Practical 1:

Create a new react application which shows the implementation of Table.

Applying Table component

First of all, create a new react application and start it using below command.

```
create-react-app myapp
cd myapp
npm start
```

Next, install the bootstrap and react-bootstrap library using below command,

```
npm install --save bootstrap react-bootstrap
```

Next, open *App.css* (src/App.css) and remove all CSS classes.

```
// remove all css classes
```

Next, create a simple table component, *SimpleTable* (src/SimpleTable.js) and render a table as shown below –

App.js

```
import { Table } from 'react-bootstrap';
function SimpleTable() {
  return (
    <Table striped bordered hover>
      <thead>
        <tr>
          <th>#</th>
          <th>Name</th>
          <th>Age</th>
```

```
            <th>Email</th>
          </tr>
        </thead>
        <tbody>
          <tr>
            <td>1</td>
            <td>John</td>
            <td>25</td>
            <td>john.example@tutorialspoint.com</td>
          </tr>
          <tr>
            <td>1</td>
            <td>Peter</td>
            <td>15</td>
            <td>peter.example@tutorialspoint.com</td>
          </tr>
          <tr>
            <td>1</td>
            <td>Olivia</td>
            <td>23</td>
            <td>olivia.example@tutorialspoint.com</td>
          </tr>
        </tbody>
      </Table>
   );
}
export default SimpleTable;
```

index.js

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

```
import "bootstrap/dist/css/bootstrap.min.css";
import SimpleTable from './SimpleTable'
function App() {
  return (
    <div className="container">
      <div style={{ padding: "10px" }}>
        <div>
          <SimpleTable />
        </div>
      </div>
    </div>
  );
}
export default App;
```

Practical 2:

Create a new react application which shows the implementation of Counter.

Counter Example:

App.js

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

function Counter() {
  const [count, setCount] = useState(0); // Initialize count state
to 0

  const increment = () => {
    setCount(count + 1); // Update count state
  };

  const decrement = () => {
    setCount(count - 1); // Update count state
  };

  return (
    <div>
      <h2>Count: {count}</h2>
      <button onClick={increment}>Increment</button>
      <button onClick={decrement}>Decrement</button>
    </div>
  );
}

export default Counter;
```

index.js

```
import React from 'react';
import ReactDOM from 'react-dom/client';
import './index.css';
import Counter from './App';
import reportWebVitals from './reportWebVitals';

const root =
ReactDOM.createRoot(document.getElementById('root'));
root.render(
  <Counter/>
);

reportWebVitals();
```

Practical 3:

Create a new react application which shows the implementation of List.

App.js

```
import React from 'react';

function ShoppingList() {
  const products = [
    { id: 1, title: 'Apples' },
    { id: 2, title: 'Bananas' },
    { id: 3, title: 'Milk' },
  ];

  return (
    <div>
      <h2>Shopping List</h2>
      <ul>
        {products.map(product => (
          <li key={product.id}>{product.title}</li>
        ))}
      </ul>
    </div>
  );
}

export default ShoppingList;
```

index.js

```
import React from 'react';
```

```
import ReactDOM from 'react-dom/client';
import './index.css';
import ShoppingList from './App';
import reportWebVitals from './reportWebVitals';

const root =
ReactDOM.createRoot(document.getElementById('root'));
root.render(
  <ShoppingList/>
);
reportWebVitals();
```

Output:

Practical 4:

Create a new react application which shows the implementation of Router which helps to route to pages

Add React Router

To add React Router in your application, run this in the terminal from the root directory of the application:

```
npm i -D react-router-dom
```

or

npm install react-router-dom

Create React App using following command:

npx create-react-app routingeg

Within the src folder, we'll create a folder named pages with several files:

src\:

- Layout.js
- Home.js
- Blogs.js
- Contact.js
- NoPage.js

Each file will contain a very basic React component.

Use React Router to route to pages based on URL:

App.js:

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

```
import "./App.css"
import Home from "./Home";
import About from "./About";
import Contact from "./Contact";
import Navigate from "./Navigate";
function App() {
 return (
  <div className="App">
   <BrowserRouter>
    <Routes>
     <Route path="/" element={<Navigate />}>
      <Route index element={<Home />} />

