PROGRAM:

Exercise 6.html

```
<!DOCTYPE html>
<html lang="en">
<head>
 <meta charset="UTF-8">
 <meta name="viewport" content="width=device-width, initial-scale=1.0">
 <title>Customer CRUD App</title>
 <link rel="stylesheet" href="ex_6_style.css">
</head>
<body>
 <h2>Customer Management System</h2>
 <form id="customerForm">
    <input type="text" id="name" placeholder="Enter Name" required>
   <input type="text" id="city" placeholder="Enter City" required>
   <input type="text" id="mobile" placeholder="Enter Mobile No" required>
   <button type="submit">Add Customer</button>
 </form>
 <thead>
     Name
       City
       Mobile No
       Actions
     </thead>
   <script>
```

```
const API_URL = 'http://localhost:5000/customers';
    async function fetchCustomers() {
      const res = await fetch(API_URL);
      const customers = await res.json();
      document.getElementById('customersList').innerHTML = customers.map(customer
=>`
         <input type="text" value="${customer.name}" id="name-
${customer.id}">
           <input type="text" value="${customer.city}" id="city-
${customer.id}">
           <input type="text" value="${customer.mobile}" id="mobile-
${customer.id}">
           <button onclick="updateCustomer('${customer.id}')">Update</button>
             <button onclick="deleteCustomer('${customer.id}')">Delete</button>
           `).join(");
    }
    async function addCustomer(event) {
      event.preventDefault();
      const name = document.getElementById('name').value;
      const city = document.getElementById('city').value;
      const mobile = document.getElementById('mobile').value;
      await fetch(API_URL, {
         method: 'POST',
         headers: { 'Content-Type': 'application/json' },
         body: JSON.stringify({ name, city, mobile })
       });
      document.getElementById('customerForm').reset();
      fetchCustomers();
```

```
}
    async function updateCustomer(id) {
       const name = document.getElementById(`name-${id}``).value;
       const city = document.getElementById(`city-${id}`).value;
       const mobile = document.getElementById(`mobile-${id}`).value;
       await fetch(`${API_URL}/${id}`, {
         method: 'PUT',
         headers: { 'Content-Type': 'application/json' },
         body: JSON.stringify({ name, city, mobile })
       });
       fetchCustomers();
     }
    async function deleteCustomer(id) {
       await fetch(`${API_URL}/${id}`, { method: 'DELETE' });
       fetchCustomers();
     }
    document.getElementById('customerForm').addEventListener('submit', addCustomer);
    fetchCustomers();
  </script>
</body>
</html>
Exercise 6 style.css
body {
  font-family: Arial, sans-serif;
  text-align: center;
  background-color: #f4f4f4;
}
form {
  margin: 20px auto;
  width: 50%;
```

