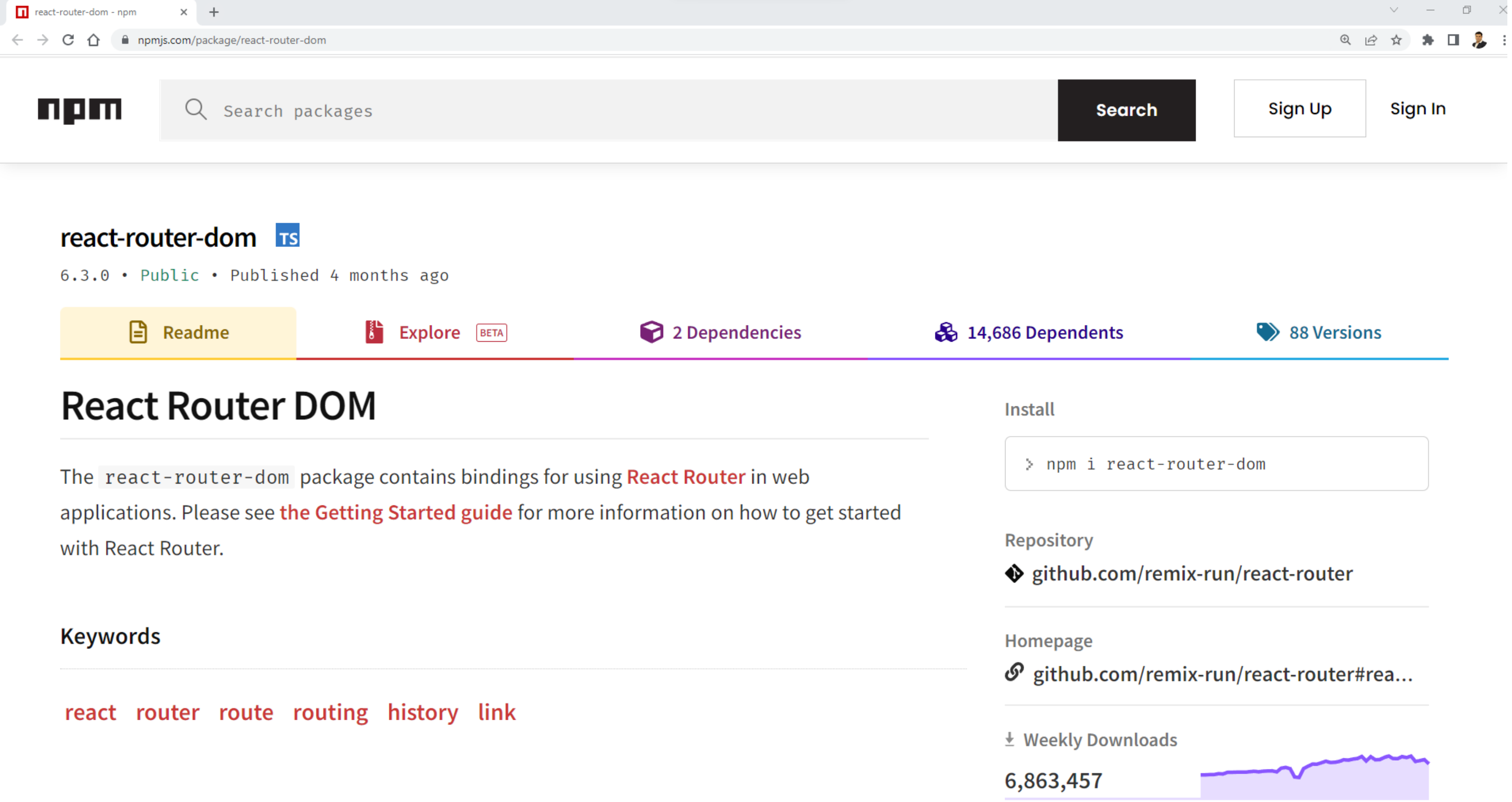
Routing

What is React Router?

- The React Router helps you define dynamic URLs and select a suitable Component to render on the user browser corresponding to each URL.
- <BrowserRouter> is used more commonly, it uses the History API included in HTML5 to monitor your router's history
- The **<Route> component** defines a **mapping between an URL and a Component**. That means when the user visits by an URL on browser, a corresponding Component shall be renderred on interface.
- The **exact attribute** is used in the <Route> to say that this <Route> only operates if the URL on the browser is matches absolutely the value of its path attribute.

React Router DOM

- To Enable Navigation in React we need to Add React Router DOM package.
- https://www.npmjs.com/package/react-router-dom



react-router-dom TS

6.3.0 • Public • Published 4 months ago

React Router DOM

The `react-router-dom` package contains bindings for using React Router in web applications. Please see the Getting Started guide for more information on how to get started with React Router.

Keywords

react router route routing history link

Install

```
> npm i react-router-dom
```

Repository

github.com/remix-run/react-router

Homepage

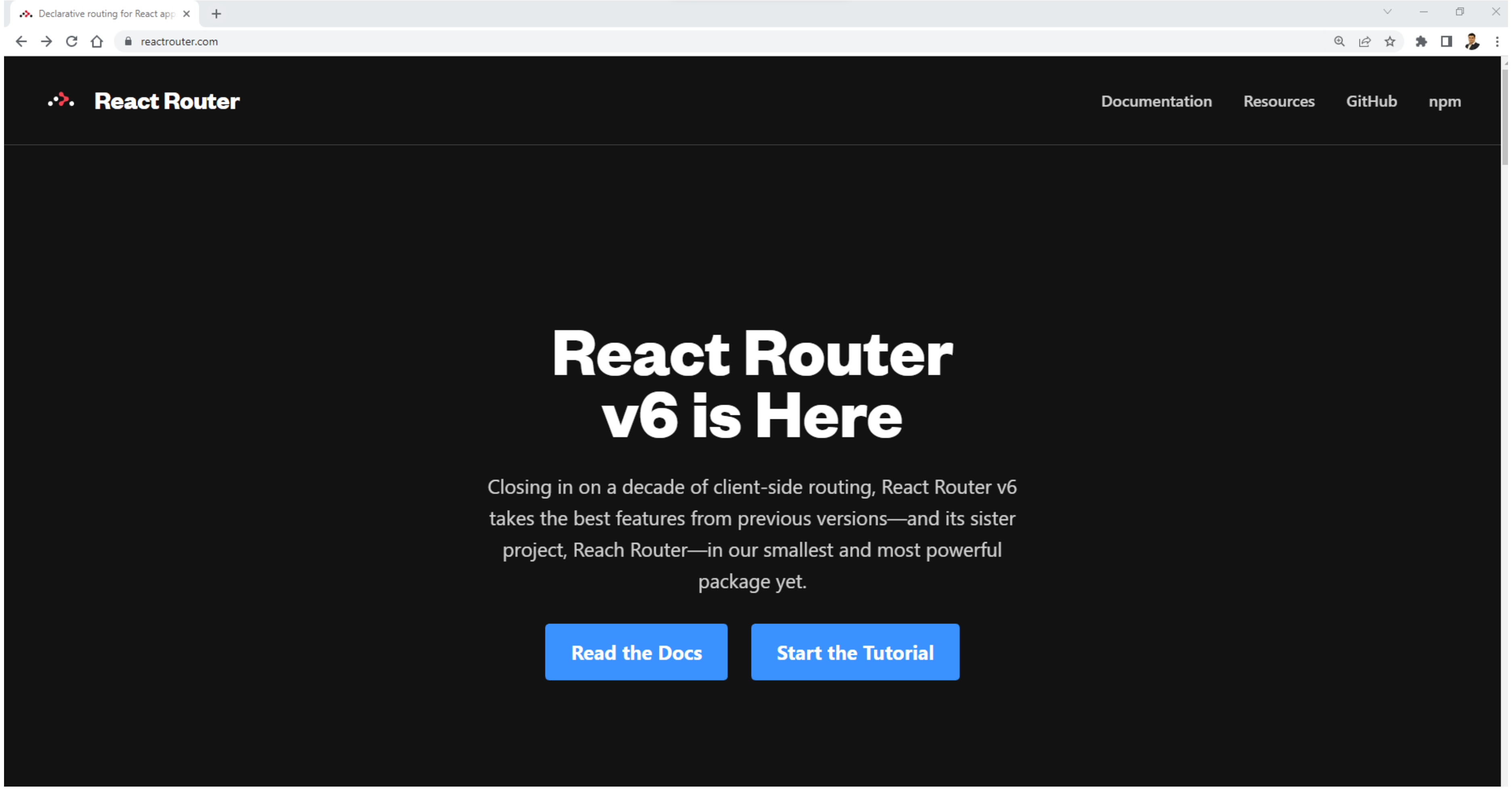
github.com/remix-run/react-router#rea...

Weekly Downloads

6,863,457

React Router DOM Official Website

- React Documentation : https://reactrouter.com/



React Router
v6 is Here

Closing in on a decade of client-side routing, React Router v6 takes the best features from previous versions—and its sister project, Reach Router—in our smallest and most powerful package yet.

Types of Router

1. **BrowserRouter** /urlname
   - makes pretty URLs like
     - **example.com/home.**
     - **example.com/about.**
2. **HashRouter** #urlname
   - makes URLs with the octothorpe (or hashtag, if you will) that would look like
     - **example.com/#about**
     - **example.com/#home**

Component

- Router
  - Groups all your routes together, and ensures they take precedence from top-to-bottom.
- Routes
  - Grouping
- Route
  - Each URL will map with Component
- Link
  - If we used the traditional <a href="/route">, it would make a completely new request and reload the page, so we have Link to help us out
  - <Link>

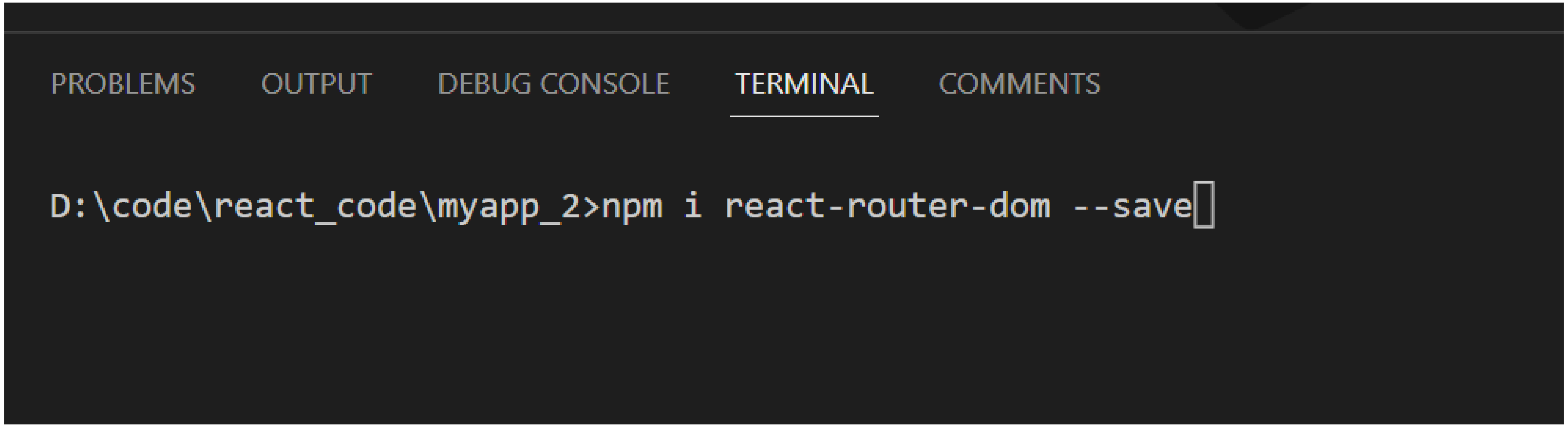
New Version > 6.0

Steps >6.0 React Router DOM

- Create New Project
  - create-react-app react_spa
- Visit :
  - https://www.npmjs.com/package/react-router-dom
- Download:
  - npm install --save react-router-dom
- Create 3 New Components
  - Home.js
  - About.js
  - Error.js

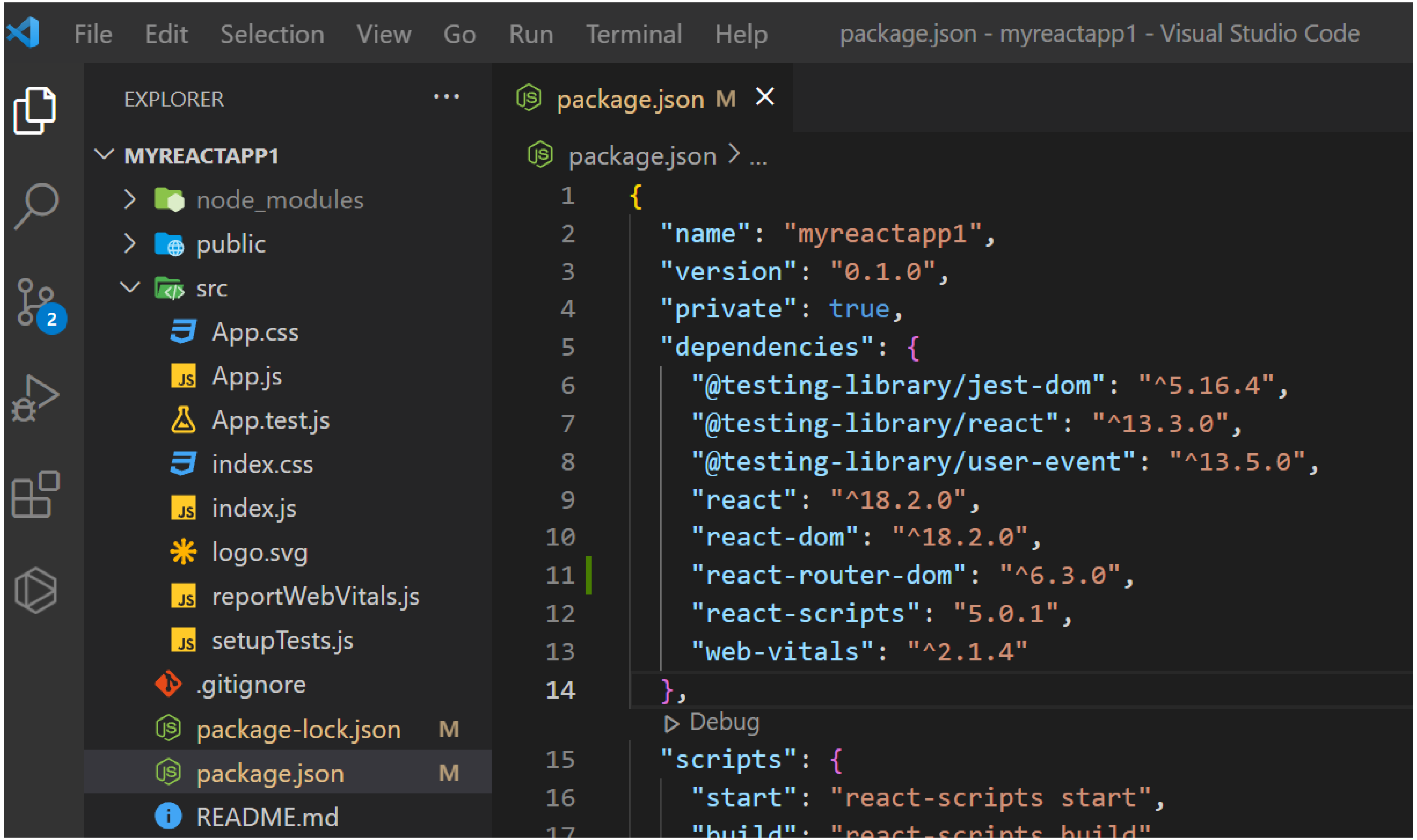
Install Package in React Project

- Npm I react-router-dom --save



```
D:\code\react_code\myapp_2>npm i react-router-dom --save
```

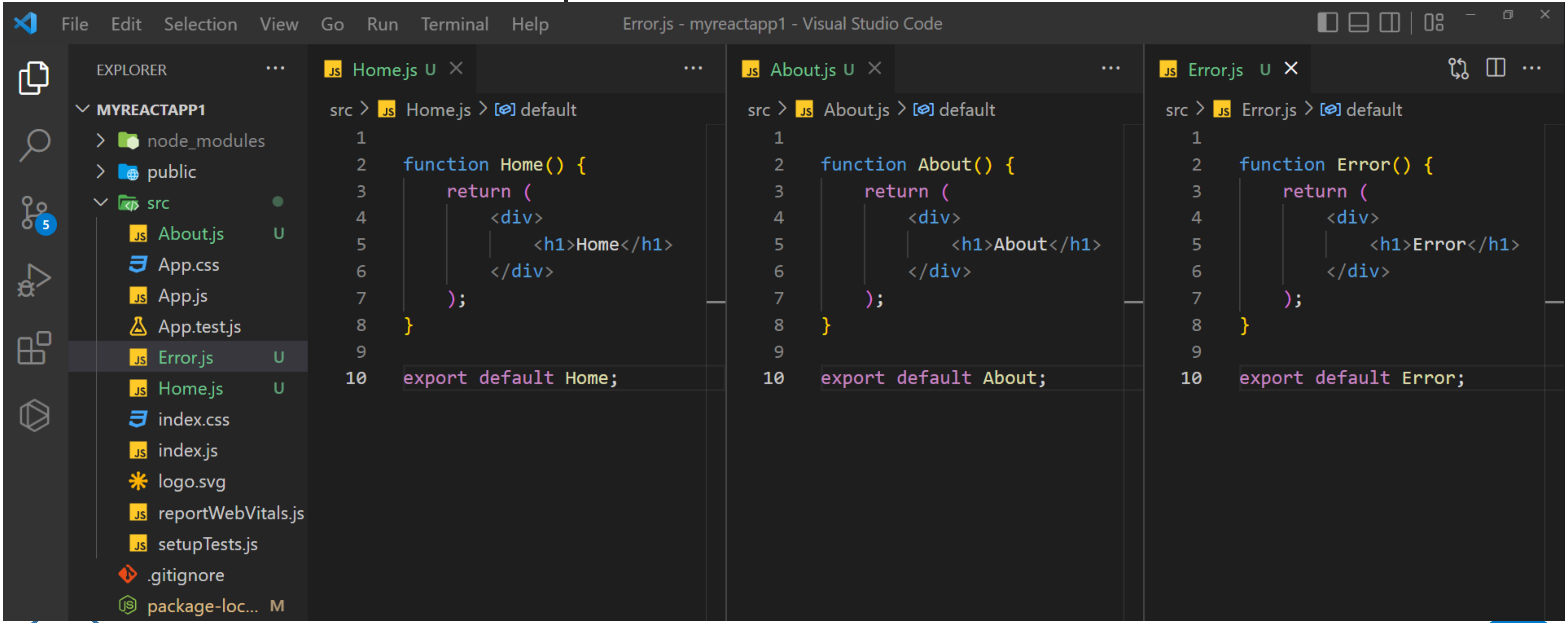
6.3 Version Downloaded



```
{
  "name": "myreactapp1",
  "version": "0.1.0",
  "private": true,
  "dependencies": {
    "@testing-library/jest-dom": "^5.16.4",
    "@testing-library/react": "^13.3.0",
    "@testing-library/user-event": "^13.5.0",
    "react": "^18.2.0",
    "react-dom": "^18.2.0",
    "react-router-dom": "^6.3.0",
    "react-scripts": "5.0.1",
    "web-vitals": "^2.1.4"
  },
  "scripts": {
    "start": "react-scripts start",
    "build": "react-scripts build"
```

