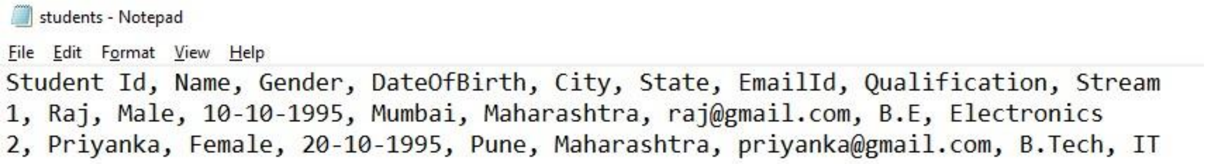
Web Based Case Study

PROBLEM STATEMENT:

The requirement is to develop a Web application which will read data from a .csv file and perform various operations mentioned below.

- Create a csv file by the name **students.csv** with the following content:



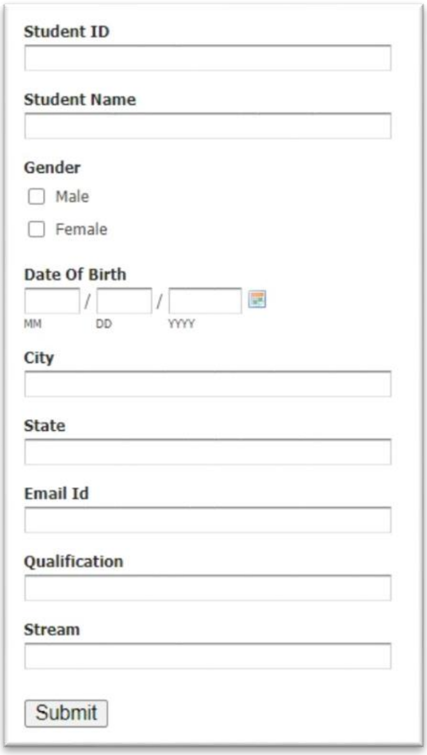
```
Student Id, Name, Gender, DateOfBirth, City, State, EmailId, Qualification, Stream
1, Raj, Male, 10-10-1995, Mumbai, Maharashtra, raj@gmail.com, B.E, Electronics
2, Priyanka, Female, 20-10-1995, Pune, Maharashtra, priyanka@gmail.com, B.Tech, IT
```

- This application should be developed using combination of client/server web technologies. For the client side code, combination of HTML/CSS/JS should be used and for the server side code, you can use any technology of choice like Servlet/JSP/PHP/.NET/Python.

- Create an **index.html** page which will display the following options to the user:
  - Add New Student ○ Search for a Student by Id
  - Display all the Students

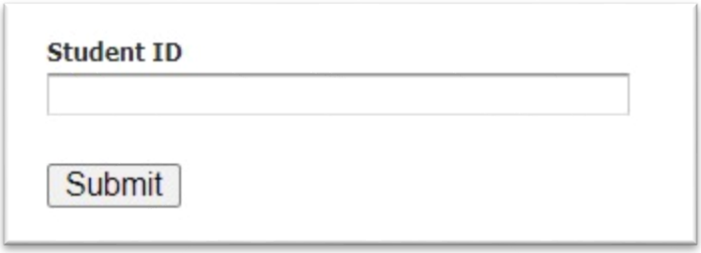
- Based on the selection done by the user, create separate pages for processing the request accordingly.

  - **Step 1:** create **add-student.html** page which will display a form to the user like this:



- ✦ When the user submits the form, some server side code should be written to save the data in the students.csv file.

- ○ **<u>Step 2:</u>** create a page called as **search-student.html** file which will look like this:



- ✦ When the user submits this form, some server side code should read the data from the csv file and display the same to the user like this:

Student ID	1
Student Name	Raj
Gender	Male
DateOfBirth	10-10-1995
City	Mumbai
State	Maharashtra
EmailId	raj@gmail.com
Qualification	B.E
Stream	Electronics

- ○ Similarly try to complete the 3rd scenario which will display all the students data in an HTML page.

SOLUTION:

CLIENT SIDE (FRONT-END) TECHNOLOGIES USED:

- HTML
- CSS
- JavaScript
- JavaScript library- jQuery

SERVER SIDE (BACK-END) TECHNOLOGIES USED:

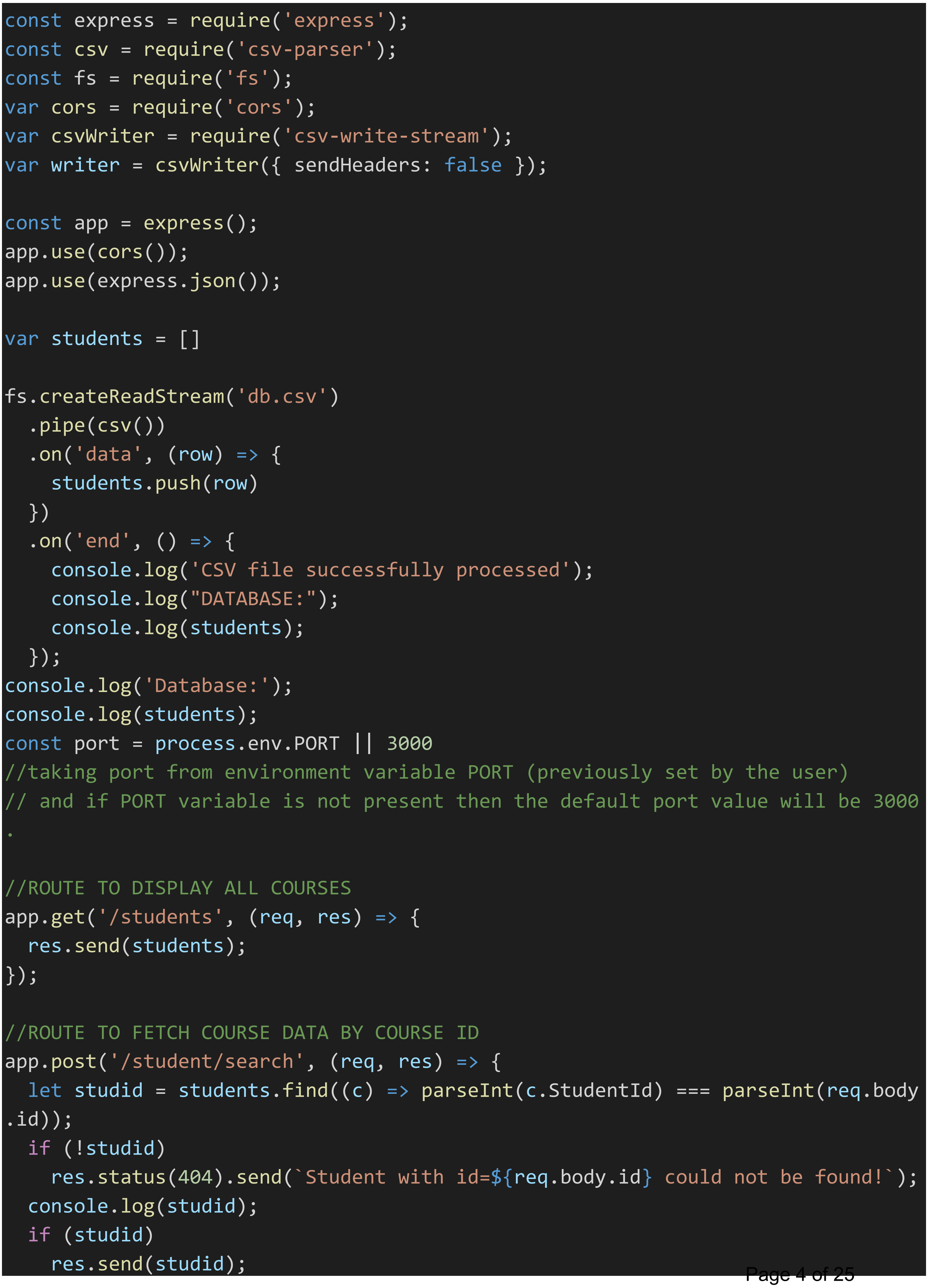
- Node.js
- Node.js Modules:
    - ♦ cors
    - ♦ csv-paser
    - ♦ csv-write-stream
    - ♦ fs
- Node.js frameworks:
    - ♦ express.js

CODE EDITOR:

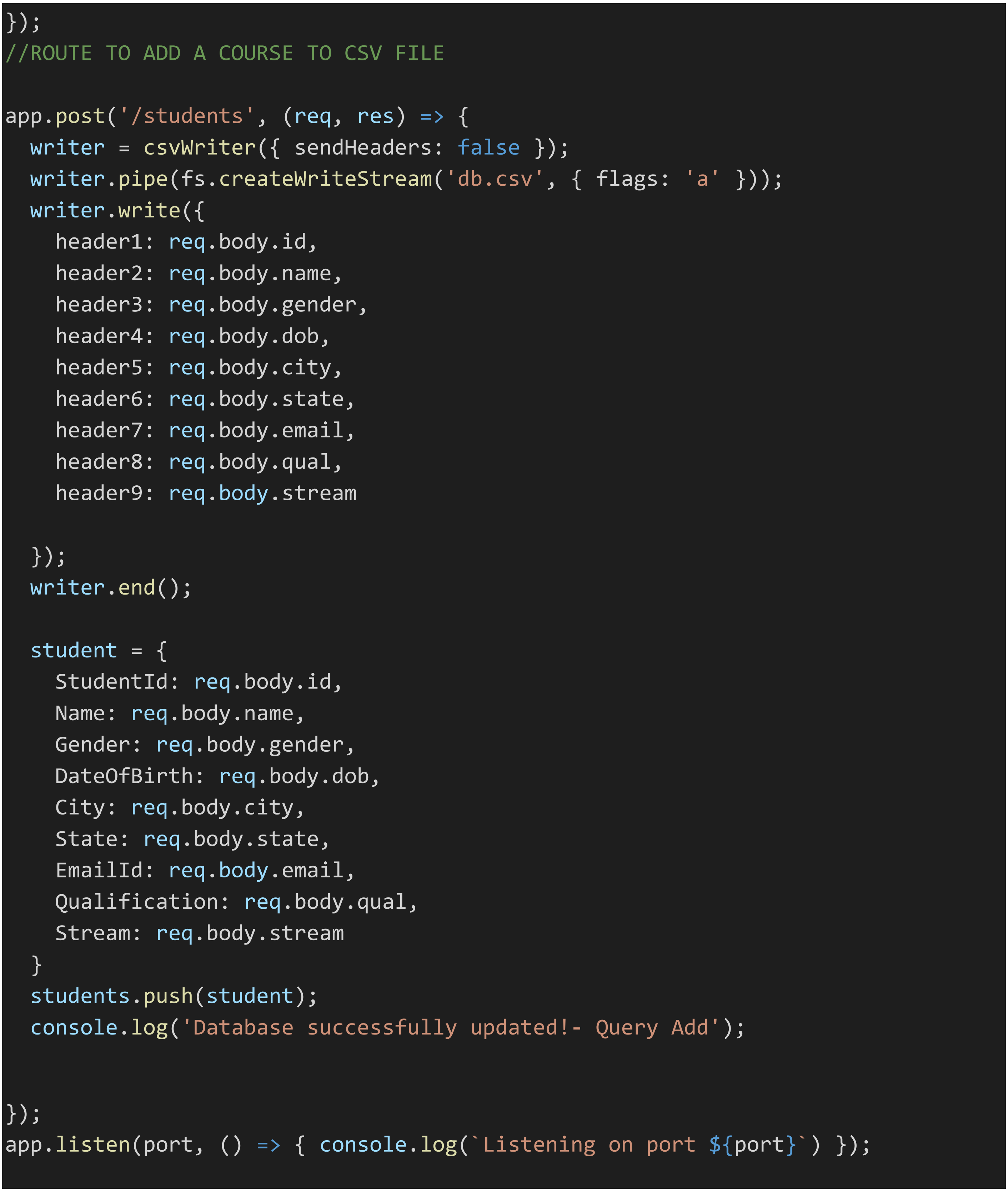
- Visual Studio Code

Server side code:

