IP PRACTICAL NO. 9

Date of Performance: 11 – 10 – 2022

Software Requirement: Visual Studio Code, NotePad, NotePad++, NodeJS

Aim: To implement React-Router and Animation concepts

Objectives: The aim of this experiment is that the students will be able

- To Know the working and implementation of a single page web application using React-Router.
- To understand different Types of Animations and its applications.

Outcomes: After study of this experiment, the students will be able

- To develop a Single page web application.
- To present a web page with different-different Animations which improves the website appearance.

Prerequisite: Basic knowledge of HTML, CSS, JavaScript & React required.

Theory:

React DOM

ReactDOM is a package that provides DOM specific methods that can be used at the top level of a web app to enable an efficient way of managing DOM elements of the web page. ReactDOM provides the developers with an API containing the following methods and a few more. render() findDOMNode()

React library is responsible for creating views and ReactDOM library is responsible to actually render UI in the browser. Include these two libraries before your main JavaScript file. React Router DOM is a npm package that enables you to implement dynamic routing in a web app. It allows you to display pages and allow users to navigate them. It is a fully-featured client and server-side routing library for React. The primary difference between them lies in their usage. React Router DOM is for web applications and React Router Native is for mobile applications made with React Native.

React Router

React Router is a standard library for routing in React. It enables the navigation among views of various components in a React Application, allows changing the browser URL, and keeps the UI in sync with the URL. React routers can be an overkill for certain projects where all you need is basic navigation and routing functionalities. In that context, React Router is not necessary at all. React Router is a standard library for routing in React. It enables the navigation among views of various components in a React Application, allows changing the browser URL, and keeps the UI in sync with the URL.

The below command is used to install react router dom.

'npm install react-router-dom'

Benefits Of React Router

- In this, it is not necessary to set the browser history manually.
- Link uses to navigate the internal links in the application. It is similar to the anchor tag.
- It uses Switch feature for rendering.
- The Router needs only a Single Child element.
- In this, every component is specified in.

React Animation

The animation is a technique in which images are manipulated to appear as moving images. It is one of the most used techniques to make an interactive web application.
In React, we can add animation using an explicit group of components known as the React Transition Group. React Transition Group is an add-on component for managing component states and useful for defining entering and exiting transitions. It is not able to animate styles by itself. Instead, it exposes transition states, manages classes and group elements, and manipulates the DOM in useful ways. It makes the implementation of visual transitions much easier. React Transition group has mainly two APIs to create transitions. These are:

ReactTransitionGroup: It is used as a low-level API for animation.

ReactCSSTransitionGroup: It is used as a high-level API for implementing basic CSS transitions and animations.

The below command is used to install react transition group.

'npm install react-transition-group'

Problem Statement:

Implement React Router & Animation concepts using at least four components of your choice.

Source Code: React Router

App.js

```
import React, { Component } from 'react';
import { BrowserRouter as Router, Switch, Route, Link } from 'react-router-dom';
import Home from './components/Home';
import About from './components/About';
import Contact from './components/Contact';

class App extends Component {
  render() {
    return (
    <Router>
        <div>
          <h2>Welcome to React Router Tutorial</h2>
          <nav className="navbar navbar-expand-lg navbar-light bg-light">
          <ul className="navbar-nav mr-auto">
            <li><Link to={'/'} className="nav-link"> Home </Link></li>
            <li><Link to={'/contact'} className="nav-link">Contact</Link></li>
            <li><Link to={'/about'} className="nav-link">About</Link></li>
          </ul>
          </nav>
          <hr />
          <Switch>
              <Route exact path='/' component={Home} />
              <Route path='/contact' component={Contact} />
              <Route path='/about' component={About} />
          </Switch>
        </div>
      </Router>
    );
  }
}

export default App;
```

main.js

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

index.html

```
<!DOCTYPE html>

<html>
<head>
	<meta charset="UTF-8">
	<link href="https://fonts.googleapis.com/css?family=Open+Sans|Roboto"
rel="stylesheet">
	<link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0-beta/css/bootstrap.min.css"
integrity="sha384-
/Y6pD6FV/Vv2HJnA6t+vslU6fwYXjCFtcEpHbNJ0lyAFsXTsjBbfaDjzALeQsN6M"
crossorigin="anonymous">
	<title>React Router Tutorial</title>
</head>
<body>
	<div id="App" class="container"></div>
</body>
</html>
```

Home.js

```
import React, { Component } from 'react';
class Home extends Component {
  render() {
    return (
        <div>
          <h2>Home</h2>
          <p>Welcome to the Home Page!</p>
        </div>
    );
  }
}
export default Home;
```