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

      <Route path="Contact" element={<Contact />} />
     </Route>
    </Routes>
   </BrowserRouter>
  </div>
 );
}
export default App;
```

Practical 5

Create and validate the user form in React.

Create new React App with name Practical4b by using following command:

npx create-react-app practical4b

Here we are renaming App.js to UserForm.js

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

function UserForm() {
  const [formData, setFormData] = useState({
    username: '',
    email: '',
    password: '',
  });
  const [errors, setErrors] = useState({});

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

  const validateForm = () => {
    let newErrors = {};
    if (!formData.username) {
      newErrors.username = 'Username is required';
    }
    if (!formData.email) {
      newErrors.email = 'Email is required';
    } else if (!/\S+@\S+\.\S+/.test(formData.email)) {
```

```
      newErrors.email = 'Email address is invalid';
    }
    // Add more validation rules for password, etc.
    setErrors(newErrors);
    return Object.keys(newErrors).length === 0; // Return true
if no errors
  };

  const handleSubmit = (e) => {
    e.preventDefault(); // Prevent default form submission
    if (validateForm()) {
      // Form is valid, proceed with submission (e.g., API call)
      console.log('Form submitted:', formData);
    } else {
      console.log('Form has errors');
    }
  };

  return (
    <form onSubmit={handleSubmit}>
      <div>
        <label htmlFor="username">Username:</label>
        <input
          type="text"
          id="username"
          name="username"
          value={formData.username}
          onChange={handleChange}
        />
        {errors.username && <p style={{ color: 'red'
}}>{errors.username}</p>}
```

```
      </div>
      <div>
        <label htmlFor="email">Email:</label>
        <input
          type="email"
          id="email"
          name="email"
          value={formData.email}
          onChange={handleChange}
        />
        {errors.email && <p style={{ color: 'red'
}}>{errors.email}</p>}
      </div>
      {/* Add password field and other inputs similarly */}
      <button type="submit">Register</button>
    </form>
  );
}

export default UserForm;
```

index.js

```
import React from 'react';
import ReactDOM from 'react-dom/client';
import './index.css';
import reportWebVitals from './reportWebVitals';
import UserForm from './UserForm';

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

```
    <UserForm/>

);
reportWebVitals();
```

Run the app by using following command:

Practical 6

Create Chat application by using Socket.IO

Create Folder chat-server

```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals> mkdir chat-server
```

```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals> cd .\chat-server\
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server> npm init -y
```

```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server> npm install express socket.io cors

added 92 packages, and audited 93 packages in 5s
```

Create folders client and server

```
found 0 vulnerabilities
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server> mkdir client
```

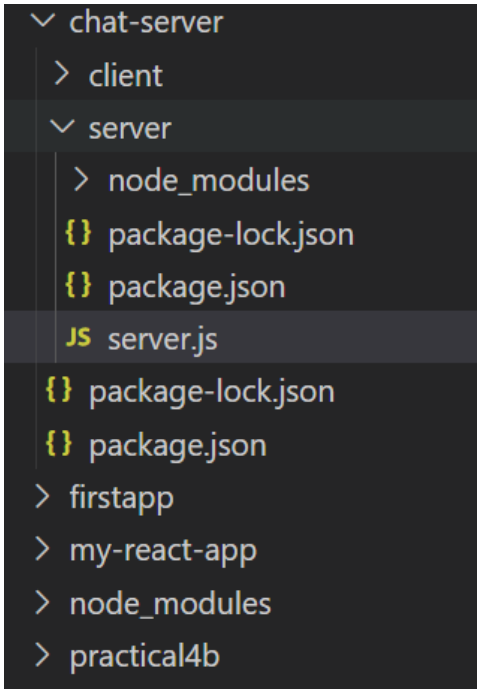
```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server> mkdir server
```

Be inside the server folder

```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server> cd .\server\
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server\server> npm init -y
```

```
Focus folder in explorer (ctrl + click)
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server\server> npm install express socket.io cors
```

Create a file in server with name server.js




```
// server/server.js
const express = require('express');
const http = require('http');
const socketIo = require('socket.io');
const cors = require('cors');

const app = express();
const server = http.createServer(app);
const io = socketIo(server, {
    cors: {
        origin: '*', // Allow all origins for development, restrict in production
        methods: ['GET', 'POST']
    }
});

app.use(cors()); // Use CORS middleware for Express routes if needed
```

```
  io.on('connection', (socket) => {
    console.log('A user connected:', socket.id);

    socket.on('message', (message) => {
      console.log('Message received:', message);
      io.emit('message', message); // Broadcast message to
all connected clients
    });

    socket.on('disconnect', () => {
      console.log('User disconnected:', socket.id);
    });
  });

  const PORT = process.env.PORT || 5000;
  server.listen(PORT, () => {
    console.log(`Server running on port ${PORT}`);
  });
```

Create a react app with name client using the following