Create 3 Component

- Home About Contact Component



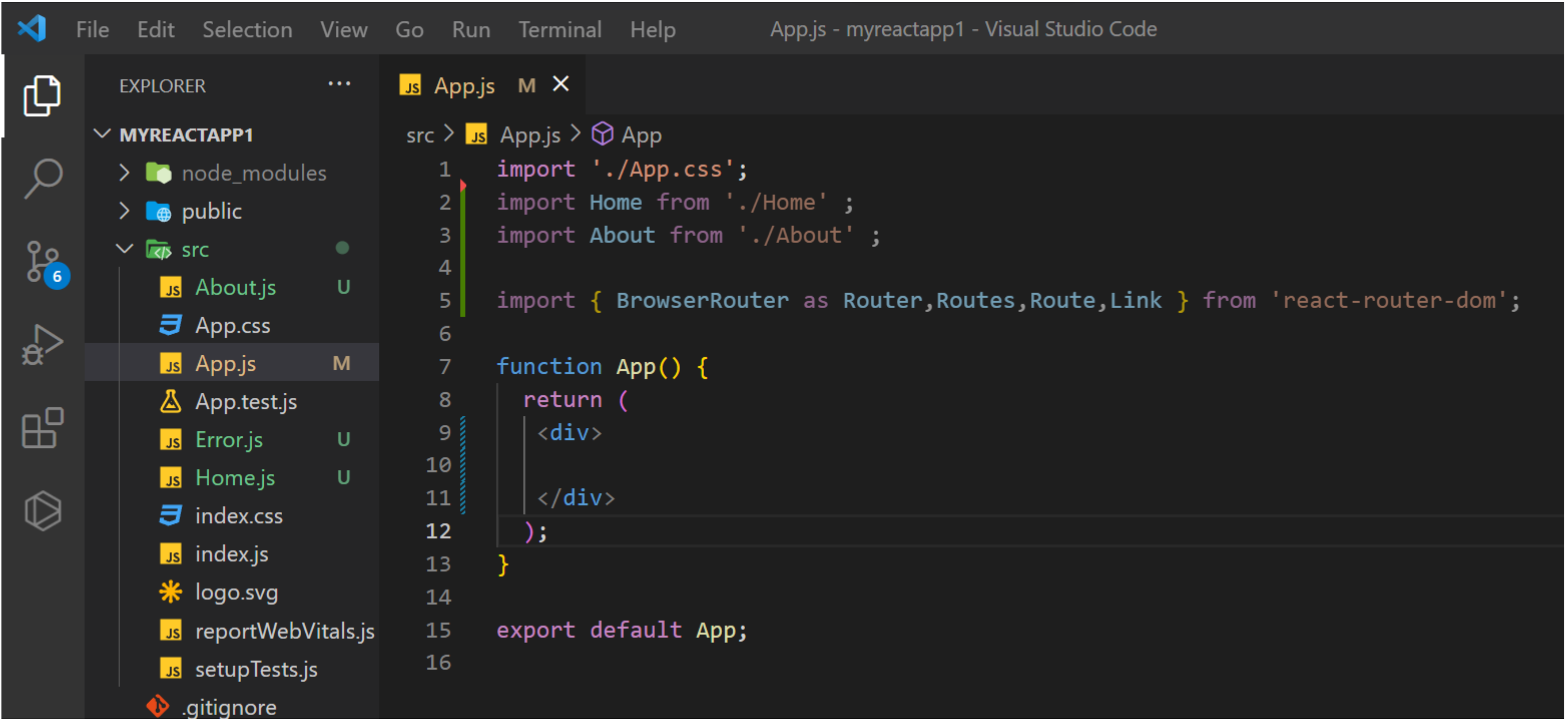
```

function Home() {
    return (
        <div>
            <h1>Home</h1>
        </div>
    );
}

export default Home;
```

```

function About() {
    return (
        <div>
            <h1>About</h1>
        </div>
    );
}

export default About;
```

```

function Error() {
    return (
        <div>
            <h1>Error</h1>
        </div>
    );
}

export default Error;
```

Import Browser Router and Component

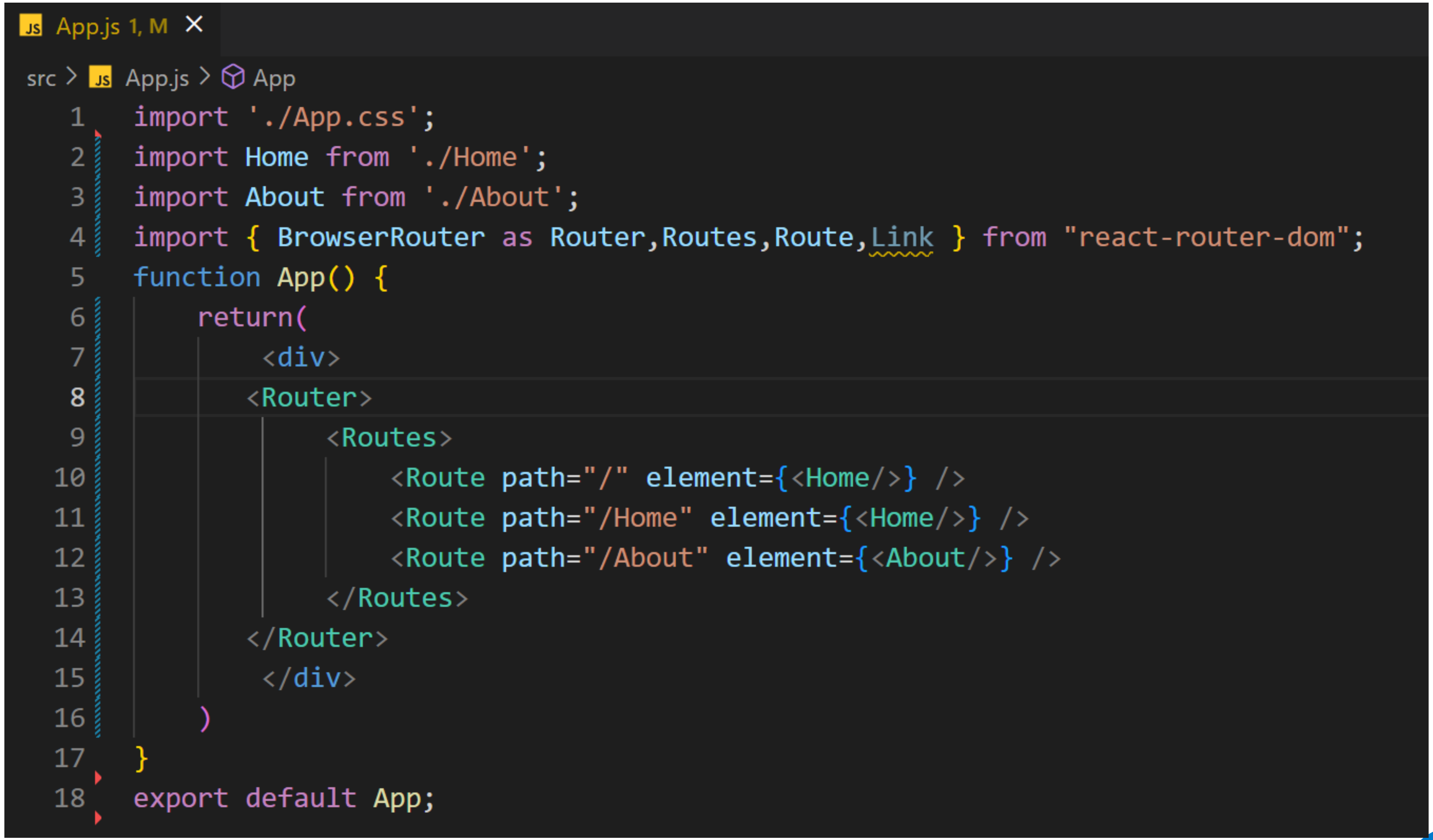
- import { BrowserRouter as Router,Routes,Route,Link } from "react-router-dom";



```
import './App.css';
import Home from './Home' ;
import About from './About' ;

import { BrowserRouter as Router,Routes,Route,Link } from 'react-router-dom';

function App() {
  return (
   <div>


   </div>
  );
}

export default App;
```

Add Routing and Mapping of Component

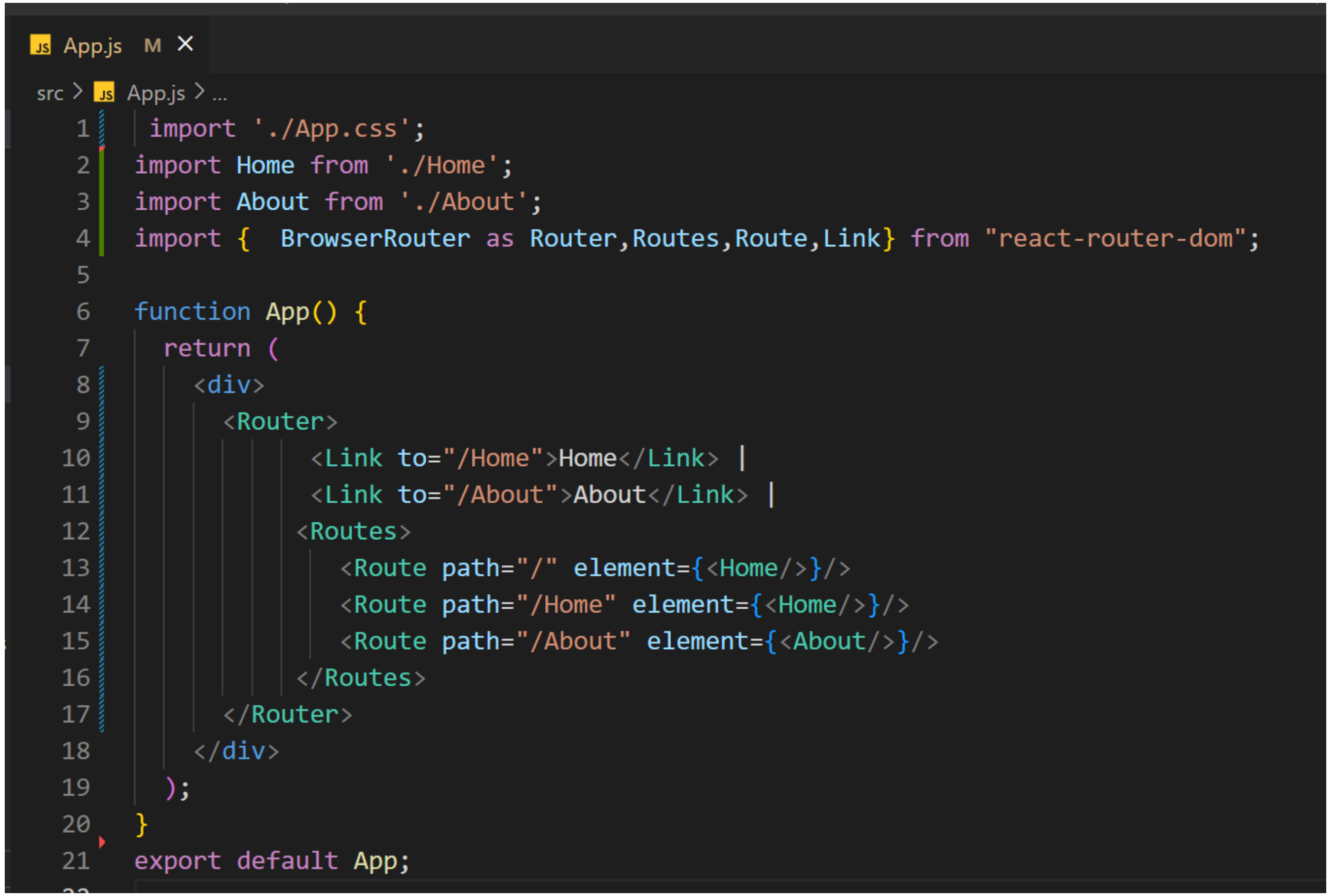
- Path Mapping with Component



```
import './App.css';
import Home from './Home';
import About from './About';
import { BrowserRouter as Router,Routes,Route,Link } from "react-router-dom";
function App() {
    return(
        <div>
       <Router>
            <Routes>
                <Route path="/" element={<Home/>} />
                <Route path="/Home" element={<Home/>} />
                <Route path="/About" element={<About/>} />
            </Routes>
       </Router>
        </div>
    )
}
export default App;
```

Routing

- Routing with Link Navigation

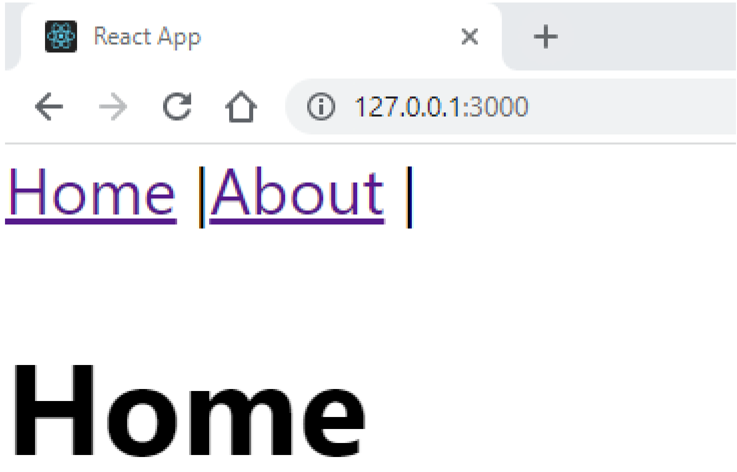


```
import './App.css';
import Home from './Home';
import About from './About';
import {  BrowserRouter as Router,Routes,Route,Link} from "react-router-dom";

function App() {
  return (
    <div>
      <Router>
            <Link to="/Home">Home</Link> |
            <Link to="/About">About</Link> |
           <Routes>
              <Route path="/" element={<Home/>}/>
              <Route path="/Home" element={<Home/>}/>
              <Route path="/About" element={<About/>}/>
           </Routes>
      </Router>
    </div>
  );
}
export default App;
```

```
import { BrowserRouter as Router, Routes,Route, Link } from "react-router-dom";

 <Router>
        <Link to="/Home">Home</Link> |
        <Link to="/About">About</Link>
      <Routes>
        <Route path="/" element={<Home />} />
        <Route path="/Home" element={<Home />} />
        <Route path="/About" element={<About />} />
      </Routes>
    </Router>
```

Browser Router Navigation

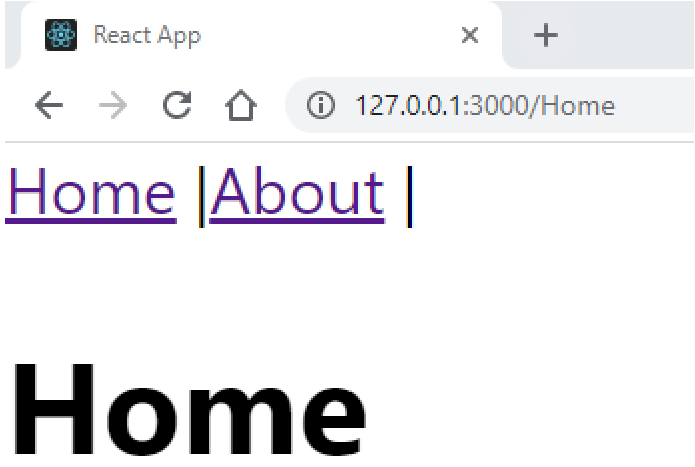
- http://127.0.0.1:3000/
- http://127.0.0.1:3000/Home
- http://127.0.0.1:3000/About



