Unit 6

Q.1) Create an application in ReactJS form and add client and server side validation.

We need to install axios

In command prompt type command npm install axios.

Create componets folder in src and add file

FormValidation.js

```
import React, { useState } from 'react';
import axios from 'axios';

const FormValidation = () => {
  const [formData, setFormData] = useState({
    name: '',
    email: '',
    password: '',
  });

  const [errors, setErrors] = useState({});
  const [serverMessage, setServerMessage] = useState('');

  const handleChange = (e) => {
    const { name, value } = e.target;
    setFormData({ ...formData, [name]: value });
  };
  const validate = () => {
    const newErrors = {};

    if (!formData.name.trim()) newErrors.name = 'Name is required.';
    if (!formData.email.trim()) {
      newErrors.email = 'Email is required.';
    } else if (!/\S+@\S+\.\S+/.test(formData.email)) {
      newErrors.email = 'Email format is invalid.';
    }

    if (!formData.password) {
      newErrors.password = 'Password is required.';
    } else if (formData.password.length < 8) {
      newErrors.password = 'Password must be at least 8 characters.';
    } else if (!/[A-Z]/.test(formData.password)) {
      newErrors.password = 'Password must contain at least one uppercase letter.';
    }

    setErrors(newErrors);
    return Object.keys(newErrors).length === 0;
  };

  const mockServerValidation = async (data) => {
    try {
      const response = await axios.post('/api/validate', data);
      return response.data;
    } catch (error) {
      return error.response.data;
    }
  };

  const handleSubmit = async (e) => {
    e.preventDefault();

    setServerMessage('');
```

```
    if (validate()) {
      const serverResponse = await mockServerValidation(formData);
      if (serverResponse.success) {
        setServerMessage('Form submitted successfully!');
        setFormData({ name: '', email: '', password: '' }); // Reset form
      } else {
        setErrors(serverResponse.errors);
      }
    }
  };

  return (
    <div style={styles.container}>
      <h2 style={styles.header}>React Form with Validation</h2>
      <form onSubmit={handleSubmit} style={styles.form}>
        <div style={styles.field}>
          <label style={styles.label}>Name:</label>
          <input
            type="text"
            name="name"
            value={formData.name}
            onChange={handleChange}
            style={styles.input}
          />
          {errors.name && <p style={styles.error}>{errors.name}</p>}
        </div>
        <div style={styles.field}>
          <label style={styles.label}>Email:</label>
          <input
```

```
            type="email"
            name="email"
            value={formData.email}
            onChange={handleChange}
            style={styles.input}
          />
          {errors.email && <p style={styles.error}>{errors.email}</p>}
        </div>
        <div style={styles.field}>
          <label style={styles.label}>Password:</label>
          <input
            type="password"
            name="password"
            value={formData.password}
            onChange={handleChange}
            style={styles.input}
          />
          {errors.password && <p style={styles.error}>{errors.password}</p>}
        </div>
        <button type="submit" style={styles.button}>Submit</button>
      </form>
      {serverMessage && <p style={styles.success}>{serverMessage}</p>}
    </div>
  );
};

// Mock server-side validation API
axios.post = (url, data) => {
  return new Promise((resolve, reject) => {
    setTimeout(() => {
      if (data.email === 'taken@example.com') {
        reject({
          response: {
            data: {
              success: false,
              errors: { email: 'Email is already taken.' },
            },
          },
        });
      } else {
        resolve({ data: { success: true } });
      }
    }, 1000);
  });
};

const styles = {
  container: {
    maxWidth: '400px',
    margin: '20px auto',
    padding: '20px',
    background: '#fff',
    boxShadow: '0px 4px 6px rgba(0, 0, 0, 0.1)',
    borderRadius: '8px',
  },
  header: { textAlign: 'center', marginBottom: '20px', fontSize: '1.5rem' },
  form: { display: 'flex', flexDirection: 'column' },
  field: { marginBottom: '15px' },
  label: { marginBottom: '5px', fontWeight: 'bold' },
  input: {
    padding: '10px',
    border: '1px solid #ccc',
    borderRadius: '4px',
    width: '100%',
  },
  button: {
    padding: '10px',
    backgroundColor: '#4CAF50',
    color: '#fff',
    border: 'none',
    borderRadius: '4px',
    cursor: 'pointer',
    fontWeight: 'bold',
  },
  error: { color: 'red', fontSize: '0.9rem' },
  success: { color: 'green', fontSize: '1rem', marginTop: '15px' },
};
export default FormValidation;
```