File : Index.js



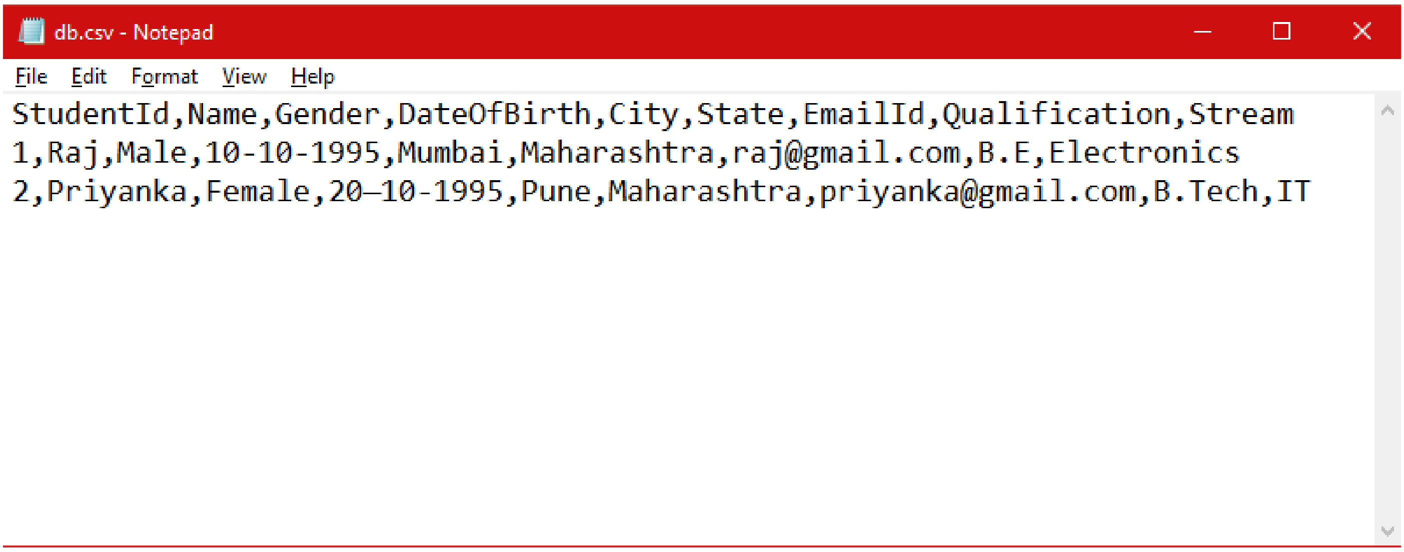
```
const express = require('express');
const csv = require('csv-parser');
const fs = require('fs');
var cors = require('cors');
var csvWriter = require('csv-write-stream');
var writer = csvWriter({ sendHeaders: false });

const app = express();
app.use(cors());
app.use(express.json());

var students = []

fs.createReadStream('db.csv')
  .pipe(csv())
  .on('data', (row) => {
    students.push(row)
  })
  .on('end', () => {
    console.log('CSV file successfully processed');
    console.log("DATABASE:");
    console.log(students);
  });
console.log('Database:');
console.log(students);
const port = process.env.PORT || 3000
//taking port from environment variable PORT (previously set by the user)
// and if PORT variable is not present then the default port value will be 3000
.

//ROUTE TO DISPLAY ALL COURSES
app.get('/students', (req, res) => {
  res.send(students);
});

//ROUTE TO FETCH COURSE DATA BY COURSE ID
app.post('/student/search', (req, res) => {
  let studid = students.find((c) => parseInt(c.StudentId) === parseInt(req.body
.id));
  if (!studid)
    res.status(404).send(`Student with id=${req.body.id} could not be found!`);
  console.log(studid);
  if (studid)
    res.send(studid);
```



```
});
//ROUTE TO ADD A COURSE TO CSV FILE

app.post('/students', (req, res) => {
  writer = csvWriter({ sendHeaders: false });
  writer.pipe(fs.createWriteStream('db.csv', { flags: 'a' }));
  writer.write({
    header1: req.body.id,
    header2: req.body.name,
    header3: req.body.gender,
    header4: req.body.dob,
    header5: req.body.city,
    header6: req.body.state,
    header7: req.body.email,
    header8: req.body.qual,
    header9: req.body.stream

  });
  writer.end();

  student = {
    StudentId: req.body.id,
    Name: req.body.name,
    Gender: req.body.gender,
    DateOfBirth: req.body.dob,
    City: req.body.city,
    State: req.body.state,
    EmailId: req.body.email,
    Qualification: req.body.qual,
    Stream: req.body.stream
  }
  students.push(student);
  console.log('Database successfully updated!- Query Add');


});
app.listen(port, () => { console.log(`Listening on port ${port}`) });
```

Database Present State

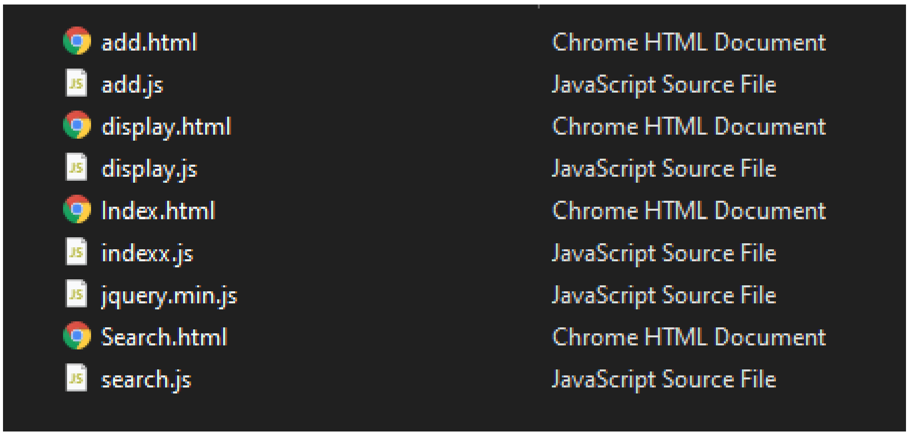
File: db.csv



```
StudentId,Name,Gender,DateOfBirth,City,State,EmailId,Qualification,Stream
1,Raj,Male,10-10-1995,Mumbai,Maharashtra,raj@gmail.com,B.E,Electronics
2,Priyanka,Female,20–10-1995,Pune,Maharashtra,priyanka@gmail.com,B.Tech,IT
```

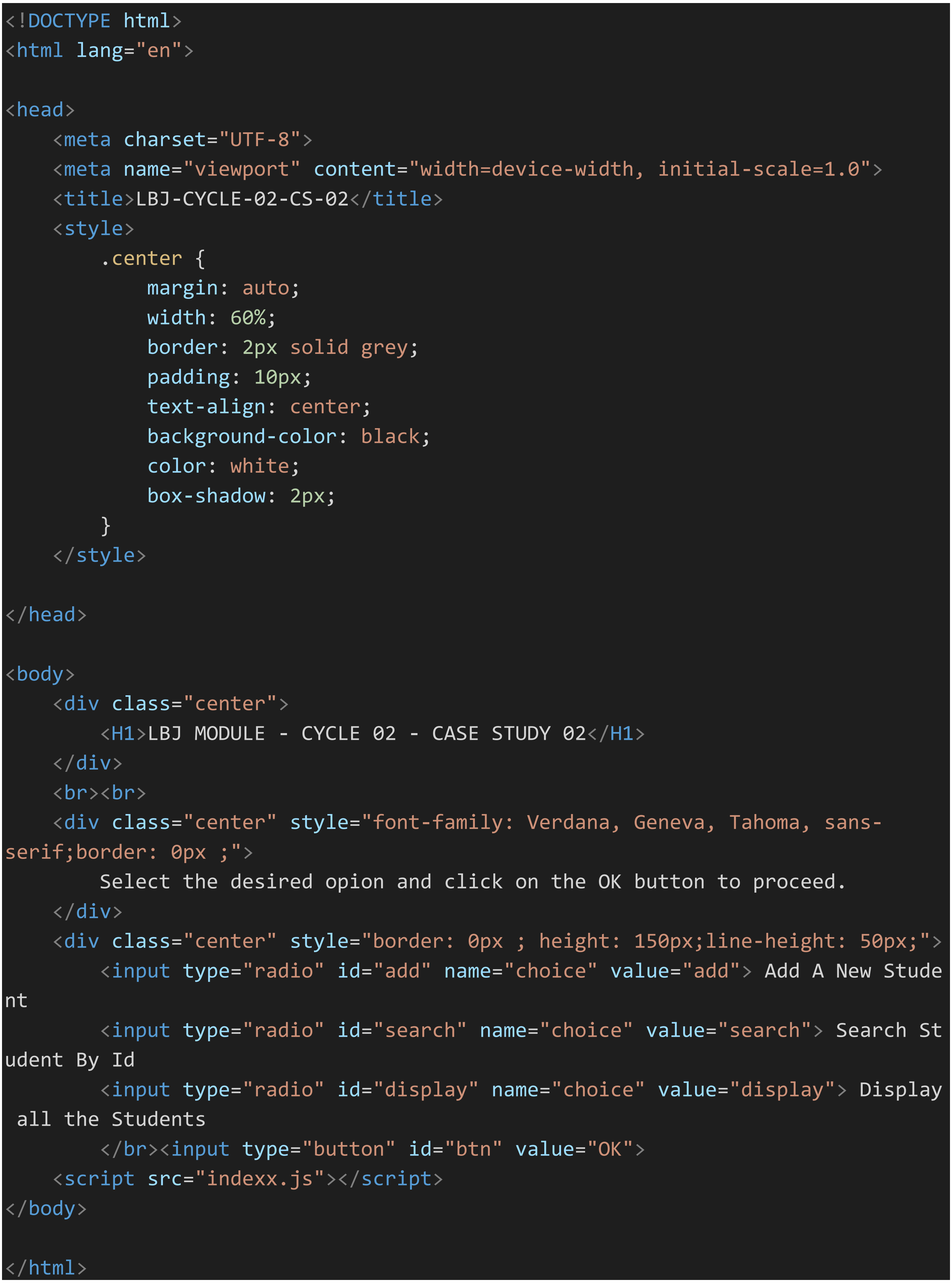
Client side code:

File list:



add.html	Chrome HTML Document
add.js	JavaScript Source File
display.html	Chrome HTML Document
display.js	JavaScript Source File
Index.html	Chrome HTML Document
indexx.js	JavaScript Source File
jquery.min.js	JavaScript Source File
Search.html	Chrome HTML Document
search.js	JavaScript Source File