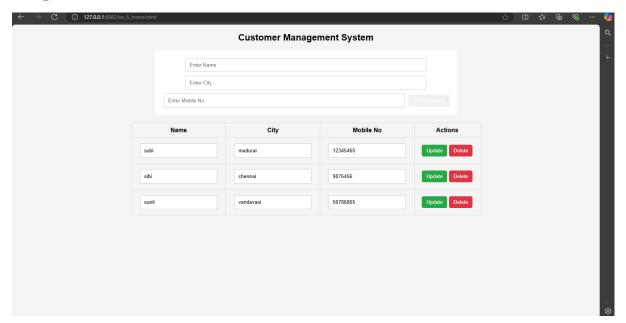
```
padding: 15px;
  background: white;
  border-radius: 8px;
}
input {
  padding: 10px;
  margin: 5px;
  width: 80%;
  border: 1px solid #ccc;
}
table {
  width: 60%;
  margin: 20px auto;
  border-collapse: collapse;
}
th, td {
  padding: 10px;
  border: 1px solid #ddd;
  text-align: center;
}
button {
  padding: 8px 12px;
  border: none;
  color: white;
  border-radius: 5px;
}
button:nth-child(1) { background-color: #28a745; }
button:nth-child(2) { background-color: #dc3545; }
Ex_6_server.js
require('dotenv').config();
```

```
const express = require('express');
const mysql = require('mysql2');
const cors = require('cors');
const app = express();
app.use(express.json());
app.use(cors());
const db = mysql.createConnection({
  host: process.env.DB_HOST,
  user: process.env.DB_USER,
  password: process.env.DB_PASS,
  database: process.env.DB_NAME
});
db.connect(err => {
  if (err) {
    console.error("X MySQL Connection Error:", err.message);
    process.exit(1);
  }
  console.log('

✓ MySQL Connected');
});
app.post('/customers', (req, res) => {
  const { name, city, mobile } = req.body;
  const sql = 'INSERT INTO customers (name, city, mobile) VALUES (?, ?, ?)';
  db.query(sql, [name, city, mobile], (err, result) => {
    if (err) return res.status(500).json({ error: err.message });
    res.json({ id: result.insertId, name, city, mobile });
  });
});
app.get('/customers', (req, res) => {
  const sql = 'SELECT * FROM customers';
  db.query(sql, (err, results) => {
```

```
if (err) return res.status(500).json({ error: err.message });
     res.json(results);
  });
});
app.put('/customers/:id', (req, res) => {
  const { name, city, mobile } = req.body;
  const sql = 'UPDATE customers SET name = ?, city = ?, mobile = ? WHERE id = ?';
  db.query(sql, [name, city, mobile, req.params.id], (err) => {
     if (err) return res.status(500).json({ error: err.message });
     res.json({ message: 'Customer updated successfully' });
  });
});
app.delete('/customers/:id', (req, res) => {
  const sql = 'DELETE FROM customers WHERE id = ?';
  db.query(sql, [req.params.id], (err) => {
     if (err) return res.status(500).json({ error: err.message });
    res.json({ message: 'Customer deleted successfully' });
  });
});
app.listen(5000, () => console.log(' Server running on port 5000'));
```

Output:



PROGRAM:

Exercise 7.html

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="utf-8"/>
  <link rel="icon" href="%PUBLIC_URL%/favicon.ico" />
  <meta name="viewport" content="width=device-width, initial-scale=1" />
  <meta name="theme-color" content="#000000" />
  <meta
   name="description"
   content="Web site created using create-react-app"
  k rel="apple-touch-icon" href="%PUBLIC_URL%/logo192.png" />
  k rel="manifest" href="%PUBLIC_URL%/manifest.json" />
  <title>React App</title>
 </head>
 <body>
  <noscript>You need to enable JavaScript to run this app.</noscript>
  <div id="root"></div>
 </body>
</html>
App.css
.App {
 text-align: center;
}
.App-logo {
 height: 40vmin;
 pointer-events: none;
```

```
@media (prefers-reduced-motion: no-preference) {
 .App-logo {
  animation: App-logo-spin infinite 20s linear;
 }
}
.App-header {
 background-color: #282c34;
 min-height: 100vh;
 display: flex;
 flex-direction: column;
 align-items: center;
 justify-content: center;
 font-size: calc(10px + 2vmin);
 color: white;
}
.App-link {
 color: #61dafb;
@keyframes App-logo-spin {
 from {
  transform: rotate(0deg);
 }
 to {
  transform: rotate(360deg);
 }
}
App.js
import React, { useState } from 'react'; // Import useState from React
import logo from './logo.svg';
```

```
import './App.css';
function App() {
 const [count, setCount] = useState(0);
 const handleClick = () => {
  setCount(count + 1); // Increase the count by 1 each time the button is clicked
 };
 return (
  <div className="App">
   <header className="App-header">
    <img src={logo} className="App-logo" alt="logo" />
    >
     Edit <code>src/App.js</code> and save to reload.
    <a
      className="App-link"
     href="https://reactjs.org"
     target="_blank"
     rel="noopener noreferrer"
     Learn React
    </a>
     {/* Button to trigger count update */}
    <button onClick={handleClick}>Click Me!</button>
     {/* Display the click count */}
    Click count: {count}
   </header>
  </div>
 );
}
export default App;
```

Output:



PROGRAM:

Exercise 8:

App.js