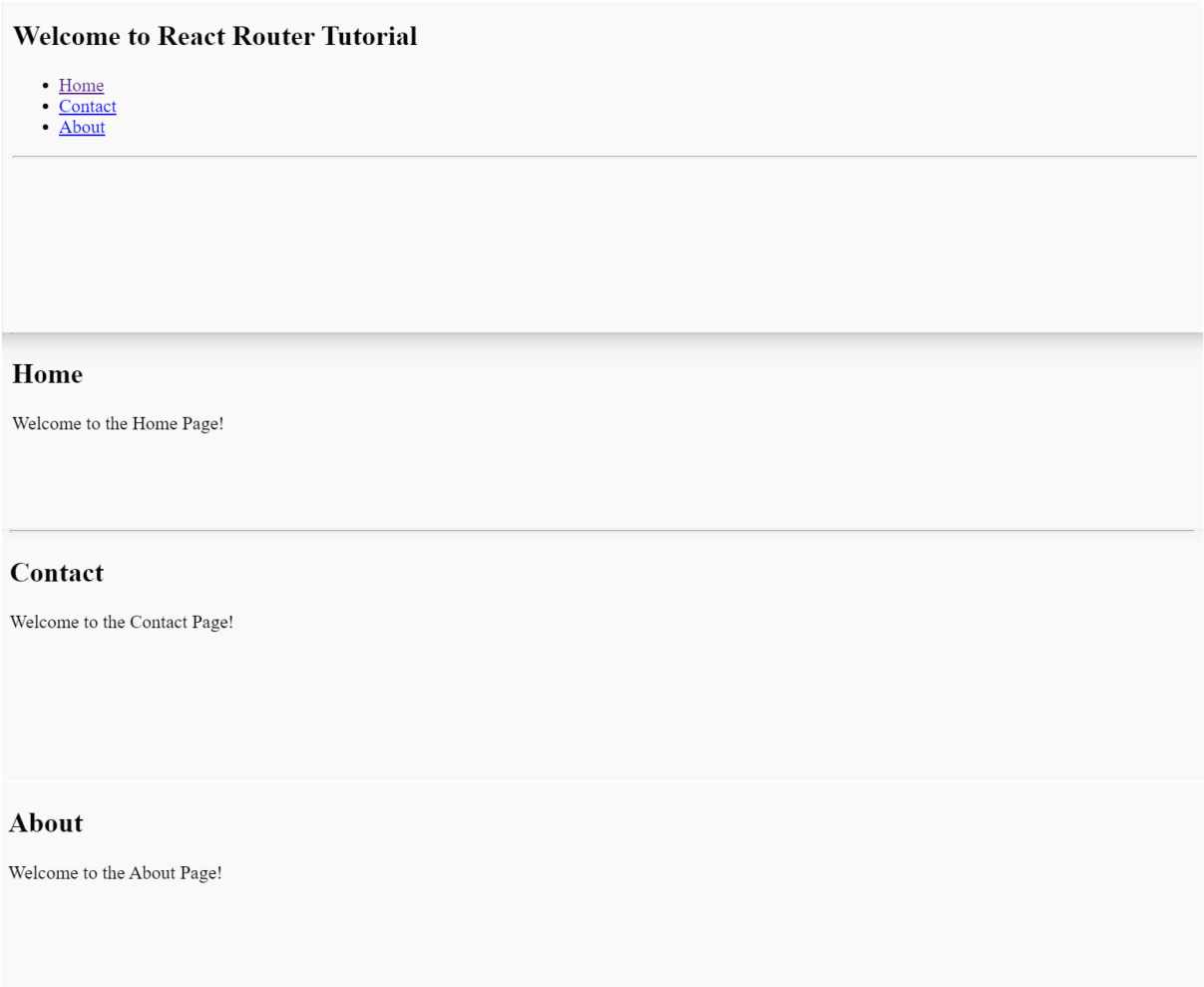
About.js

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

class About extends Component {
  render() {
    return (
        <div>
          <h2>About</h2>
          <p>Welcome to the About Page!</p>
        </div>
    );
  }
}

export default About;
```

Contact.js

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

class Contact extends Component {
  render() {
    return (
        <div>
          <h2>Contact</h2>
          <p>Welcome to the Contact Page!</p>
        </div>
    );
  }
}

export default Contact;
```

Output:



Source Code: React Animation

App.js

```
import React, { Component } from 'react';
import { CSSTransitionGroup } from 'react-transition-group';

class App extends React.Component {
    constructor(props) {
    super(props);
    this.state = {items: ['Eggs', 'Bread', 'Milk', 'Fruit','Fish']};
    this.handleAdd = this.handleAdd.bind(this);
  }

  handleAdd() {
    const newItems = this.state.items.concat([
      prompt('Enter Grocery items:')
    ]);
    this.setState({items: newItems});
  }

  handleRemove(i) {
    let newItems = this.state.items.slice();
    newItems.splice(i, 1);
    this.setState({items: newItems});
  }

  render() {
    const items = this.state.items.map((item, i) => (
      <div key={item} onClick={() => this.handleRemove(i)}>
        {item}
      </div>
    ));

    return (
      <div>
    <h1>Grocery List</h1>
            <button onClick={this.handleAdd}>Insert Item</button>
            <CSSTransitionGroup
               transitionName="example"
           transitionEnterTimeout={800}
               transitionLeaveTimeout={600}>
               {items}
            </CSSTransitionGroup>
      </div>
    );
  }
}
export default App;
```