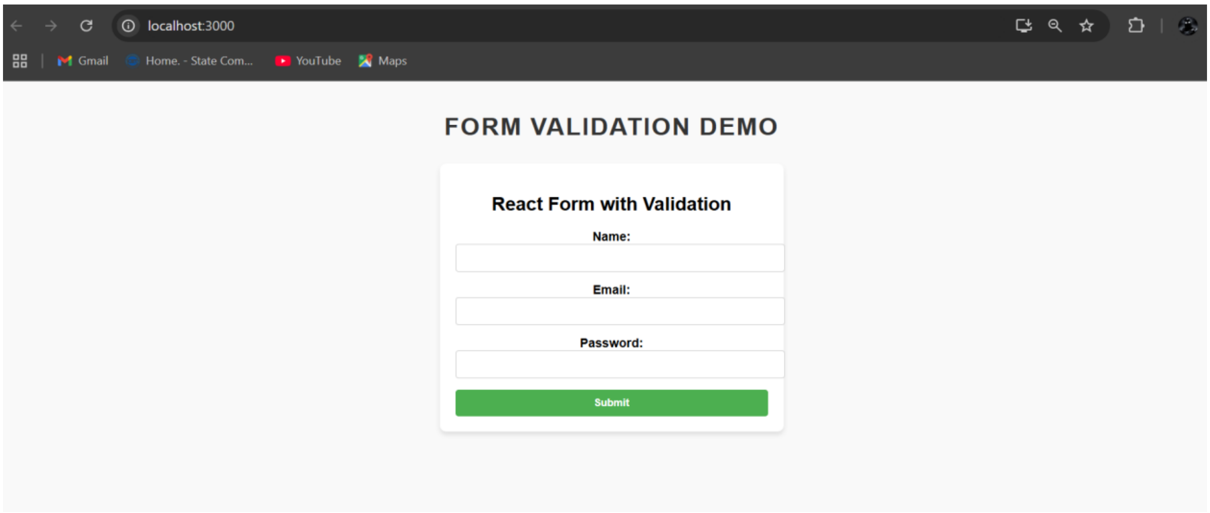
App.js

```
import React from 'react';
import './App.css';
import FormValidation from './components/FormValidation';
function App() {
  return (
    <div className="App">
      <h1>Form Validation Demo</h1>
      <FormValidation />
    </div>
  );
}
export default App;
```