```
import React, { useState } from 'react';
import './App.css';
function App() {
 const [todos, setTodos] = useState([]);
 const [input, setInput] = useState(");
 const [editIndex, setEditIndex] = useState(null);
 const [editText, setEditText] = useState(");
 const handleInputChange = (e) => {
  setInput(e.target.value);
 };
 const addTodo = () => {
  if (input.trim() !== ") {
   setTodos([...todos, { text: input, completed: false }]);
   setInput(");
  }
 };
 const toggleComplete = (index) => {
  const updatedTodos = todos.map((todo, i) =>
   i === index ? { ...todo, completed: !todo.completed } : todo
  );
  setTodos(updatedTodos);
 };
 const deleteTodo = (index) => {
  const updatedTodos = todos.filter((\_, i) \Rightarrow i! = index);
  setTodos(updatedTodos);
 };
 const editTodo = (index) => {
```

```
setEditIndex(index);
 setEditText(todos[index].text);
};
const saveEdit = () => {
 if (editText.trim() !== ") {
  const updatedTodos = todos.map((todo, i) =>
   i === editIndex ? { ...todo, text: editText } : todo
  );
  setTodos(updatedTodos);
  setEditIndex(null);
  setEditText(");
 }
};
return (
 <div className="App">
  <h1>To-Do App</h1>
  <div className="todo-input">
   <input
    type="text"
    value={input}
    onChange={handleInputChange}
    placeholder="Enter a new task"
   />
   <button className="add-btn" onClick={addTodo}>Add</button>
  </div>
  {/* Edit todo */}
  {editIndex !== null && (
   <div className="edit-todo">
    <input
      type="text"
```

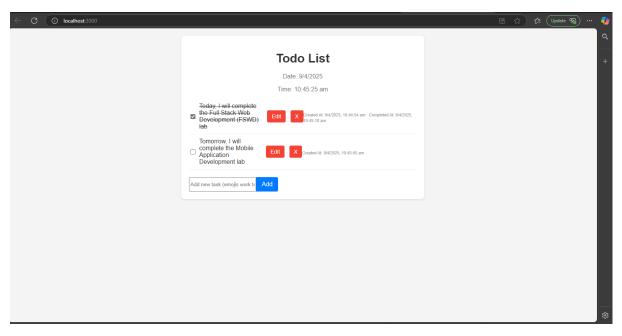
```
value={editText}
     onChange={(e) => setEditText(e.target.value)}
     placeholder="Edit your task"
    />
    <button className="save-btn" onClick={saveEdit}>Save</button>
   </div>
  )}
  <thead>
    Task
     Actions
    </thead>
   \{todos.map((todo, index) => (
     <span onClick={() => toggleComplete(index)}>{todo.text}/span>
     >
      <button className="edit-btn" onClick={() => editTodo(index)}>Edit
      <button className="delete-btn" onClick={() =>
deleteTodo(index)}>Delete</button>
     ))}
   </div>
);
```

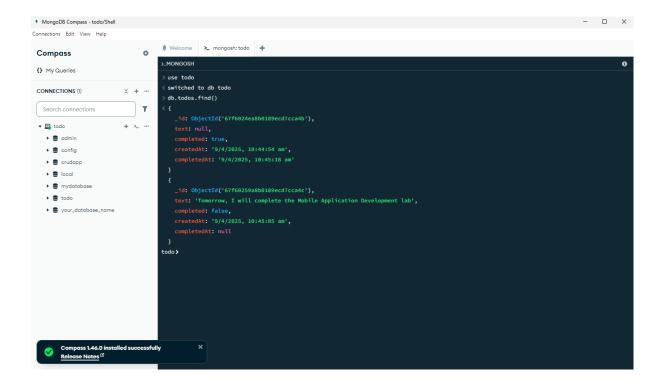
```
}
export default App;
App.css
.App {
 text-align: center;
 margin-top: 20px;
 font-family: Arial, sans-serif;
}
.todo-input {
 margin-bottom: 20px;
input {
 padding: 10px;
 font-size: 16px;
 width: 250px;
}
button {
 padding: 10px;
 font-size: 16px;
 cursor: pointer;
 margin-left: 10px;
 border: none;
 border-radius: 4px;
}
.add-btn {
 background-color: green;
 color: white;
}
.add-btn:hover {
```