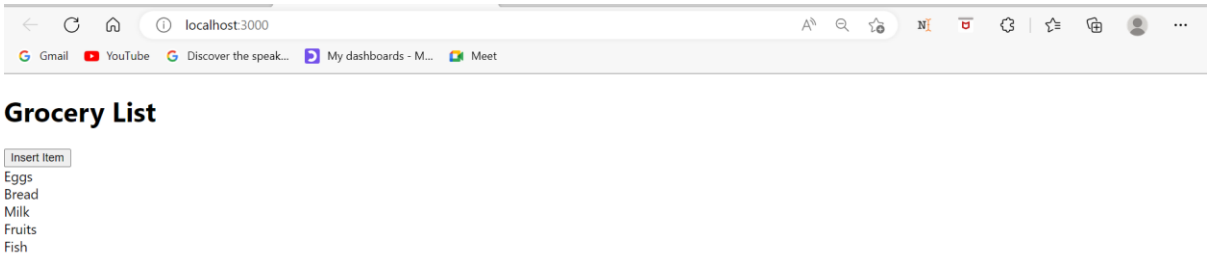
Main.js

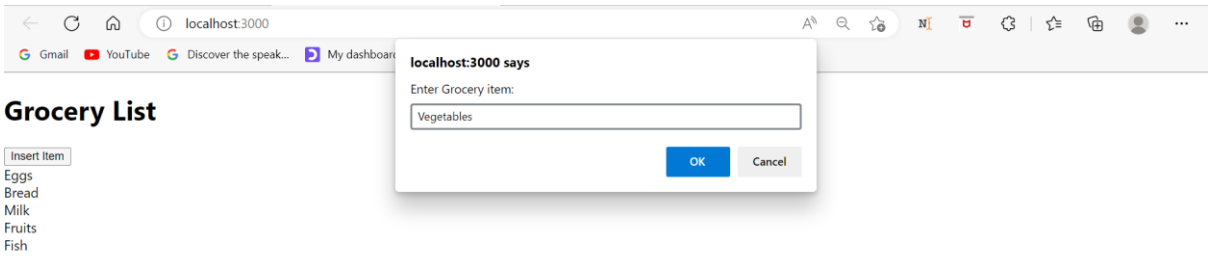
```
import React from 'react';
import ReactDOM from 'react-dom';
import App from './App.js';

ReactDOM.render(<App />, document.getElementById('app'));
```

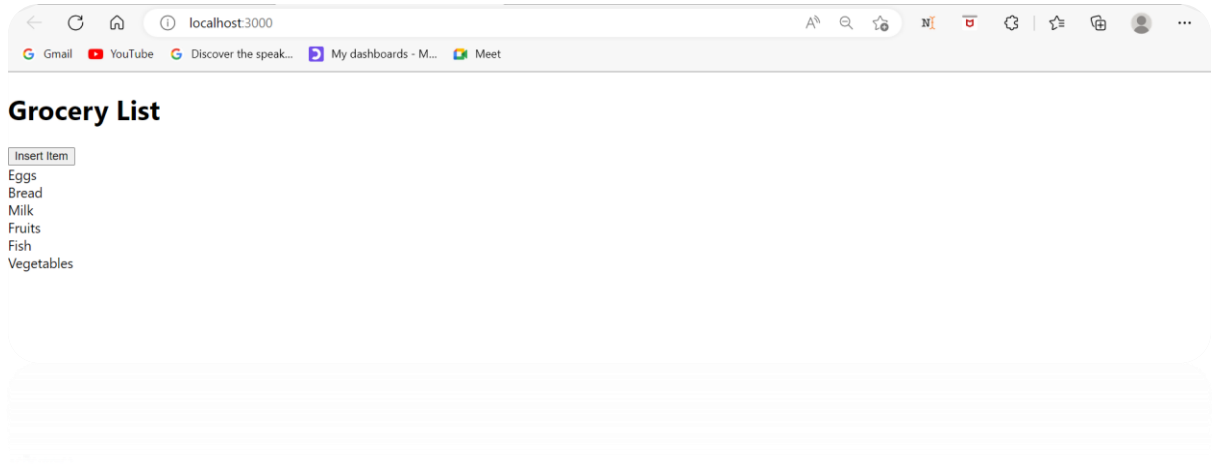
style.css

```
.example-enter {
  opacity: 0.01;
}

.example-enter.example-enter-active {
  opacity: 1;
  transition: opacity 500ms ease-in;
}

.example-leave {
  opacity: 1;
}

.example-leave.example-leave-active {
  opacity: 0.01;
  transition: opacity 300ms ease-in;
}
```

Output:







Conclusion:

After performing this experiment, we learned how react router and react animation works. We implemented react router on a single page web application to see and understand how it works. We also learned about various react animation components.