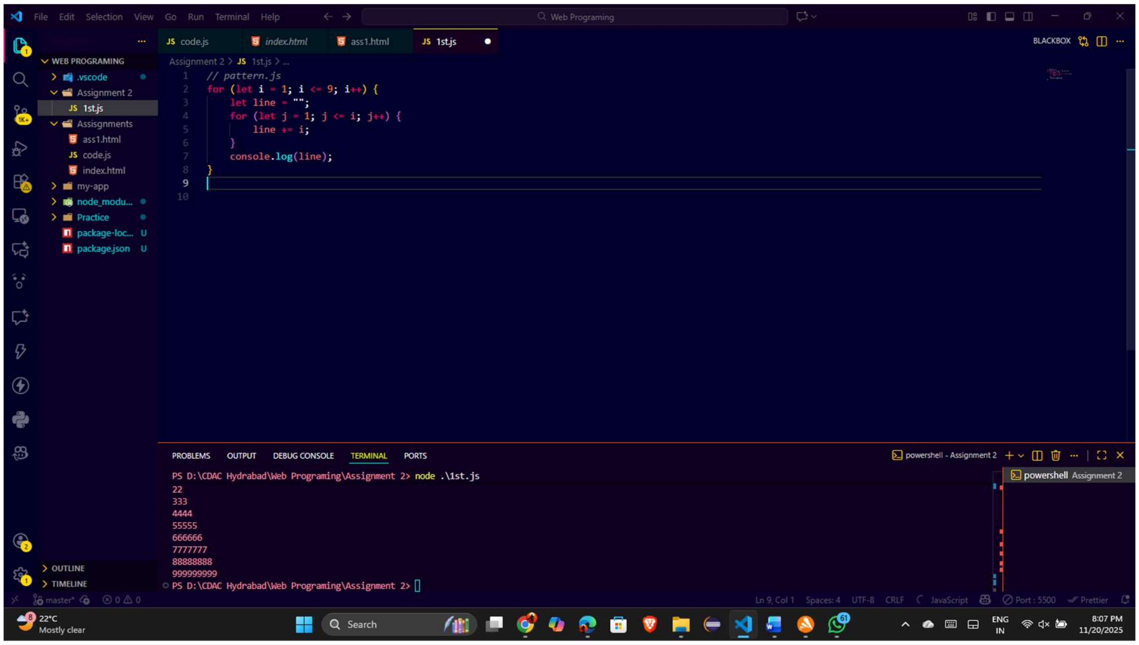
Assignment 02

Yash Yadav(107)

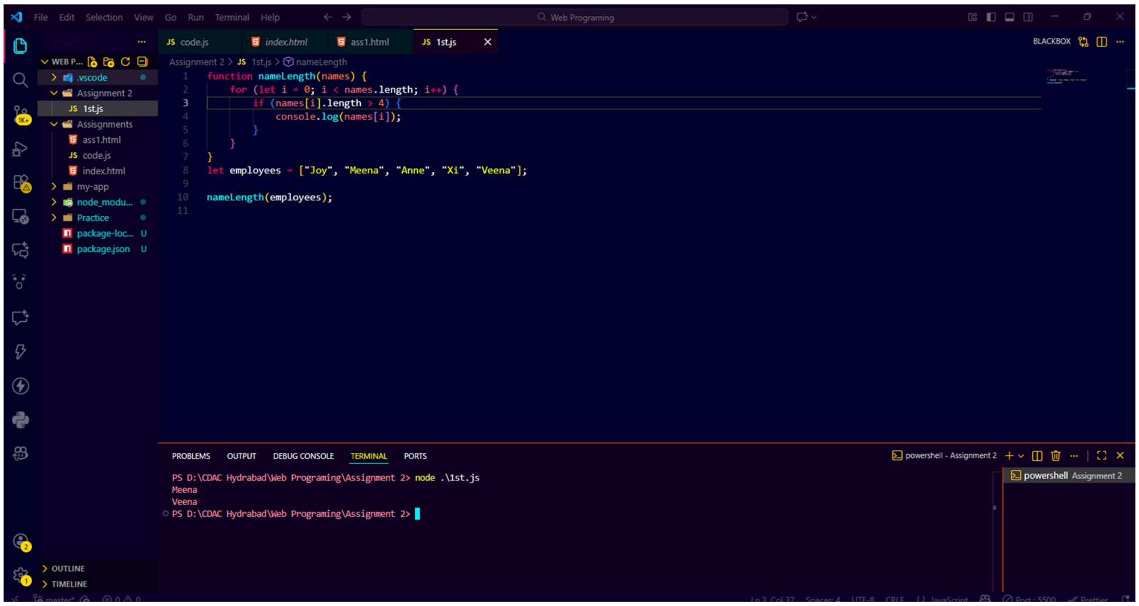
Q1)



```
// pattern.js
for (let i = 1; i <= 9; i++) {
    let line = "";
    for (let j = 1; j <= i; j++) {
        line += i;
    }
    console.log(line);
}
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\1st.js
22
333
4444
55555
666666
7777777
88888888
999999999
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> 
```

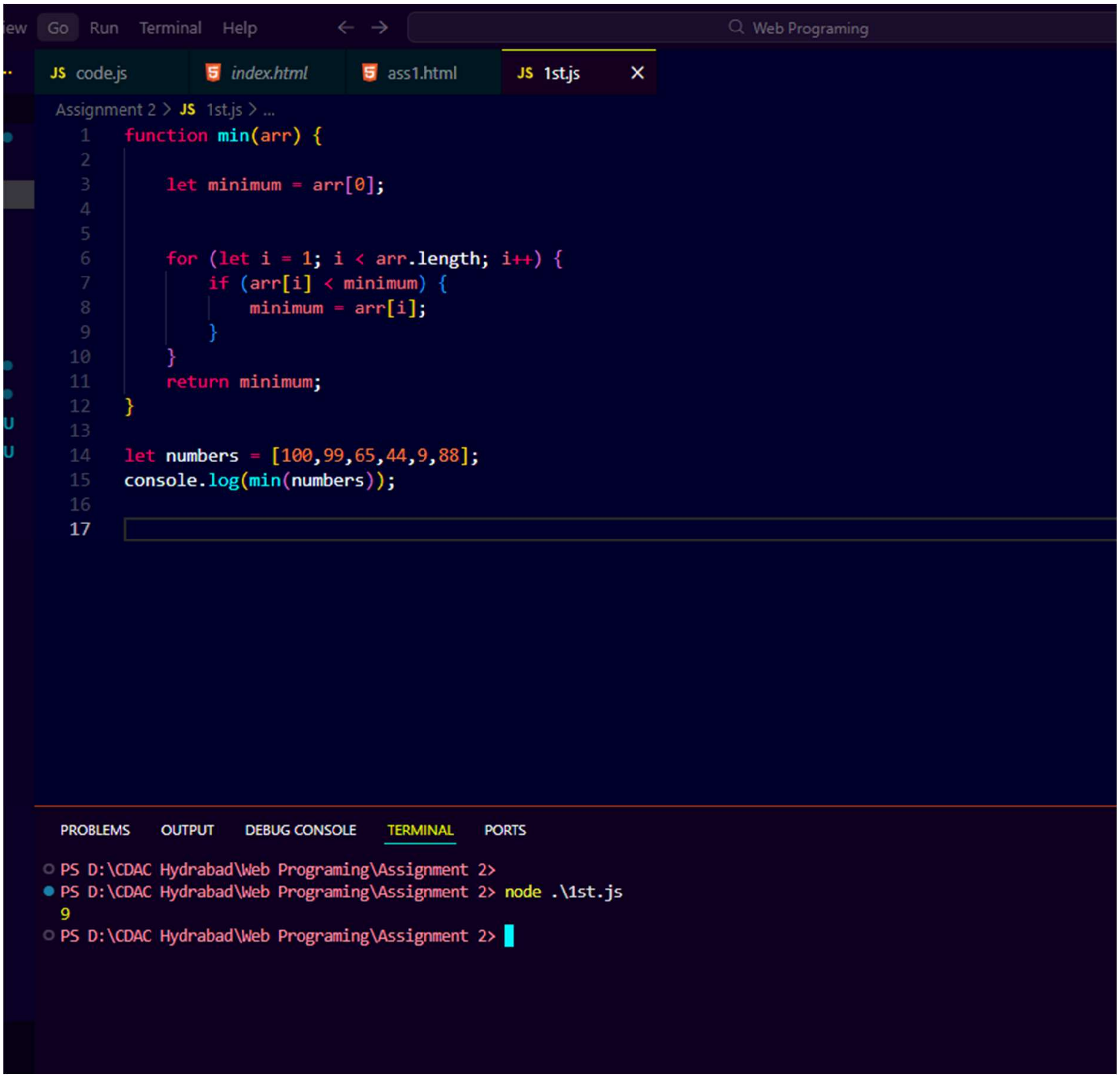
Q2)



```
function nameLength(names) {
    for (let i = 0; i < names.length; i++) {
        if (names[i].length > 4) {
            console.log(names[i]);
        }
    }
}
let employees = ["Joy", "Meena", "Anne", "Xi", "Veena"];

nameLength(employees);
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\1st.js
Meena
Veena
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> 
```

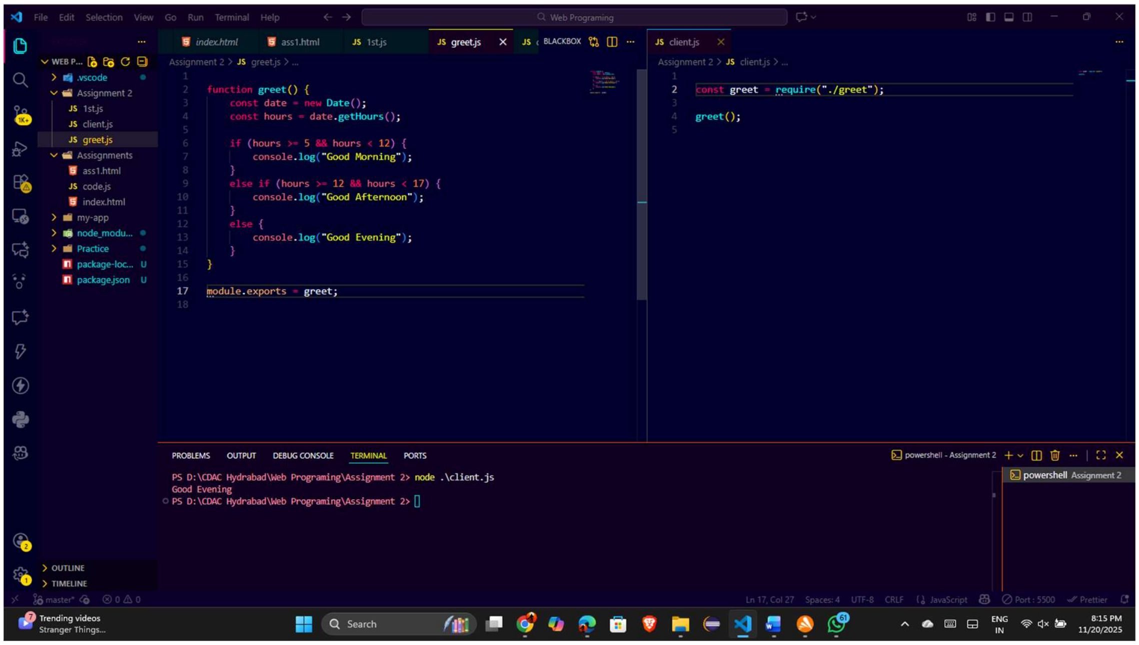
Q3)



```
function min(arr) {

    let minimum = arr[0];


    for (let i = 1; i < arr.length; i++) {
        if (arr[i] < minimum) {
            minimum = arr[i];
        }
    }
    return minimum;
}

let numbers = [100,99,65,44,9,88];
console.log(min(numbers));