127.0.0.1:3000

Home |About |

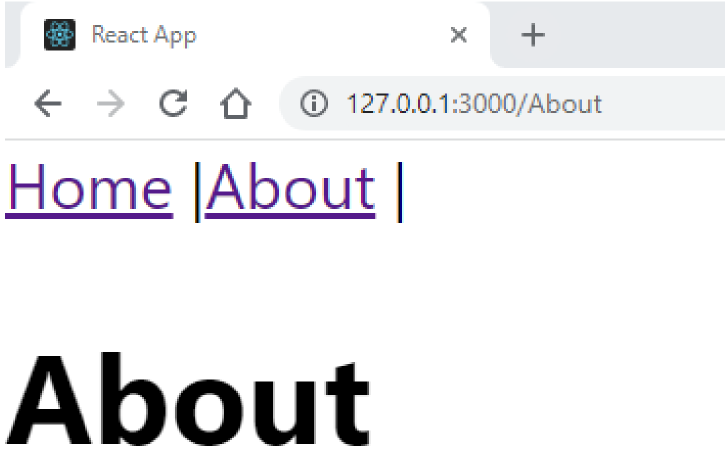
Home



127.0.0.1:3000/Home

Home |About |

Home



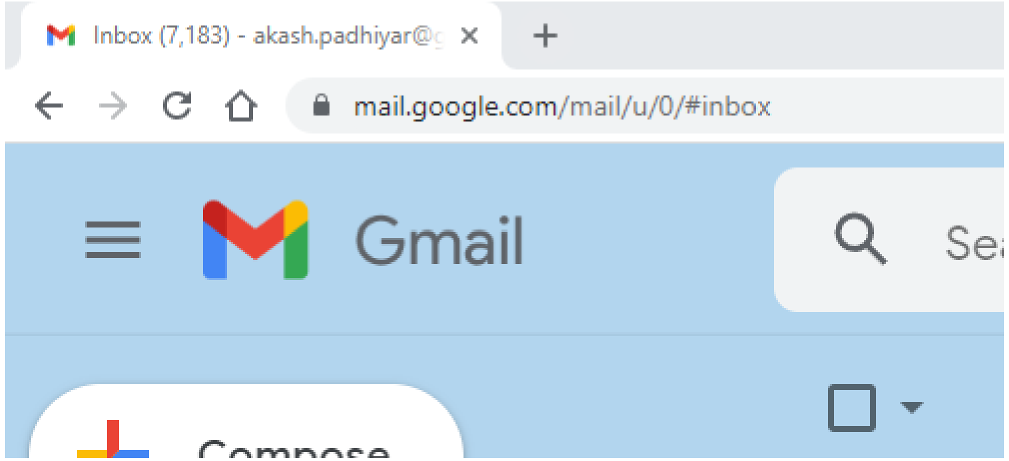
127.0.0.1:3000/About

Home |About |

About

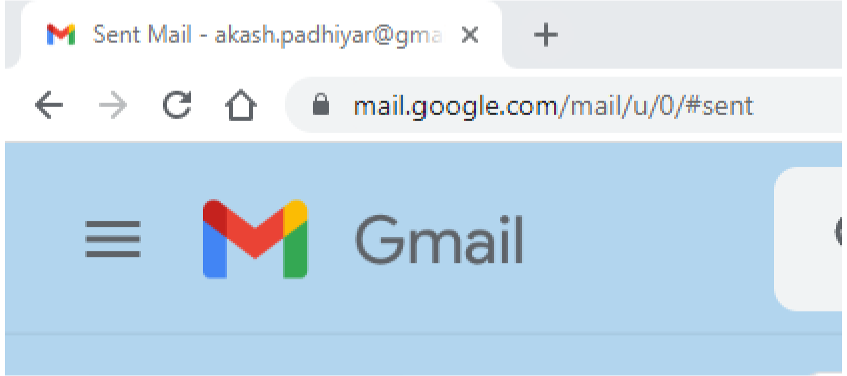
Hash Router

Example



Inbox (7,183) - akash.padhiyar@g

mail.google.com/mail/u/0/#inbox

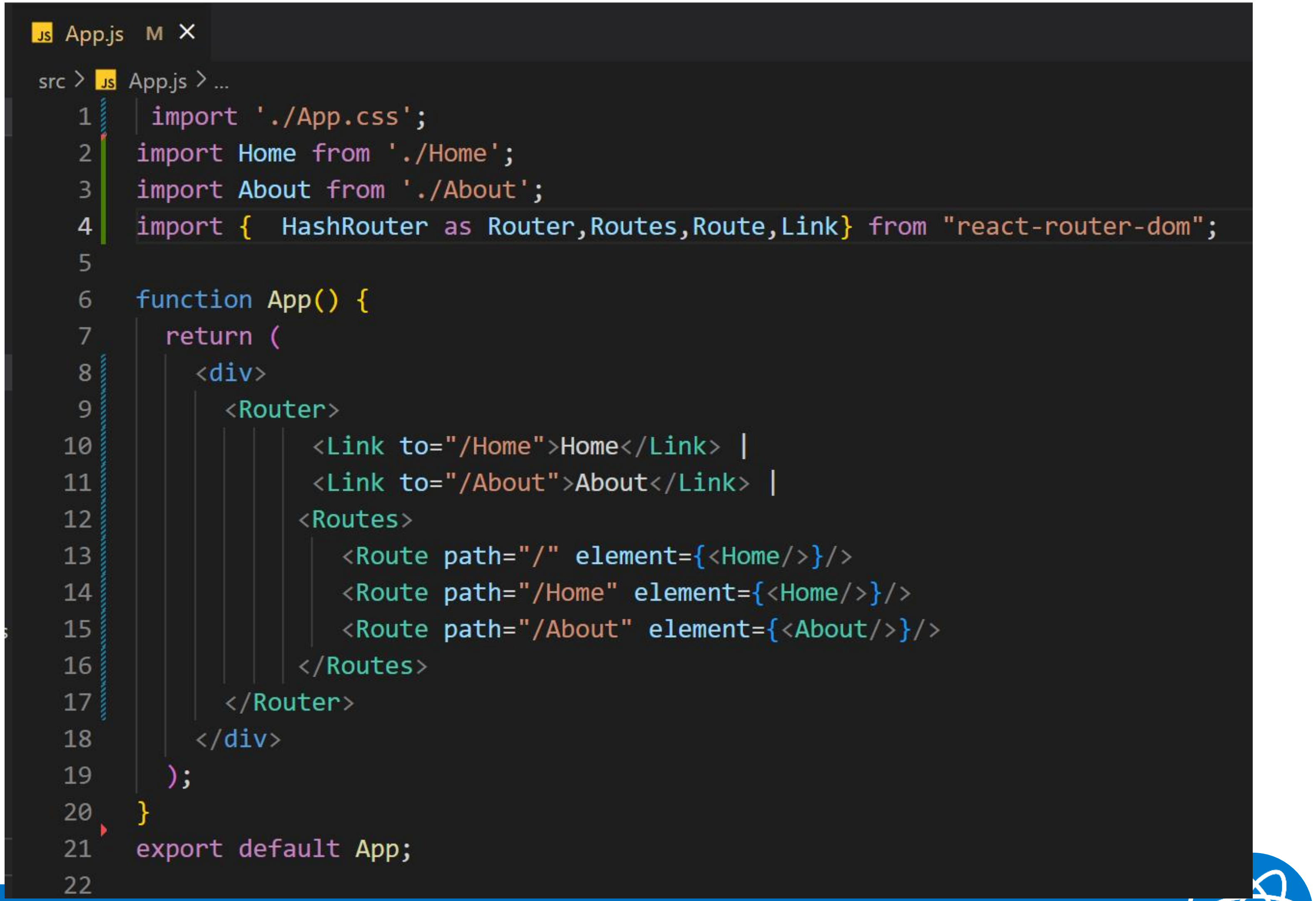


Sent Mail - akash.padhiyar@gma

mail.google.com/mail/u/0/#sent

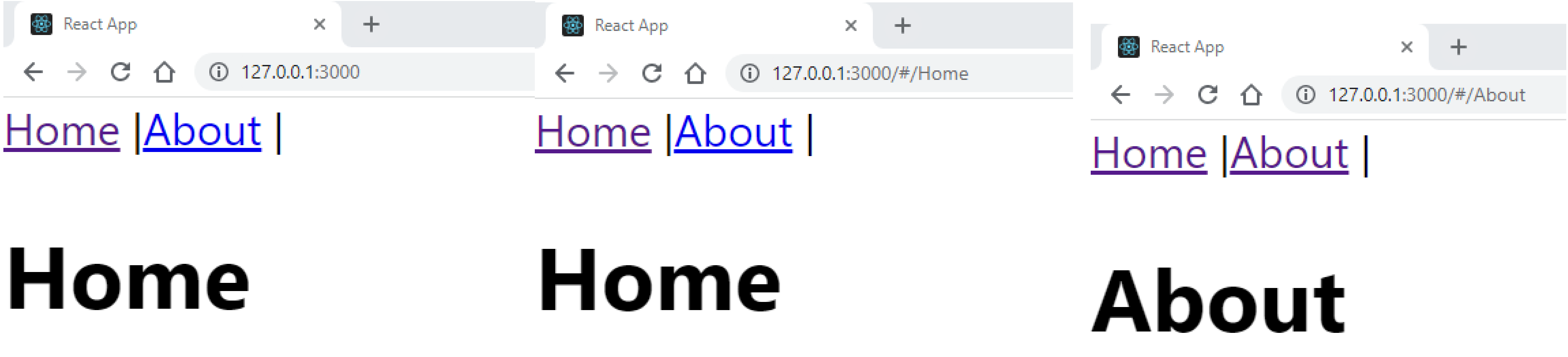
Hash Router

- HashRouter



```
 import './App.css';
import Home from './Home';
import About from './About';
import {  HashRouter as Router,Routes,Route,Link} from "react-router-dom";

function App() {
  return (
    <div>
      <Router>
            <Link to="/Home">Home</Link> |
            <Link to="/About">About</Link> |
           <Routes>
              <Route path="/" element={<Home/>}/>
              <Route path="/Home" element={<Home/>}/>
              <Route path="/About" element={<About/>}/>
           </Routes>
      </Router>
    </div>
  );
}
export default App;

```

HashRouter Example



127.0.0.1:3000

Home |About |

Home

127.0.0.1:3000/#/Home

Home |About |

Home

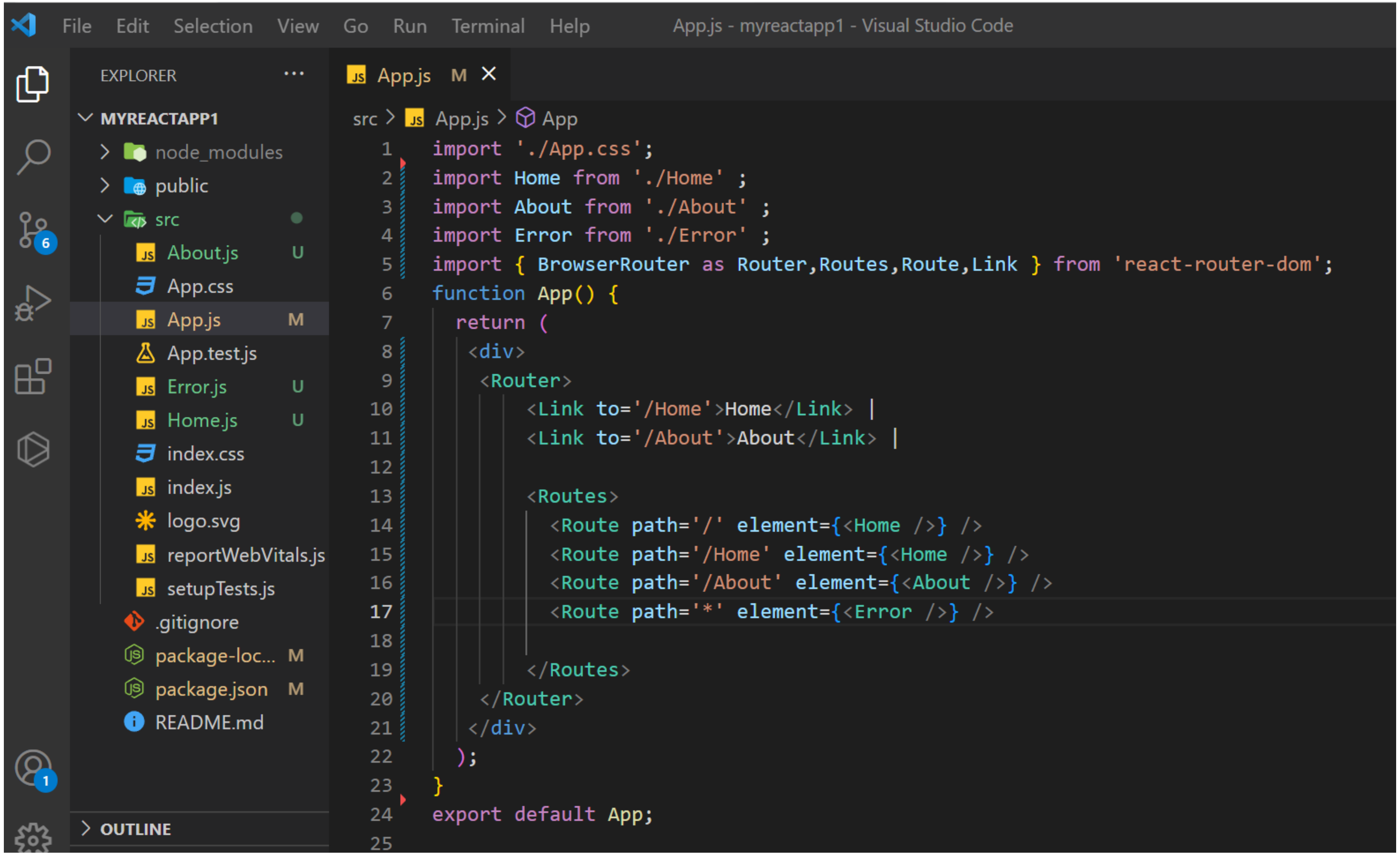
127.0.0.1:3000/#/About

Home |About |

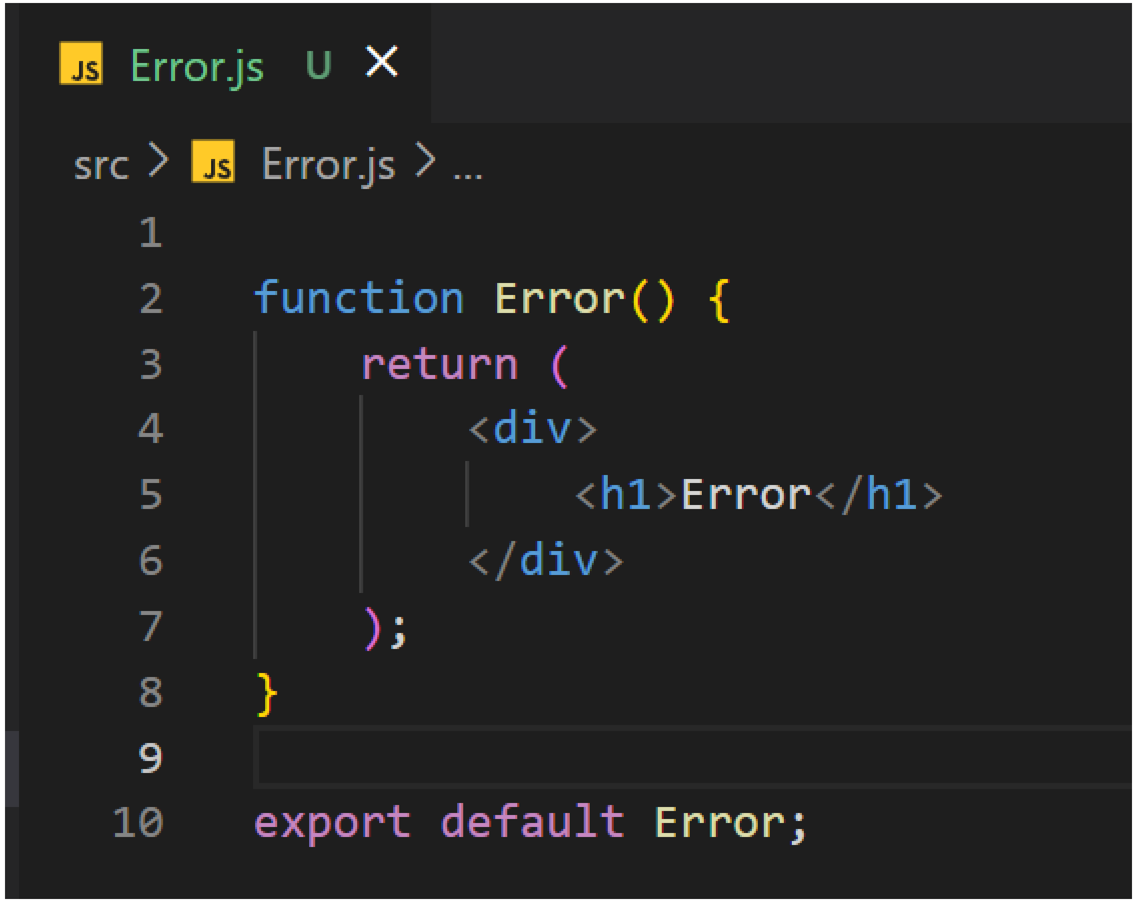
About

Error Handling

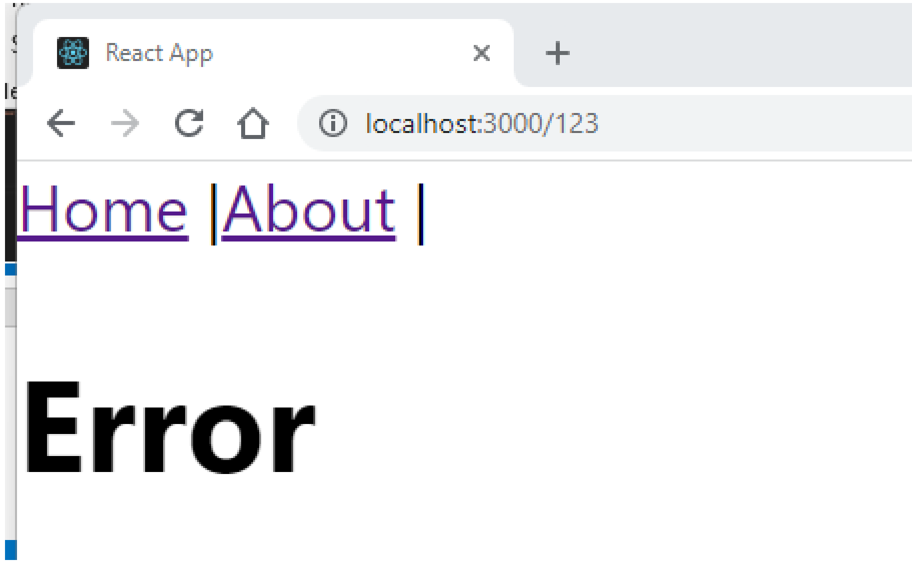
Error Routing * for All URL



```
import './App.css';
import Home from './Home' ;
import About from './About' ;
import Error from './Error' ;
import { BrowserRouter as Router,Routes,Route,Link } from 'react-router-dom';
function App() {
  return (
   <div>
    <Router>
        <Link to='/Home'>Home</Link> |
        <Link to='/About'>About</Link> |

        <Routes>
          <Route path='/' element={<Home />} />
          <Route path='/Home' element={<Home />} />
          <Route path='/About' element={<About />} />
          <Route path='*' element={<Error />} />

        </Routes>
    </Router>
   </div>
  );
}
export default App;

```



```
function Error() {
    return (
        <div>
            <h1>Error</h1>
        </div>
    );
}

export default Error;
```

