WEEK-6

React Fundamentals and Hands-On Exercises

# Single Page Application (SPA)

### public/index.html

html

Copy code

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8" />

<meta name="viewport" content="width=device-width, initial-scale=1.0" />

<title>SPA Example</title>

</head>

<body>

<div id="root"></div>

</body>

</html>

### src/index.js

jsx

Copy code

import React from 'react';

import ReactDOM from 'react-dom/client';

import App from './App';

import { BrowserRouter } from 'react-router-dom';

const root = ReactDOM.createRoot(document.getElementById('root'));

root.render(

<BrowserRouter>

<App />

</BrowserRouter>

);

### src/App.js

jsx

Copy code

import React from 'react';

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

import Home from './Home';

import About from './About';

import Contact from './Contact';

const App = () => {

return (

<div>

<h1>My Single Page Application (SPA)</h1>

<nav>

<Link to="/">Home</Link> |{' '}

<Link to="/about">About</Link> |{' '}

<Link to="/contact">Contact</Link>

</nav>

<hr />

<Routes>

<Route path="/" element={<Home />} />

<Route path="/about" element={<About />} />

<Route path="/contact" element={<Contact />} />

</Routes>

</div>

);

};

export default App;

### src/Home.js

jsx

Copy code

import React from 'react';

const Home = () => {

return <h2>Welcome to the Home Page!</h2>;

};

export default Home;

### src/About.js

jsx

Copy code

import React from 'react';

const About = () => {

return <h2>This is the About Page</h2>;

};

export default About;

### src/Contact.js

jsx

Copy code

import React from 'react';

const Contact = () => {

return <h2>Contact us at contact@example.com</h2>;

};

export default Contact;

# 2. Introduction to React

**src/index.js**

jsx

Copy code

import React from 'react';

import ReactDOM from 'react-dom/client';

import App from './App';

const root = ReactDOM.createRoot(document.getElementById('root'));

root.render(<App />);

**src/App.js**

jsx

Copy code

import React from 'react';

import Hello from './components/Hello';

function App() {

return (

<div>

<h1>Welcome to React!</h1>

<Hello name="Lahari" />

</div>

);

}

export default App;

**src/components/Hello.js**

jsx

Copy code

import React from 'react';

// Functional Component using props

const Hello = ({ name }) => {

return <h2>Hello, {name}! This is a React component.</h2>;

};

export default Hello;

**public/index.html (unchanged but important)**

html

Copy code

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8" />

<meta name="viewport" content="width=device-width, initial-scale=1.0" />

<title>React App</title>

</head>

<body>

<div id="root"></div> <!-- React DOM mounts here -->

</body>

</html>

npx create-react-app my-app  
cd my-app  
npm start

# React Components and Props

## src/index.js

jsx

Copy code

import React from 'react';

import ReactDOM from 'react-dom/client';

import App from './App';

const root = ReactDOM.createRoot(document.getElementById('root'));

root.render(<App />);

## src/App.js

jsx

Copy code

import React from 'react';

import Greeting from './components/Greeting';

function App() {

return (

<div>

<h1>React Components & Props Example</h1>

<Greeting name="Lahari" />

<Greeting name="John" />

<Greeting name="Emma" />

</div>

);

}

export default App;

## src/components/Greeting.js

jsx

Copy code

import React from 'react';

const Greeting = (props) => {

return (

<p>Hello, {props.name}! 👋</p>

);

};

export default Greeting;

## Output

React Components & Props Example

Hello, Lahari!

Hello, John!

Hello, Emma!

// Greeting.jsx  
import React from 'react';  
  
export function Greeting({ name }) {  
 return <h2>Hello, {name}</h2>;  
}  
  
// App.jsx  
import React from 'react';  
import { Greeting } from './Greeting';  
  
function App() {  
 return <Greeting name="Alice" />;  
}  
  
export default App;

# 4. React ES6 and JSX

const items = ['Apple', 'Banana'];  
const list = items.map((item, index) => <li key={index}>{item}</li>);

**public/index.html**

html

Copy code

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8" />

<meta name="viewport" content="width=device-width, initial-scale=1.0"/>

<title>React Components and Props</title>

</head>

<body>

<div id="root"></div>

</body>

</html>

**src/index.js**

jsx

Copy code

import React from 'react';

import ReactDOM from 'react-dom/client';

import App from './App';

const root = ReactDOM.createRoot(document.getElementById('root'));

root.render(<App />);

**src/App.js**

jsx

Copy code

import React from 'react';

import Greeting from './components/Greeting';

function App() {

return (

<div style={{ textAlign: 'center', marginTop: '50px' }}>

<h1>React Components & Props Example</h1>

<Greeting name="Lahari" />

<Greeting name="John" />

<Greeting name="Emma" />

</div>

);

}

export default App;

**src/components/Greeting.js**

jsx

Copy code

import React from 'react';

const Greeting = (props) => {

return (

<p style={{ fontSize: '20px' }}>

Hello, {props.name}! 👋

</p>

);

};

export default Greeting;