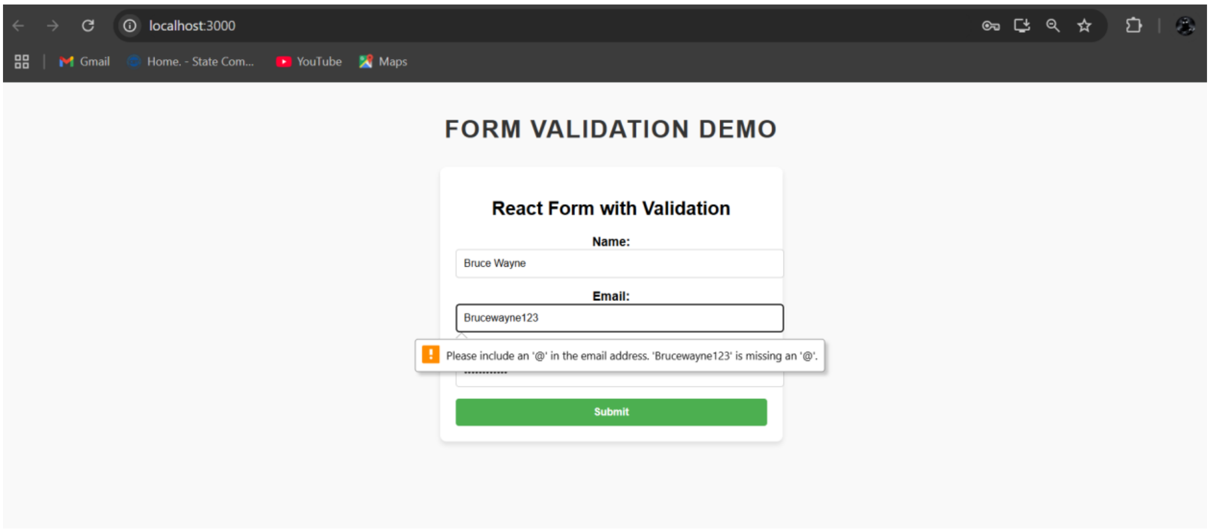
index.js

```
import React from "react";
import ReactDOM from "react-dom/client";
import "./index.css";
import App from "./App";
import reportWebVitals from "./reportWebVitals";
const root = ReactDOM.createRoot(document.getElementById("root"));
root.render(
  <React.StrictMode>
    <App />
  </React.StrictMode>
);
reportWebVitals();
```

Output :



Email validation



FORM VALIDATION DEMO

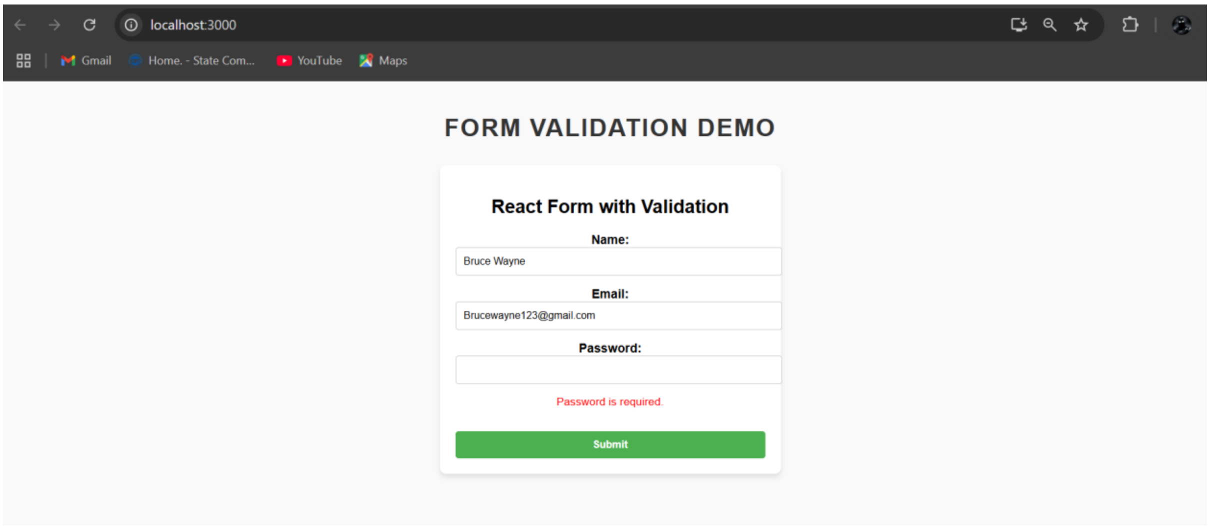
React Form with Validation

Name: Bruce Wayne

Email: Brucewayne123

Please include an '@' in the email address. 'Brucewayne123' is missing an '@'.