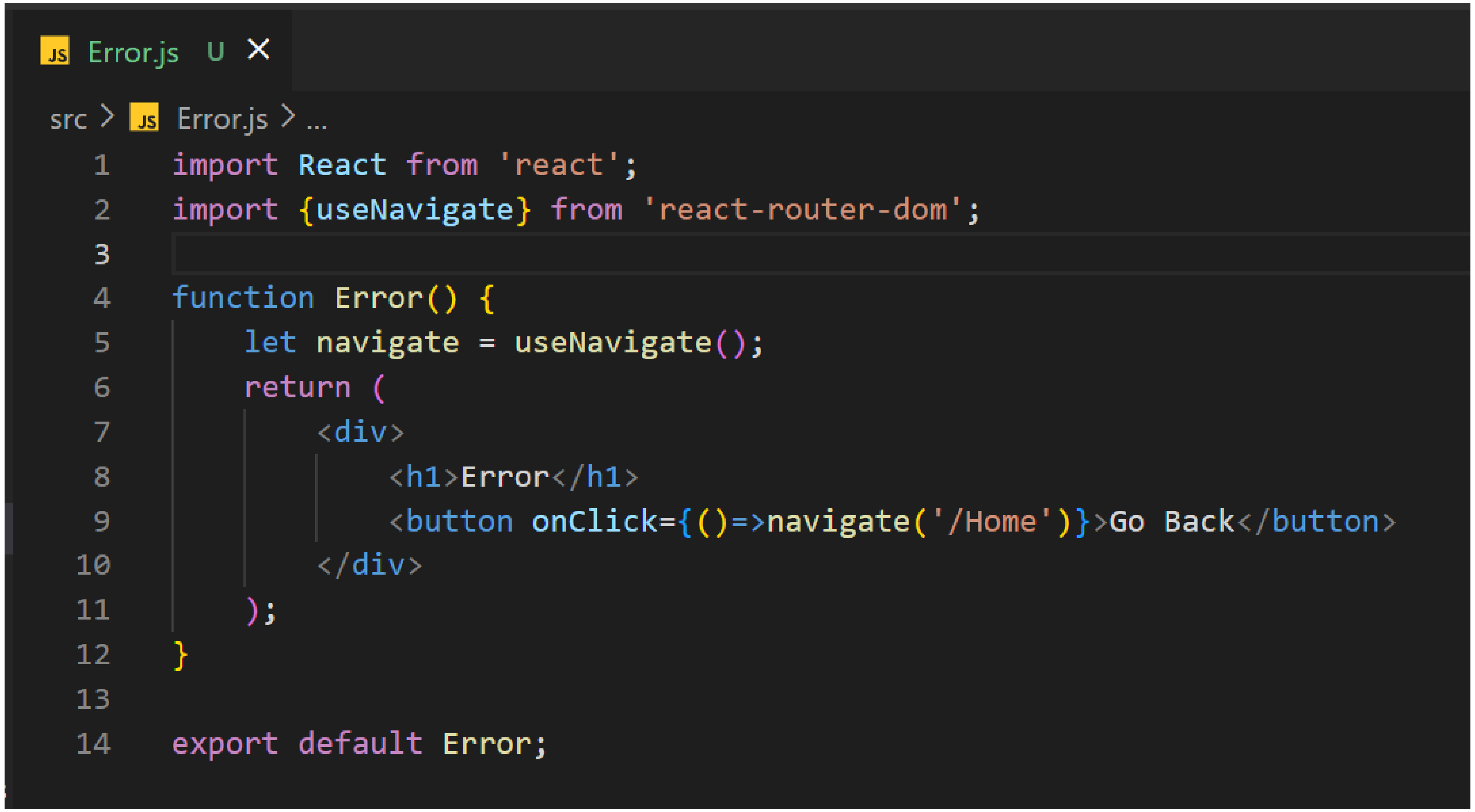


Home |About |

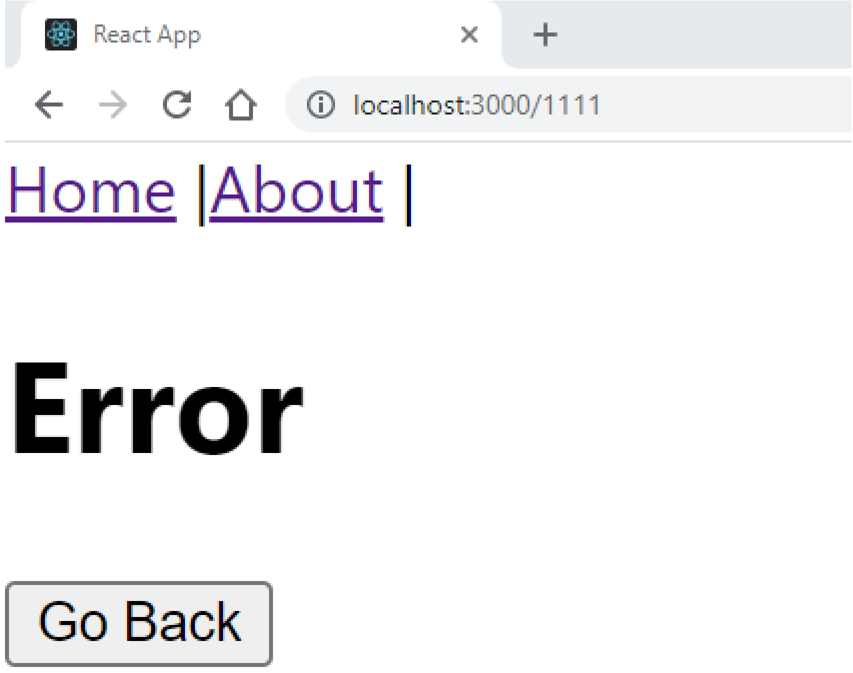
Error

Error With Button Back Click Event

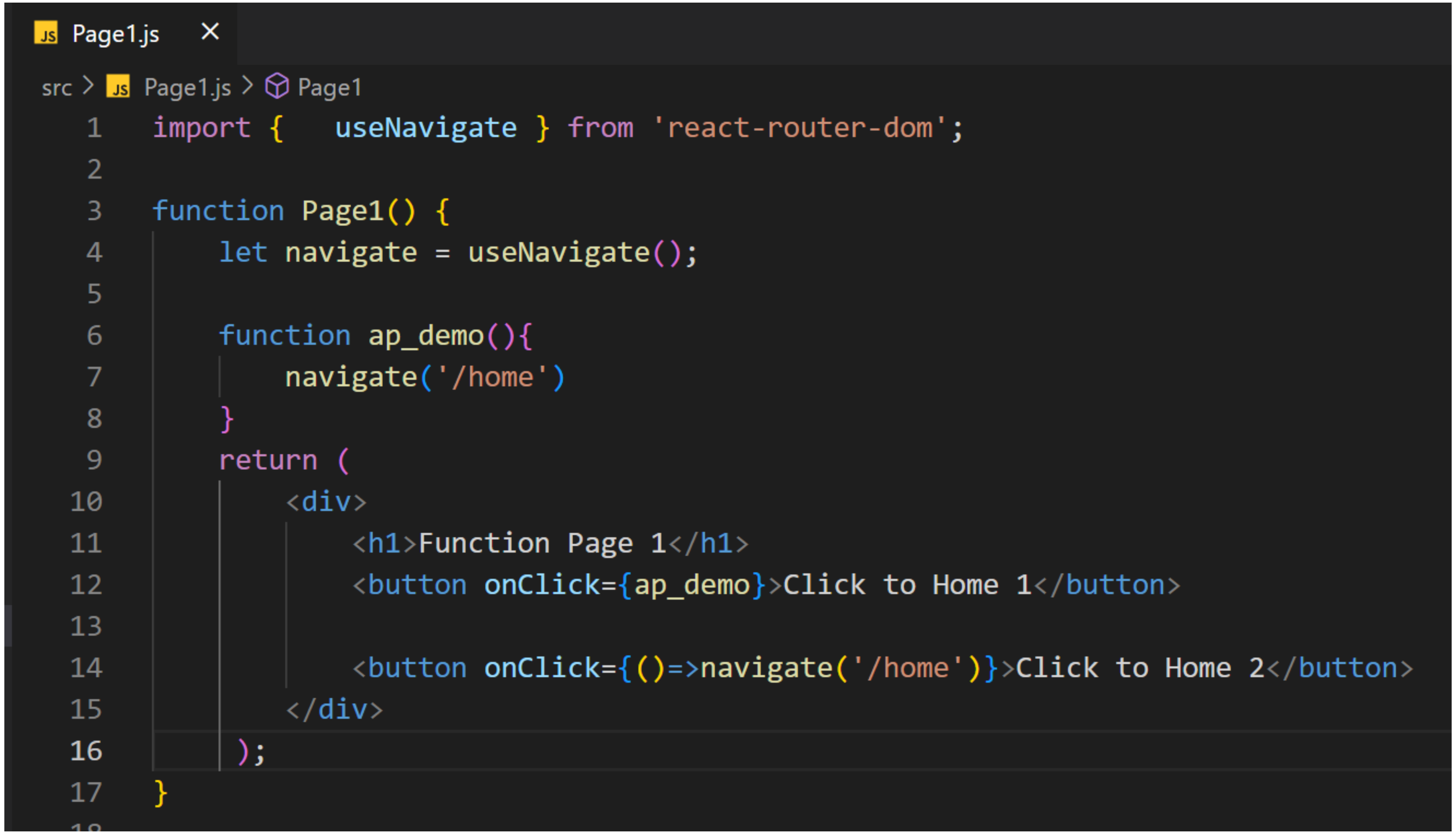
Error with Back Navigation



```
import React from 'react';
import {useNavigate} from 'react-router-dom';

function Error() {
    let navigate = useNavigate();
    return (
        <div>
            <h1>Error</h1>
            <button onClick={()=>navigate('/Home')}>Go Back</button>
        </div>
    );
}

export default Error;
```



Navigate with Hooks



```
import {   useNavigate } from 'react-router-dom';

function Page1() {
    let navigate = useNavigate();

    function ap_demo(){
        navigate('/home')
    }
    return (
        <div>
            <h1>Function Page 1</h1>
            <button onClick={ap_demo}>Click to Home 1</button>

            <button onClick={()=>navigate('/home')}>Click to Home 2</button>
        </div>
    );
}
```

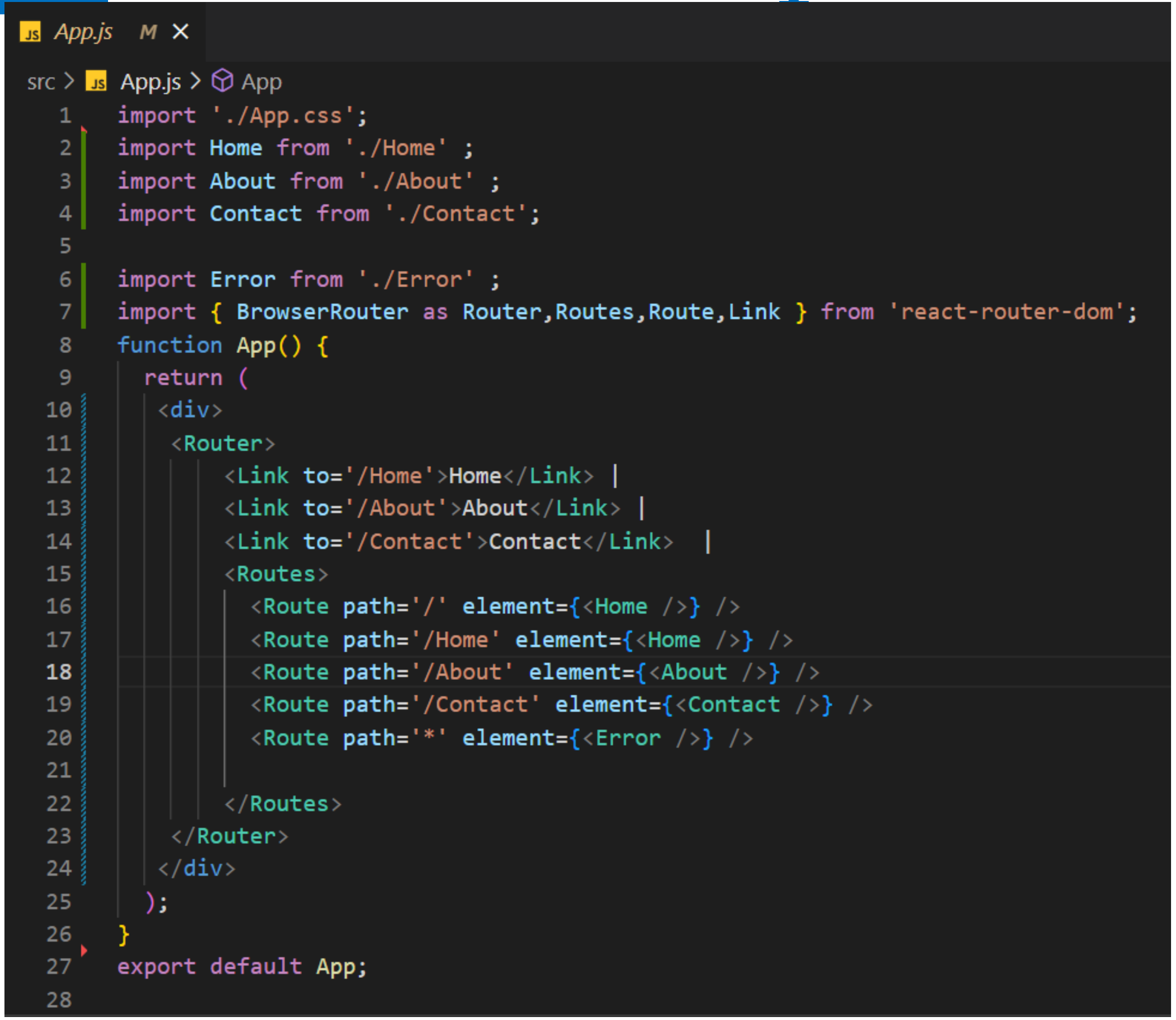
- To go back, like the browser’s “Back” button, simply pass -1:
  - navigate(-1);
- To go forward, like the browser’s “Forward” button, simply pass 1:
  - navigate(1);

```
const GoBack = () => {
  const navigate = useNavigate();
  const handleClick = () => navigate(-1);

  return (
    <button type="button" onClick={handleClick}>
      Go Back ⏪
    </button>
  );
};
```

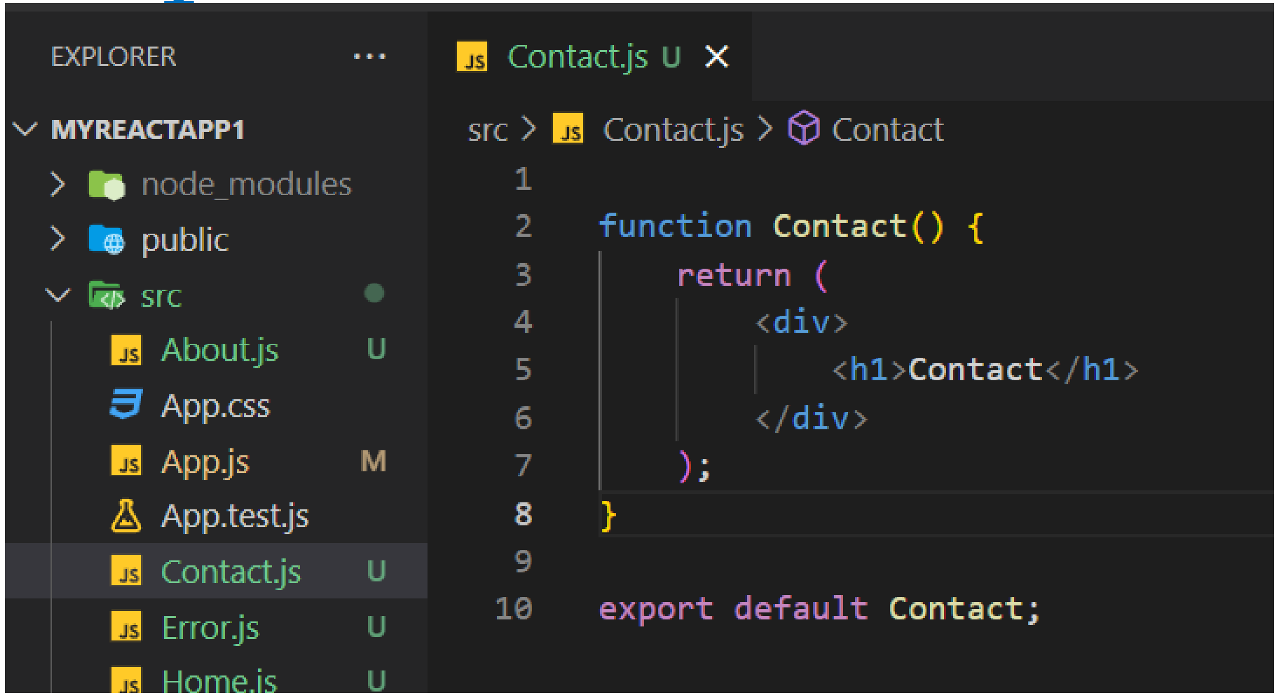
```
const GoForward = () => {
  const navigate = useNavigate();
  const handleClick = () => navigate(1);

  return (
    <button type="button" onClick={handleClick}>
      Go Forward ⏩
    </button>
  );
};
```

Routing Parameter

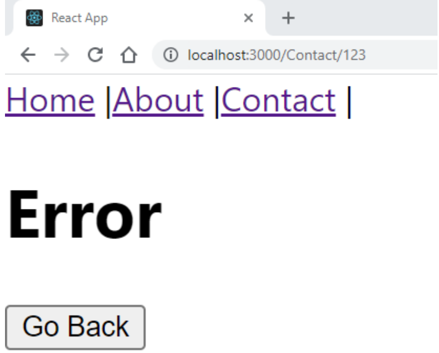
Contact Component Simple



```
import './App.css';
import Home from './Home' ;
import About from './About' ;
import Contact from './Contact';

import Error from './Error' ;
import { BrowserRouter as Router,Routes,Route,Link } from 'react-router-dom';
function App() {
  return (
   <div>
    <Router>
        <Link to='/Home'>Home</Link> |
        <Link to='/About'>About</Link> |
        <Link to='/Contact'>Contact</Link>  |
        <Routes>
          <Route path='/' element={<Home />} />
          <Route path='/Home' element={<Home />} />
          <Route path='/About' element={<About />} />
          <Route path='/Contact' element={<Contact />} />
          <Route path='*' element={<Error />} />

        </Routes>
    </Router>
   </div>
  );
}
export default App;
```