```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2>
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\1st.js
9
PS D:\CDAC Hydrabad\Web Programing\Assignment 2>
```

Q4)

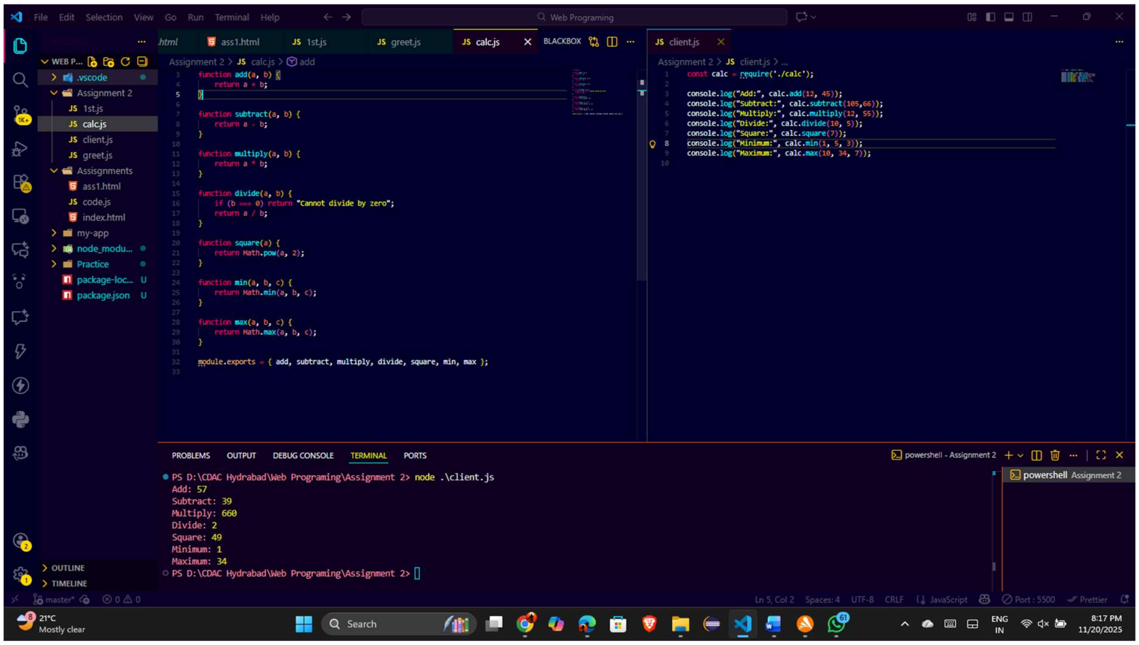


```
function greet() {
    const date = new Date();
    const hours = date.getHours();

    if (hours >= 5 && hours < 12) {
        console.log("Good Morning");
    }
    else if (hours >= 12 && hours < 17) {
        console.log("Good Afternoon");
    }
    else {
        console.log("Good Evening");
    }
}

module.exports = greet;
```

```
const greet = require("./greet");

greet();
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
Good Evening
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> 
```

Q5)

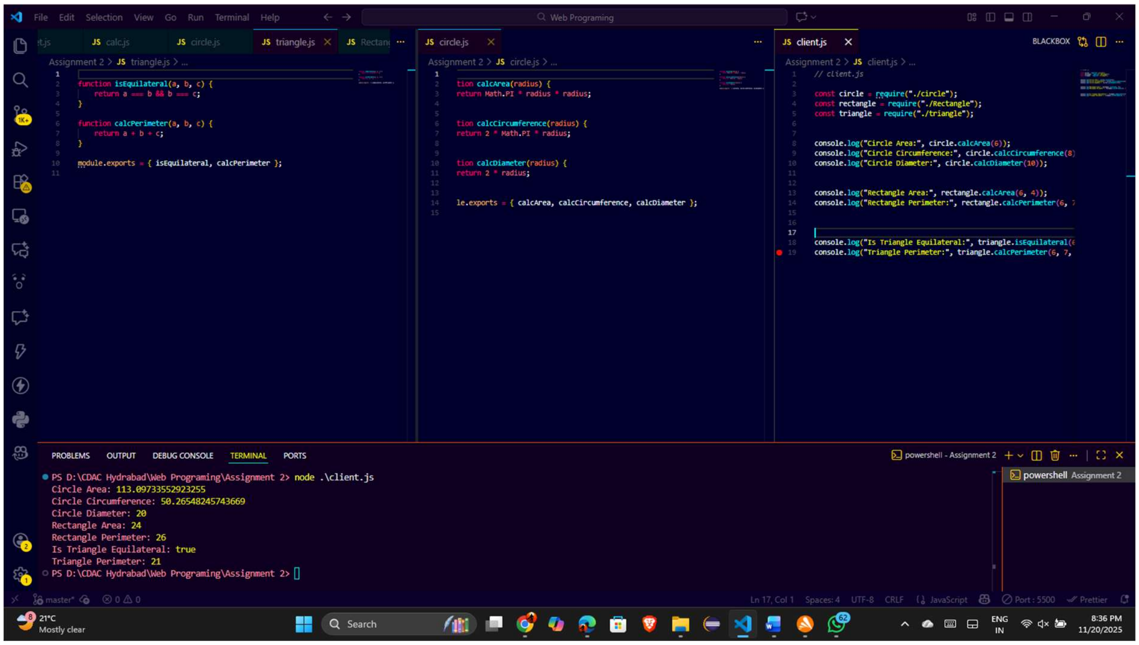


```
function add(a, b) {
    return a + b;
}

function subtract(a, b) {
    return a - b;
}

function multiply(a, b) {
    return a * b;
}

function divide(a, b) {
    if (b === 0) return "Cannot divide by zero";
    return a / b;
}

function square(a) {
    return Math.pow(a, 2);
}

function min(a, b, c) {
    return Math.min(a, b, c);
}

function max(a, b, c) {
    return Math.max(a, b, c);
}

module.exports = { add, subtract, multiply, divide, square, min, max };
```

```
const calc = require('./calc');

console.log("Add:", calc.add(12, 45));
console.log("Subtract:", calc.subtract(105,66));
console.log("Multiply:", calc.multiply(12, 55));
console.log("Divide:", calc.divide(10, 5));
console.log("Square:", calc.square(7));
console.log("Minimum:", calc.min(1, 5, 3));
console.log("Maximum:", calc.max(10, 34, 7));
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
Add: 57
Subtract: 39
Multiply: 660
Divide: 2
Square: 49
Minimum: 1
Maximum: 34
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> 
```

Q6)



triangle.js

```
function isEquilateral(a, b, c) {
    return a === b && b === c;
}

function calcPerimeter(a, b, c) {
    return a + b + c;
}

module.exports = { isEquilateral, calcPerimeter };
```

circle.js

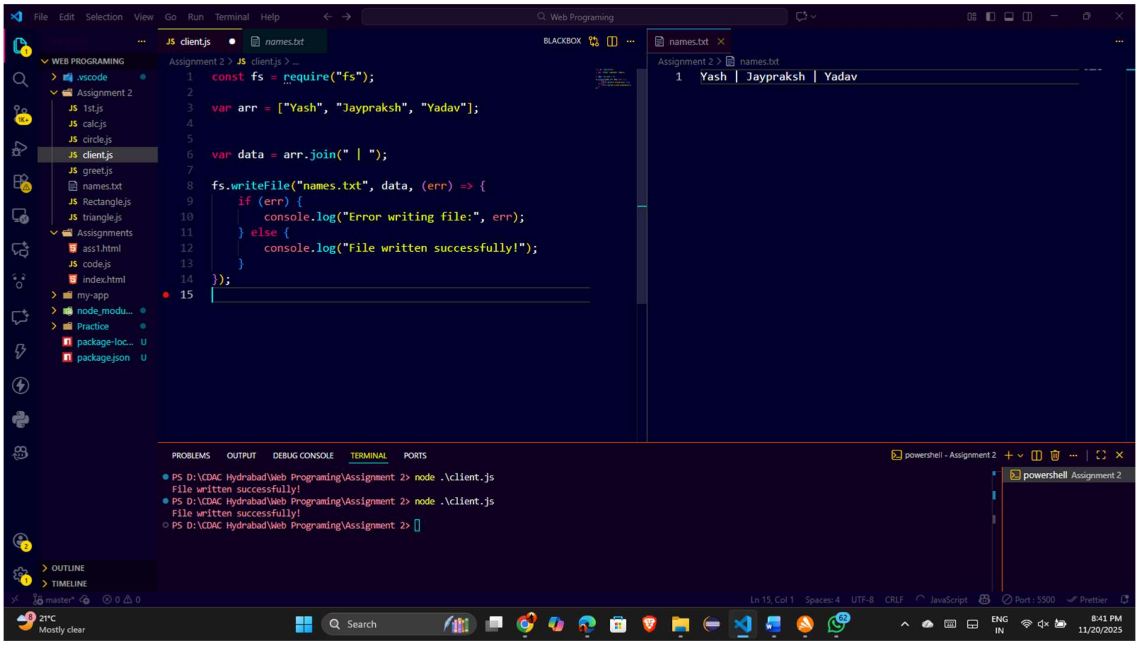
```
tion calcArea(radius) {
return Math.PI * radius * radius;


tion calcCircumference(radius) {
return 2 * Math.PI * radius;


tion calcDiameter(radius) {
return 2 * radius;


le.exports = { calcArea, calcCircumference, calcDiameter };
```

client.js

```
// client.js

const circle = require("./circle");
const rectangle = require("./Rectangle");
const triangle = require("./triangle");


console.log("Circle Area:", circle.calcArea(6));
console.log("Circle Circumference:", circle.calcCircumference(8)
console.log("Circle Diameter:", circle.calcDiameter(10));


console.log("Rectangle Area:", rectangle.calcArea(6, 4));
console.log("Rectangle Perimeter:", rectangle.calcPerimeter(6, 7


console.log("Is Triangle Equilateral:", triangle.isEquilateral(
console.log("Triangle Perimeter:", triangle.calcPerimeter(6, 7,
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
Circle Area: 113.09733552923255
Circle Circumference: 50.26548245743669
Circle Diameter: 20
Rectangle Area: 24
Rectangle Perimeter: 26
Is Triangle Equilateral: true
Triangle Perimeter: 21
PS D:\CDAC Hydrabad\Web Programing\Assignment 2>
```

Q7)



client.js

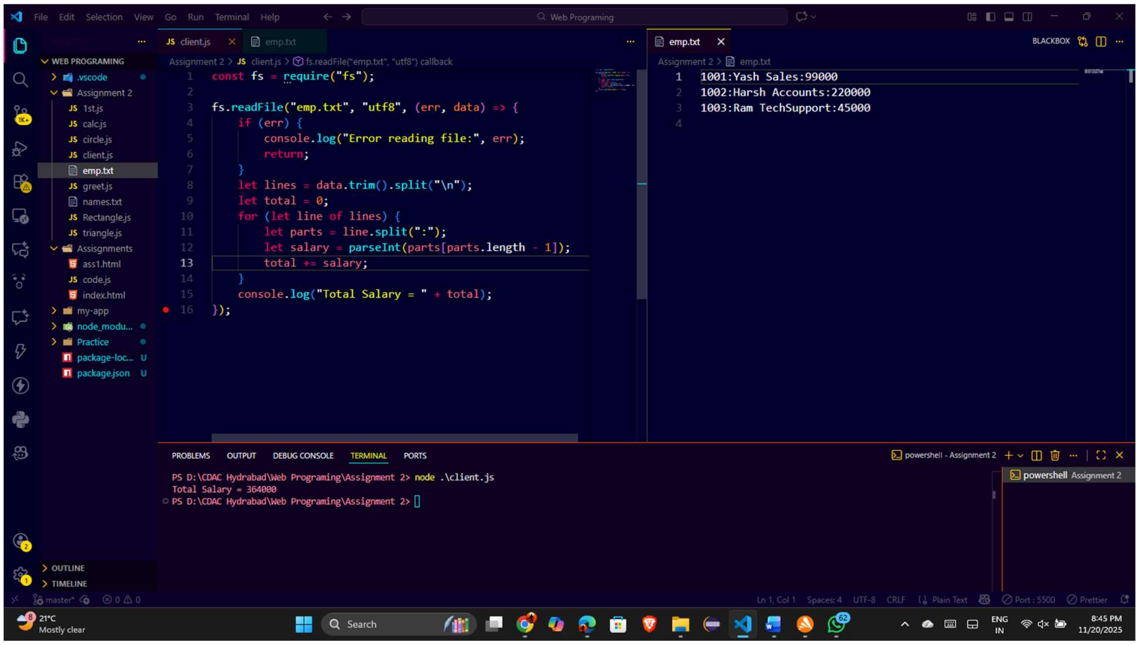
```
const fs = require("fs");

var arr = ["Yash", "Jayprakash", "Yadav"];


var data = arr.join(" | ");

fs.writeFile("names.txt", data, (err) => {
    if (err) {
        console.log("Error writing file:", err);
    } else {
        console.log("File written successfully!");
    }
});
```

names.txt