Password requirement



FORM VALIDATION DEMO

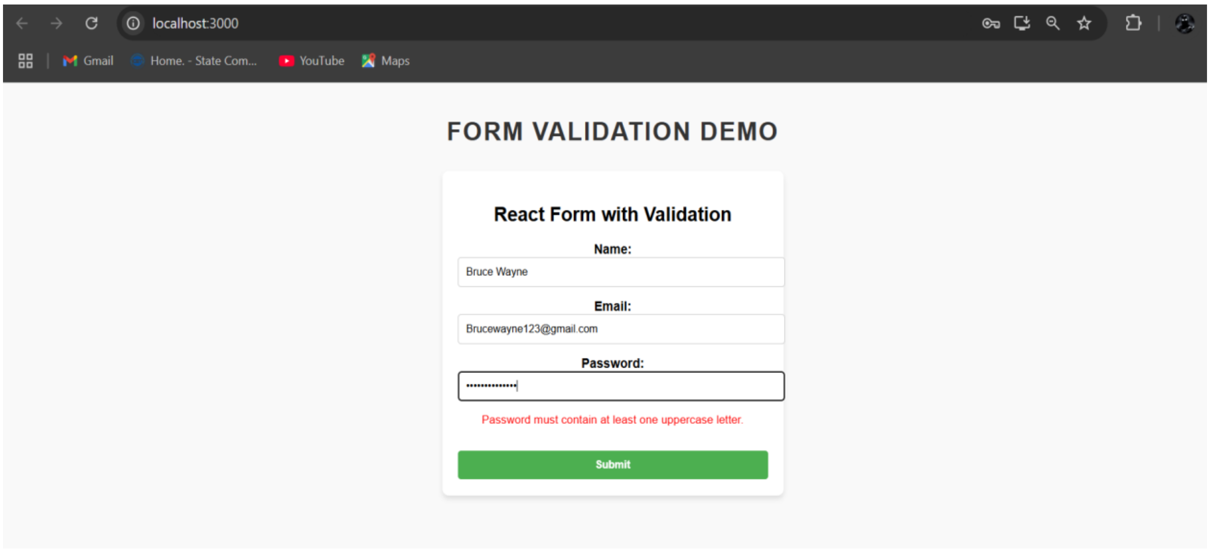
React Form with Validation

Name: Bruce Wayne

Email: Brucewayne123@gmail.com

Password:

Password is required.



FORM VALIDATION DEMO

React Form with Validation

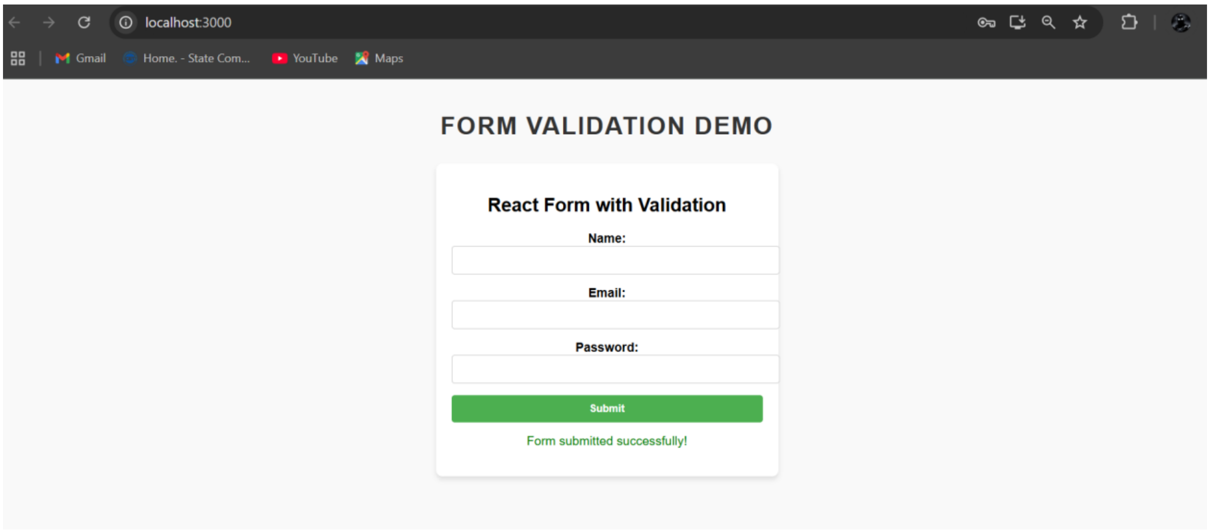
Name: Bruce Wayne

Email: Brucewayne123@gmail.com

Password: ••••••••••••••

Password must contain at least one uppercase letter.