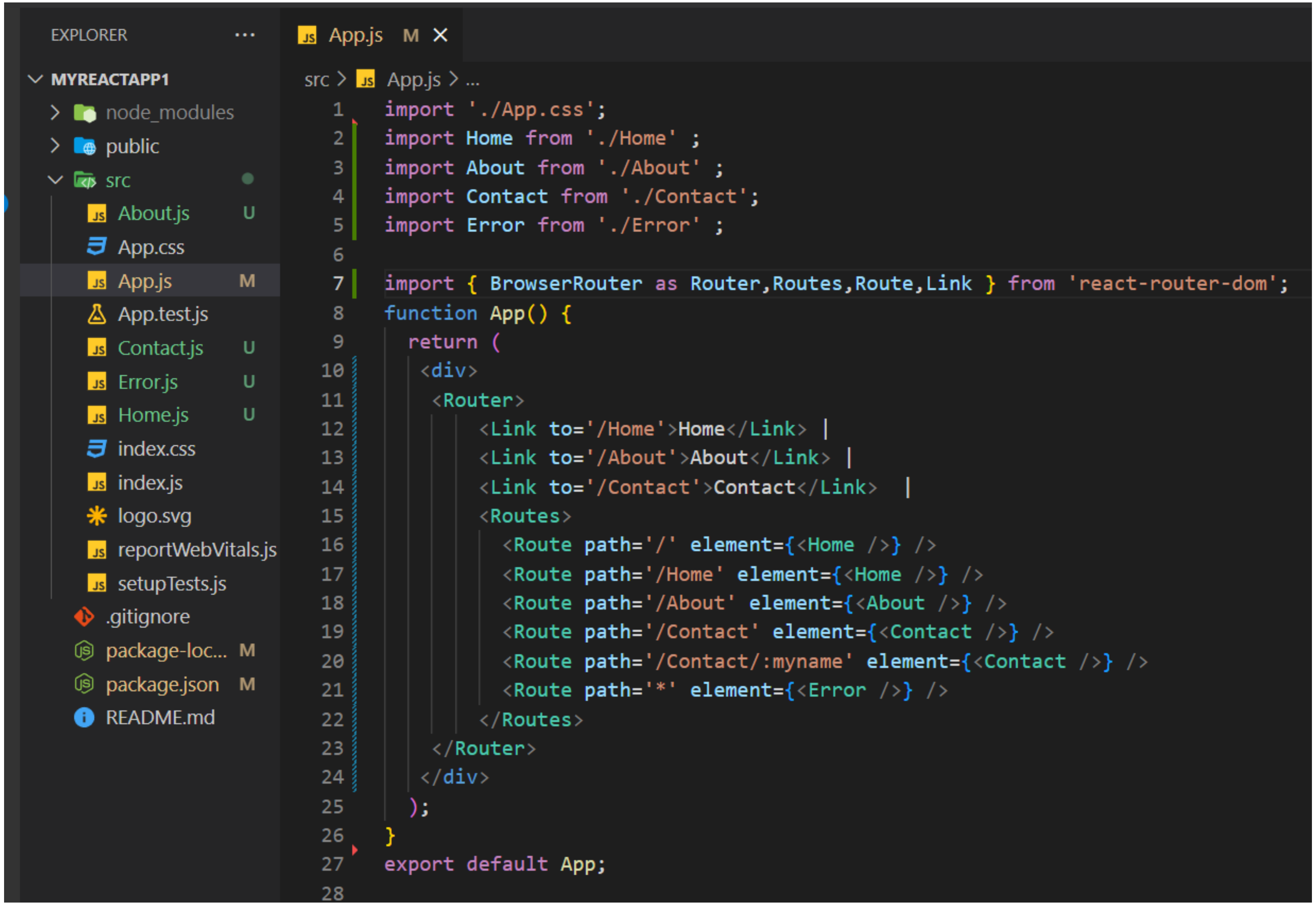
```

function Contact() {
    return (
        <div>
            <h1>Contact</h1>
        </div>
    );
}

export default Contact;
```



Home |About |Contact |

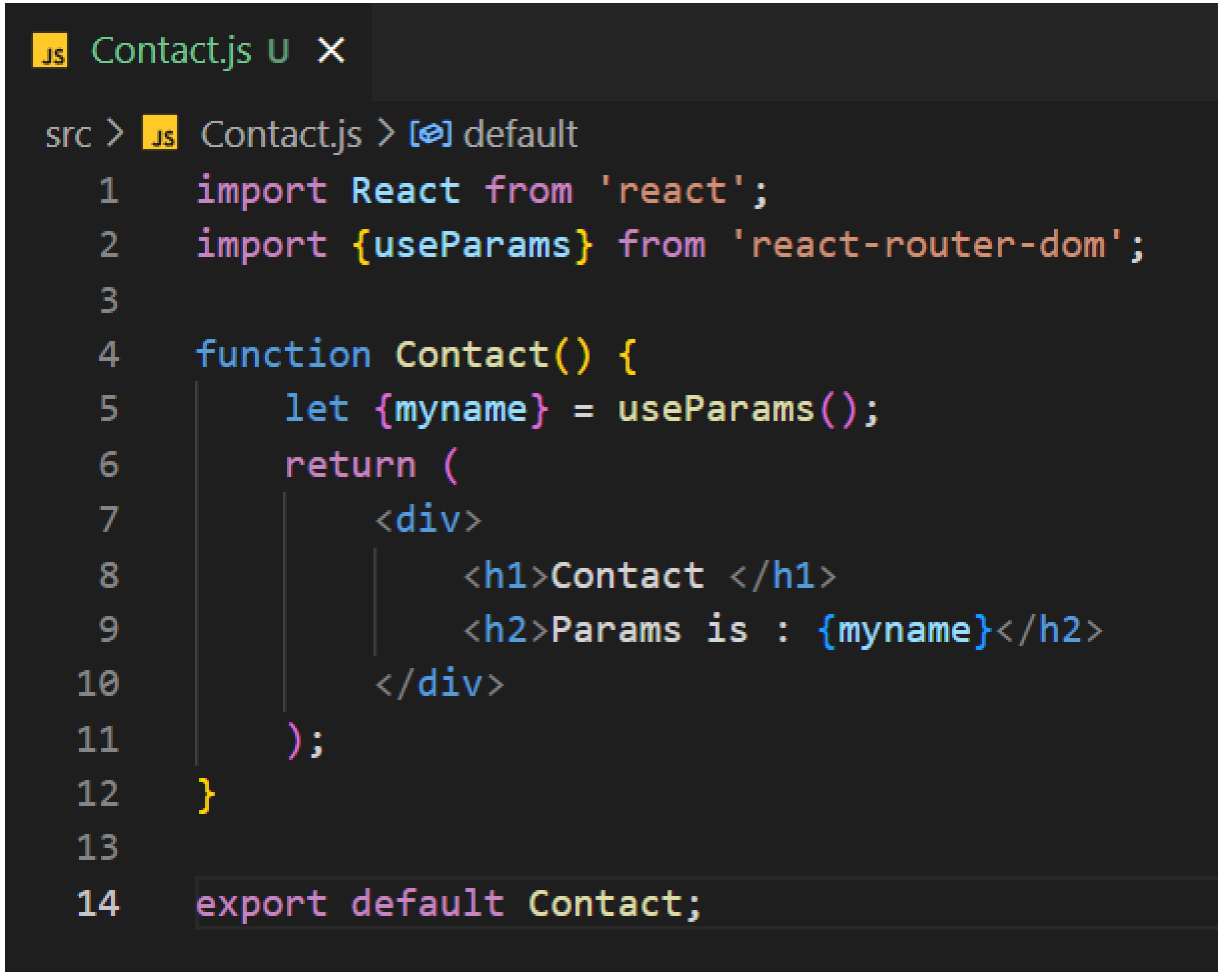
Error

Parameter Define



```
import './App.css';
import Home from './Home' ;
import About from './About' ;
import Contact from './Contact';
import Error from './Error' ;

import { BrowserRouter as Router,Routes,Route,Link } from 'react-router-dom';
function App() {
  return (
   <div>
    <Router>
        <Link to='/Home'>Home</Link> |
        <Link to='/About'>About</Link> |
        <Link to='/Contact'>Contact</Link>  |
        <Routes>
          <Route path='/' element={<Home />} />
          <Route path='/Home' element={<Home />} />
          <Route path='/About' element={<About />} />
          <Route path='/Contact' element={<Contact />} />
          <Route path='/Contact/:myname' element={<Contact />} />
          <Route path='*' element={<Error />} />
        </Routes>
    </Router>
   </div>
  );
}
export default App;

```

Get Parameter

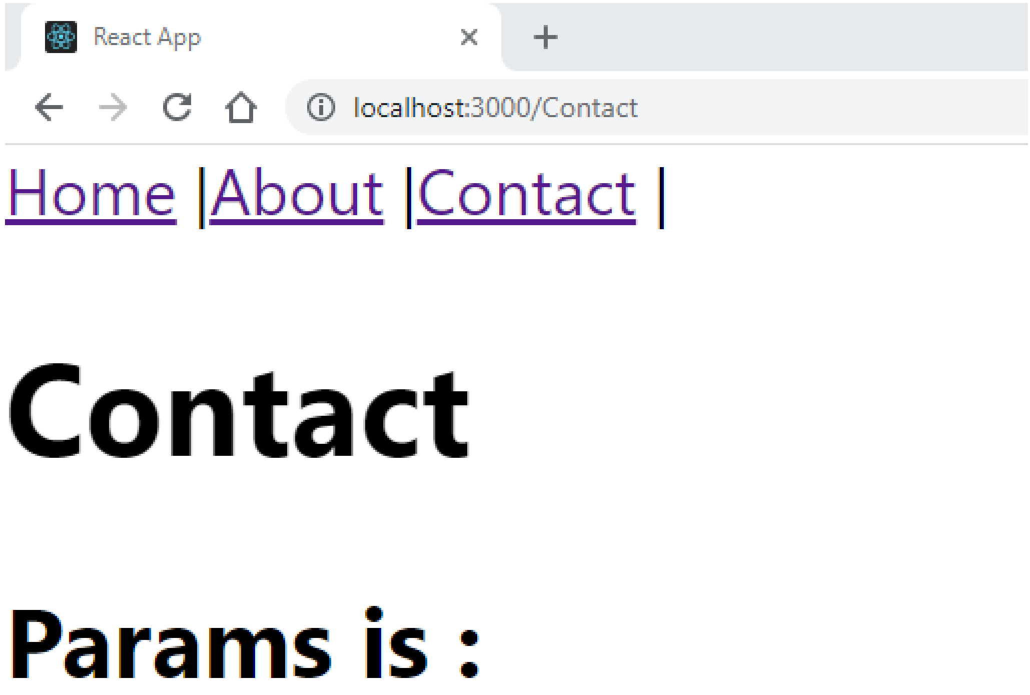


Contact.js U ×

src > Contact.js > default

```
import React from 'react';
import {useParams} from 'react-router-dom';

function Contact() {
    let {myname} = useParams();
    return (
        <div>
            <h1>Contact </h1>
            <h2>Params is : {myname}</h2>
        </div>
    );
}

export default Contact;
```

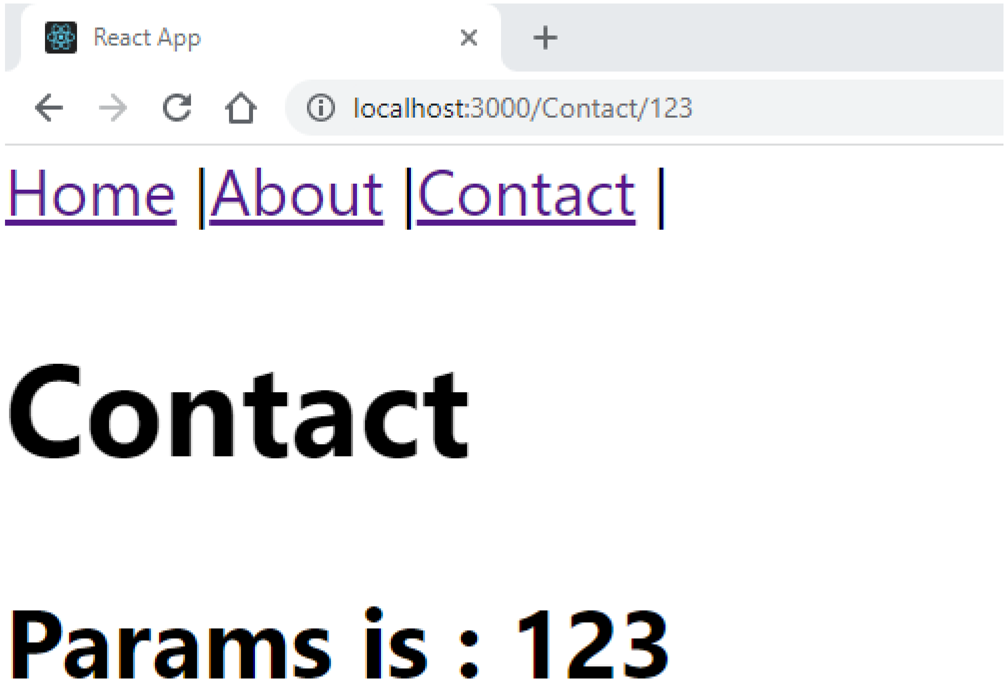
Contact with Parameter



Home |About |Contact |

Contact

Params is :



Home |About |Contact |

Contact

Params is : 123

Match multiple paths :

- Path will check URL and According to URL it will load Component

- <Route path="/(about|who)/" component={Dashboard} />

Inline rendering

- Instead of specifying a component property on Route, you can set a render prop:

```
<Route
  path="/(about|who)/"
  render={() => (
    <div>
      <h2>About</h2>
      ...
    </div>
  )}
/>
```

Match dynamic route parameter

- <Route exact path="/posts" component={Posts} />

```
const Posts = () => (
  <div>
    <h2>Posts</h2>
    ...
  </div>
)
```

Parameters

```
const Post = ({match}) => (
  <div>
    <h2>Post #{match.params.id}</h2>
    ...
  </div>
)

//...

<Route exact path="/post/:id" component={Post} />
```

Old Version

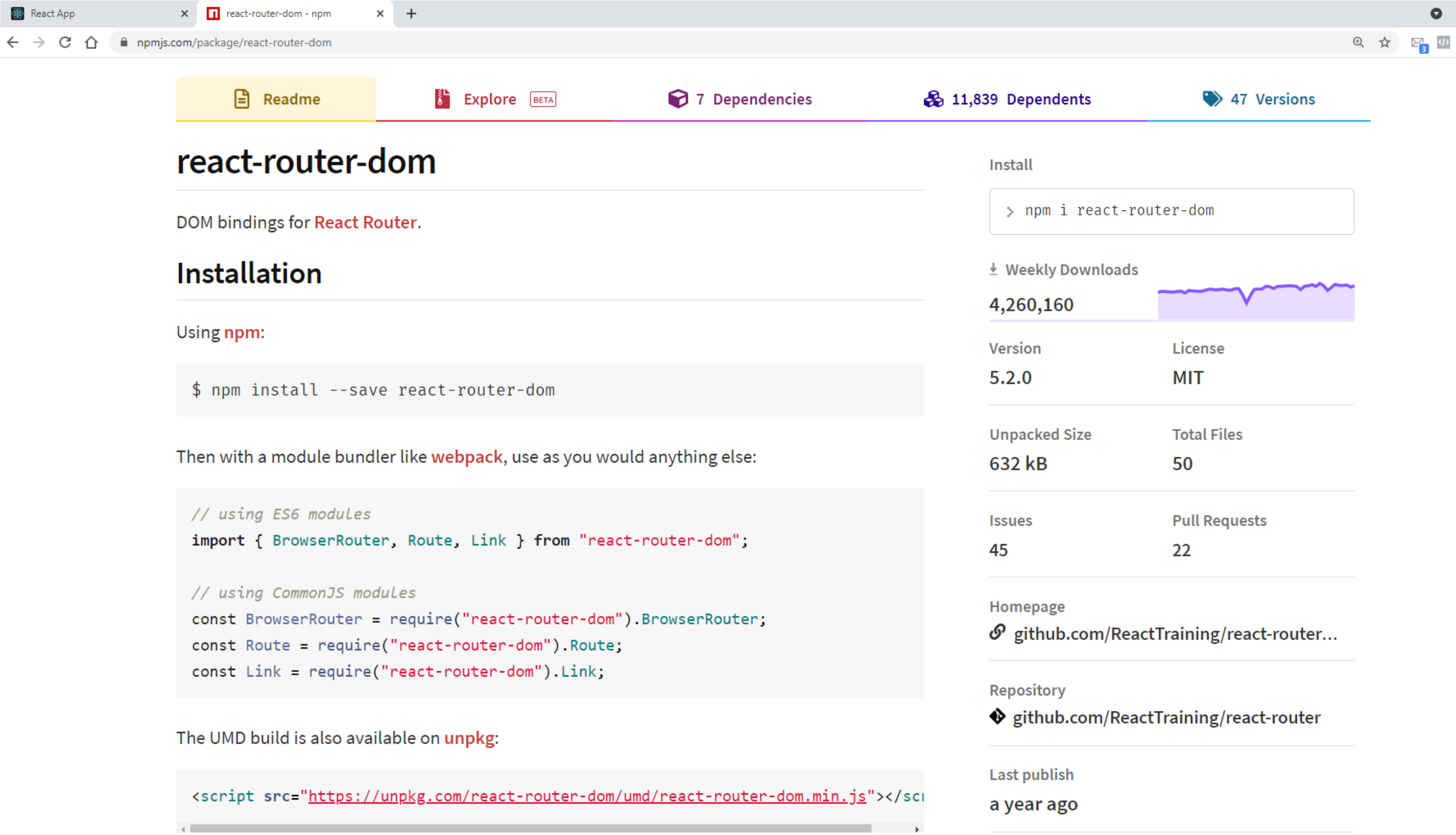
Old Steps

Component

- Switch
  - Groups all your routes together, and ensures they take precedence from top-to-bottom.
- Route
  - Each individual route.
- Link
  - If we used the traditional <a href="/route">, it would make a completely new request and reload the page, so we have Link to help us out
  - <Link>

Old Version Steps

- Create New Project
  - create-react-app react_spa
- Visit :
  - https://www.npmjs.com/package/react-router-dom
- Download 5.2 Version :
  - npm install --save react-router-dom**@5.2**
- Create 2 New Components
  - Home.js
  - About.js



react-router-dom

DOM bindings for React Router.

Installation

Using npm:

```
$ npm install --save react-router-dom
```

Then with a module bundler like webpack, use as you would anything else:

```
// using ES6 modules
import { BrowserRouter, Route, Link } from "react-router-dom";

// using CommonJS modules
const BrowserRouter = require("react-router-dom").BrowserRouter;
const Route = require("react-router-dom").Route;
const Link = require("react-router-dom").Link;
```

The UMD build is also available on unpkg:

```
<script src="https://unpkg.com/react-router-dom/umd/react-router-dom.min.js"></sc
```

Install

```
> npm i react-router-dom
```

Weekly Downloads
4,260,160

Version	License
5.2.0	MIT
Unpacked Size	**Total Files**
632 kB	50
Issues	**Pull Requests**
45	22

Homepage
github.com/ReactTraining/react-router...