Index.html



```html
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>LBJ-CYCLE-02-CS-02</title>
    <style>
        .center {
            margin: auto;
            width: 60%;
            border: 2px solid grey;
            padding: 10px;
            text-align: center;
            background-color: black;
            color: white;
            box-shadow: 2px;
        }
    </style>

</head>

<body>
    <div class="center">
        <H1>LBJ MODULE - CYCLE 02 - CASE STUDY 02</H1>
    </div>
    <br><br>
    <div class="center" style="font-family: Verdana, Geneva, Tahoma, sans-serif;border: 0px ;">
        Select the desired opion and click on the OK button to proceed.
    </div>
    <div class="center" style="border: 0px ; height: 150px;line-height: 50px;">
        <input type="radio" id="add" name="choice" value="add"> Add A New Student
        <input type="radio" id="search" name="choice" value="search"> Search Student By Id
        <input type="radio" id="display" name="choice" value="display"> Display all the Students
        </br><input type="button" id="btn" value="OK">
    <script src="indexx.js"></script>
</body>

</html>
```

indexx.js

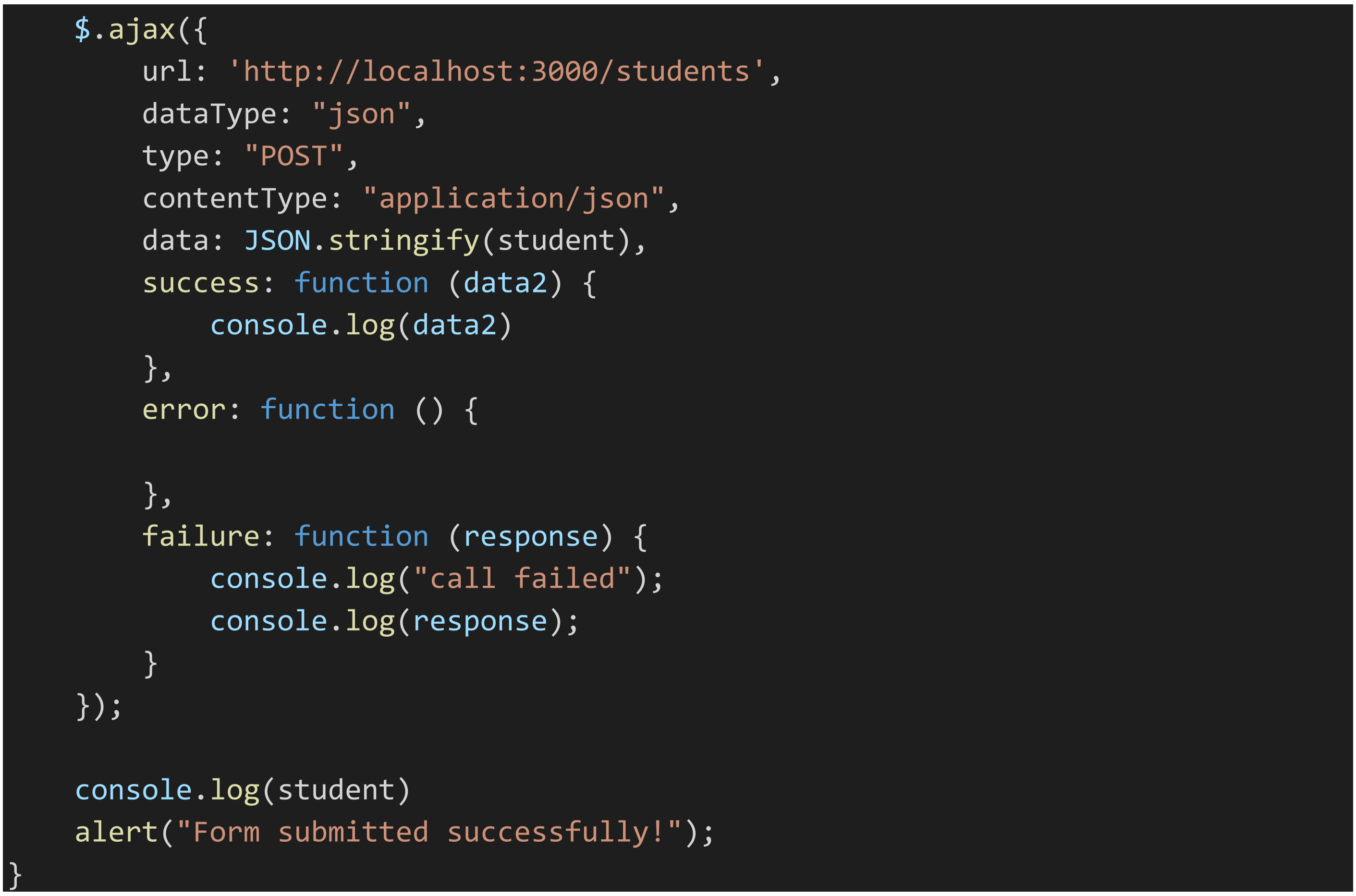
```
console.log("Indexx loaded");
const btn = document.querySelector('#btn');
btn.onclick = function () {
    const rbs = document.querySelectorAll('input[name="choice"]');
    let selectedValue;
    for (const rb of rbs) {
        if (rb.checked) {
            selectedValue = rb.value;
            break;
        }
    }
    if (selectedValue == "add") {
        location.href = "add.html"
    } else if (selectedValue == "search") {
        location.href = "search.html"
    } else if (selectedValue == "display") {
        location.href = "display.html"
    }

};
```

add.html

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Add student</title>
    <style>
        .center {
            margin: auto;
            width: 60%;
            border: 2px solid grey;
            padding: 10px;
            background-color: black;
            color: white;
            box-shadow: 2px;
            padding-top: 50px;
        }
    </style>
    <script src="jquery.min.js"></script>

</head>

<body>
    <div class="center">
        <h1>Student Enrollment Form:</h1>
    </div>
    <div class="center" style="line-height:30px;">
        <form id="form" method="POST">
            Student Id: <br>
            <input type="number" id="id"><br>
            Student Name: <br>
            <input type="text" id="name"><br>
            Gender:<br>
            <input type="checkbox" id="male"> Male <br>
            <input type="checkbox" id="female"> Female<br>
            <input type="date" id="dob"><br>
            City:<br>
            <input type="text" id="city"><br>
            State:<br>
            <input type="text" id="state"><br>
            Email Id:<br>
            <input type="email" id="email"><br>
            Qualification:<br>
            <input type="text" id="qualification"><br>
            Stream:<br>
            <input type="text" id="stream"><br>
            <input type="submit" form="form" value="Submit" onclick="add(event)">
            <input type="button" value="Back" onclick="back()">
        </form>
    </div>
    <script src="add.js"></script>
</body>

</html>
```

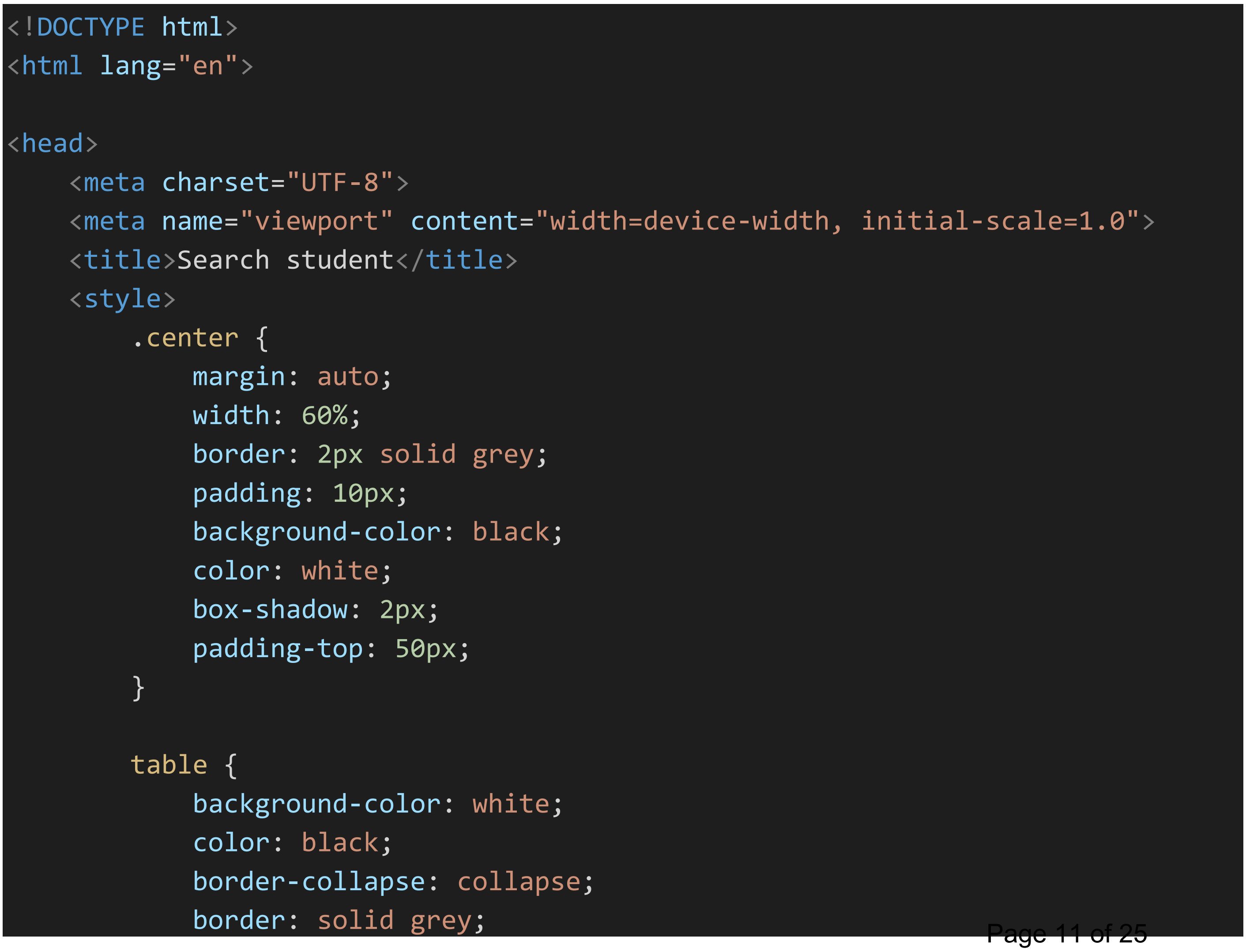
add.js

```
function back() {
    location.href = "index.html";
}

function add(event) {
    event.preventDefault();
    const id = document.getElementById("id").value.trim();
    const name = document.getElementById("name").value.trim();
    const state = document.getElementById("state").value.trim();
    const email = document.getElementById("email").value.trim();
    const dob = document.getElementById("dob").value.trim();
    const stream = document.getElementById("stream").value.trim();
    const qual = document.getElementById("qualification").value.trim();
    const city = document.getElementById("city").value.trim();

    if (document.getElementById("male").checked === true) {
        var gender = "male";
    } else if (document.getElementById("female").checked === true) {
        var gender = "female";
    }
    const student = {
        id: id,
        name: name,
        gender: gender,
        dob: dob,
        city: city,
        state: state,
        email: email,
        qual: qual,
        stream: stream