# 5. React Events and Forms

**public/index.html**

html

Copy code

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8" />

<meta name="viewport" content="width=device-width, initial-scale=1.0"/>

<title>React Events and Forms</title>

</head>

<body>

<div id="root"></div>

</body>

</html>

**src/index.js**

jsx

Copy code

import React from 'react';

import ReactDOM from 'react-dom/client';

import App from './App';

const root = ReactDOM.createRoot(document.getElementById('root'));

root.render(<App />);

**src/App.js**

jsx

Copy code

import React from 'react';

import ContactForm from './components/ContactForm';

function App() {

return (

<div style={{ padding: '20px' }}>

<h1>React Events & Forms Example</h1>

<ContactForm />

</div>

);

}

export default App;

**src/components/ContactForm.js**

jsx

Copy code

import React, { useState } from 'react';

const ContactForm = () => {

const [name, setName] = useState('');

const [email, setEmail] = useState('');

const [submittedData, setSubmittedData] = useState(null);

const handleSubmit = (e) => {

e.preventDefault(); // prevents page reload

setSubmittedData({ name, email });

setName('');

setEmail('');

};

return (

<div>

<form onSubmit={handleSubmit} style={{ marginTop: '20px' }}>

<div>

<label>Name: </label>

<input

type="text"

value={name}

onChange={(e) => setName(e.target.value)}

required

/>

</div>

<div style={{ marginTop: '10px' }}>

<label>Email: </label>

<input

type="email"

value={email}

onChange={(e) => setEmail(e.target.value)}

required

/>

</div>

<button type="submit" style={{ marginTop: '15px' }}>Submit</button>

</form>

{submittedData && (

<div style={{ marginTop: '20px' }}>

<h3>Submitted Data:</h3>

<p><strong>Name:</strong> {submittedData.name}</p>

<p><strong>Email:</strong> {submittedData.email}</p>

</div>

)}

</div>

);

};

export default ContactForm;

# 6. Conditional Rendering & Lists

**public/index.html**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8" />

<meta name="viewport" content="width=device-width, initial-scale=1.0"/>

<title>React Conditional Rendering & Lists</title>

</head>

<body>

<div id="root"></div>

</body>

</html>

**src/index.js**

import React from 'react';

import ReactDOM from 'react-dom/client';

import App from './App';

const root = ReactDOM.createRoot(document.getElementById('root'));

root.render(<App />);

**src/App.js**

import React from 'react';

import UserList from './components/UserList';

function App() {

return (

<div style={{ padding: '20px' }}>

<h1>React Conditional Rendering & Lists</h1>

<UserList />

</div>

);

}

export default App;

src/components/UserList.js

import React, { useState } from 'react';

const UserList = () => {

const [users, setUsers] = useState([

{ id: 1, name: 'Lahari', age: 21 },

{ id: 2, name: 'John', age: 25 },

{ id: 3, name: 'Emma', age: 23 }

]);

const [showList, setShowList] = useState(true);

const toggleList = () => {

setShowList(prev => !prev);

};

return (

<div>

<button onClick={toggleList}>

{showList ? 'Hide Users' : 'Show Users'}

</button>

{showList ? (

users.length > 0 ? (

<ul style={{ marginTop: '20px' }}>

{users.map(user => (

<li key={user.id}>

{user.name} - Age: {user.age}

</li>

))}

</ul>

) : (

<p>No users available.</p>

)

) : (

<p>List is hidden.</p>

)}

</div>

);

};

export default UserList;

# 7. Fetching Data from API

**public/index.html**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8" />

<meta name="viewport" content="width=device-width, initial-scale=1.0"/>

<title>React Fetch API</title>

</head>

<body>

<div id="root"></div>

</body>

</html>

**src/index.js**

import React from 'react';

import ReactDOM from 'react-dom/client';

import App from './App';

const root = ReactDOM.createRoot(document.getElementById('root'));

root.render(<App />);

**src/App.js**

import React from 'react';

import UserFetcher from './components/UserFetcher';

function App() {

return (

<div style={{ padding: '20px' }}>

<h1>Fetch Users from API</h1>

<UserFetcher />

</div>

);

}

export default App;

**src/components/UserFetcher.js**

import React, { useEffect, useState } from 'react';

const UserFetcher = () => {

const [users, setUsers] = useState([]);

const [loading, setLoading] = useState(true);

const [error, setError] = useState(null);

// Fetch API on component mount

useEffect(() => {

fetch('https://jsonplaceholder.typicode.com/users') // dummy API

.then(response => {

if (!response.ok) {

throw new Error('Something went wrong');

}

return response.json();

})

.then(data => {

setUsers(data);

setLoading(false);

})

.catch(err => {

setError(err.message);

setLoading(false);

});

}, []);

if (loading) return <p>Loading users...</p>;

if (error) return <p>Error: {error}</p>;

return (

<ul>

{users.map(user => (

<li key={user.id}>

<strong>{user.name}</strong> - {user.email}

</li>

))}

</ul>

);

};

export default UserFetcher;