```
background-color: darkgreen;
}
.delete-btn {
 background-color: red;
 color: white;
}
.delete-btn:hover {
 background-color: darkred;
}
.edit-btn {
 background-color: orange;
 color: white;
.edit-btn:hover {
 background-color: darkorange;
}
.todo-table {
 width: 80%;
 margin: 0 auto;
 border-collapse: collapse;
}
th, td {
 padding: 10px;
 text-align: left;
 border: 1px solid #ddd;
}
th {
 background-color: #f2f2f2;
}
.completed {
```

```
text-decoration: line-through;
 color: gray;
}
.edit-todo {
 margin-top: 20px;
.edit-todo input {
 padding: 10px;
 font-size: 16px;
 width: 250px;
.save-btn {
 background-color: blue;
 color: white;
 cursor: pointer;
 padding: 10px;
 margin-left: 10px;
.save-btn:hover {
 background-color: darkblue;
}
```

Output:





PROGRAM

Exercise 9

```
models/user.js
const mongoose = require('mongoose');
const UserSchema = new mongoose.Schema({
  username: { type: String, required: true, unique: true },
  password: { type: String, required: true }
});
module.exports = mongoose.model('User', UserSchema);
routes/user.js
import express from 'express';
import { getAllUsers, login, logout, signUp } from "../controllers/user.js";
import { checkRole, checkToken } from '../middlewares/middlewares.js';
const router = express.Router();
router.post("/signUp", signUp);
router.post("/login", login);
router.post("/logout", checkToken, logout);
router.get('/getAllUsers', checkToken, checkRole(['admin', 'manager']), getAllUsers);
export default router;
Server.js
const express = require('express');
const connectDB = require('./config/db');
const cookieParser = require('cookie-parser');
const authRoutes = require('./routes/auth');
require('dotenv').config();
const app = express();
const PORT = process.env.PORT || 2222;
app.use(express.json());
app.use(cookieParser());
app.use('/api/auth', authRoutes);
connectDB();
app.listen(PORT, () => console.log(`Server running on port ${PORT}`));
```

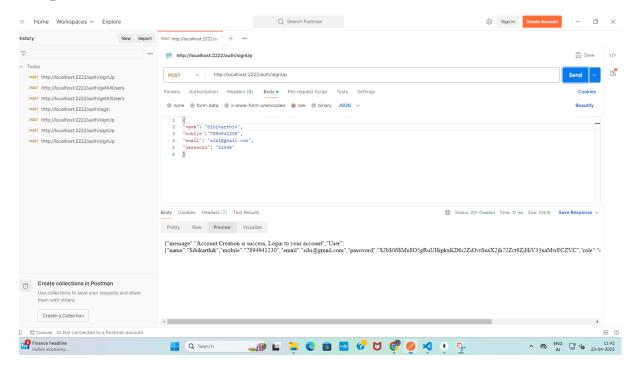
controller/user.js

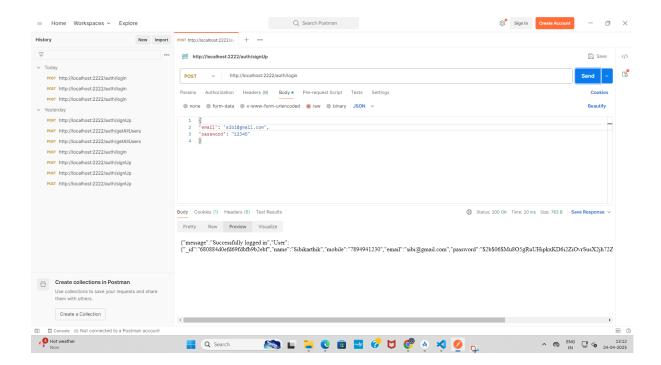
```
import bcrypt from 'bcrypt';
import User from "../models/user.js";
import { CreateToken } from '../middlewares/middlewares.js';
import jsonwebtoken from 'jsonwebtoken';
export const signUp = async (req, res) => {
  const { name, mobile, email, password, role } = req.body;
  if (!name || !mobile || !email || !password) {
    return res.status(422).json({ message: "All feilds should be filled" })
  }
 try {
    let existingUser;
    try {
      existingUser = await User.findOne({ $or: [{ email: email }, { mobile:
mobile }] });
    } catch (err) {
      console.error(err);
    if (existingUser) {
      if (existingUser.email == email) {
        return res.status(409).json({ message: "A User is already signUp with
this email" })
      }
      else if (existingUser.mobile == mobile) {
       return res.status(409).json({ message: "A User is already signUp with
this mobile" })
      }
    }
    const salt = await bcrypt.genSalt(6)
    const hashedpassword = await bcrypt.hash(password, salt);
    const user = new User({
     name,
     mobile,
      email,
      password: hashedpassword,
     role: role,
    });
    await user.save();
    return res.status(201).json({ message: "Account Creation is success, Login
to your account", User: user })
```