    }

    yourUrl = 'http://localhost:3000/students';
    data = JSON.stringify(student)
```

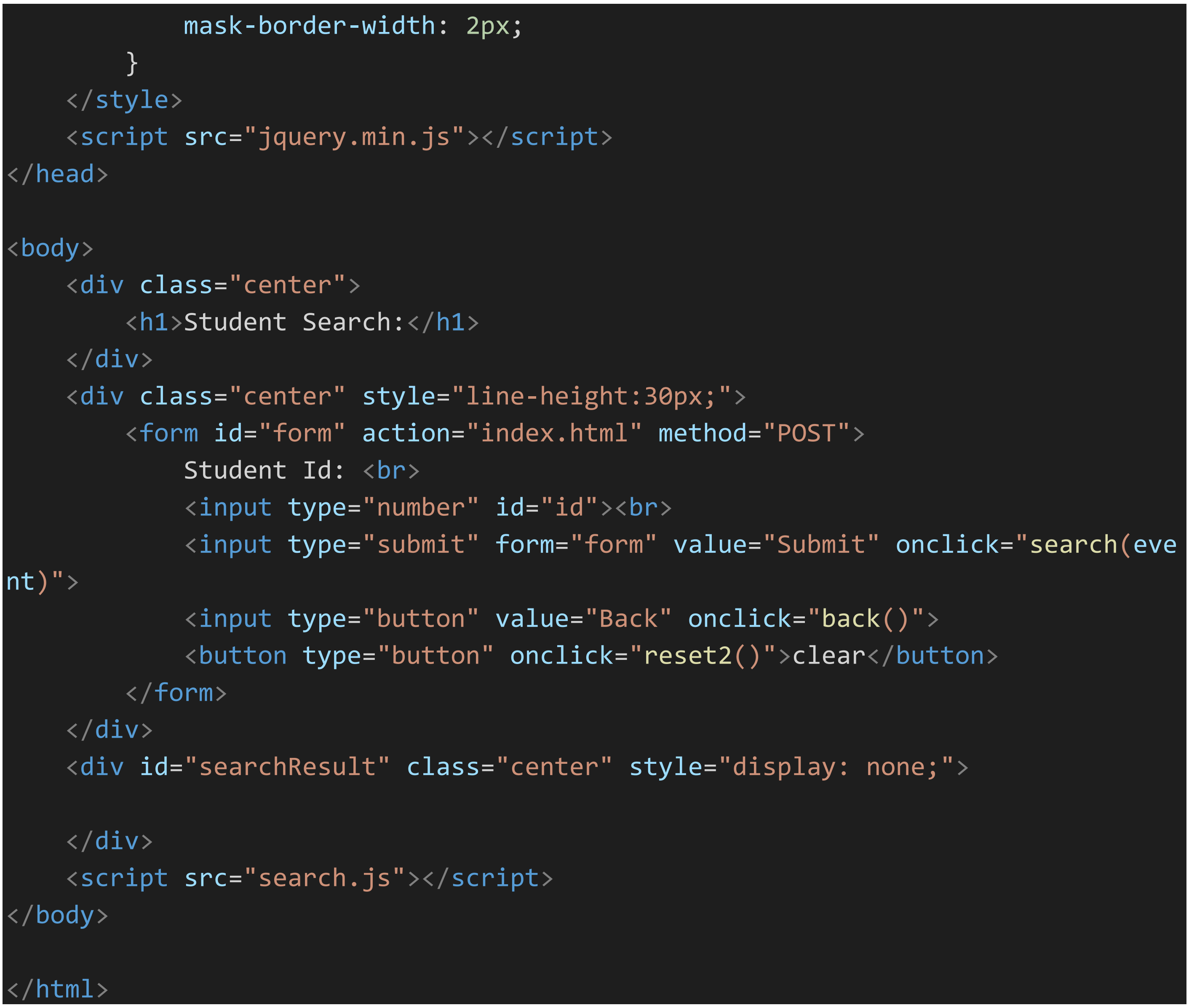


```
    $.ajax({
        url: 'http://localhost:3000/students',
        dataType: "json",
        type: "POST",
        contentType: "application/json",
        data: JSON.stringify(student),
        success: function (data2) {
            console.log(data2)
        },
        error: function () {

        },
        failure: function (response) {
            console.log("call failed");
            console.log(response);
        }
    });

    console.log(student)
    alert("Form submitted successfully!");
}
```

search.html

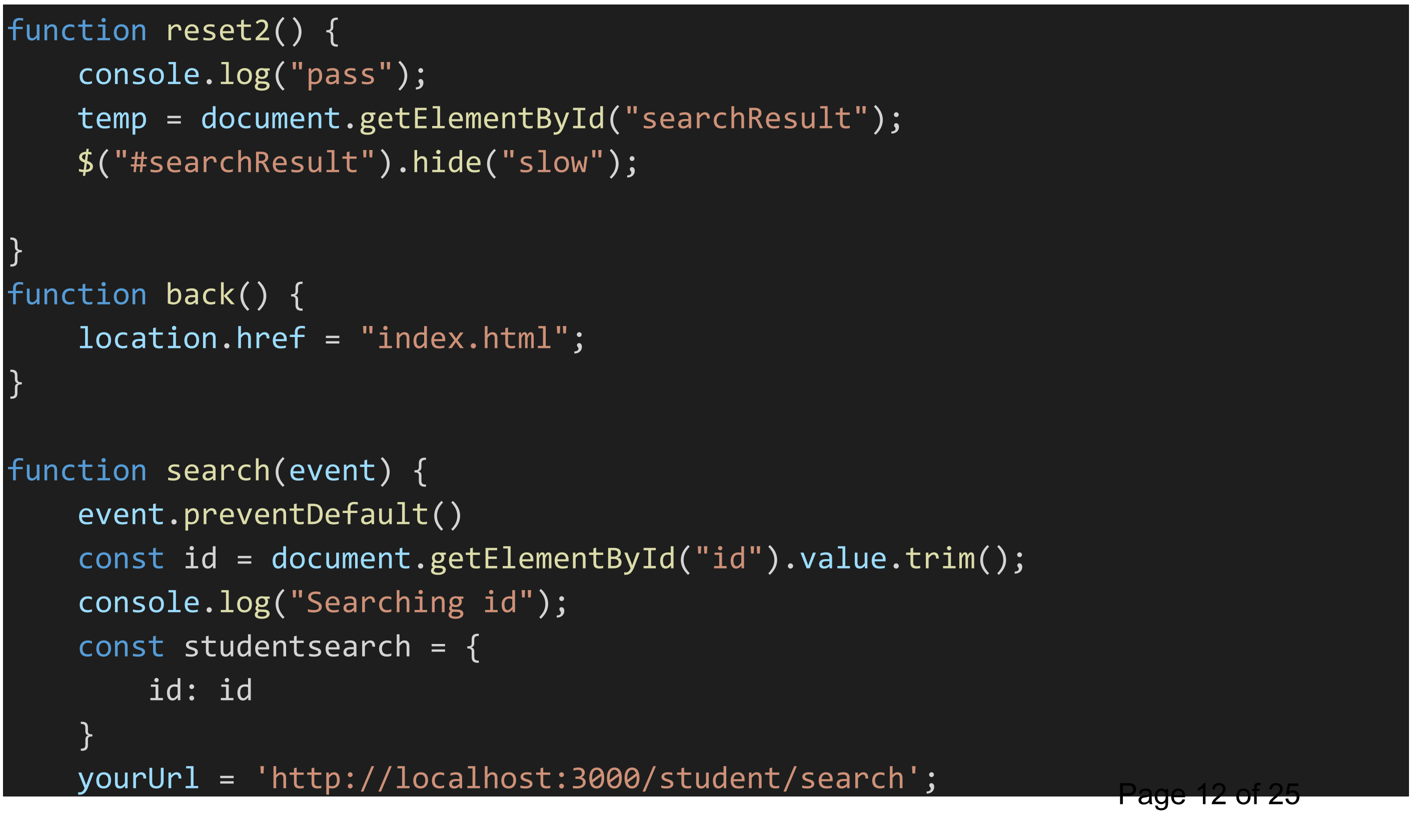


```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Search student</title>
    <style>
        .center {
            margin: auto;
            width: 60%;
            border: 2px solid grey;
            padding: 10px;
            background-color: black;
            color: white;
            box-shadow: 2px;
            padding-top: 50px;
        }

        table {
            background-color: white;
            color: black;
            border-collapse: collapse;
            border: solid grey;
```

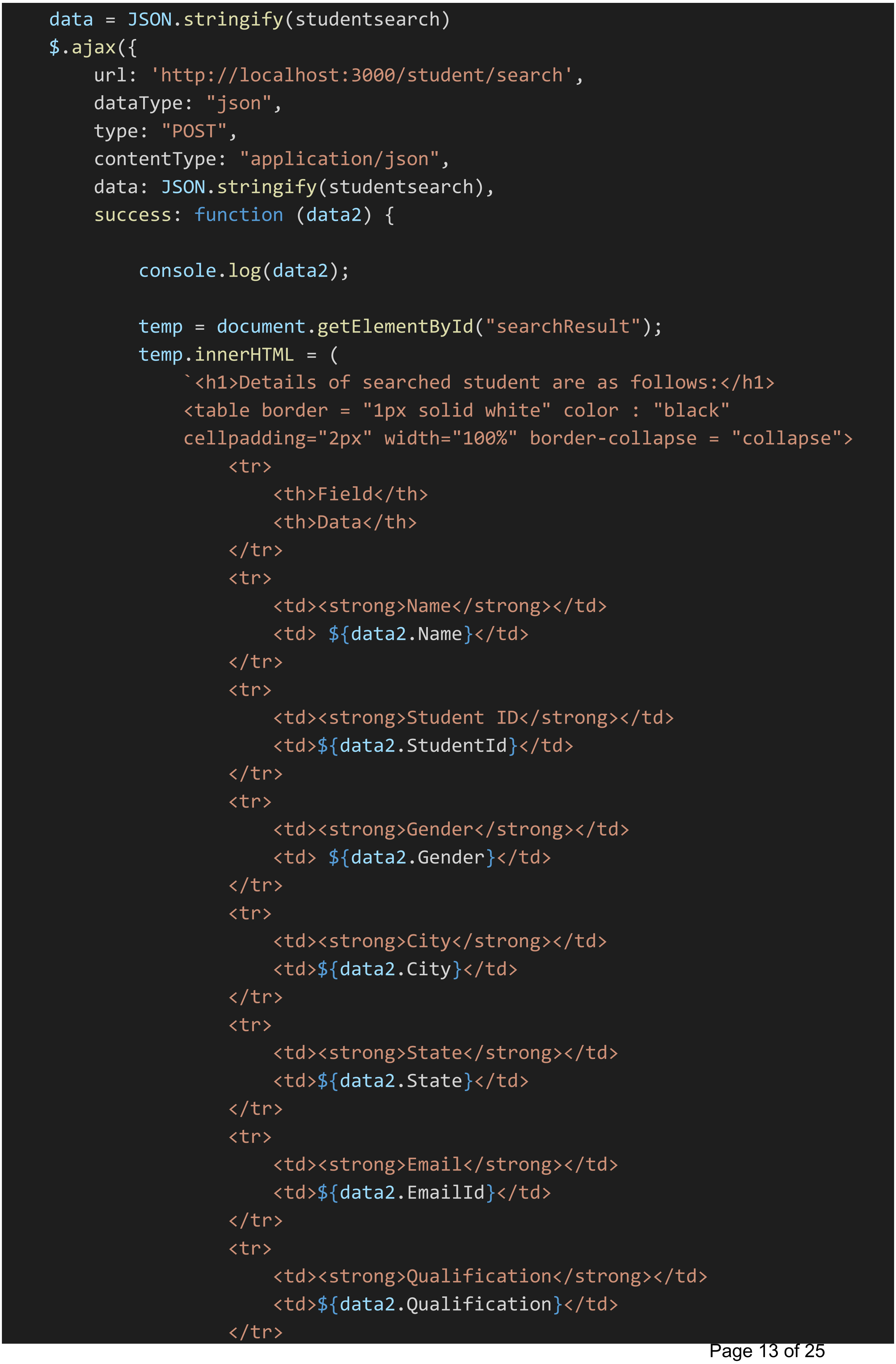


```
            mask-border-width: 2px;
        }
    </style>
    <script src="jquery.min.js"></script>
</head>

<body>
    <div class="center">
        <h1>Student Search:</h1>
    </div>
    <div class="center" style="line-height:30px;">
        <form id="form" action="index.html" method="POST">
            Student Id: <br>
            <input type="number" id="id"><br>
            <input type="submit" form="form" value="Submit" onclick="search(eve
nt)">
            <input type="button" value="Back" onclick="back()">
            <button type="button" onclick="reset2()">clear</button>
        </form>
    </div>
    <div id="searchResult" class="center" style="display: none;">