```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server\client> cd..
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server> npx create-react-app client
```

If some warning occurs like this

```
9 vulnerabilities (3 moderate, 6 high)

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

Run `npm audit` for details.
```

Then the following command

```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server\client> npm audit fix --force
```

Install dependencies

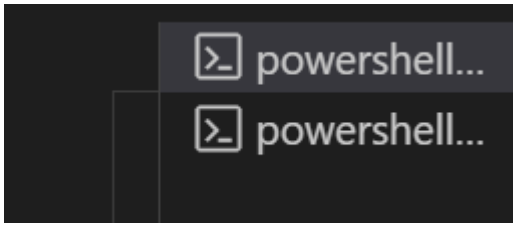
```
found 0 vulnerabilities
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server\client> npm install socket.io-client
```

In under client src App.js

```
// client/src/App.js
import React, { useState, useEffect } from 'react';
import io from 'socket.io-client';

const socket = io('http://localhost:5000'); // Connect to your server

function App() {
  const [message, setMessage] = useState('');
  const [messages, setMessages] = useState([]);

  useEffect(() => {
    socket.on('message', (msg) => {
      setMessages((prevMessages) => [...prevMessages, msg]);
    });

    return () => {
      socket.off('message');
    };
  }, []);

  const sendMessage = (e) => {
    e.preventDefault();
    if (message.trim()) {
```

```
            socket.emit('message', message);
            setMessage('');
        }
    };

    return (
        <div>
            <h1>Real-time Chat</h1>
            <div>
                {messages.map((msg, index) => (
                    <p key={index}>{msg}</p>
                ))}
            </div>
            <form onSubmit={sendMessage}>
                <input
                    type="text"
                    value={message}
                    onChange={(e) => setMessage(e.target.value)}
                    placeholder="Type a message..."
                />
                <button type="submit">Send</button>
            </form>
        </div>
    );
}

export default App;
```

Open two terminal



In one terminal

```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server\server> node server.js
Server running on port 5000
```

In second terminal

```
PS E:\BSc_new\TY\Sem-V\MERN\Practicals\chat-server\client> npm start
```

Real-time Chat

hii

how are you

Type a message... Send

We can check message in server terminal

```
User disconnected: CQ30p2VONy6aT4ssAAAL
User disconnected: hX3jr2YyfwuLx3qbAAAJ
User disconnected: 2XMcQdjOE6sWTSf8AAAB
A user connected: -39IJw8vOGpBKbLLAAAN
Message received: hii
Message received: how are you
```

ERROR in [eslint] Failed to load config "react-app" to extend from.

npm install --save-dev eslint-config-react-app

Practical 7:

Fetch the API data and render the list on React app.

Create new React App with name Practical5 by using following command:

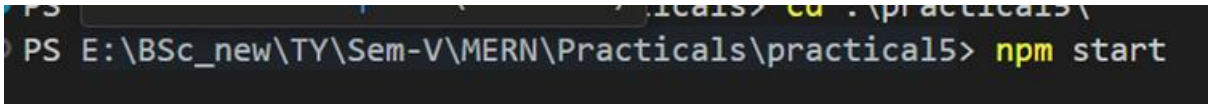
```
npx create-react-app practical5
```

Here we are renaming App.js to FetchData.js

```
import React, { useEffect, useState } from 'react'
//import './App.css';
function FetchData() {
  const [records, setrecords] = useState([])
  useEffect(()=>{
    fetch('https://jsonplaceholder.typicode.com/users')
    .then(response => response.json())
    .then(data => setrecords(data))
    .catch(err => console.log(err))
  },[]  )
  return (
    <div>
      <ul> {records.map((list,index)=>(
          <li key={index} > {list.id} | {list.name}</li>  ))}
      </ul>
      </div>  );
```

}export default FetchData;

Run the app by using following command:



Practical 8:

In Angular create TODO list with different components.

Todolist.js

```
import React,{useState} from "react"

function ToDoList(){

  const [tasks,setTasks] = useState(["Eat Breakfast","Take Shower"]);

   const [newTask,setNewTask] = useState("");


   function handleInputChange(event) {

     setNewTask(event.target.value);

   }

   function addTask(){

      if(newTask.trimEnd()!==""){

      setTasks(t=>[...tasks,newTask]);

      setNewTask("");