If everything is correct.



FORM VALIDATION DEMO

React Form with Validation

Name:

Email:

Password:

Form submitted successfully!

Q.2) Create an application to implement react hooks.

In the src folder create component folder and add following files.

AppContext.js

```
import React, { createContext } from 'react';
export const AppContext = createContext();
export const AppProvider = ({ children }) => {
  const user = { name: 'John Doe', age: 30 };
  return <AppContext.Provider value={user}>{children}</AppContext.Provider>;
};
```

ContextDemo.js

```
import React, { useContext } from 'react';
import { AppContext } from './AppContext';
const ContextDemo = () => {
const user = useContext(AppContext);
  return (
    <div style={styles.container}>
      <h3>useContext Demo</h3>
      <p>Name: {user.name}</p>
      <p>Age: {user.age}</p>
    </div>
  );
};
const styles = {
  container: { margin: '10px 0', padding: '10px', border: '1px solid #ccc', borderRadius: '5px' },
};

export default ContextDemo;
```

EffectDemo.js

```
import React, { useState } from 'react';
const StateDemo = () => {
 const [count, setCount] = useState(0);
  return (
    <div style={styles.container}>
      <h3>useState Demo</h3>
      <p>Count: {count}</p>
      <button onClick={() => setCount(count + 1)} style={styles.button}>Increment</button>
      <button onClick={() => setCount(count - 1)} style={styles.button}>Decrement</button>
    </div>
  );
};
const styles = {
  container: { margin: '10px 0', padding: '10px', border: '1px solid #ccc', borderRadius: '5px' },
   button: { margin: '5px', padding: '5px 10px', backgroundColor: '#4caf50', color: 'white', border: 'none', borderRadius: '3px' },
};
export default StateDemo;
```

ReducerDemo.js

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

const initialState = { count: 0 };

function reducer(state, action) {
  switch (action.type) {
    case 'increment':
      return { count: state.count + 1 };
    case 'decrement':
      return { count: state.count - 1 };
    case 'reset':
      return { count: 0 };
    default:
      return state;
  }
}

const ReducerDemo = () => {
 const [state, dispatch] = useReducer(reducer, initialState);

  return (
    <div style={styles.container}>
      <h3>useReducer Demo</h3>
      <p>Count: {state.count}</p>
      <button onClick={() => dispatch({ type: 'increment' })} style={styles.button}>Increment</button>
      <button onClick={() => dispatch({ type: 'decrement' })} style={styles.button}>Decrement</button>
      <button onClick={() => dispatch({ type: 'reset' })} style={styles.button}>Reset</button>
    </div>
  );
};
const styles = {
  container: { margin: '10px 0', padding: '10px', border: '1px solid #ccc', borderRadius: '5px' },
   button: { margin: '5px', padding: '5px 10px', backgroundColor: '#008cba', color: 'white', border: 'none', borderRadius: '3px' },
};
export default ReducerDemo;
```

RefDemo.js

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


const RefDemo = () => {
 const inputRef = useRef();
  const focusInput = () => {
    inputRef.current.focus();
  };
  return (
    <div style={styles.container}>
      <h3>useRef Demo</h3>
      <input type="text" ref={inputRef} placeholder="Focus me!" style={styles.input} />
      <button onClick={focusInput} style={styles.button}>Focus Input</button>
    </div>
  );
};
const styles = {
  container: { margin: '10px 0', padding: '10px', border: '1px solid #ccc', borderRadius: '5px' },
  input: { width: '100%', padding: '5px', margin: '10px 0', borderRadius: '3px', border: '1px solid #ccc' },
   button: { margin: '5px', padding: '5px 10px', backgroundColor: '#f0ad4e', color: 'white', border: 'none', borderRadius: '3px' },
};
export default RefDemo;
```