Repository
github.com/ReactTraining/react-router

Last publish
a year ago

Home.js & About.js

Home.js

```
import React, { Component } from 'react';
class Home extends Component{
    render()
    {
        return(
            <p>  I am Home Page</p>
        )
    }
}
export default Home;
```

About.js

```
import React, { Component } from 'react';
class About extends Component{
    render()
    {
        return(
            <p>I am About us</p>
        )
    }
}
export default About;
```

Browser Router Navigation

```
import React, { Component } from 'react';

import { BrowserRouter as Router,Switch, Route, Link } from
'react-router-dom';

import './App.css';


import Home from './Home';

import About from './About';
```

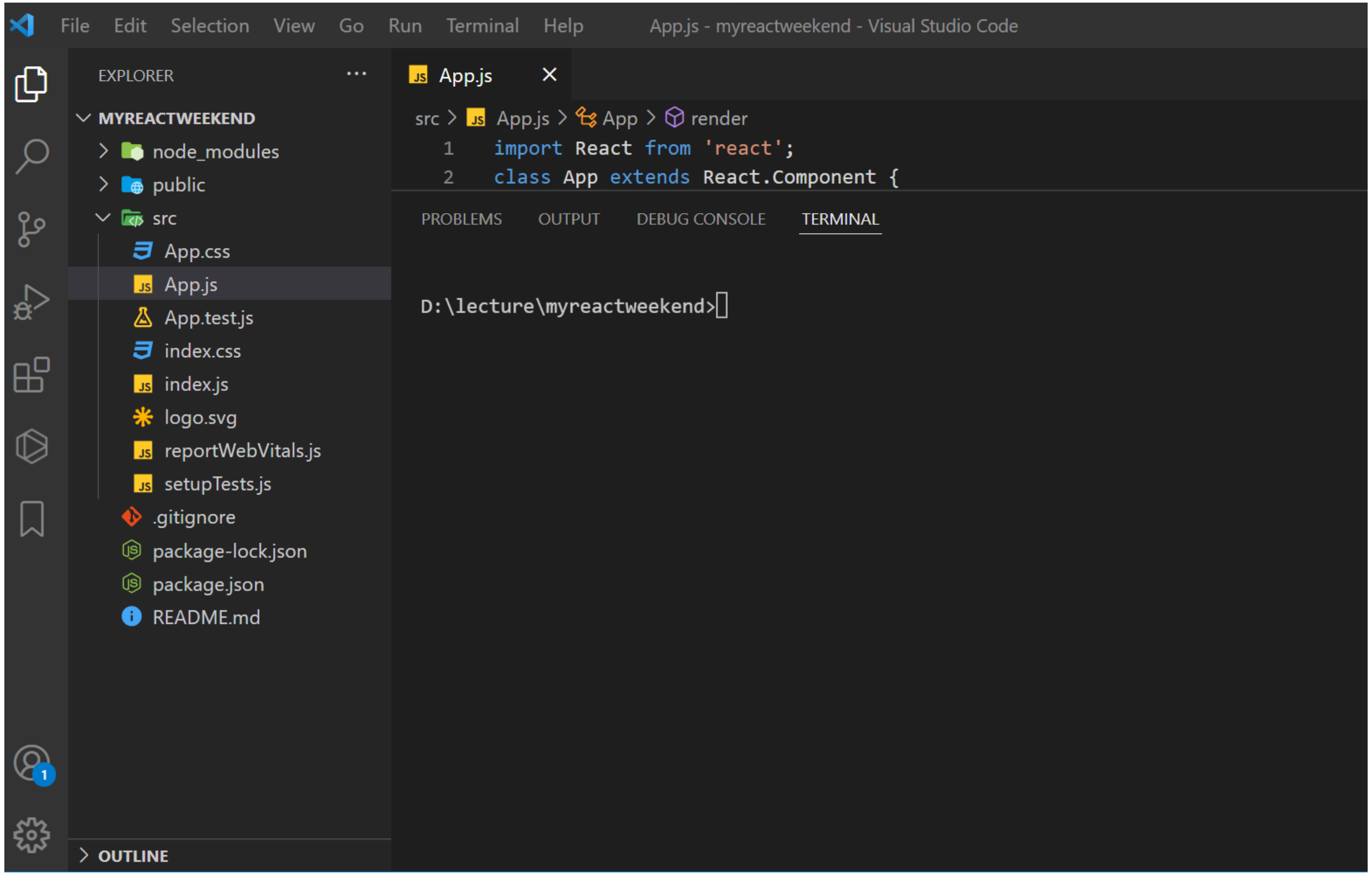
```
class App extends Component {
 render() {
  return (
   <Router>
   <div>
    <ul>
     <li><Link to={'/'}>Home</Link></li>
     <li> <Link to={'/about'}>About</Link></li>
    </ul>
   <Switch>
     <Route exact path='/' component={Home} />
     <Route exact path='/about' component={About} />
   </Switch>
  </div>
  </Router>
  );
 }
}
export default App;
```

HashRouter Navigation

```
import React, { Component } from "react";
import {Route,NavLink,HashRouter} from "react-router-dom";
import Home from './Home';
import About from './About';
class Main extends Component {
  render() {
   return (
     <div>
       <HashRouter>
       <h1>Simple SPA</h1>
         <ul>
           <li><NavLink to="/Home">Home</NavLink></li>
           <li><NavLink to="/About">About</NavLink></li>
         </ul>
         <div>
           <Route  path='/home' component={Home} />
           <Route  path='/about' component={About} />
         </div>
       </HashRouter>
     </div>
   );
  }
}
export default Main;
```

Demo

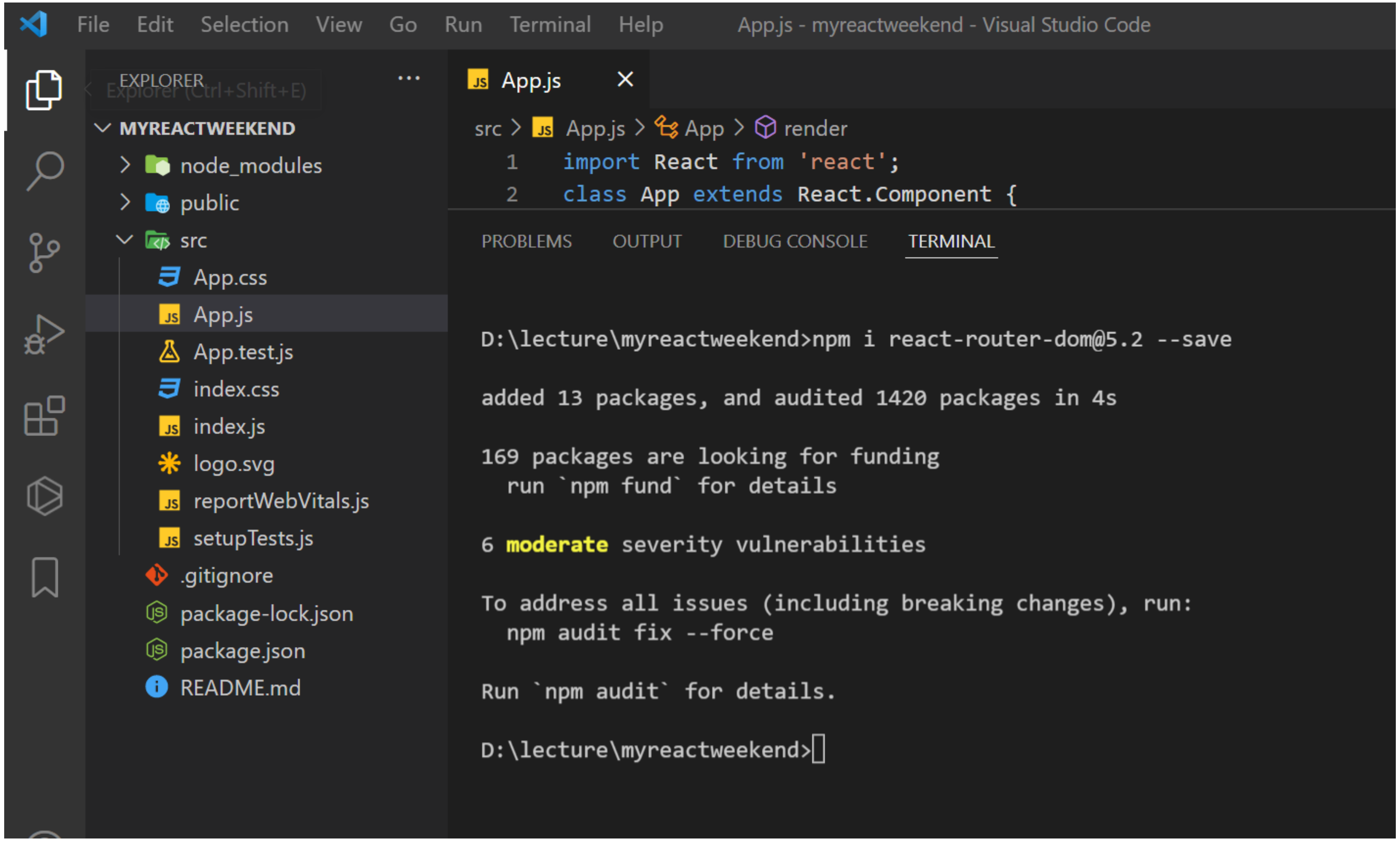
Create New Project & Install React Router Dom



```
import React from 'react';
class App extends React.Component {
```

```
D:\lecture\myreactweekend>
```

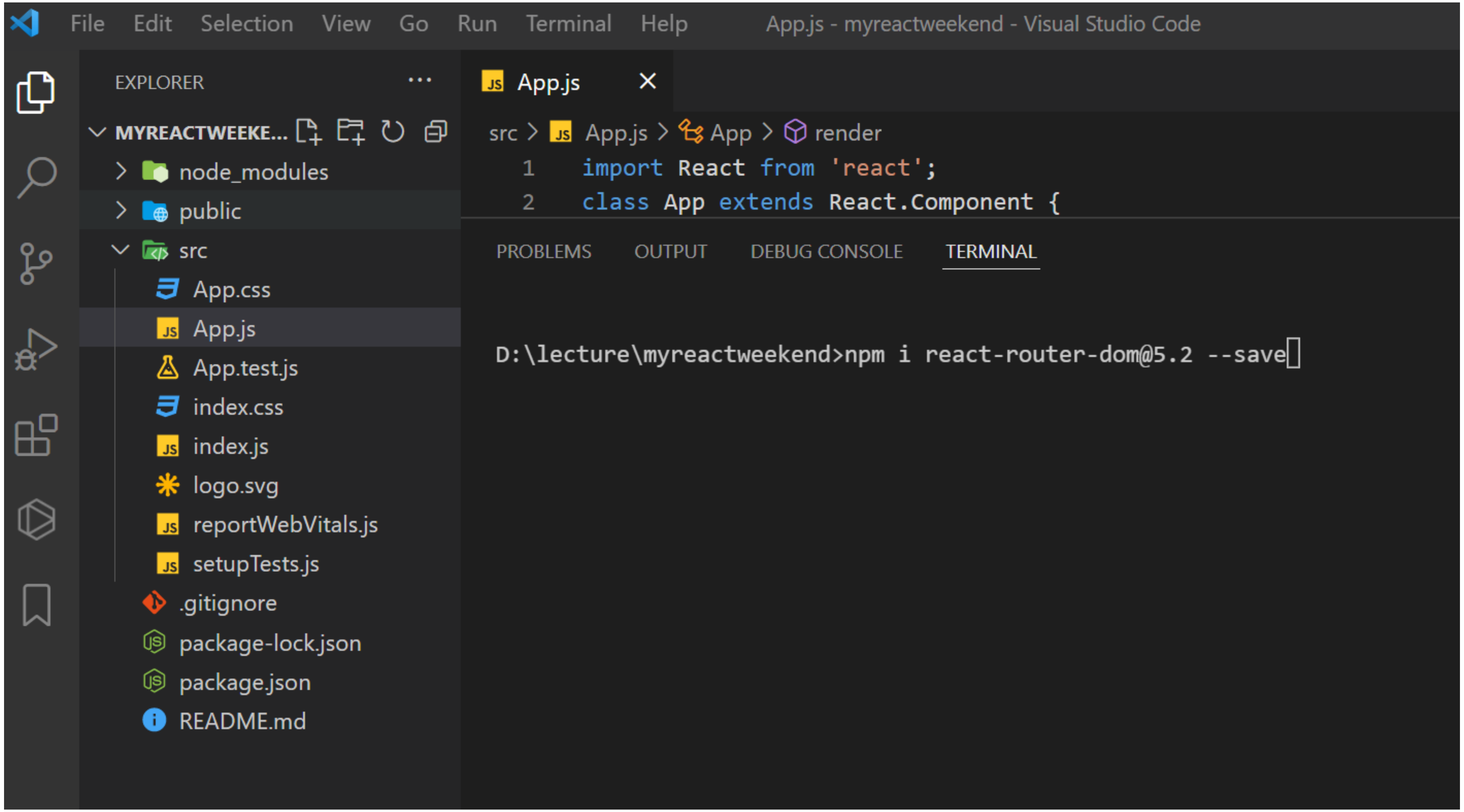
Install React Router Dom



```
import React from 'react';
class App extends React.Component {
```

```
D:\lecture\myreactweekend>npm i react-router-dom@5.2 --save

added 13 packages, and audited 1420 packages in 4s

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

6 moderate severity vulnerabilities

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.

D:\lecture\myreactweekend>
```

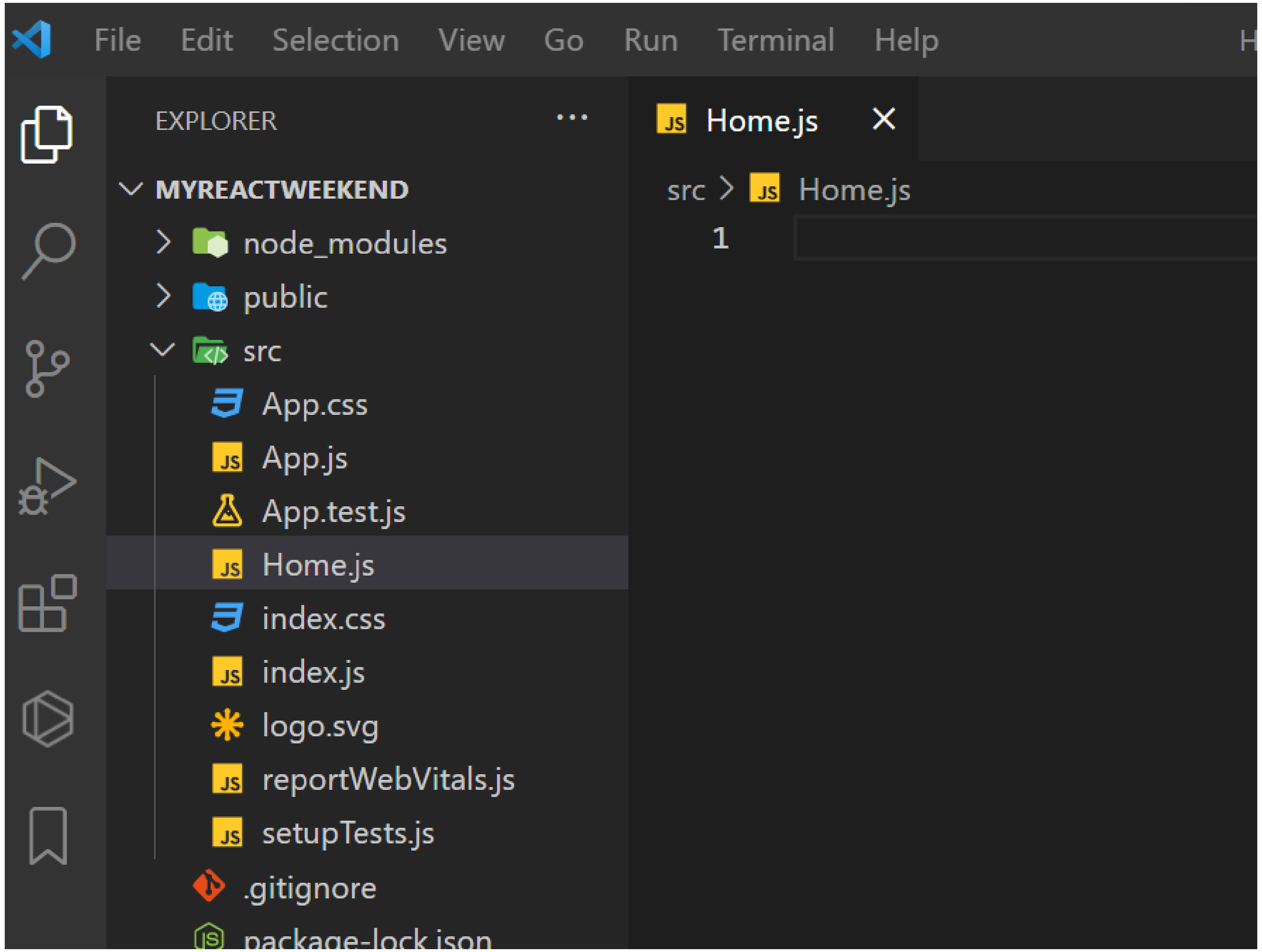
Install React Router Dom 5.2



```
import React from 'react';
class App extends React.Component {
```