      }

}

function deleteTask(index){

      const updatedTasks = tasks.filter((_, i) => i !== index);

      setTasks(updatedTasks);
```

```
    }
    function moveTaskUp(index){
        if(index>0){
        const updatedTasks=[...tasks];
        [updatedTasks[index],updatedTasks[index-1]]=
        [updatedTasks[index-1],updatedTasks[index]];
        setTasks(updatedTasks);
    }
}
    function moveTaskDown(index){
    if(index < tasks.length - 1){
        const updatedTasks=[...tasks];
        [updatedTasks[index],updatedTasks[index+1]]=
        [updatedTasks[index+1],updatedTasks[index]];
        setTasks(updatedTasks);
    }
}
        return(
            <div className="to-do-list">
                <h1>To-Do-List</h1>
```

```
<div>
    <input
    type="text"
    placeholder="Enter a task.."
    value={newTask}
    onChange={handleInputChange}></input>
<button
   className="add-button"
   onClick={addTask}></button>
</div>
<ol>
   {tasks.map((task,index)=>
      <li key={index}>
         <span className="text">{task}</span>
         <button
            className="delete-button"
            onClick={()=>deleteTask(index)}>
               Delete
               </button>
            <button
```

```
                    className="move-button"
                    onClick={()=>moveTaskUp(index)}>
                        Up
                    </button>
                    <button
                    className="move-button"
                    onClick={()=>moveTaskDown(index)}>
                        Down
                    </button>

                </li>
                    )}

            </ol>
            </div>);
}

export default ToDoList
```

App.js

```
import ToDoList from "./ToDoList.js";
function App(){
    return(<ToDoList/>)
}
export default App
```

Index.js

```
import React from 'react';
import ReactDOM from 'react-dom/client';
import './indexx.css';
import App from './App';
import reportWebVitals from './reportWebVitals';

const root =
ReactDOM.createRoot(document.getElementById('root'));
root.render(
  <React.StrictMode>
    <App />
  </React.StrictMode>
);
```

// If you want to start measuring performance in your app, pass a function

// to log results (for example: reportWebVitals(console.log))

// or send to an analytics endpoint. Learn more: https://bit.ly/CRA-vitals

reportWebVitals();

Practical 9:

Fetch the API data and render the list on Angular app.

App.js

```
angular.module('todoApp', [])
    .controller('TodoController', function($scope) {
        $scope.todos = [
            { text: 'Learn AngularJS', done: false },
            { text: 'Build a To-Do list', done: true }
        ];

        $scope.addTodo = function() {
            if ($scope.newTodoText) {
                $scope.todos.push({ text: $scope.newTodoText,
done: false });
                $scope.newTodoText = ''; // Clear input
            }
        };

        $scope.removeTodo = function(todoToRemove) {
            $scope.todos = $scope.todos.filter(function(todo) {
                return todo !== todoToRemove;
            });
```

```
    };

    $scope.remaining = function() {
        var count = 0;
        angular.forEach($scope.todos, function(todo) {
            count += todo.done ? 0 : 1;
        });
        return count;
    };
});
```

Index.html

```
<!DOCTYPE html>
<html lang="en" ng-app="todoApp">
<head>
    <meta charset="UTF-8">
    <title>AngularJS To-Do List</title>
    <script
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.8.2/ang
ular.min.js"></script>
    <script src="app.js"></script>
</head>
```

```
<body>
    <div ng-controller="TodoController">
        <h2>My To-Do List</h2>
        <input type="text" ng-model="newTodoText"
placeholder="Add a new task">
        <button ng-click="addTodo()">Add Task</button>

        <ul>
            <li ng-repeat="todo in todos">
                <input type="checkbox" ng-model="todo.done">
                <span ng-class="{ 'done': todo.done }">{{ todo.text
}}</span>
                <button ng-
click="removeTodo(todo)">Remove</button>
            </li>
        </ul>

        <p>Remaining tasks: {{ remaining() }}</p>
    </div>
<script defer
src="https://static.cloudflareinsights.com/beacon.min.js/vcd15
cbe7772f49c399c6a5babf22c1241717689176015"
```

integrity="sha512-ZpsOmlRQV6y907TI0dKBHq9Md29nnaEIPlkf84rnaERnq6zvWvPUqr2ft8M1aS28oN72PdrCzSjY4U6VaAw1EQ==" data-cf-beacon='{"version":"2024.11.0","token":"499e684b7b1043878977050a0a606794","r":1,"server_timing":{"name":{"cfCacheStatus":true,"cfEdge":true,"cfExtPri":true,"cfL4":true,"cfOrigin":true,"cfSpeedBrain":true},"location_startswith":null}}' crossorigin="anonymous"></script>

</body>

</html>