```
Yash | Jayprakash | Yadav
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
File written successfully!
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
File written successfully!
PS D:\CDAC Hydrabad\Web Programing\Assignment 2>
```

Q8)



client.js

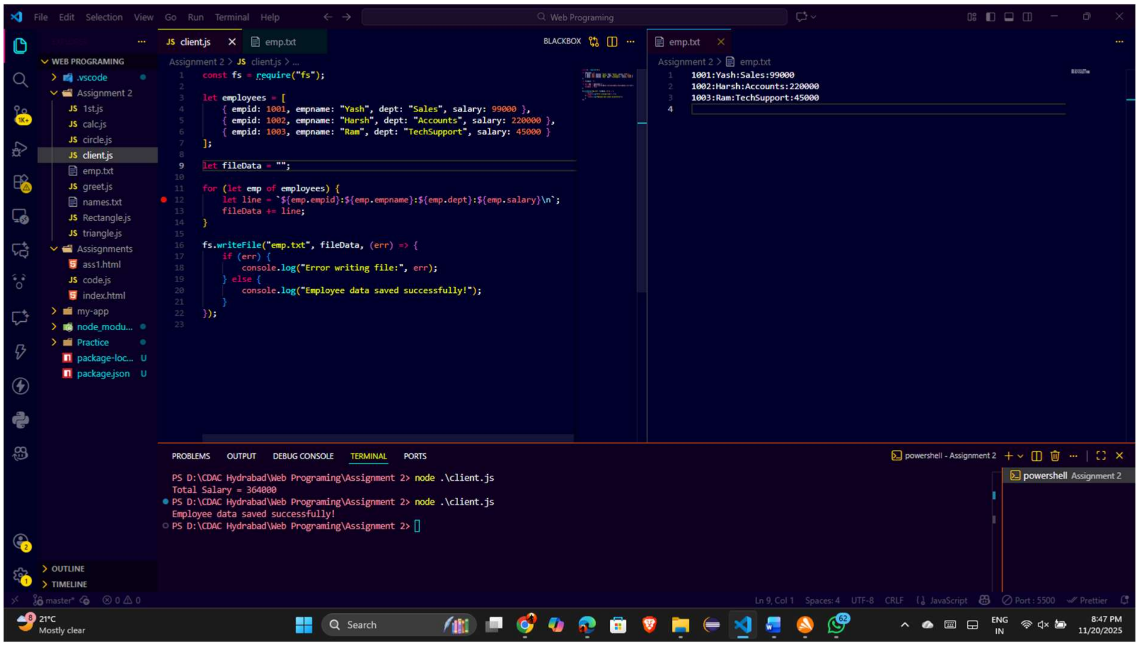
```
const fs = require("fs");

fs.readFile("emp.txt", "utf8", (err, data) => {
    if (err) {
        console.log("Error reading file:", err);
        return;
    }
    let lines = data.trim().split("\n");
    let total = 0;
    for (let line of lines) {
        let parts = line.split(":");
        let salary = parseInt(parts[parts.length - 1]);
        total += salary;
    }
    console.log("Total Salary = " + total);
});
```

emp.txt

```
1001:Yash Sales:99000
1002:Harsh Accounts:220000
1003:Ram TechSupport:45000
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
Total Salary = 364000
PS D:\CDAC Hydrabad\Web Programing\Assignment 2>
```

Q9)



client.js

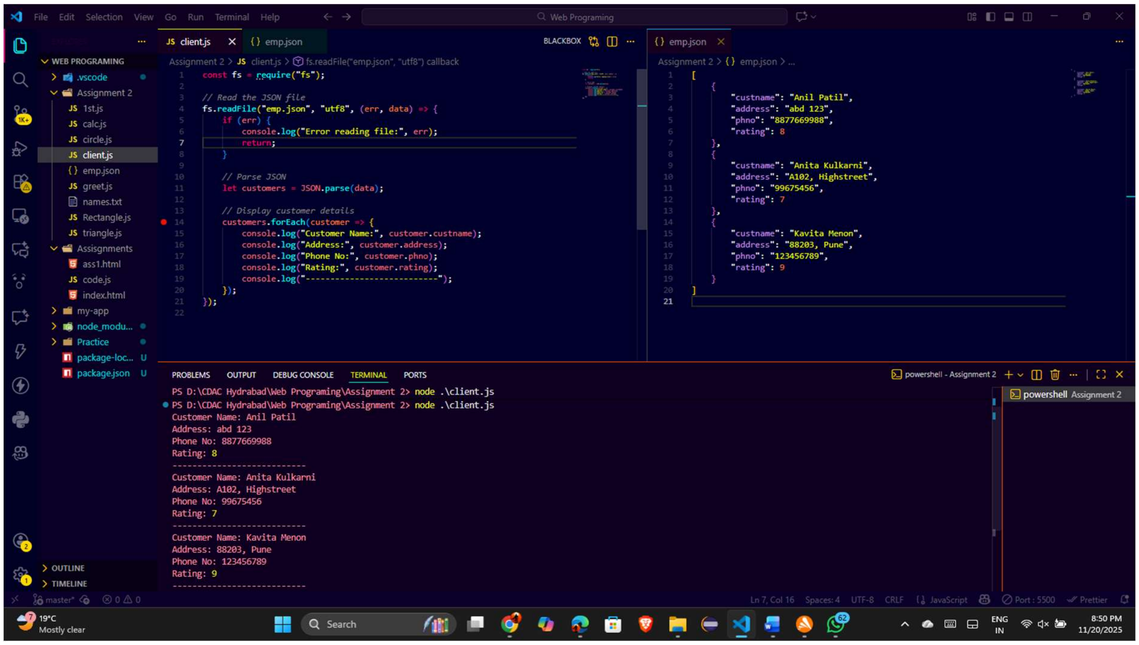
```
const fs = require("fs");

let employees = [
    { empid: 1001, empname: "Yash", dept: "Sales", salary: 99000 },
    { empid: 1002, empname: "Harsh", dept: "Accounts", salary: 220000 },
    { empid: 1003, empname: "Ram", dept: "TechSupport", salary: 45000 }
];

let fileData = "";

for (let emp of employees) {
    let line = `${emp.empid}:${emp.empname}:${emp.dept}:${emp.salary}\n`;
    fileData += line;
}

fs.writeFile("emp.txt", fileData, (err) => {
    if (err) {
        console.log("Error writing file:", err);
    } else {
        console.log("Employee data saved successfully!");
    }
});
```

emp.txt

```
1001:Yash:Sales:99000
1002:Harsh:Accounts:220000
1003:Ram:TechSupport:45000
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
Total Salary = 364000
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
Employee data saved successfully!
PS D:\CDAC Hydrabad\Web Programing\Assignment 2>
```

Q9)



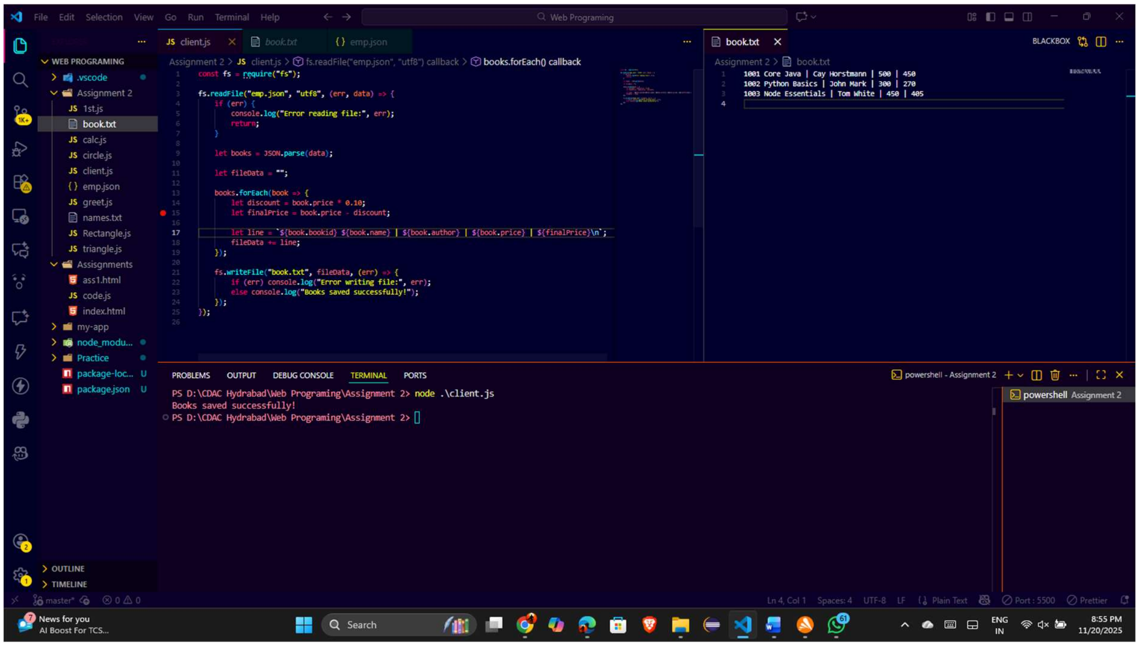
client.js
emp.json
Assignment 2 > client.js > fs.readFile("emp.json", "utf8") callback
Assignment 2 > emp.json > ...
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
powershell - Assignment 2

```javascript
const fs = require("fs");

// Read the JSON file
fs.readFile("emp.json", "utf8", (err, data) => {
    if (err) {
        console.log("Error reading file:", err);
        return;
    }

    // Parse JSON
    let customers = JSON.parse(data);

    // Display customer details
    customers.forEach(customer => {
        console.log("Customer Name:", customer.custname);
        console.log("Address:", customer.address);
        console.log("Phone No:", customer.phno);
        console.log("Rating:", customer.rating);
        console.log("--------------------------");
    });
});
```

```json
[
    {
        "custname": "Anil Patil",
        "address": "abd 123",
        "phno": "8877669988",
        "rating": 8
    },
    {
        "custname": "Anita Kulkarni",
        "address": "A102, Highstreet",
        "phno": "99675456",
        "rating": 7
    },
    {
        "custname": "Kavita Menon",
        "address": "88203, Pune",
        "phno": "123456789",
        "rating": 9
    }
]
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
Customer Name: Anil Patil
Address: abd 123
Phone No: 8877669988
Rating: 8
--------------------------
Customer Name: Anita Kulkarni
Address: A102, Highstreet
Phone No: 99675456
Rating: 7
--------------------------
Customer Name: Kavita Menon
Address: 88203, Pune
Phone No: 123456789
Rating: 9
--------------------------
```

Q10)



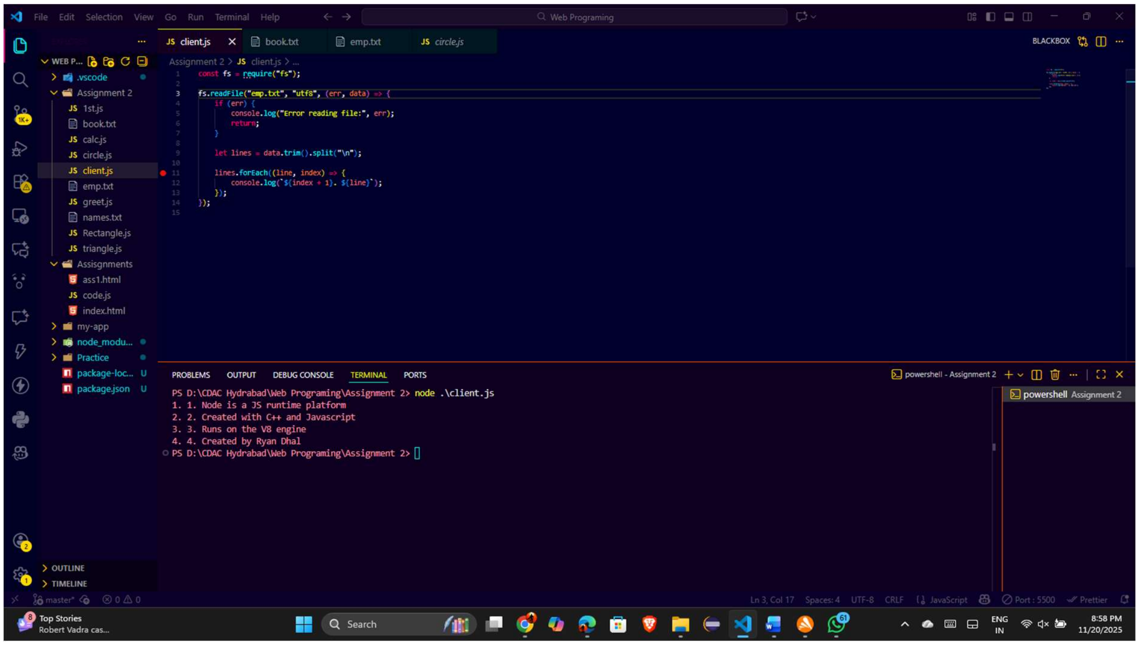
client.js
book.txt
emp.json
Assignment 2 > client.js > fs.readFile("emp.json", "utf8") callback > books.forEach() callback
Assignment 2 > book.txt
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
powershell - Assignment 2