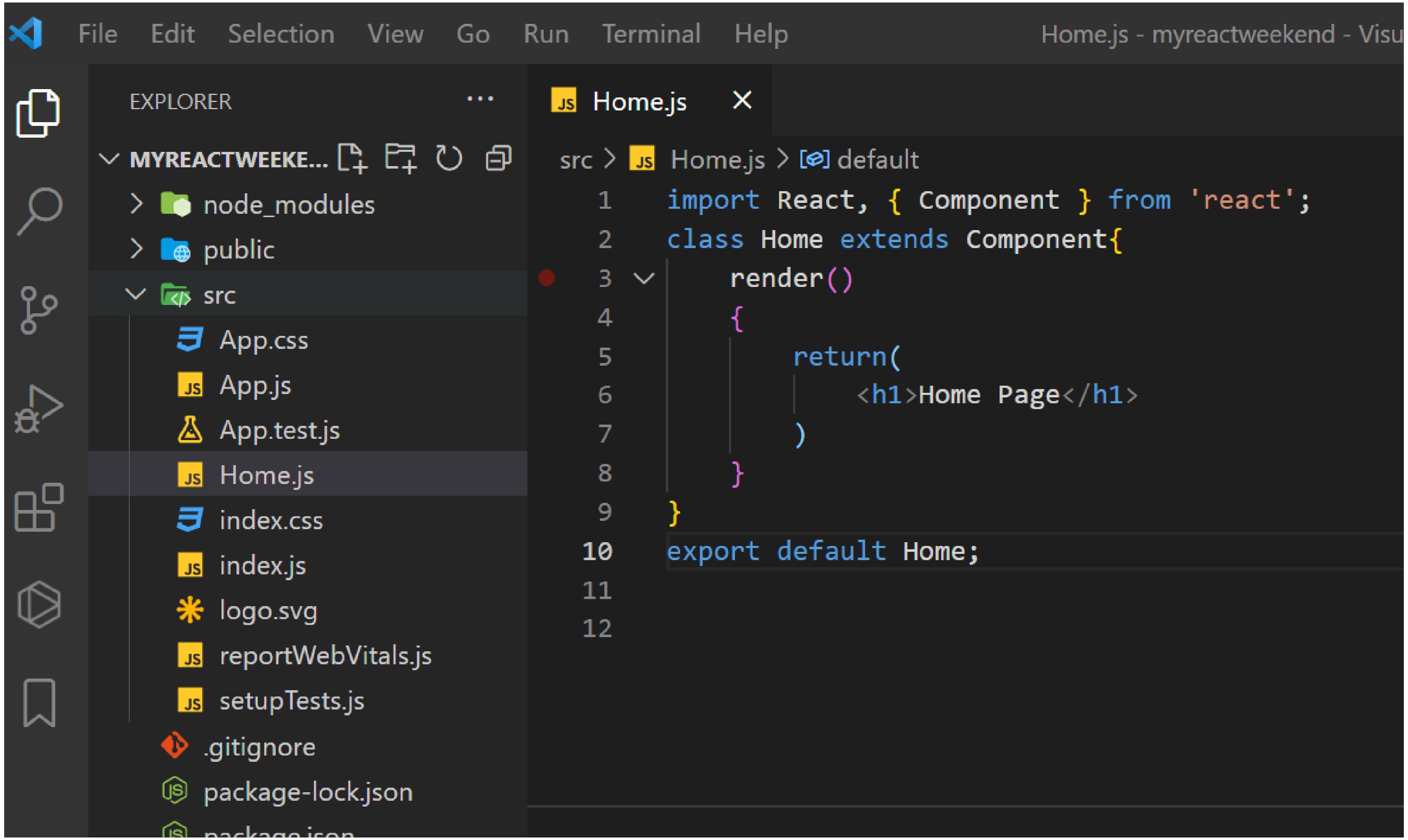
```
D:\lecture\myreactweekend>npm i react-router-dom@5.2 --save
```

Home.js



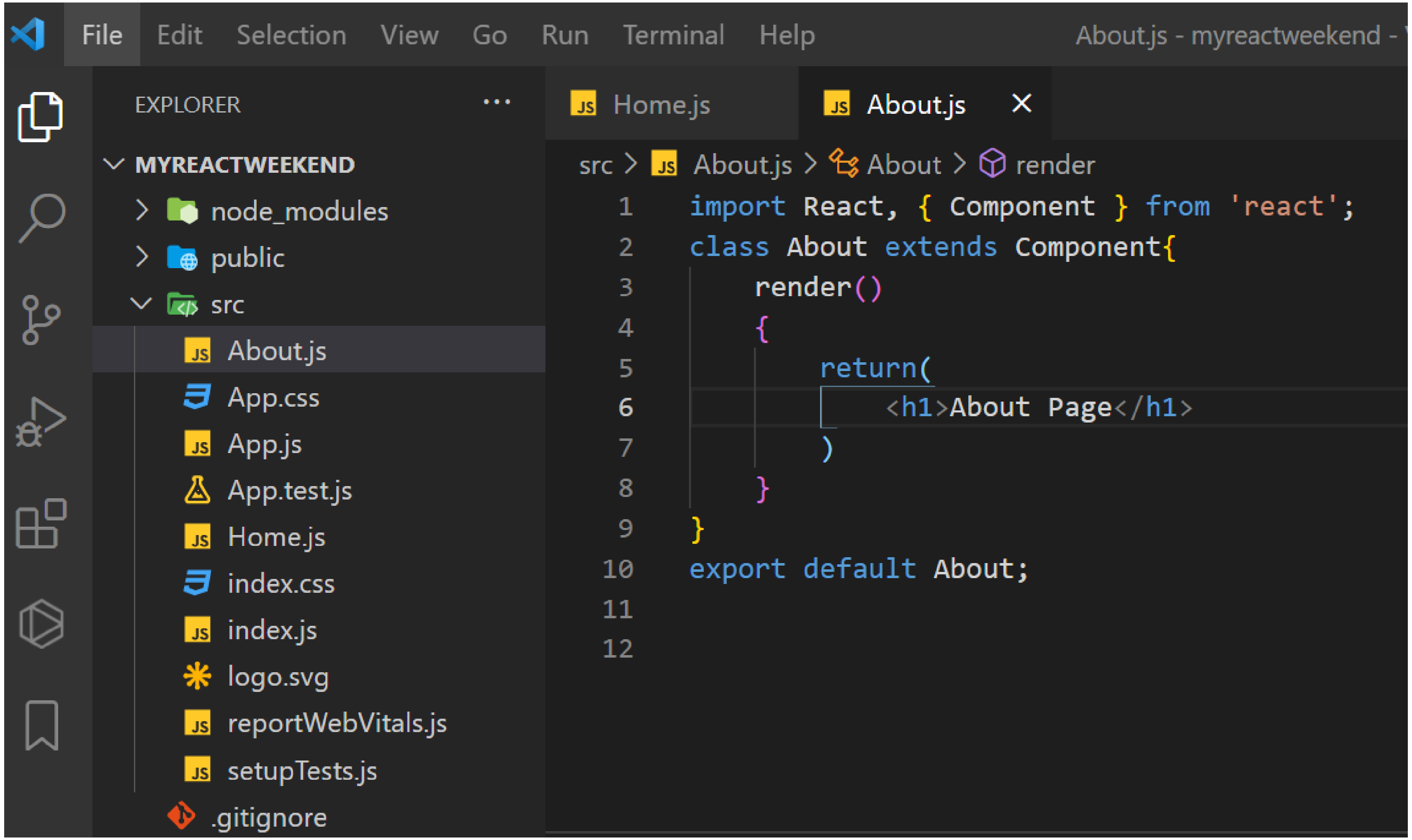
File
Edit
Selection
View
Go
Run
Terminal
Help
EXPLORER
MYREACTWEEKEND
node_modules
public
src
App.css
App.js
App.test.js
Home.js
index.css
index.js
logo.svg
reportWebVitals.js
setupTests.js
.gitignore
package-lock.json
Home.js
src > Home.js
1

Home.js Component



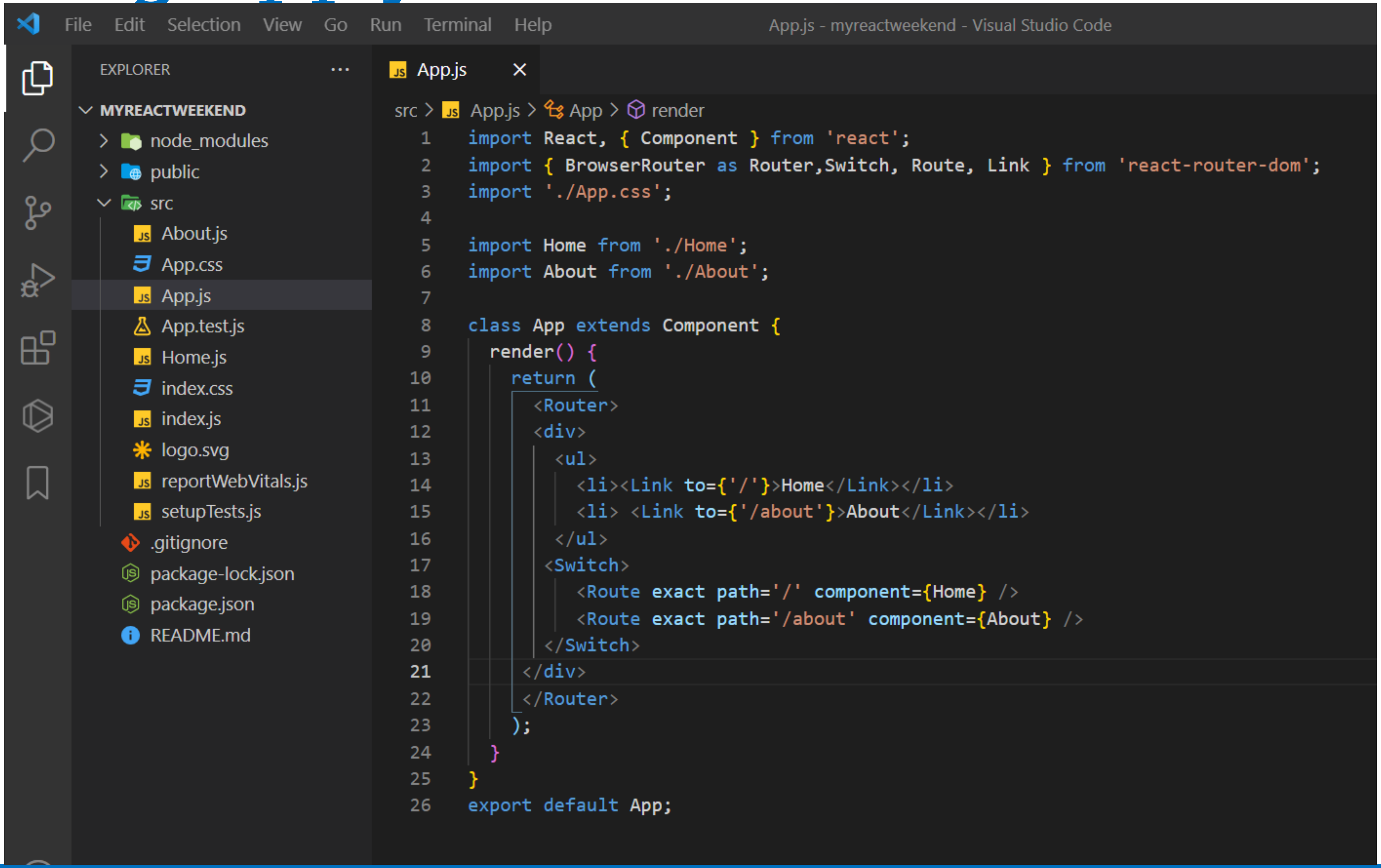
```
import React, { Component } from 'react';
class Home extends Component{
    render()
    {
        return(
            <h1>Home Page</h1>
        )
    }
}
export default Home;
```

About.js Component



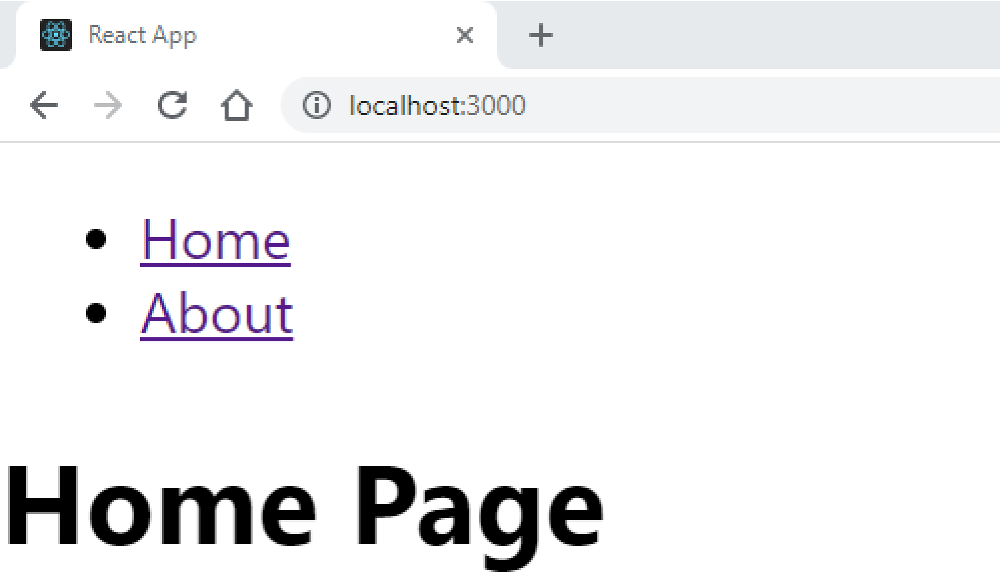
```
import React, { Component } from 'react';
class About extends Component{
    render()
    {
        return(
            <h1>About Page</h1>
        )
    }
}
export default About;
```

Routing App.js



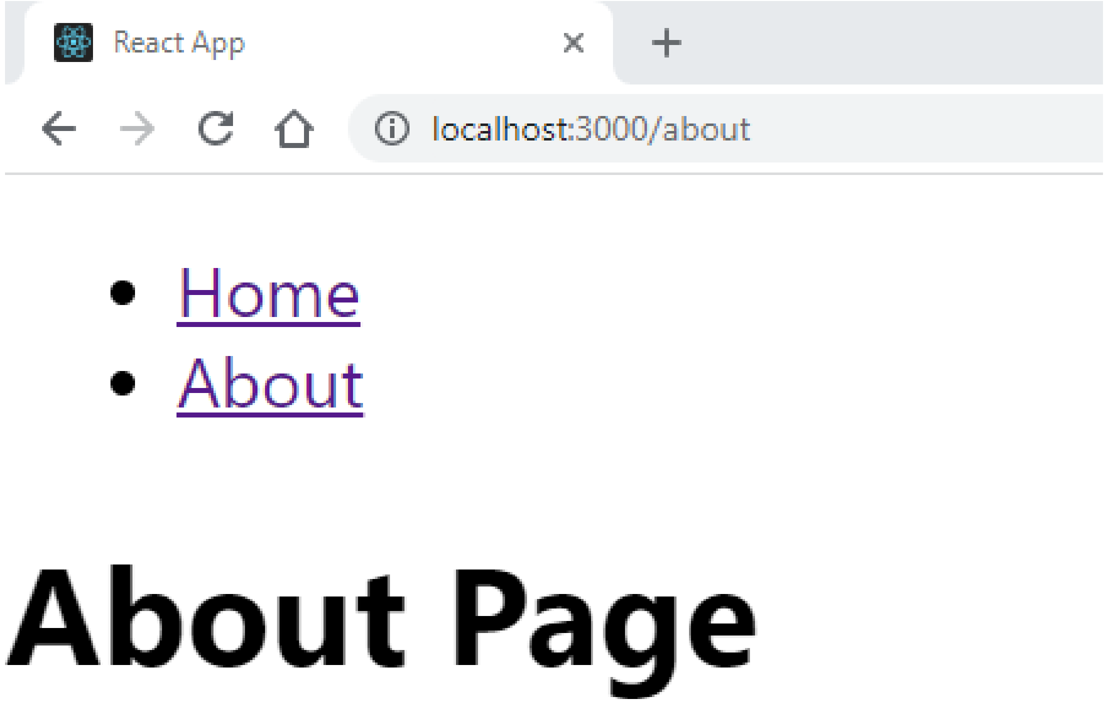
```
import React, { Component } from 'react';
import { BrowserRouter as Router,Switch, Route, Link } from 'react-router-dom';
import './App.css';

import Home from './Home';
import About from './About';

class App extends Component {
  render() {
    return (
      <Router>
      <div>
        <ul>
          <li><Link to={'/'}>Home</Link></li>
          <li> <Link to={'/about'}>About</Link></li>
        </ul>
       <Switch>
          <Route exact path='/' component={Home} />
          <Route exact path='/about' component={About} />
       </Switch>
     </div>
     </Router>
    );
  }
}
export default App;
```