    </div>
    <script src="search.js"></script>
</body>

</html>
```

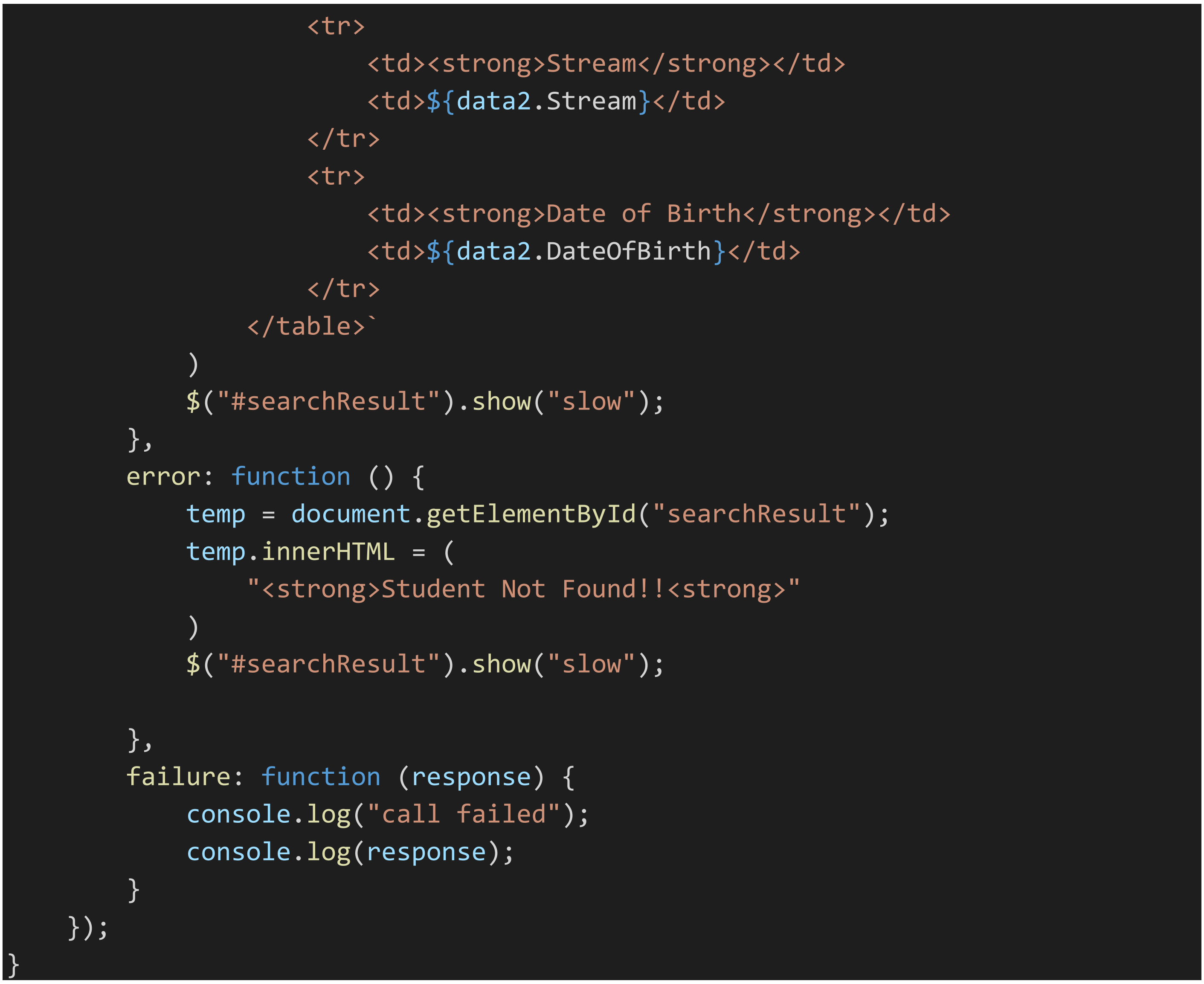
search.js



```
function reset2() {
    console.log("pass");
    temp = document.getElementById("searchResult");
    $("#searchResult").hide("slow");

}
function back() {
    location.href = "index.html";
}

function search(event) {
    event.preventDefault()
    const id = document.getElementById("id").value.trim();
    console.log("Searching id");
    const studentsearch = {
        id: id
    }
    yourUrl = 'http://localhost:3000/student/search';
```

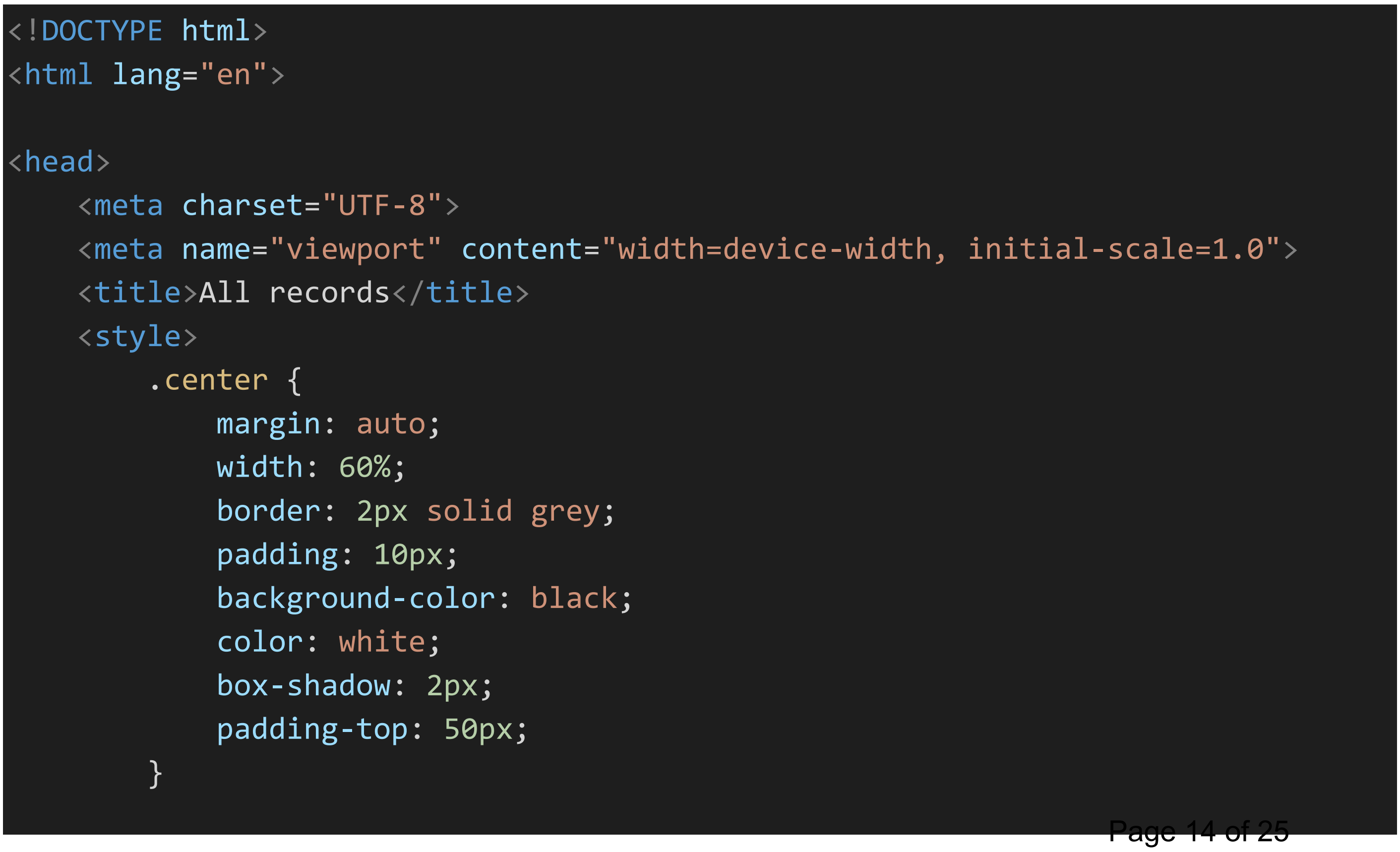


```
    data = JSON.stringify(studentsearch)
    $.ajax({
        url: 'http://localhost:3000/student/search',
        dataType: "json",
        type: "POST",
        contentType: "application/json",
        data: JSON.stringify(studentsearch),
        success: function (data2) {

            console.log(data2);

            temp = document.getElementById("searchResult");
            temp.innerHTML = (
                `<h1>Details of searched student are as follows:</h1>
                <table border = "1px solid white" color : "black"
                cellpadding="2px" width="100%" border-collapse = "collapse">
                    <tr>
                        <th>Field</th>
                        <th>Data</th>
                    </tr>
                    <tr>
                        <td><strong>Name</strong></td>
                        <td> ${data2.Name}</td>
                    </tr>
                    <tr>
                        <td><strong>Student ID</strong></td>
                        <td>${data2.StudentId}</td>
                    </tr>
                    <tr>
                        <td><strong>Gender</strong></td>
                        <td> ${data2.Gender}</td>
                    </tr>
                    <tr>
                        <td><strong>City</strong></td>
                        <td>${data2.City}</td>
                    </tr>
                    <tr>
                        <td><strong>State</strong></td>
                        <td>${data2.State}</td>
                    </tr>
                    <tr>
                        <td><strong>Email</strong></td>
                        <td>${data2.EmailId}</td>
                    </tr>
                    <tr>
                        <td><strong>Qualification</strong></td>
                        <td>${data2.Qualification}</td>
                    </tr>
```

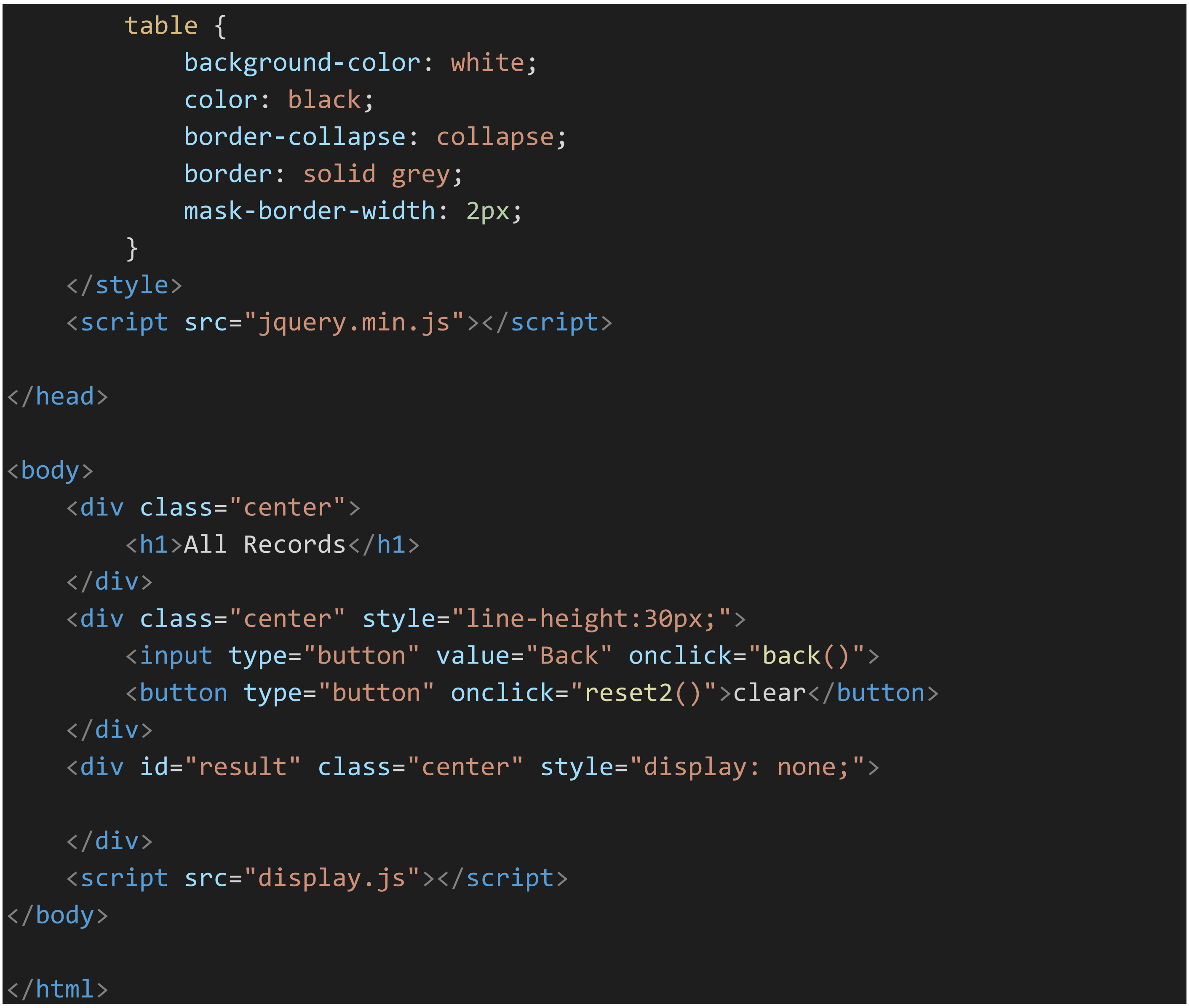