StateDemo.js

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


const StateDemo = () => {
const [count, setCount] = useState(0);
```

```
  return (
    <div style={styles.container}>
      <h3>useState Demo</h3>
      <p>Count: {count}</p>
      <button onClick={() => setCount(count + 1)} style={styles.button}>Increment</button>
      <button onClick={() => setCount(count - 1)} style={styles.button}>Decrement</button>
    </div>
  );
};
const styles = {
  container: { margin: '10px 0', padding: '10px', border: '1px solid #ccc', borderRadius: '5px' },
  button: { margin: '5px', padding: '5px 10px', backgroundColor: '#4caf50', color: 'white', border: 'none', borderRadius: '3px' },
};
export default StateDemo;
```

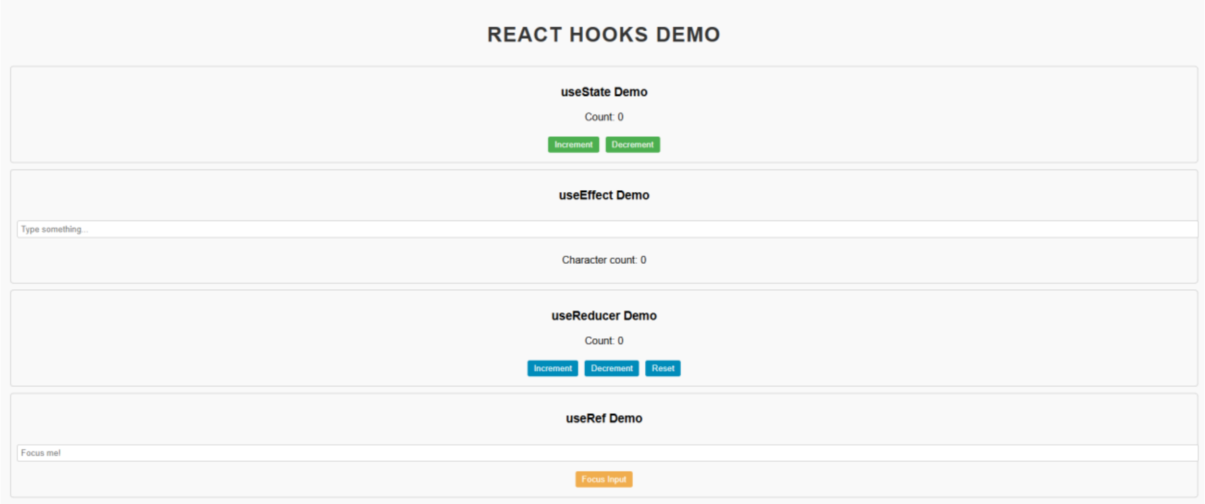
App.js

```
import React from 'react';
import './App.css';
import StateDemo from './components/StateDemo';
import EffectDemo from './components/EffectDemo';
import ReducerDemo from './components/ReducerDemo';
import RefDemo from './components/RefDemo';
import ContextDemo from './components/ContextDemo';
import { AppProvider } from './components/AppContext';
function App() {
  return (
    <AppProvider>
      <div className="App">
        <h1>React Hooks Demo</h1>
        <StateDemo />
        <EffectDemo />
        <ReducerDemo />
        <RefDemo />
        <ContextDemo />
      </div>
    </AppProvider>
  );
}
export default App;
```

index.js