```
} catch (err) {
    console.error(err)
    return res.status(400).json({ message: "Error in saving user in DB" });
 }
}
export const login = async (req, res) => {
 const { email, password } = req.body;
 if (!email || !password) {
    return res.status(422).json({ message: "All feilds should be filled" })
  }
  let loggedUser;
 try {
    loggedUser = await User.findOne({ email: email });
    if (!loggedUser) {
     return res.status(404).json({ message: "Email is not found, Check it and
try again" })
    }
    const isPasswordCorrect = bcrypt.compareSync(password,
loggedUser.password);
    if (!isPasswordCorrect) {
      return res.status(400).json({ message: "Invalid password, Check it and
try again" })
    const token = CreateToken(loggedUser._id);
      res.cookie(String(loggedUser._id), token, {
      path: "/",
      expires: new Date(Date.now() + 1000 * 59),
                          sameSite: "lax"
      httpOnly: true
    })
    return res.status(200).json({ message: "Successfully logged in", User:
loggedUser })
  } catch (err) {
    console.log(err)
 }
}
export const logout = (req, res) => {
 const cookies = req.headers.cookie
 const previousToken = cookies.split("=")[1];
```

```
if (!previousToken) {
    return res.status(400).json({ message: "Couldn't find token" });
 jsonwebtoken.verify(String(previousToken), process.env.JWTAUTHSECRET, (err,
user) => {
    if (err) {
     console.log(err);
      return res.status(403).json({ message: "Authentication failed" });
    res.clearCookie(`${user.id}`);
    req.cookies[`${user.id}`] = "";
    return res.status(200).json({ message: "Successfully Logged Out" });
 });
};
export const getAllUsers = async (req, res) => {
 try {
    const allusers = await User.find();
    if (!allusers) {
     return res.status(404).json({ message: "There are not any users" });
    }
   else {
     res.status(200).json({ allusers })
    }
 } catch (error) {
    console.log(error);
    return res.status(500).json({ message: "Error in getting the Users" })
 }
}
```

Output





PROGRAM

Exercise 10

Step 1: Prepare your computer for Virtualization:

- Enable Processor Virtualization: Ensure Virtualization is enabled on your computer. See the Virtualization Error (VT-d/VT-x or AMD-V) for troubleshooting support.
- Review File Sync Services for tools like OneDrive, Nextcloud, DropBox Sync, iCloud, etc. If you are using a data synchronization service, make sure it DOES NOT (or at least not frequently) synchronize the folder in which your hypervisor imports and installs the Virtual Machines.
- File sync services can cause a dramatic fall-off in performance for your entire system as these services try to synchronize these massive files that are getting updated constantly while you are using the Virtual Machines.
- Sufficient Disk Space: Virtual Machines require a significant amount of Disk space (10 GB or more each is typical). Ensure you have sufficient space on your computer.
- Admin Privileges: Installing a hypervisor on a host in most cases requires admin privileges.
- Step 2: Install Hypervisor (Virtualization Tool): Installing a hypervisor on your host is usually quite simple. In most cases, the install program will ask only a couple of questions, such as where to install the hypervisor software.

Step 3: Import a Virtual Machine:

- The first step is to download the Virtual Machine for your course from our Course Virtual Machines page. This will download an .ova file. The .ova file is actually a compressed (zipped) tarball of a Virtual Machine exported from Virtual Box.
- Once the Virtual Machine has been imported, it will normally show up in the guest list within your hypervisor tool.
- Step 4: Start the Virtual Machine: To start up a Virtual Machine guest in most hypervisors, you simply click on the desired guest and click the Start button (often double-clicking the guest icon will work as well).
- Step 5: Using the Virtual Machine: MC4266-FSWD LAB 34
- Sharing files between the guest and host: To learn about different ways of sharing files, check out this guide.
- Run a command with sudo (root) privileges: Open a terminal and type any command with sudo in front to run that command as root.
- Example: sudo apt-get install vim will install the vim text editor package on an Ubuntu Linux Virtual Machine. Find the IP address of your guest: Open a terminal and type ifconfig | more The | more (pronounced "pipe more") will "pipe" the output of the ifconfig command to the more command, which will show the results one page at a time, so it doesn't scroll by before you see it all.

- If you have a Host-Only Network IP address, you will see an IP of 192.168.56.101 (or something similar). Check the Trouble-Shooting section below for more information about the Host-Only Network.
- Step 6: Shut down the Virtual Machine: When you are done using a guest Virtual Machine, regardless of hypervisor, you need to shut it down properly. This can be done in three ways:
- 1. Press the shutdown button found on the desktop, taskbar, or task menu of the guest operating system.
- 2. Open a terminal and type the command: sudo shutdown -h now
- 3. In the guest window, click Machine (menu) -> ACPI Shut down This will simulate the power button being pressed

PROGRAM

Exercise 11

```
Server.js
```

```
const http = require('http'); // Import the 'http' module for creating a server.
const hostname = 0.0.0.0; // Set the hostname to listen on all IP addresses.
                          // Define the port for the server to listen on.
const port = 8080;
const server = http.createServer((req, res) => {
 if (req.method === 'GET' && req.url === '/ping') { // Check if the request method is GET
and the URL is '/ping'
  res.statusCode = 200;
                                         // Set status code to 200 (OK)
  res.setHeader('Content-Type', 'application/json'); // Set response type as JSON
  res.end(JSON.stringify({ message: 'pong' })); // Send a 'pong' response
 } else {
  res.statusCode = 404; // For all other routes or methods, return a 404
  res.end('Not Found');
 }
});
server.listen(port, hostname, () \Rightarrow { // Start the server on the specified hostname and port.
 console.log(`Server running at http://${hostname}:${port}/`);
});
Dockerfile
# Use official Node.js image from Docker Hub
FROM node:16
# Set the working directory inside the container
WORKDIR /usr/src/app
# (Optional) Copy package.json and package-lock.json if dependencies are needed
# COPY package*.json ./
```

RUN npm install

Copy the server.js file to the working directory inside the container COPY server.js .

Expose port 8080 for the app to be accessible outside the container EXPOSE 8080

Run the Node.js server when the container starts

CMD ["node", "server.js"]

Output