```javascript
const fs = require("fs");

fs.readFile("emp.json", "utf8", (err, data) => {
    if (err) {
        console.log("Error reading file:", err);
        return;
    }

    let books = JSON.parse(data);

    let fileData = "";

    books.forEach(book => {
        let discount = book.price * 0.10;
        let finalPrice = book.price - discount;

        let line = `${book.bookid} ${book.name} | ${book.author} | ${book.price} | ${finalPrice}\n`;
        fileData += line;
    });

    fs.writeFile("book.txt", fileData, (err) => {
        if (err) console.log("Error writing file:", err);
        else console.log("Books saved successfully!");
    });
});
```

```
1001 Core Java | Cay Horstmann | 500 | 450
1002 Python Basics | John Mark | 300 | 270
1003 Node Essentials | Tom White | 450 | 405
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
Books saved successfully!
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> 
```

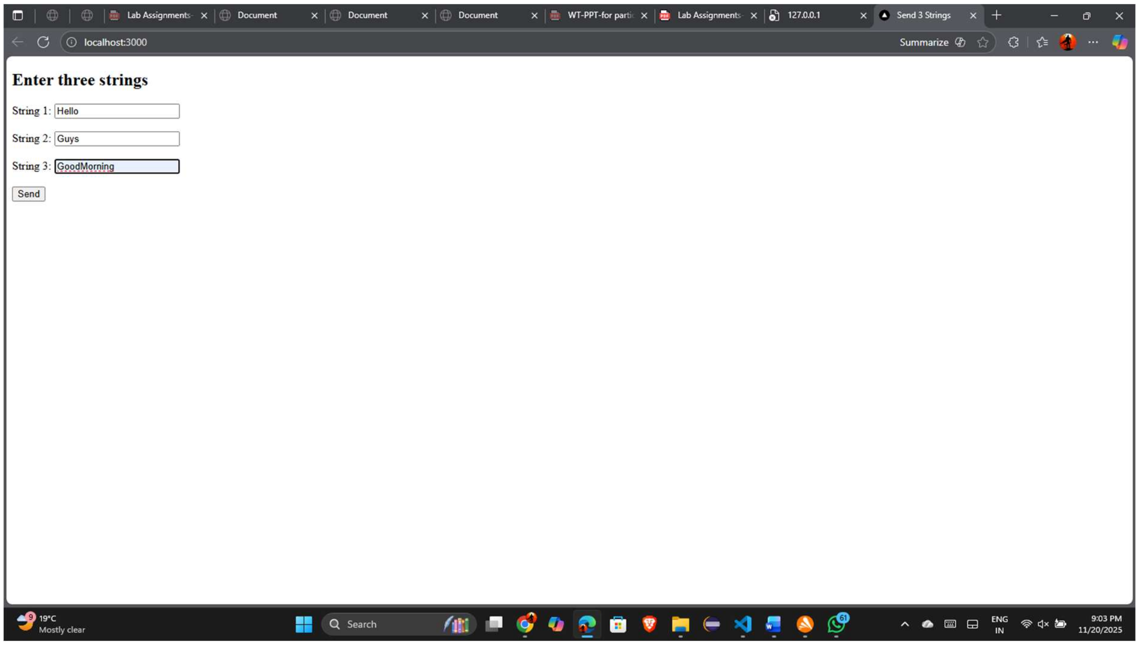
Q11)



```
const fs = require("fs");

fs.readFile("emp.txt", "utf8", (err, data) => {
    if (err) {
        console.log("Error reading file:", err);
        return;
    }

    let lines = data.trim().split("\n");

    lines.forEach((line, index) => {
        console.log(`${index + 1}. ${line}`);
    });
});
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node .\client.js
1. 1. Node is a JS runtime platform
2. 2. Created with C++ and Javascript
3. 3. Runs on the V8 engine
4. 4. Created by Ryan Dhal
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> 
```

Q11)



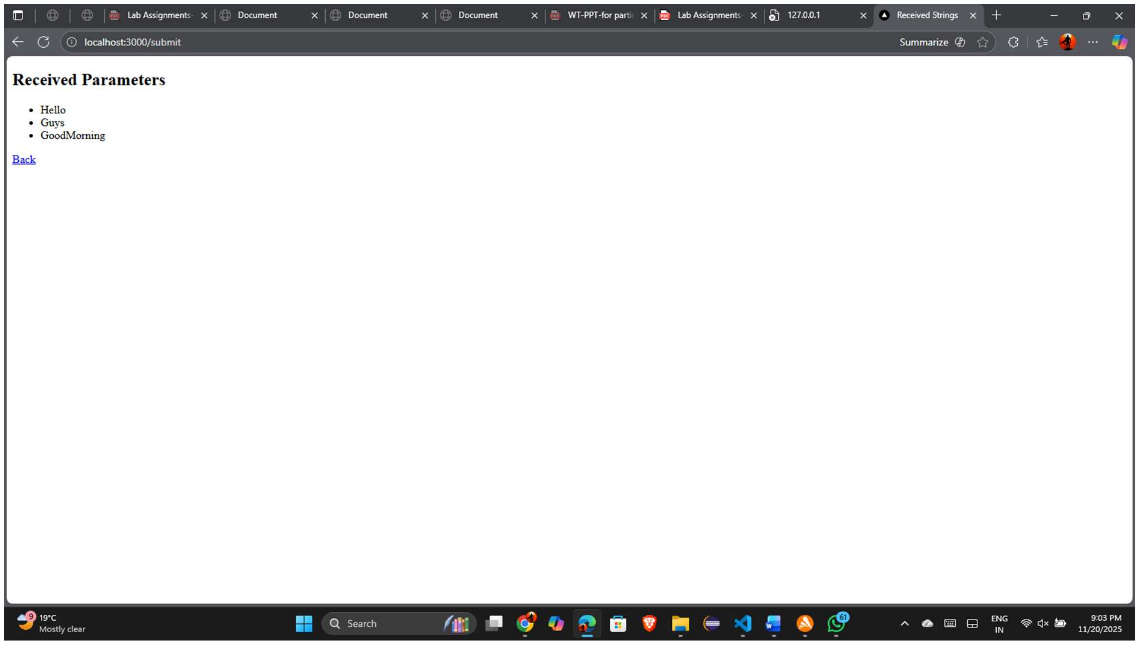
localhost:3000

Enter three strings

String 1: Hello

String 2: Guys

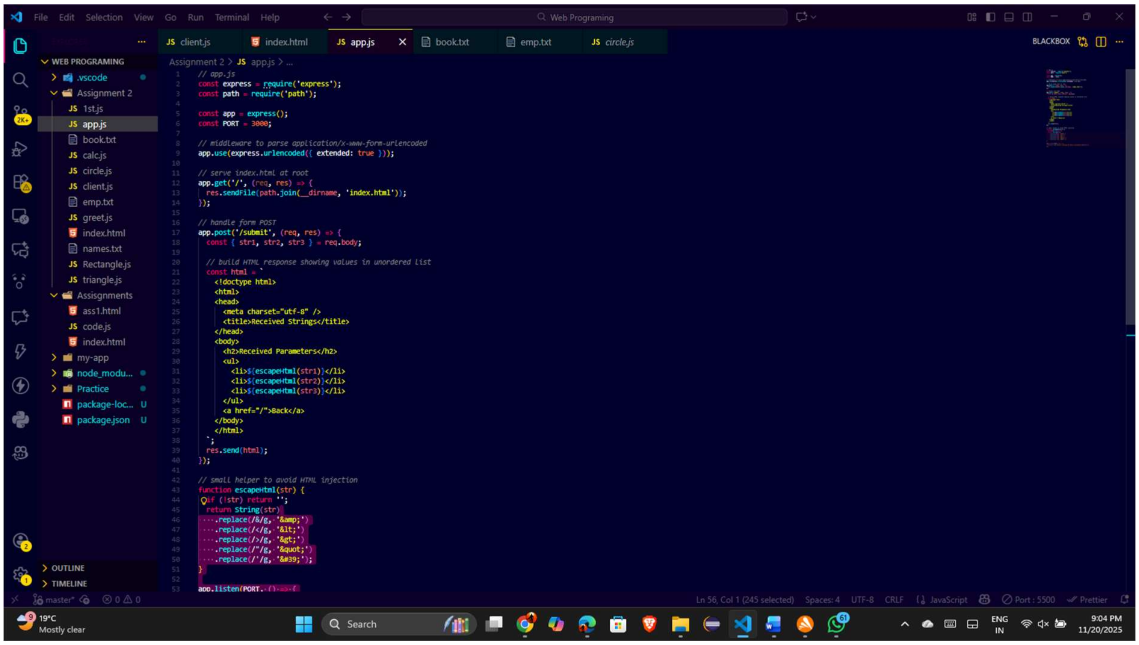
String 3: GoodMorning



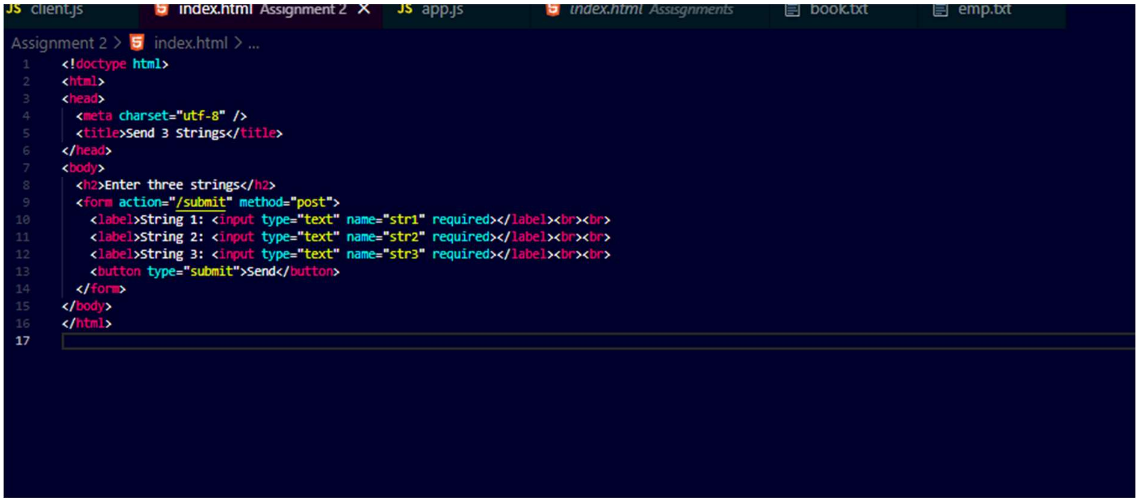
Received Parameters

- Hello
- Guys
- GoodMorning

Back

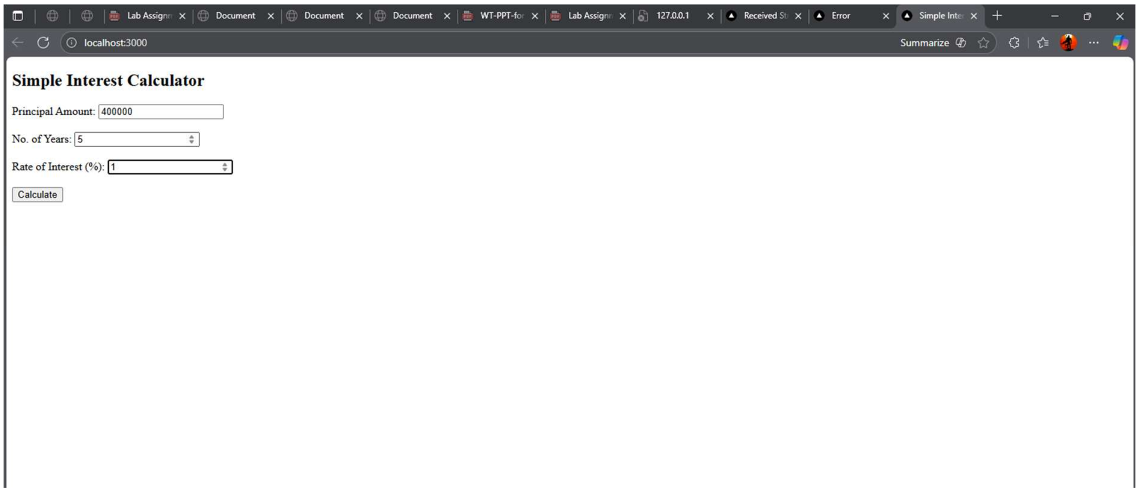