```
import React from "react";
import ReactDOM from "react-dom/client";
import "./index.css";
import App from "./App";
import reportWebVitals from "./reportWebVitals";
const root = ReactDOM.createRoot(document.getElementById("root"));
root.render(
  <React.StrictMode>
    <App />
  </React.StrictMode>
);
reportWebVitals();
```

Output :



REACT HOOKS DEMO

useState Demo

Count: 0

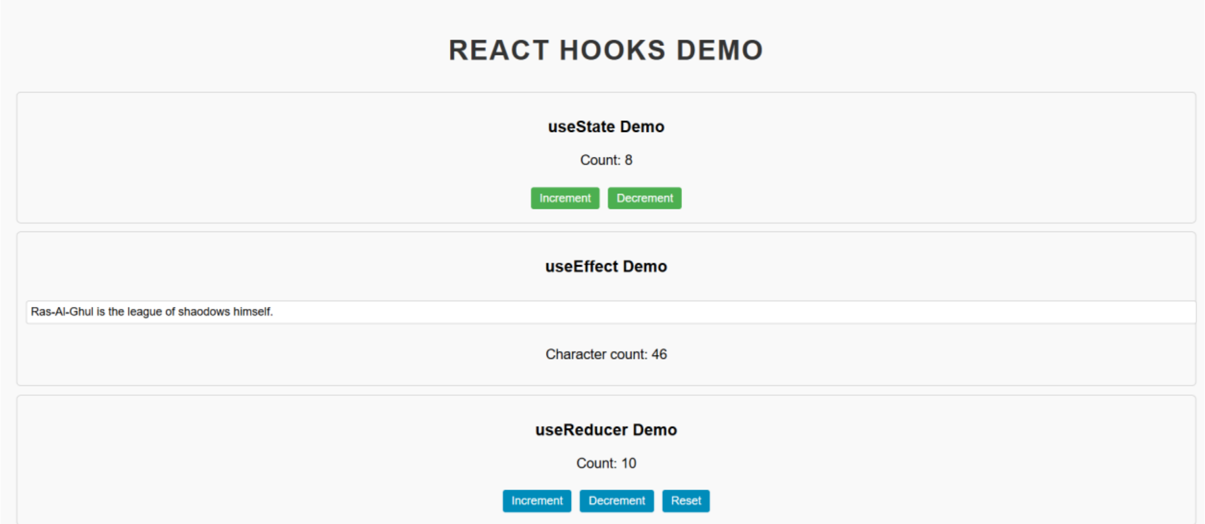
useEffect Demo

Character count: 0

useReducer Demo

Count: 0

useRef Demo



REACT HOOKS DEMO

useState Demo

Count: 8

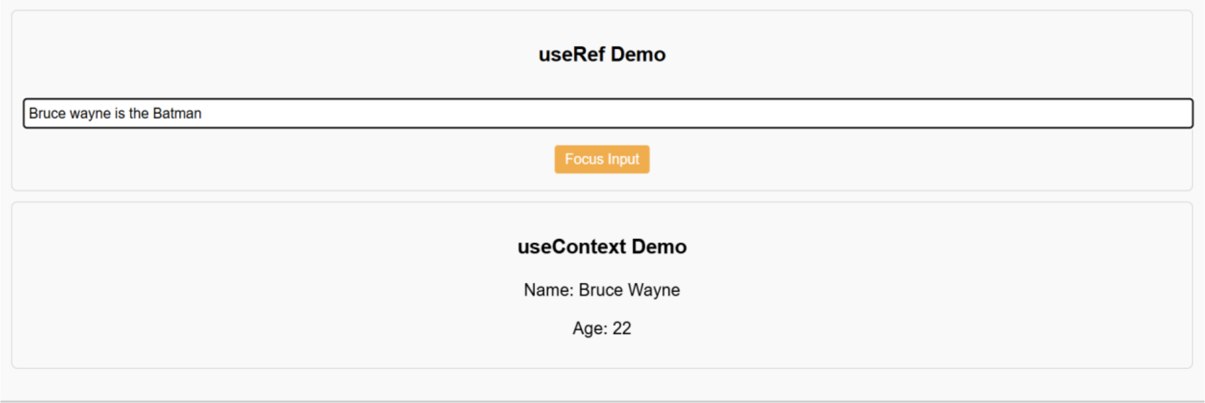
useEffect Demo

Ras-Al-Ghul is the league of shaodows himself.

Character count: 46

useReducer Demo

Count: 10



useRef Demo

Bruce wayne is the Batman

useContext Demo

Name: Bruce Wayne

Age: 22