```
                    <tr>
                        <td><strong>Stream</strong></td>
                        <td>${data2.Stream}</td>
                    </tr>
                    <tr>
                        <td><strong>Date of Birth</strong></td>
                        <td>${data2.DateOfBirth}</td>
                    </tr>
                </table>`
            )
            $("#searchResult").show("slow");
        },
        error: function () {
            temp = document.getElementById("searchResult");
            temp.innerHTML = (
                "<strong>Student Not Found!!<strong>"
            )
            $("#searchResult").show("slow");

        },
        failure: function (response) {
            console.log("call failed");
            console.log(response);
        }
    });
}
```

display.html

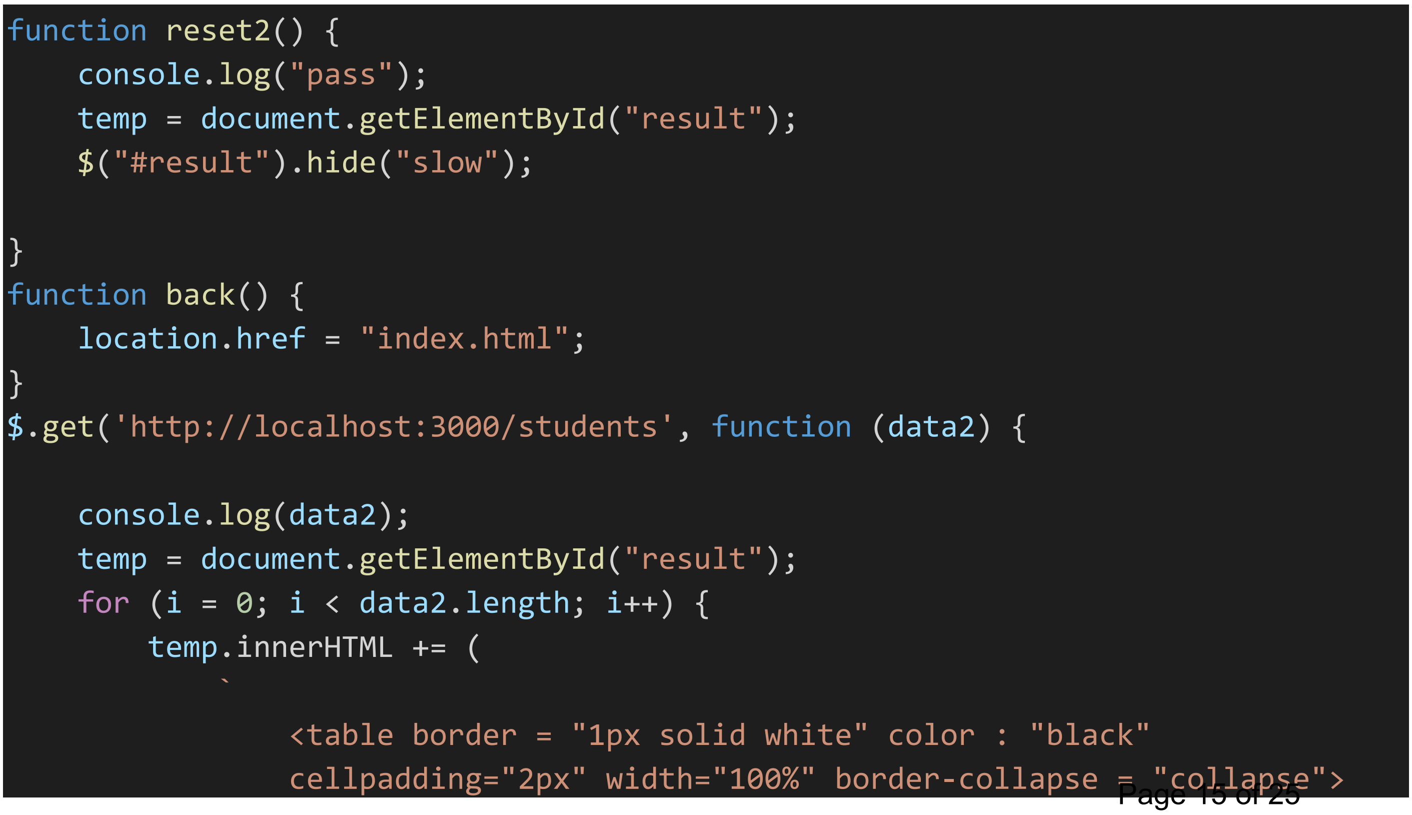


```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>All records</title>
    <style>
        .center {
            margin: auto;
            width: 60%;
            border: 2px solid grey;
            padding: 10px;
            background-color: black;
            color: white;
            box-shadow: 2px;
            padding-top: 50px;
        }
```

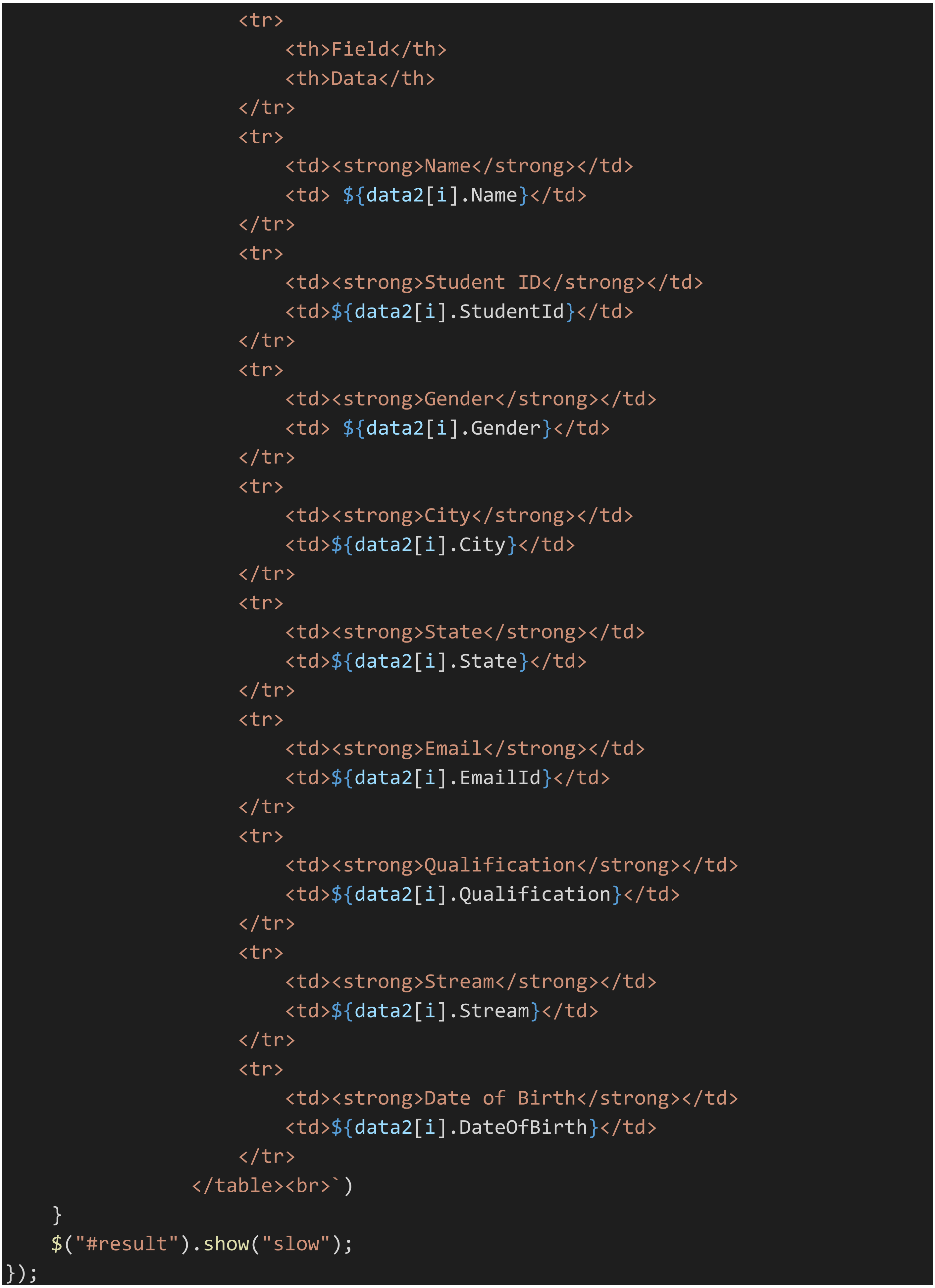


```
        table {
            background-color: white;
            color: black;
            border-collapse: collapse;
            border: solid grey;
            mask-border-width: 2px;
        }
    </style>
    <script src="jquery.min.js"></script>

</head>

<body>
    <div class="center">
        <h1>All Records</h1>
    </div>
    <div class="center" style="line-height:30px;">
        <input type="button" value="Back" onclick="back()">
        <button type="button" onclick="reset2()">clear</button>
    </div>
    <div id="result" class="center" style="display: none;">

    </div>
    <script src="display.js"></script>
</body>

</html>
```

display.js



```
function reset2() {
    console.log("pass");
    temp = document.getElementById("result");
    $("#result").hide("slow");

}
function back() {
    location.href = "index.html";
}
$.get('http://localhost:3000/students', function (data2) {