```javascript
// app.js
const express = require('express');
const path = require('path');

const app = express();
const PORT = 3000;

// middleware to parse application/x-www-form-urlencoded
app.use(express.urlencoded({ extended: true }));

// serve index.html at root
app.get('/', (req, res) => {
  res.sendFile(path.join(__dirname, 'index.html'));
});

// handle form POST
app.post('/submit', (req, res) => {
  const { str1, str2, str3 } = req.body;

  // build HTML response showing values in unordered list
  const html = `
    <!doctype html>
    <html>
    <head>
      <meta charset="utf-8" />
      <title>Received Strings</title>
    </head>
    <body>
      <h2>Received Parameters</h2>
      <ul>
        <li>${escapeHtml(str1)}</li>
        <li>${escapeHtml(str2)}</li>
        <li>${escapeHtml(str3)}</li>
      </ul>
      <a href="/">Back</a>
    </body>
    </html>
  `;
  res.send(html);
});

// small helper to avoid HTML injection
function escapeHtml(str) {
  if (!str) return '';
  return String(str)
    .replace(/&/g, '&amp;')
    .replace(/</g, '&lt;')
    .replace(/>/g, '&gt;')
    .replace(/"/g, '&quot;')
    .replace(/'/g, '&#39;');
}

app.listen(PORT, () => {
```



```html
<!doctype html>
<html>
<head>
  <meta charset="utf-8" />
  <title>Send 3 Strings</title>
</head>
<body>
  <h2>Enter three strings</h2>
  <form action="/submit" method="post">
    <label>String 1: <input type="text" name="str1" required></label><br><br>
    <label>String 2: <input type="text" name="str2" required></label><br><br>
    <label>String 3: <input type="text" name="str3" required></label><br><br>
    <button type="submit">Send</button>
  </form>
</body>
</html>
```

Q12)



localhost:3000

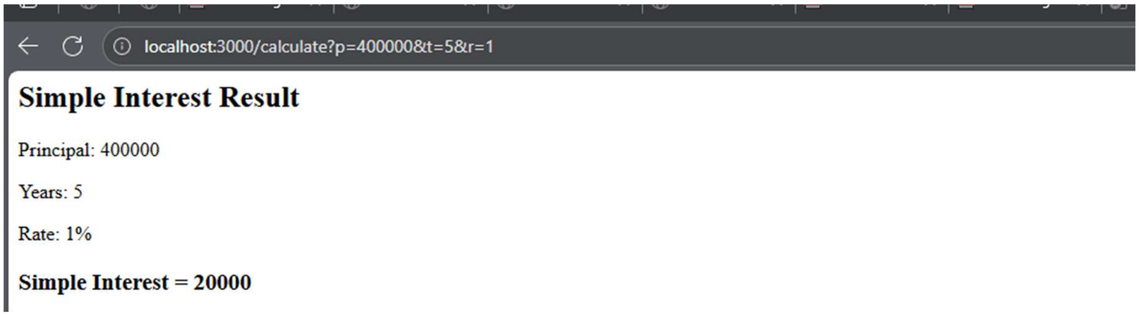
Simple Interest Calculator

Principal Amount: 400000

No. of Years: 5

Rate of Interest (%): 1

Calculate



localhost:3000/calculate?p=400000&t=5&r=1

Simple Interest Result

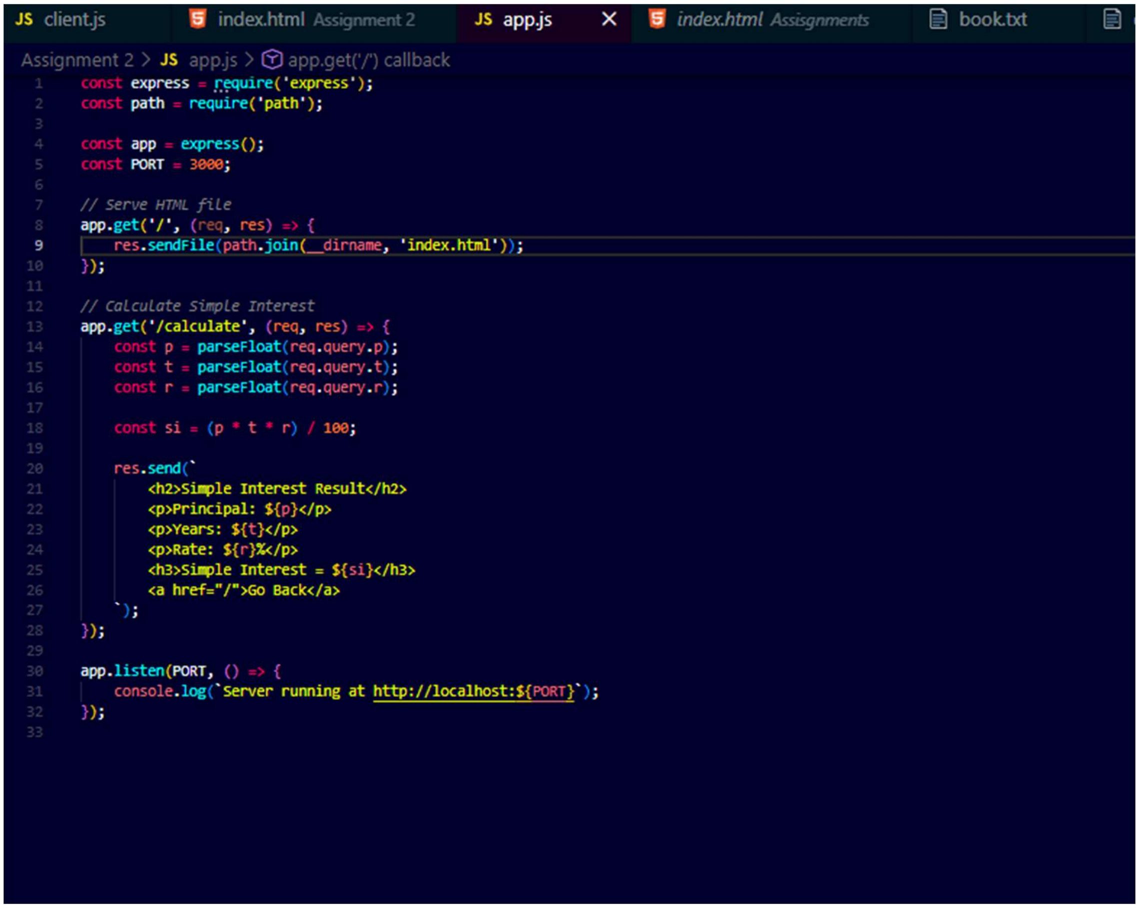
Principal: 400000

Years: 5

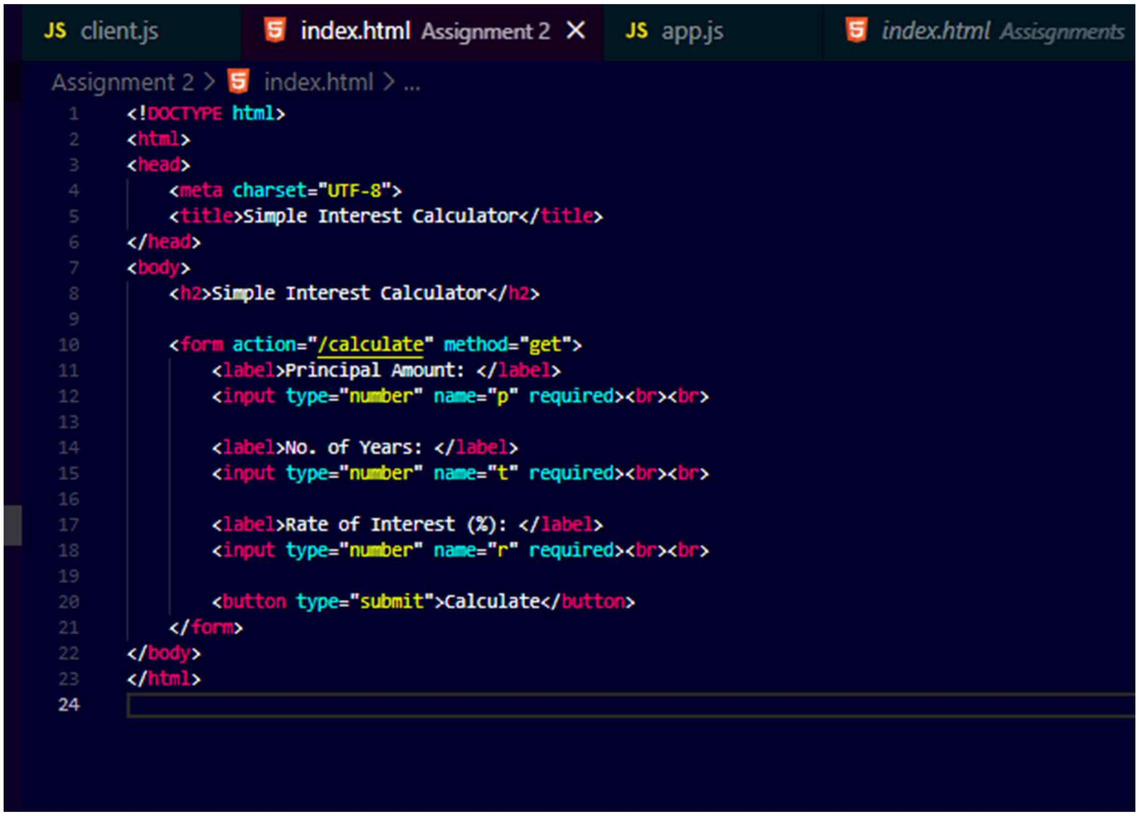
Rate: 1%

Simple Interest = 20000

\

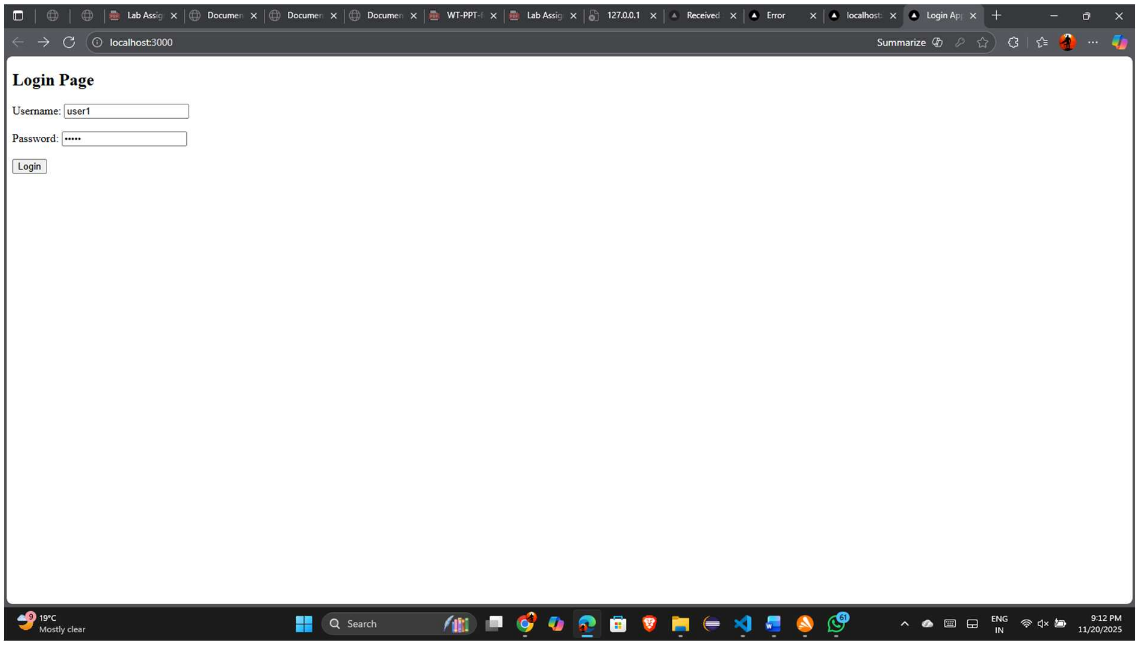