Browser Router Navigation



- Home
- About

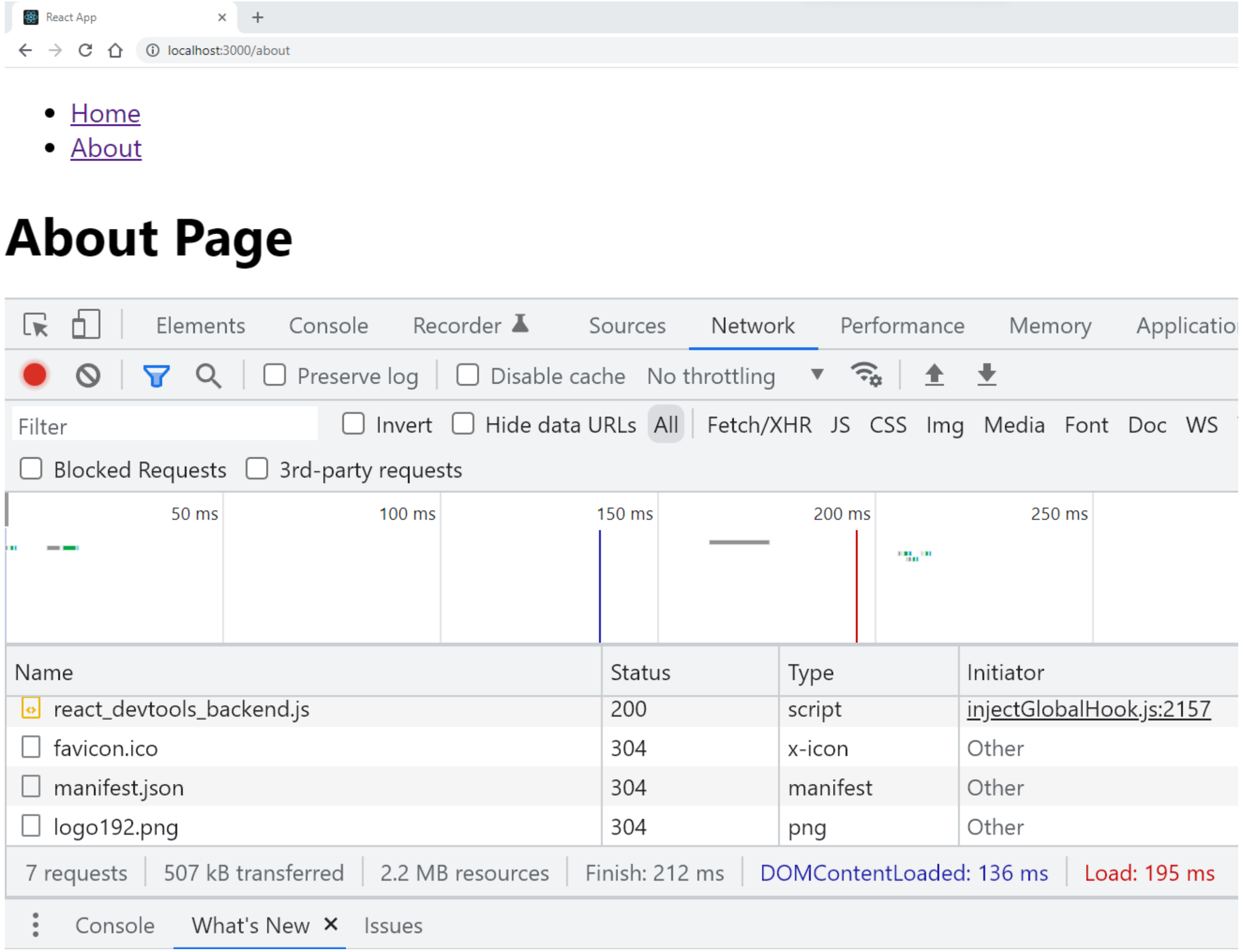
Home Page



- Home
- About

About Page

Loading Time will be same for all Component



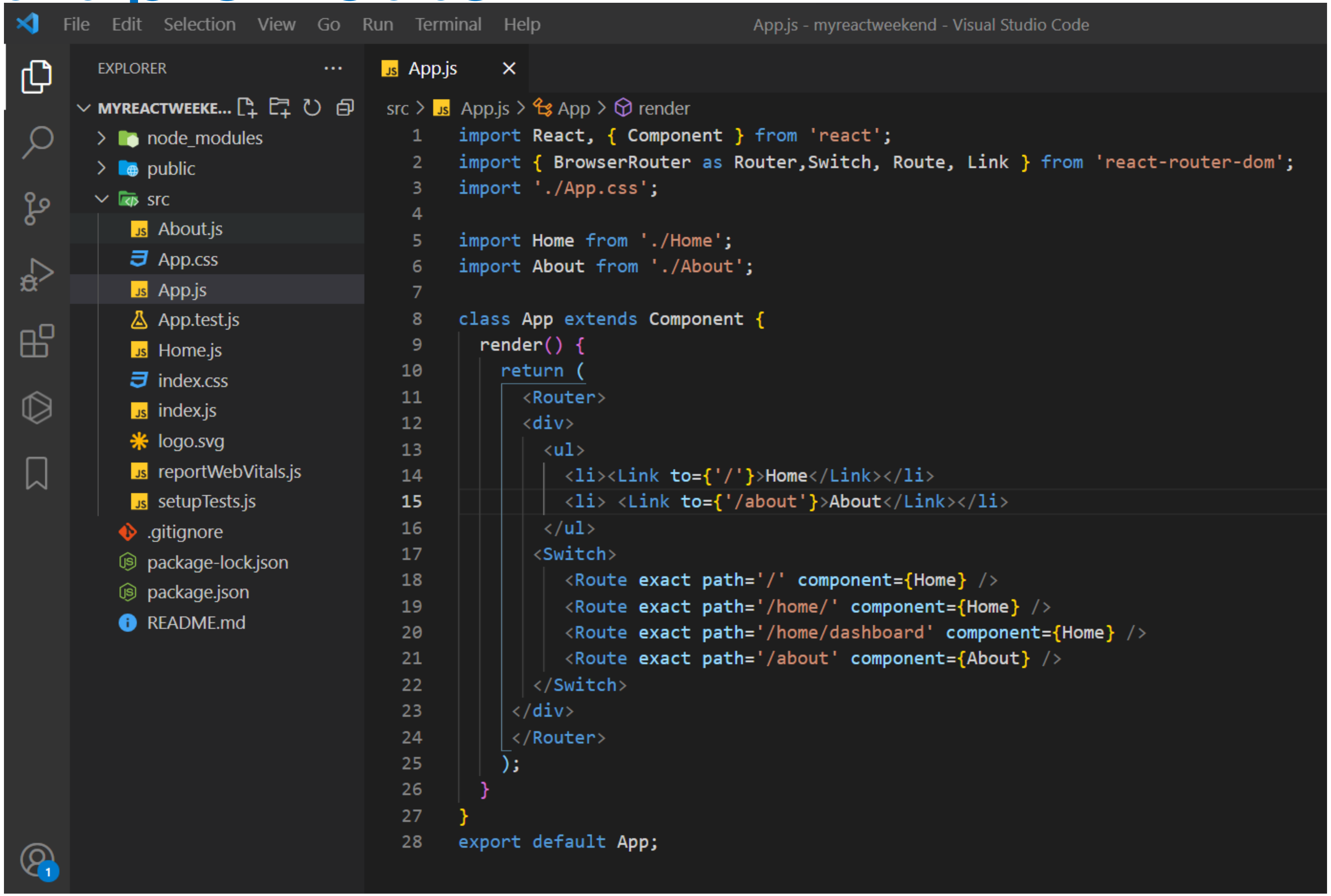
- Home
- About

About Page

Name	Status	Type	Initiator
react_devtools_backend.js	200	script	injectGlobalHook.js:2157
favicon.ico	304	x-icon	Other
manifest.json	304	manifest	Other
logo192.png	304	png	Other

7 requests | 507 kB transferred | 2.2 MB resources | Finish: 212 ms | DOMContentLoaded: 136 ms | Load: 195 ms

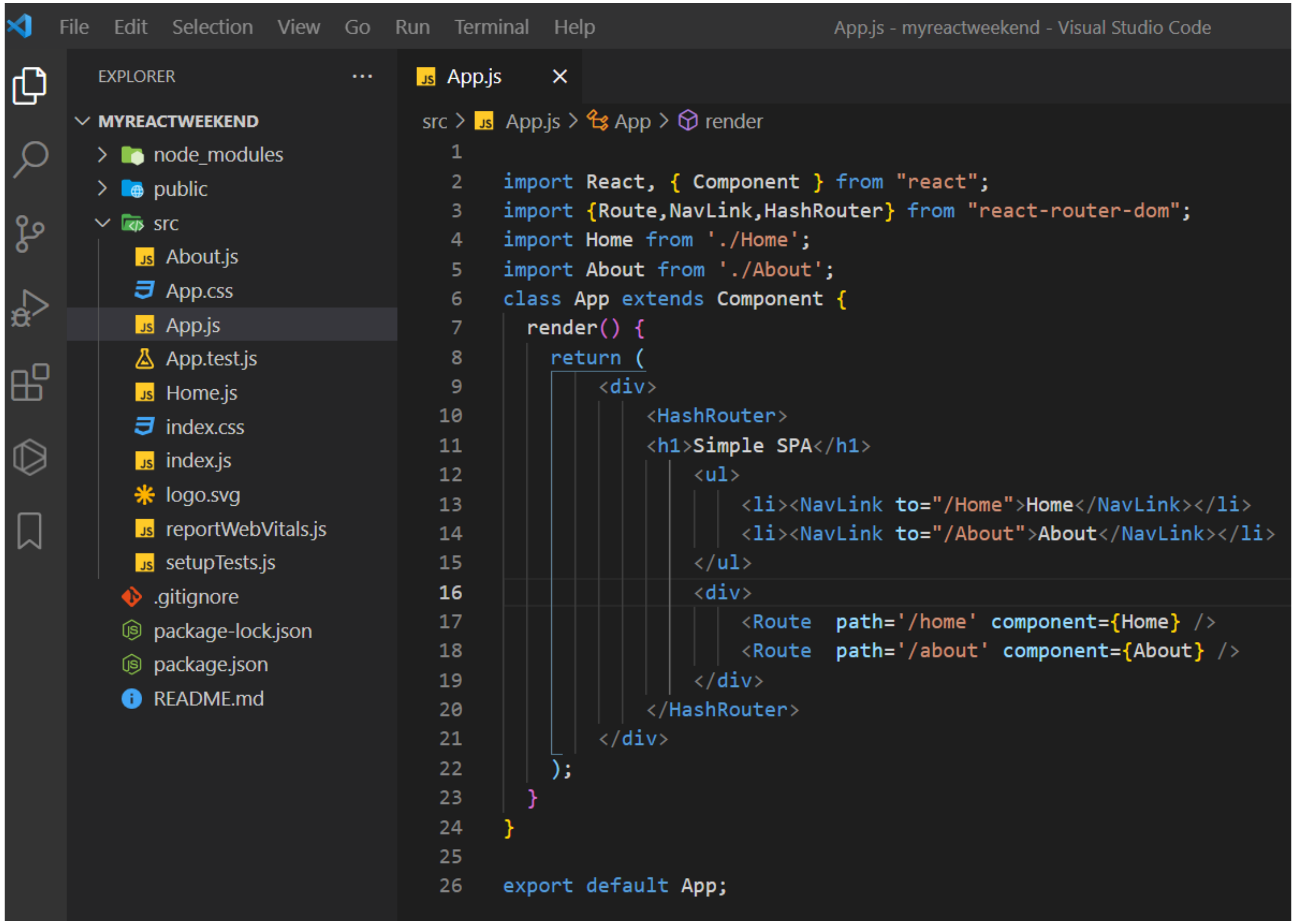
Multiple Route



```
import React, { Component } from 'react';
import { BrowserRouter as Router,Switch, Route, Link } from 'react-router-dom';
import './App.css';

import Home from './Home';
import About from './About';

class App extends Component {
  render() {
    return (
      <Router>
      <div>
        <ul>
          <li><Link to={'/'}>Home</Link></li>
          <li> <Link to={'/about'}>About</Link></li>
        </ul>
       <Switch>
          <Route exact path='/' component={Home} />
          <Route exact path='/home/' component={Home} />
          <Route exact path='/home/dashboard' component={Home} />
          <Route exact path='/about' component={About} />
       </Switch>
     </div>
     </Router>
    );
  }
}
export default App;
```

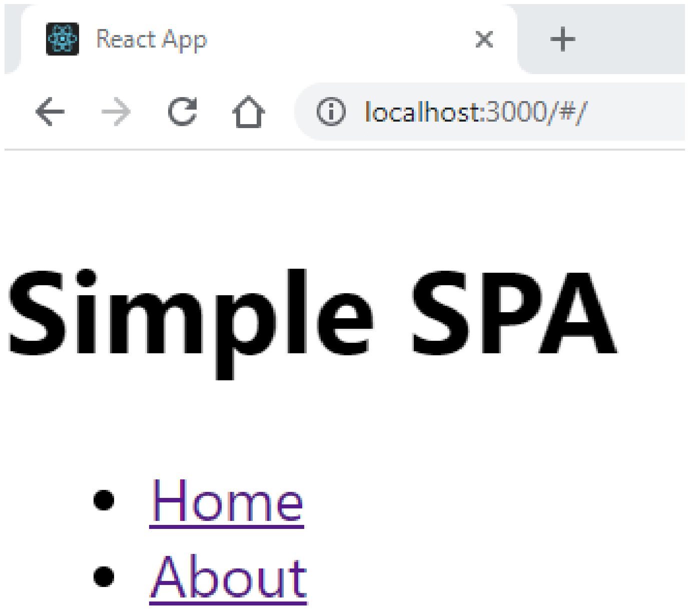
HashRouter

HashRouter



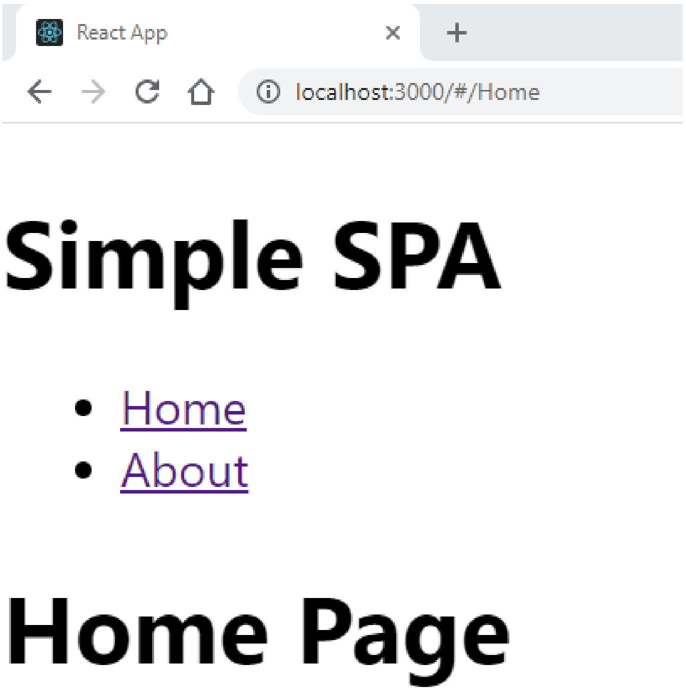
```

import React, { Component } from "react";
import {Route,NavLink,HashRouter} from "react-router-dom";
import Home from './Home';
import About from './About';
class App extends Component {
  render() {
    return (
      <div>
        <HashRouter>
        <h1>Simple SPA</h1>
          <ul>
            <li><NavLink to="/Home">Home</NavLink></li>
            <li><NavLink to="/About">About</NavLink></li>
          </ul>
          <div>
            <Route  path='/home' component={Home} />
            <Route  path='/about' component={About} />
          </div>
        </HashRouter>
      </div>
    );
  }
}

export default App;
```

HashRouter Output



Simple SPA

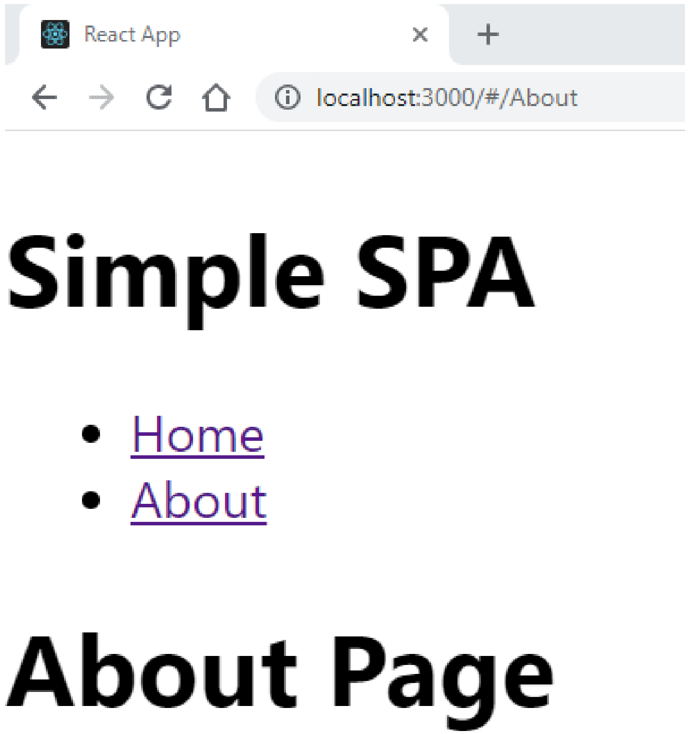
- Home
- About



Simple SPA

- Home
- About

Home Page



Simple SPA

- Home
- About

About Page

Task

- Preform Same Program
- Create Website and Create 3 Component Home,About,Contact
  - Home : Basic Content
  - About : Basic Contact & Images
  - Contact : Contact Form

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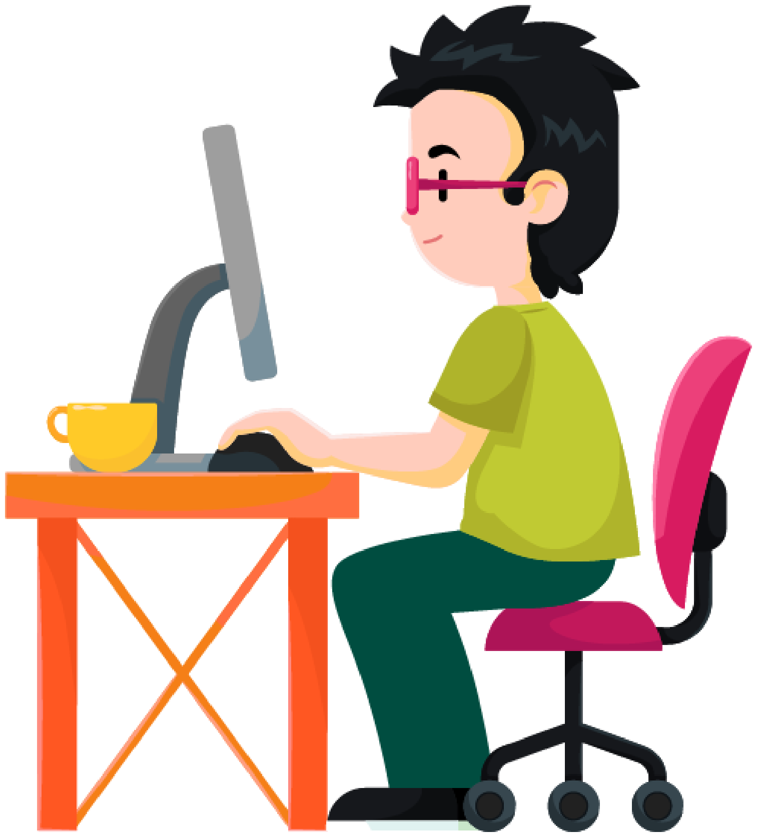

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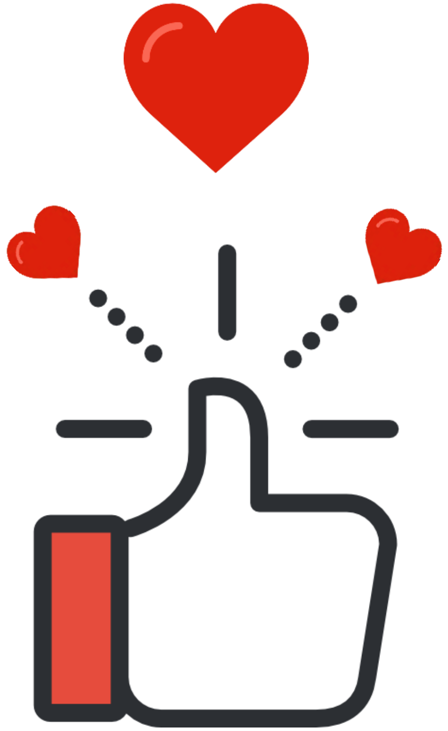

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