    console.log(data2);
    temp = document.getElementById("result");
    for (i = 0; i < data2.length; i++) {
        temp.innerHTML += (
            `
                <table border = "1px solid white" color : "black"
                cellpadding="2px" width="100%" border-collapse = "collapse">
```



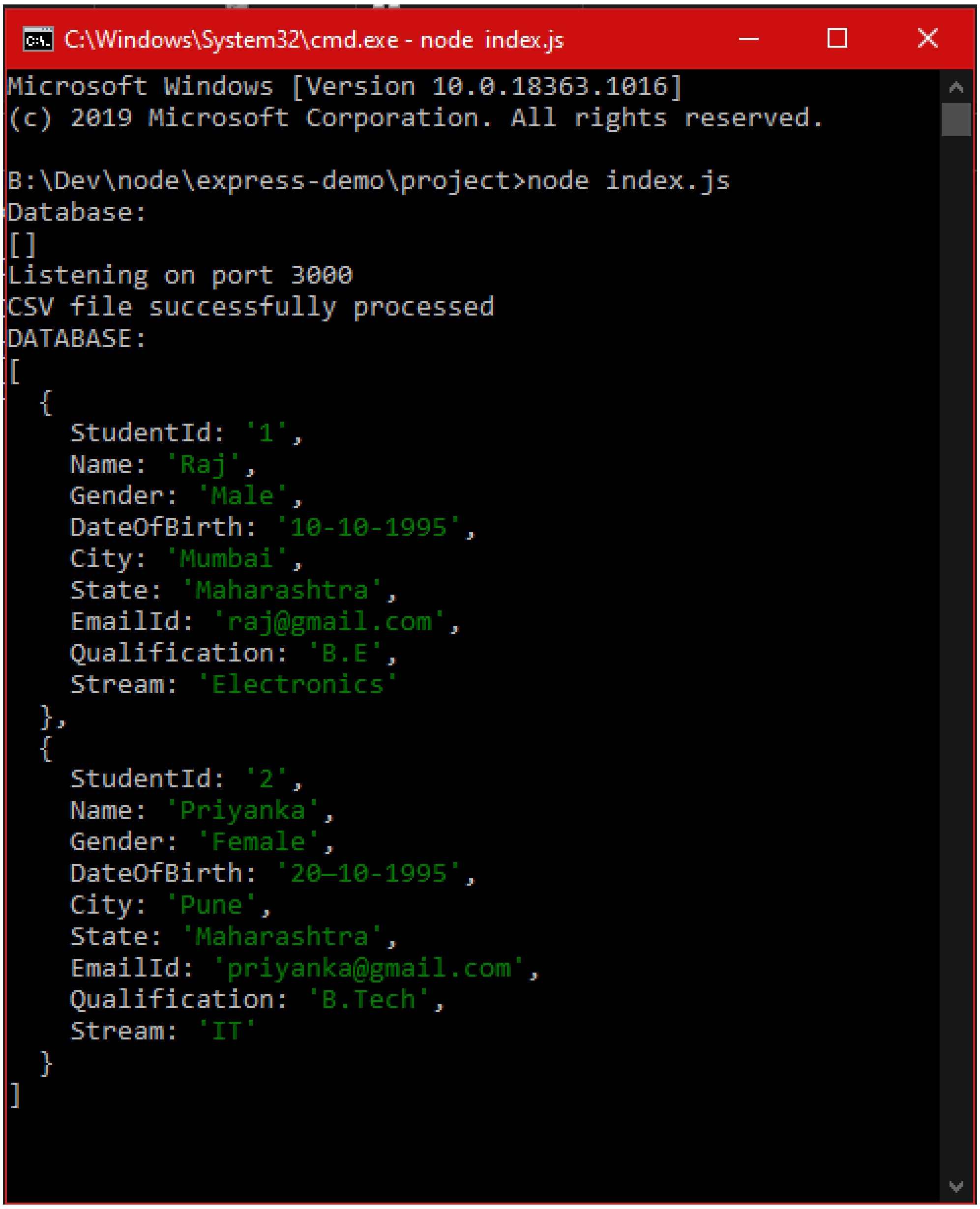
```
                    <tr>
                        <th>Field</th>
                        <th>Data</th>
                    </tr>
                    <tr>
                        <td><strong>Name</strong></td>
                        <td> ${data2[i].Name}</td>
                    </tr>
                    <tr>
                        <td><strong>Student ID</strong></td>
                        <td>${data2[i].StudentId}</td>
                    </tr>
                    <tr>
                        <td><strong>Gender</strong></td>
                        <td> ${data2[i].Gender}</td>
                    </tr>
                    <tr>
                        <td><strong>City</strong></td>
                        <td>${data2[i].City}</td>
                    </tr>
                    <tr>
                        <td><strong>State</strong></td>
                        <td>${data2[i].State}</td>
                    </tr>
                    <tr>
                        <td><strong>Email</strong></td>
                        <td>${data2[i].EmailId}</td>
                    </tr>
                    <tr>
                        <td><strong>Qualification</strong></td>
                        <td>${data2[i].Qualification}</td>
                    </tr>
                    <tr>
                        <td><strong>Stream</strong></td>
                        <td>${data2[i].Stream}</td>
                    </tr>
                    <tr>
                        <td><strong>Date of Birth</strong></td>
                        <td>${data2[i].DateOfBirth}</td>
                    </tr>
                </table><br>`)
    }
    $("#result").show("slow");
});
```

Screenshots:

1) Starting the server

Current db.csv file contents displayed.

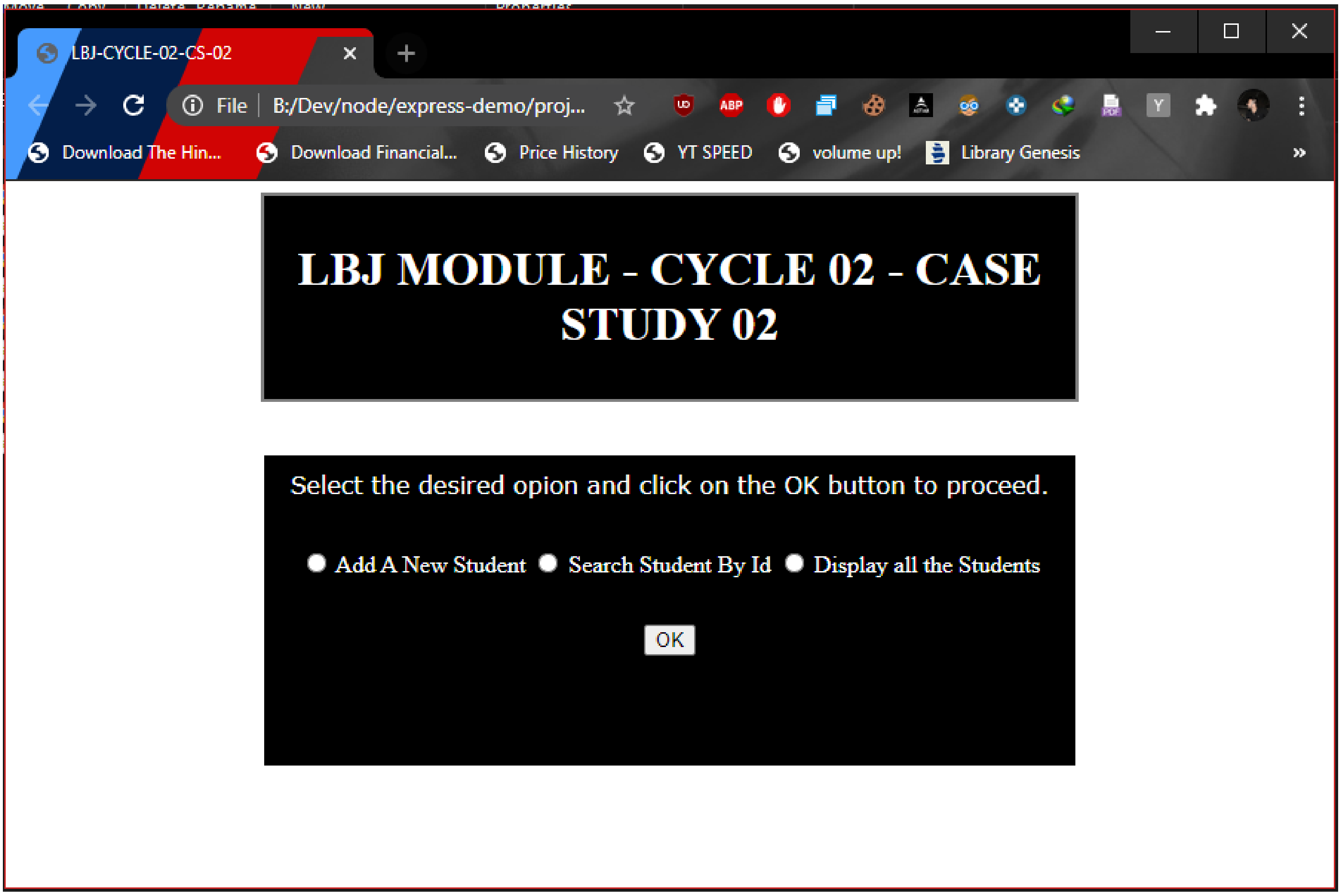
Server is listening on port 3000



```
Microsoft Windows [Version 10.0.18363.1016]
(c) 2019 Microsoft Corporation. All rights reserved.