```javascript
const express = require('express');
const path = require('path');

const app = express();
const PORT = 3000;

// Serve HTML file
app.get('/', (req, res) => {
    res.sendFile(path.join(__dirname, 'index.html'));
});

// Calculate Simple Interest
app.get('/calculate', (req, res) => {
    const p = parseFloat(req.query.p);
    const t = parseFloat(req.query.t);
    const r = parseFloat(req.query.r);

    const si = (p * t * r) / 100;

    res.send(`
        <h2>Simple Interest Result</h2>
        <p>Principal: ${p}</p>
        <p>Years: ${t}</p>
        <p>Rate: ${r}%</p>
        <h3>Simple Interest = ${si}</h3>
        <a href="/">Go Back</a>
    `);
});

app.listen(PORT, () => {
    console.log(`Server running at http://localhost:${PORT}`);
});
```



```html
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Simple Interest Calculator</title>
</head>
<body>
    <h2>Simple Interest Calculator</h2>

    <form action="/calculate" method="get">
        <label>Principal Amount: </label>
        <input type="number" name="p" required><br><br>

        <label>No. of Years: </label>
        <input type="number" name="t" required><br><br>

        <label>Rate of Interest (%): </label>
        <input type="number" name="r" required><br><br>

        <button type="submit">Calculate</button>
    </form>
</body>
</html>
```

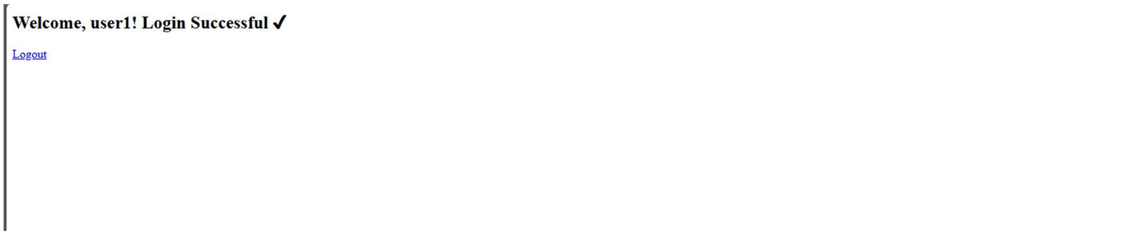
Q13)



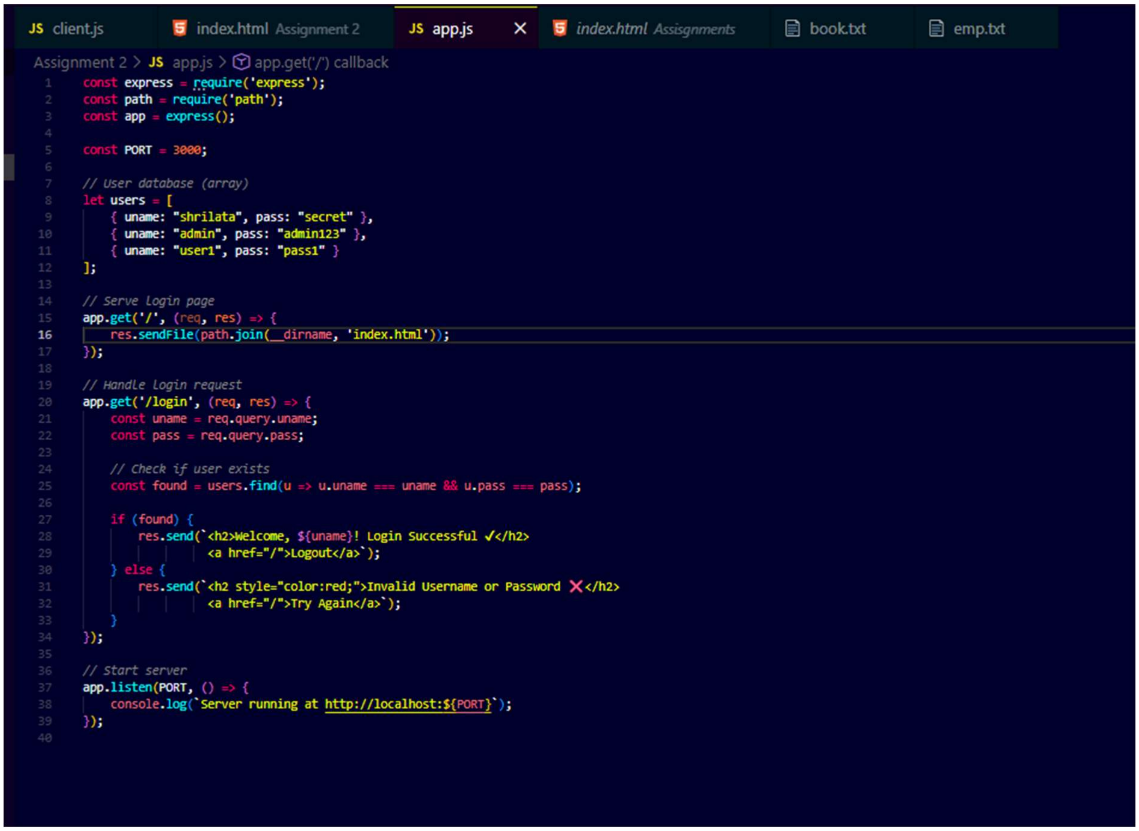
Login Page

Username: user1

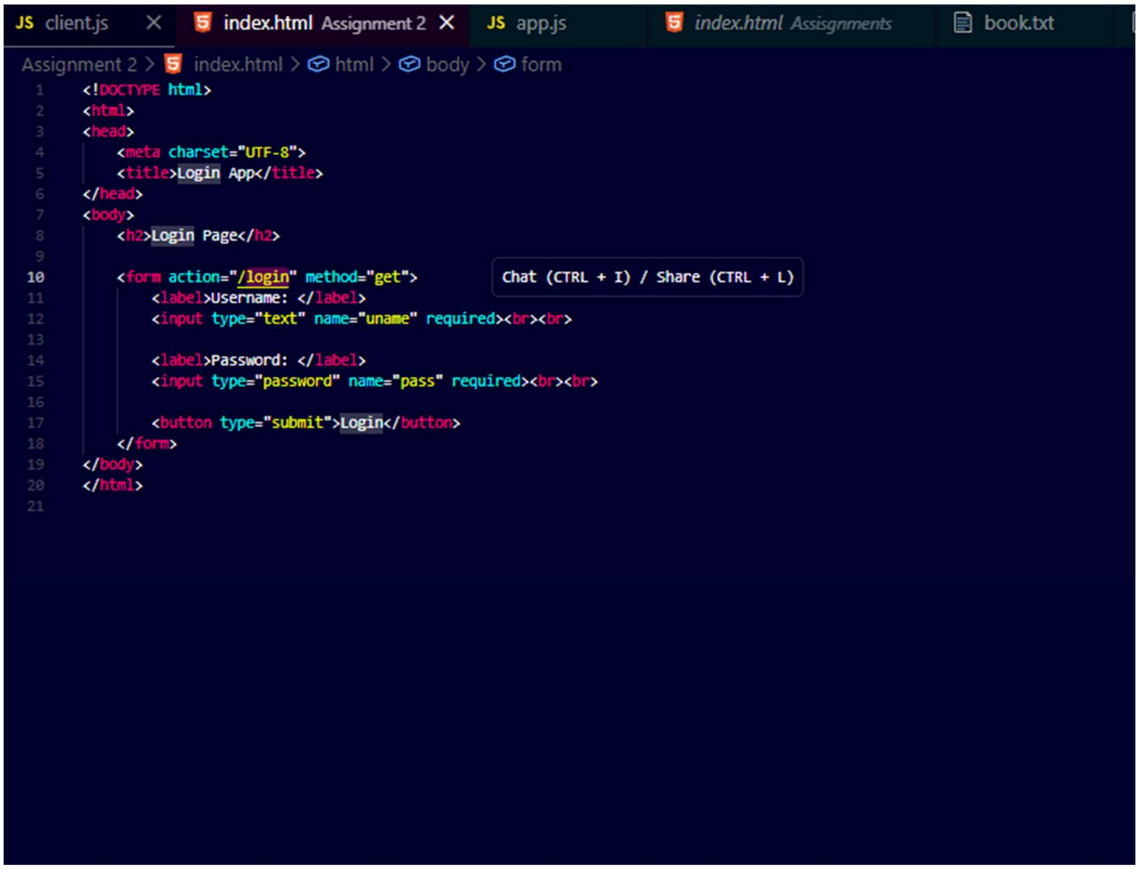
Password: •••••



Welcome, user1! Login Successful ✔

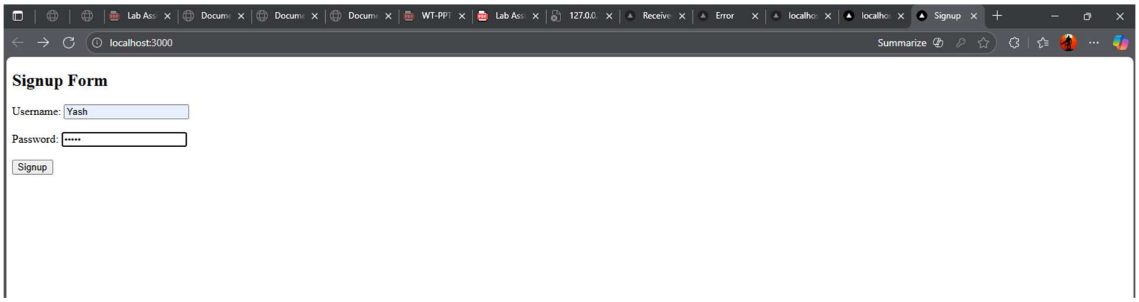


```javascript
const express = require('express');
const path = require('path');
const app = express();

const PORT = 3000;

// User database (array)
let users = [
    { uname: "shrilata", pass: "secret" },
    { uname: "admin", pass: "admin123" },
    { uname: "user1", pass: "pass1" }
];

// Serve login page
app.get('/', (req, res) => {
    res.sendFile(path.join(__dirname, 'index.html'));
});

// Handle login request
app.get('/login', (req, res) => {
    const uname = req.query.uname;
    const pass = req.query.pass;

    // Check if user exists
    const found = users.find(u => u.uname === uname && u.pass === pass);

    if (found) {
        res.send(`<h2>Welcome, ${uname}! Login Successful ✓</h2>
                  <a href="/">Logout</a>`);
    } else {
        res.send(`<h2 style="color:red;">Invalid Username or Password ❌</h2>
                  <a href="/">Try Again</a>`);
    }
});

// Start server
app.listen(PORT, () => {
    console.log(`Server running at http://localhost:${PORT}`);
});
```


JS client.js
index.html Assignment 2
JS app.js
index.html Assisgnments
book.txt
Assignment 2 > index.html > html > body > form
Chat (CTRL + I) / Share (CTRL + L)

```html
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Login App</title>
</head>
<body>
    <h2>Login Page</h2>

    <form action="/login" method="get">
        <label>Username: </label>
        <input type="text" name="uname" required><br><br>

        <label>Password: </label>
        <input type="password" name="pass" required><br><br>

        <button type="submit">Login</button>
    </form>
</body>
</html>
```

Q14)



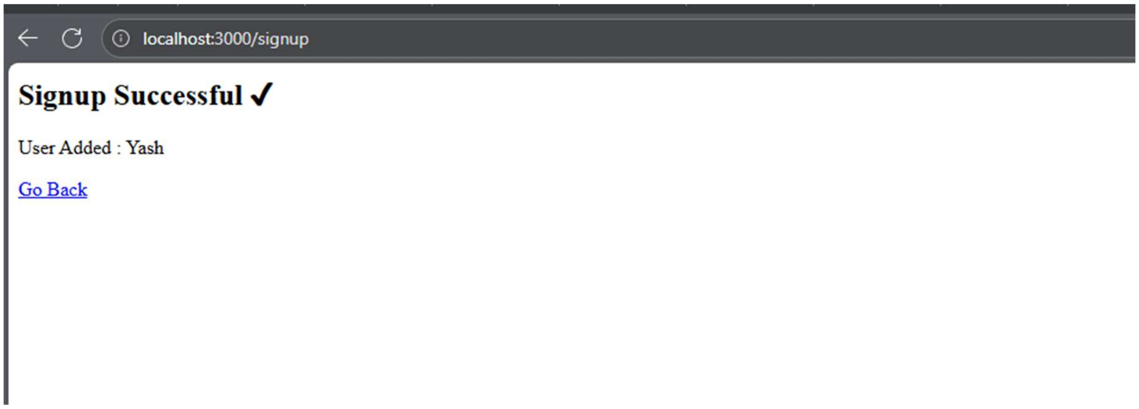
localhost:3000

Signup Form

Username: Yash

Password: •••••

Signup

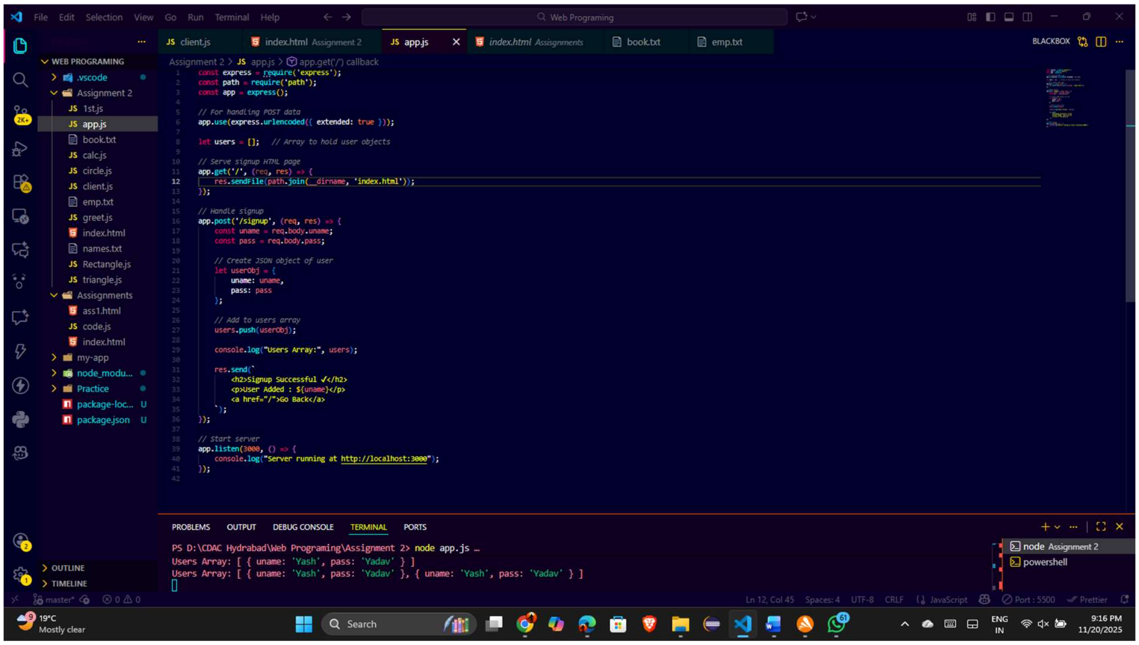


localhost:3000/signup

Signup Successful ✔

User Added : Yash

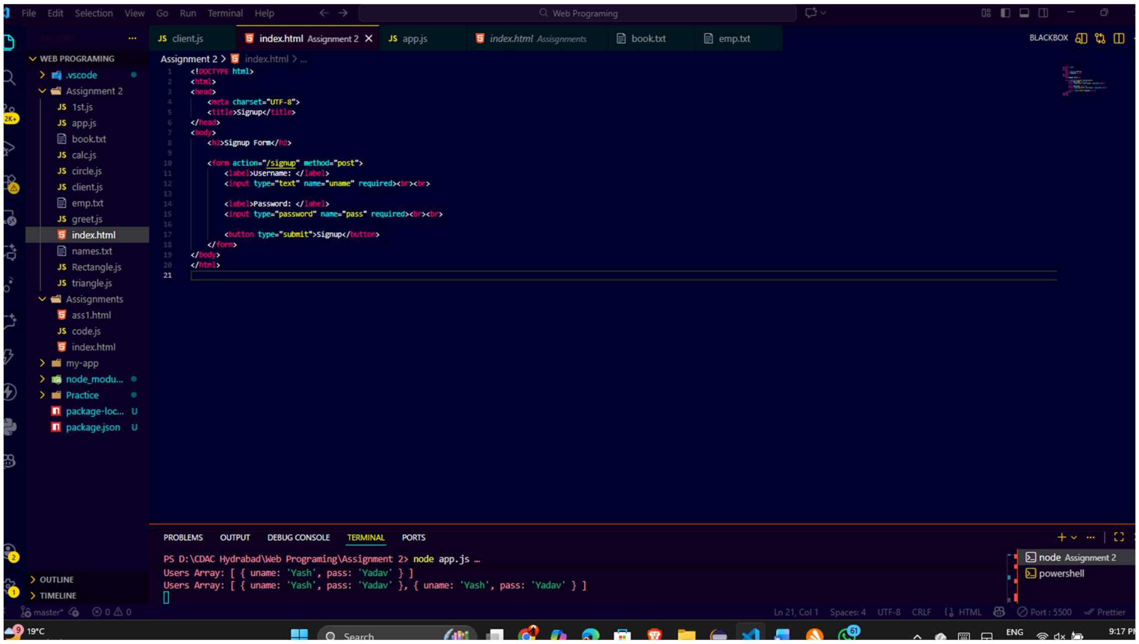
Go Back



Assignment 2 > JS app.js > app.get('/') callback

```
const express = require('express');
const path = require('path');
const app = express();

// For handling POST data
app.use(express.urlencoded({ extended: true }));

let users = [];   // Array to hold user objects

// Serve signup HTML page
app.get('/', (req, res) => {
    res.sendFile(path.join(__dirname, 'index.html'));
});

// Handle signup
app.post('/signup', (req, res) => {
    const uname = req.body.uname;
    const pass = req.body.pass;

    // Create JSON object of user
    let userObj = {
        uname: uname,
        pass: pass
    };

    // Add to users array
    users.push(userObj);

    console.log("Users Array:", users);

    res.send(`
        <h2>Signup Successful ✓</h2>
        <p>User Added : ${uname}</p>
        <a href="/">Go Back</a>
    `);
});

// Start server
app.listen(3000, () => {
    console.log("Server running at http://localhost:3000");
});
```

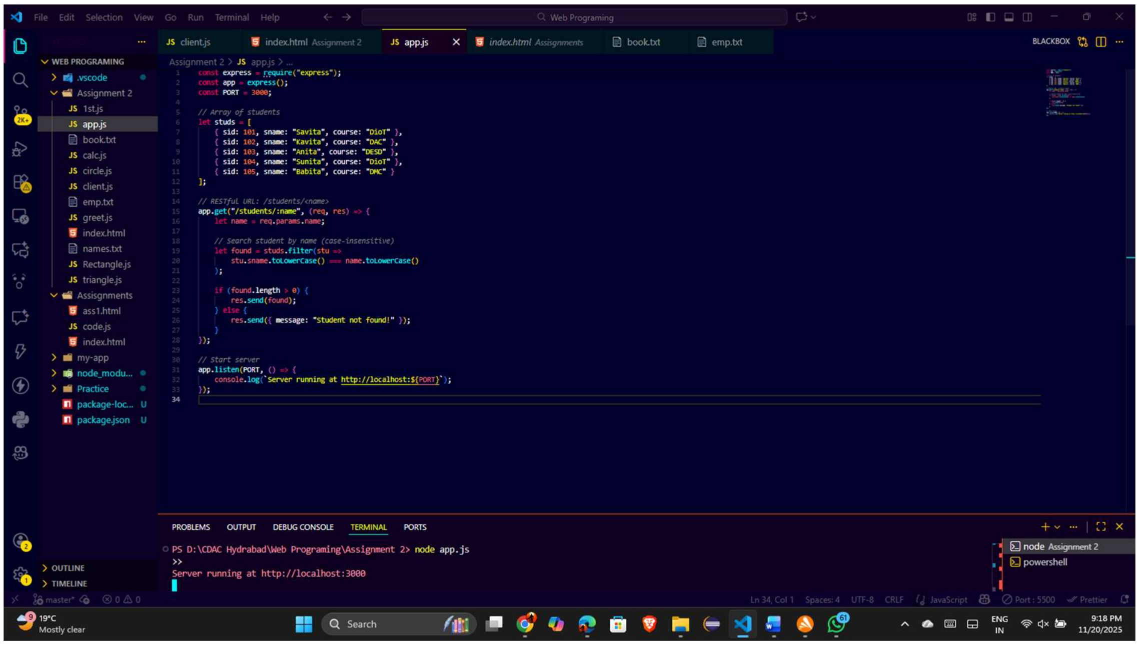
```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node app.js …
Users Array: [ { uname: 'Yash', pass: 'Yadav' } ]
Users Array: [ { uname: 'Yash', pass: 'Yadav' }, { uname: 'Yash', pass: 'Yadav' } ]
```



```html
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Signup</title>
</head>
<body>
    <h2>Signup Form</h2>

    <form action="/signup" method="post">
        <label>Username: </label>
        <input type="text" name="uname" required><br><br>

        <label>Password: </label>
        <input type="password" name="pass" required><br><br>

        <button type="submit">Signup</button>
    </form>
</body>
</html>
```

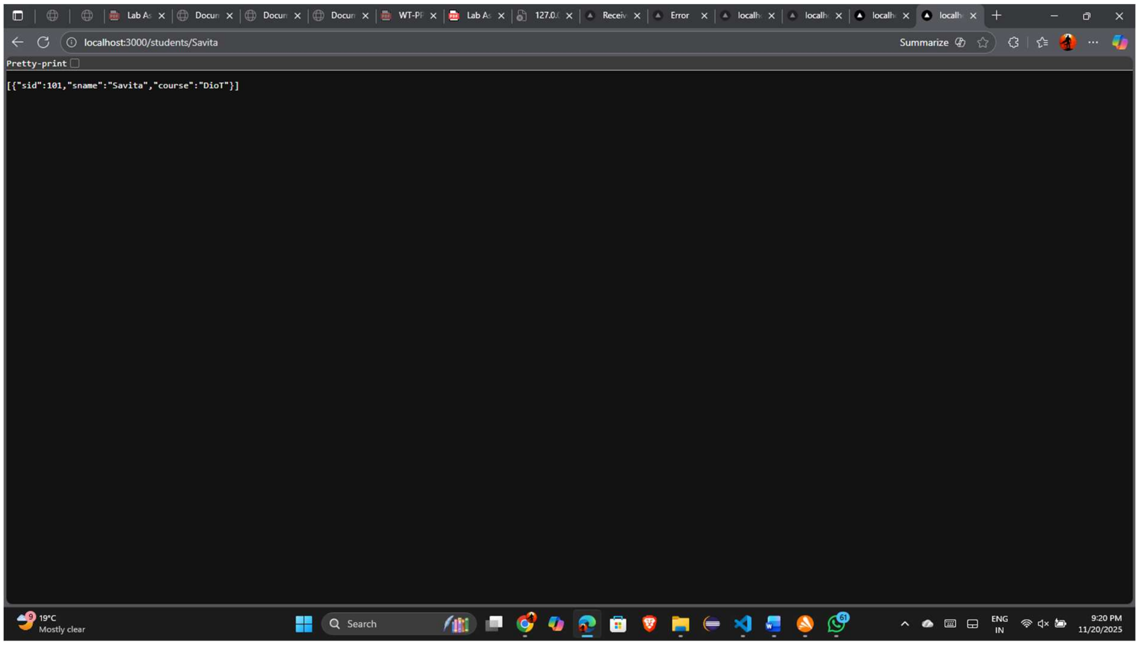
```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node app.js
Users Array: [ { uname: 'Yash', pass: 'Yadav' } ]
Users Array: [ { uname: 'Yash', pass: 'Yadav' }, { uname: 'Yash', pass: 'Yadav' } ]
```

Q15)



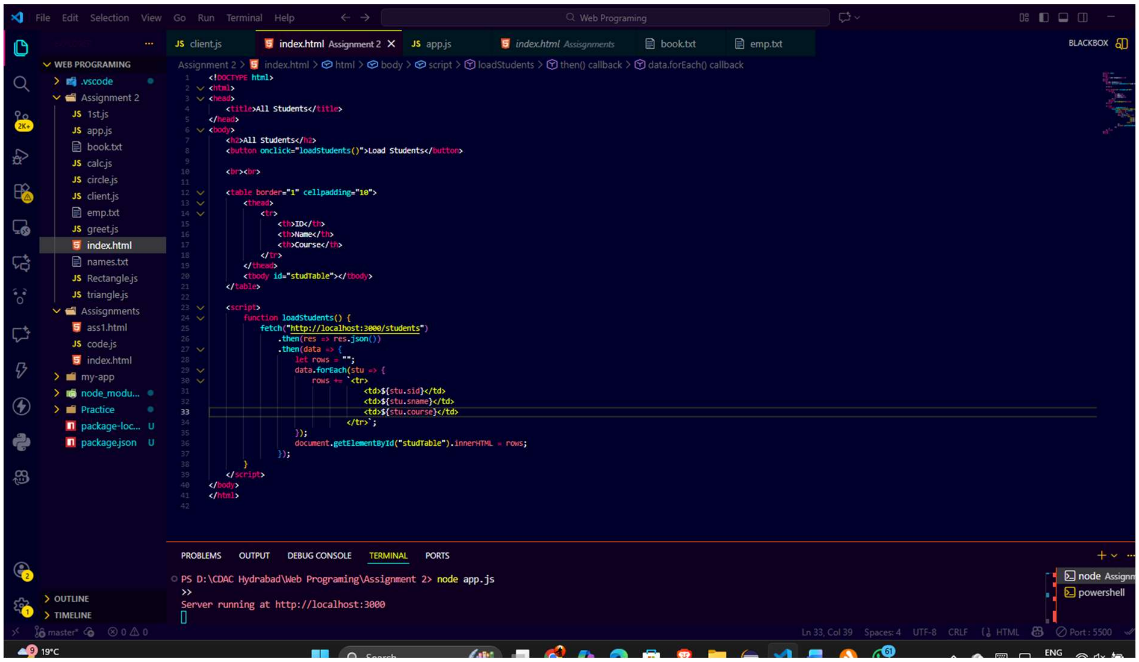
```javascript
const express = require("express");
const app = express();
const PORT = 3000;

// Array of students
let studs = [
    { sid: 101, sname: "Savita", course: "DIoT" },
    { sid: 102, sname: "Kavita", course: "DAC" },
    { sid: 103, sname: "Anita", course: "DESD" },
    { sid: 104, sname: "Sunita", course: "DIoT" },
    { sid: 105, sname: "Babita", course: "DMC" }
];

// RESTful URL: /students/<name>
app.get("/students/:name", (req, res) => {
    let name = req.params.name;

    // Search student by name (case-insensitive)
    let found = studs.filter(stu =>
        stu.sname.toLowerCase() === name.toLowerCase()
    );

    if (found.length > 0) {
        res.send(found);
    } else {
        res.send({ message: "Student not found!" });
    }
});

// Start server
app.listen(PORT, () => {
    console.log(`Server running at http://localhost:${PORT}`);
});
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node app.js
>>
Server running at http://localhost:3000
```



```
[{"sid":101,"sname":"Savita","course":"DioT"}]
```

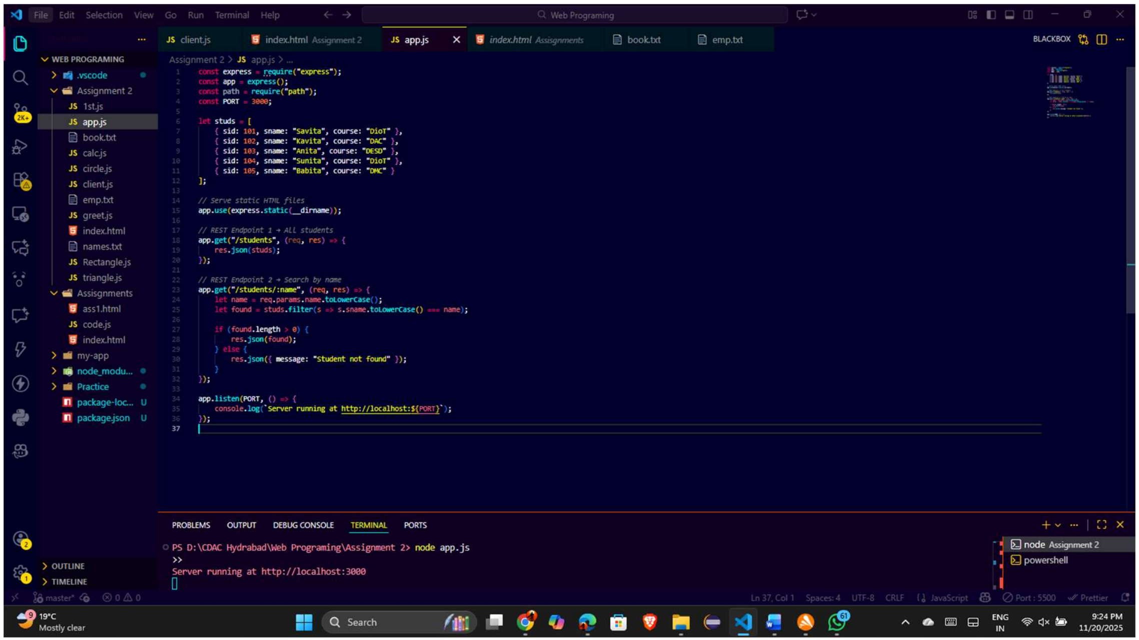
Q16)



File Edit Selection View Go Run Terminal Help
Web Programing
client.js
index.html Assignment 2
app.js
index.html Assignments
book.txt
emp.txt
WEB PROGRAMING
Assignment 2 > index.html > html > body > script > loadStudents > then() callback > data.forEach() callback
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Ln 33, Col 39 Spaces: 4 UTF-8 CRLF HTML Port : 5500

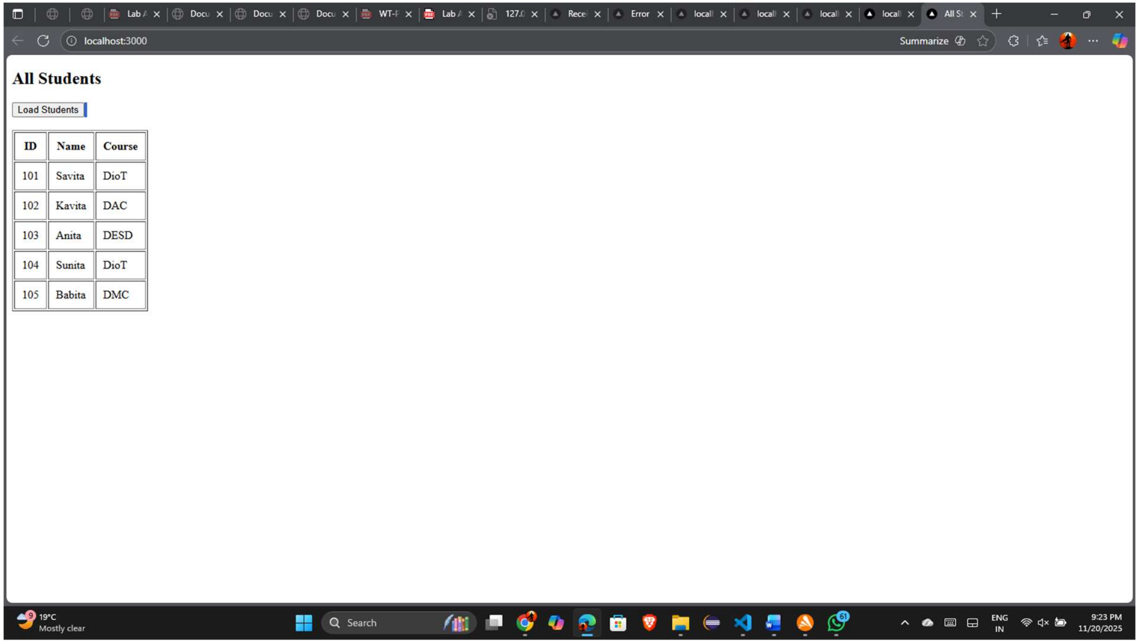
```html
<!DOCTYPE html>
<html>
<head>
    <title>All Students</title>
</head>
<body>
    <h2>All Students</h2>
    <button onclick="loadStudents()">Load Students</button>

    <br><br>

    <table border="1" cellpadding="10">
        <thead>
            <tr>
                <th>ID</th>
                <th>Name</th>
                <th>Course</th>
            </tr>
        </thead>
        <tbody id="studTable"></tbody>
    </table>

    <script>
        function loadStudents() {
            fetch("http://localhost:3000/students")
                .then(res => res.json())
                .then(data => {
                    let rows = "";
                    data.forEach(stu => {
                        rows += `<tr>
                              <td>${stu.sid}</td>
                              <td>${stu.sname}</td>
                              <td>${stu.course}</td>
                          </tr>`;
                    });
                    document.getElementById("studTable").innerHTML = rows;
                });
        }
    </script>
</body>
</html>
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node app.js
>>
Server running at http://localhost:3000
```



```
const express = require("express");
const app = express();
const path = require("path");
const PORT = 3000;

let studs = [
    { sid: 101, sname: "Savita", course: "DioT" },
    { sid: 102, sname: "Kavita", course: "DAC" },
    { sid: 103, sname: "Anita", course: "DESD" },
    { sid: 104, sname: "Sunita", course: "DioT" },
    { sid: 105, sname: "Babita", course: "DMC" }
];

// Serve static HTML files
app.use(express.static(__dirname));

// REST Endpoint 1 → All students
app.get("/students", (req, res) => {
    res.json(studs);
});

// REST Endpoint 2 → Search by name
app.get("/students/:name", (req, res) => {
    let name = req.params.name.toLowerCase();
    let found = studs.filter(s => s.sname.toLowerCase() === name);

    if (found.length > 0) {
        res.json(found);
    } else {
        res.json({ message: "Student not found" });
    }
});

app.listen(PORT, () => {
    console.log(`Server running at http://localhost:${PORT}`);
});
```

```
PS D:\CDAC Hydrabad\Web Programing\Assignment 2> node app.js
>>
Server running at http://localhost:3000
```



All Students

Load Students

ID	Name	Course
101	Savita	DioT
102	Kavita	DAC
103	Anita	DESD
104	Sunita	DioT
105	Babita	DMC