B:\Dev\node\express-demo\project>node index.js
Database:
[]
Listening on port 3000
CSV file successfully processed
DATABASE:
[
  {
    StudentId: '1',
    Name: 'Raj',
    Gender: 'Male',
    DateOfBirth: '10-10-1995',
    City: 'Mumbai',
    State: 'Maharashtra',
    EmailId: 'raj@gmail.com',
    Qualification: 'B.E',
    Stream: 'Electronics'
  },
  {
    StudentId: '2',
    Name: 'Priyanka',
    Gender: 'Female',
    DateOfBirth: '20–10-1995',
    City: 'Pune',
    State: 'Maharashtra',
    EmailId: 'priyanka@gmail.com',
    Qualification: 'B.Tech',
    Stream: 'IT'
  }
]
```

2) Index.html

This page provides the functionality to select the desired option.



LBJ MODULE - CYCLE 02 - CASE STUDY 02

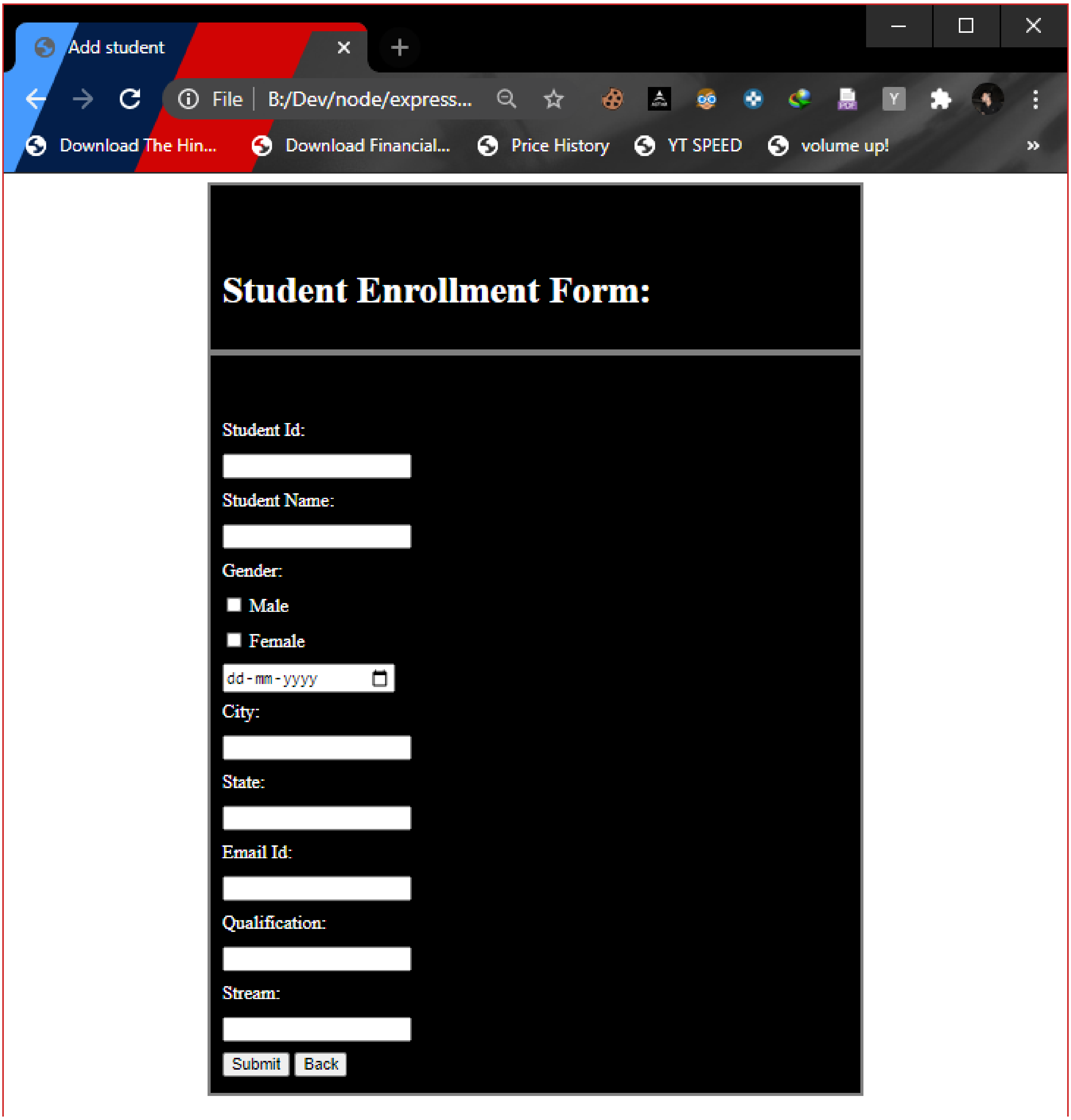
Select the desired opion and click on the OK button to proceed.

○ Add A New Student ○ Search Student By Id ○ Display all the Students

OK

After selecting the <Add A New student> radio button and pressing <OK> button.
Landing page: add.html

3) add.html



Student Enrollment Form:

Student Id:

Student Name:

Gender:

□ Male

□ Female

dd-mm-yyyy

City:

State:

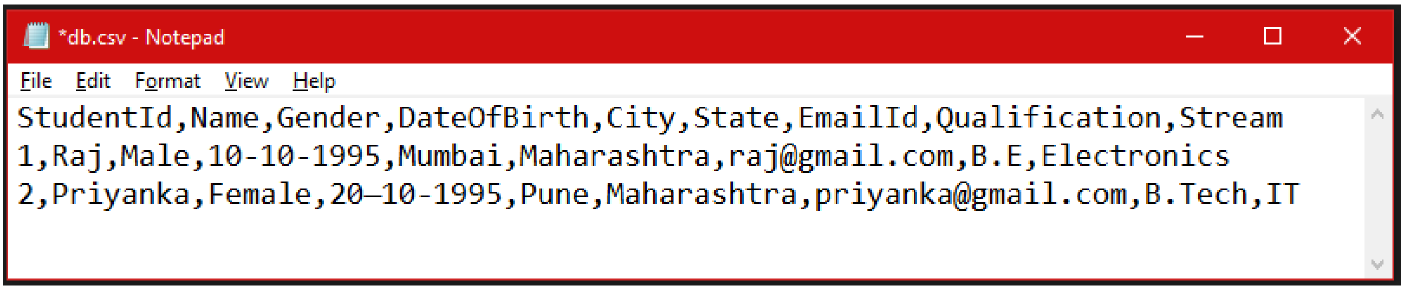
Email Id:

Qualification:

Stream:

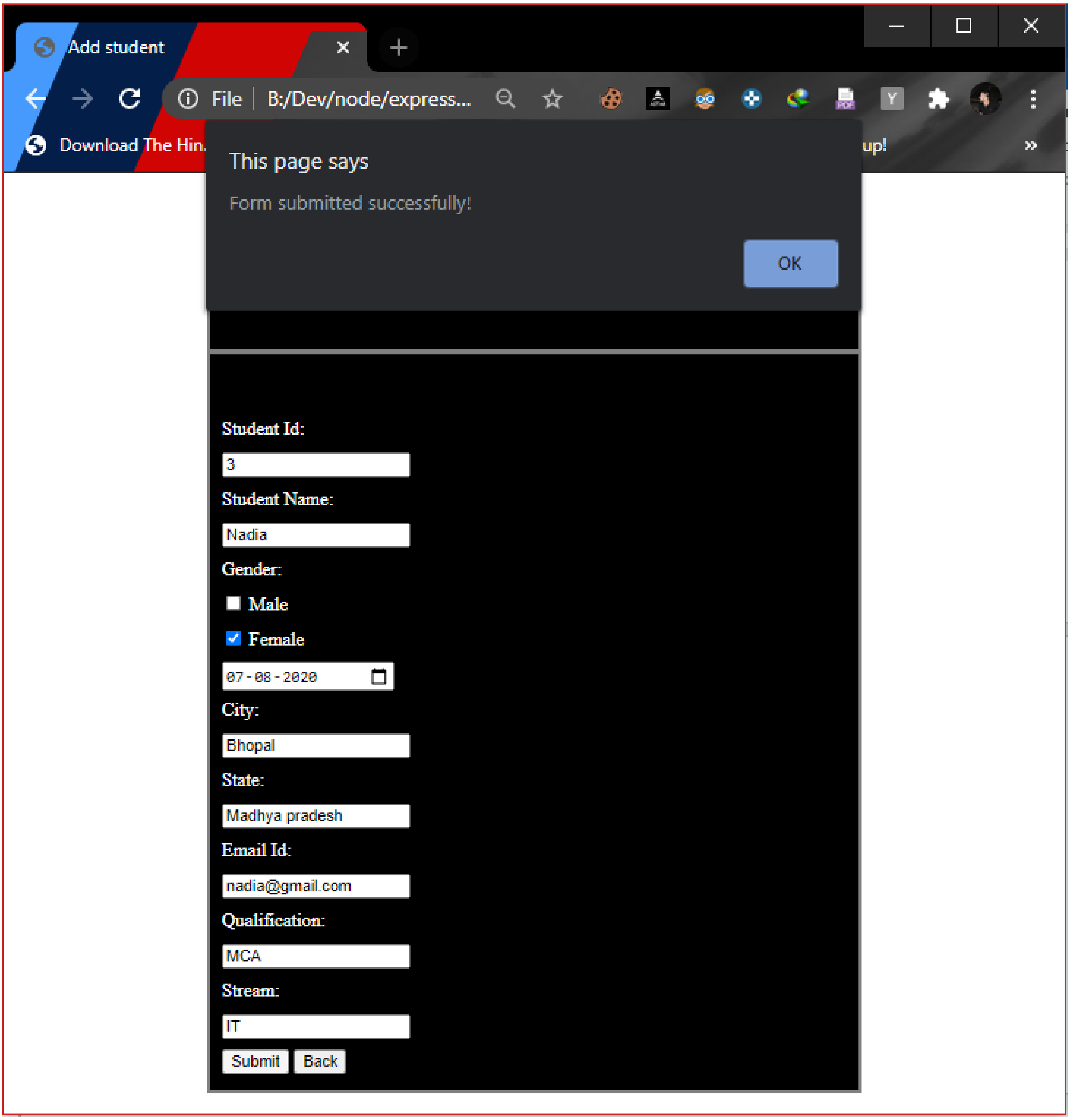
Submit Back

db.csv: present state



```
StudentId,Name,Gender,DateOfBirth,City,State,EmailId,Qualification,Stream
1,Raj,Male,10-10-1995,Mumbai,Maharashtra,raj@gmail.com,B.E,Electronics
2,Priyanka,Female,20–10-1995,Pune,Maharashtra,priyanka@gmail.com,B.Tech,IT
```

After filling all the details and clicking on the <submit> button.



This page says

Form submitted successfully!

OK

Student Id:

3

Student Name:

Nadia

Gender:

□ Male

☑ Female

07-08-2020

City:

Bhopal

State:

Madhya pradesh

Email Id:

nadia@gmail.com

Qualification:

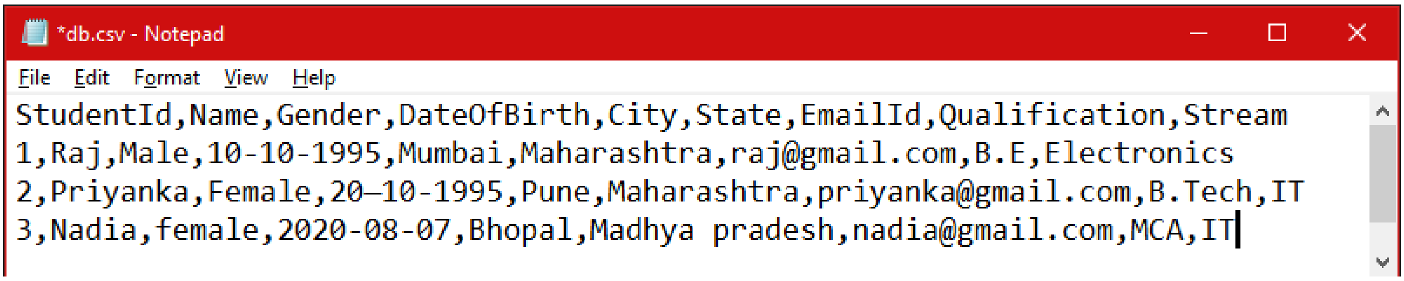
MCA

Stream:

IT

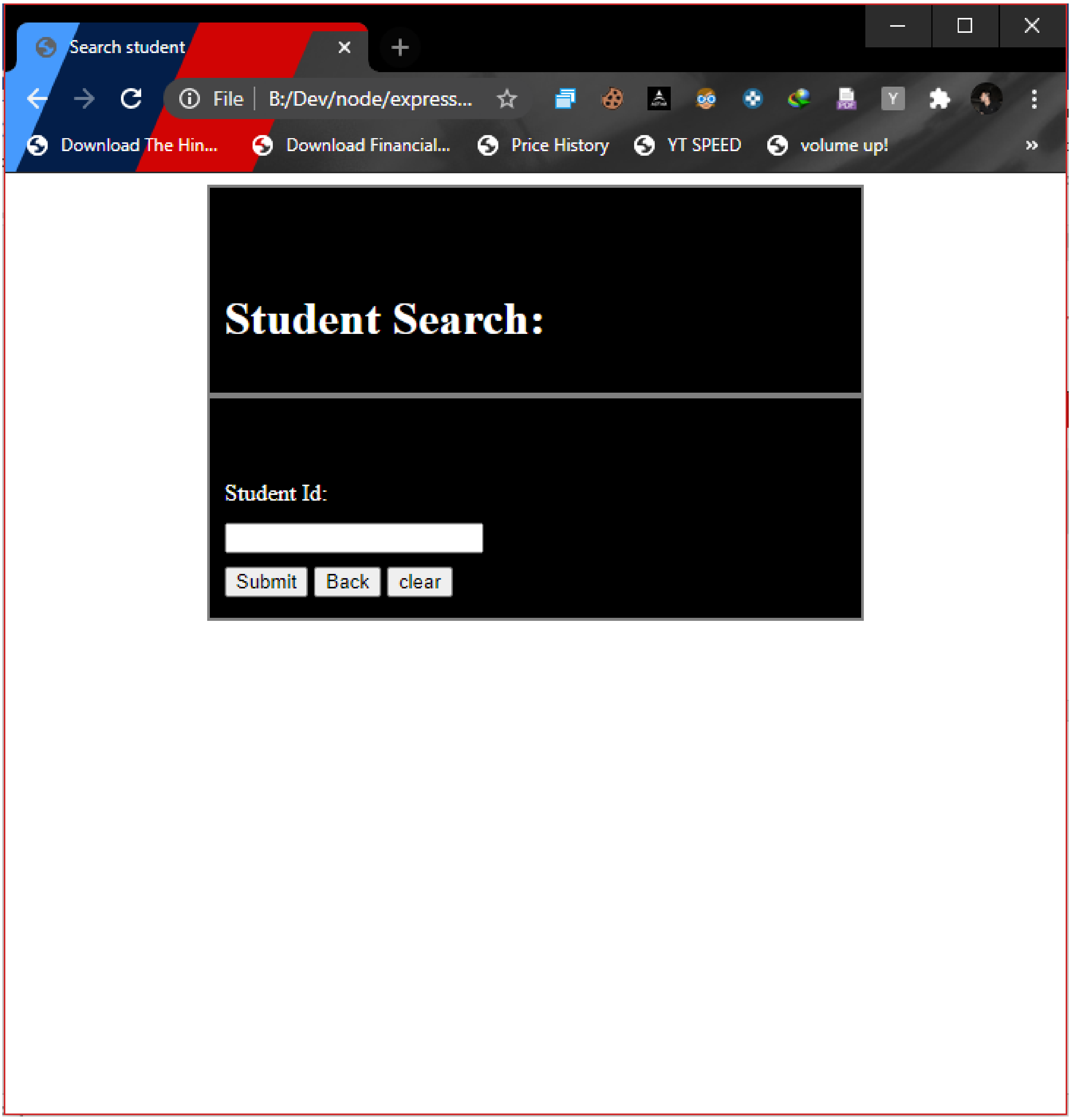
Submit Back

db.csv: present state



```
StudentId,Name,Gender,DateOfBirth,City,State,EmailId,Qualification,Stream
1,Raj,Male,10-10-1995,Mumbai,Maharashtra,raj@gmail.com,B.E,Electronics
2,Priyanka,Female,20–10-1995,Pune,Maharashtra,priyanka@gmail.com,B.Tech,IT
3,Nadia,female,2020-08-07,Bhopal,Madhya pradesh,nadia@gmail.com,MCA,IT
```

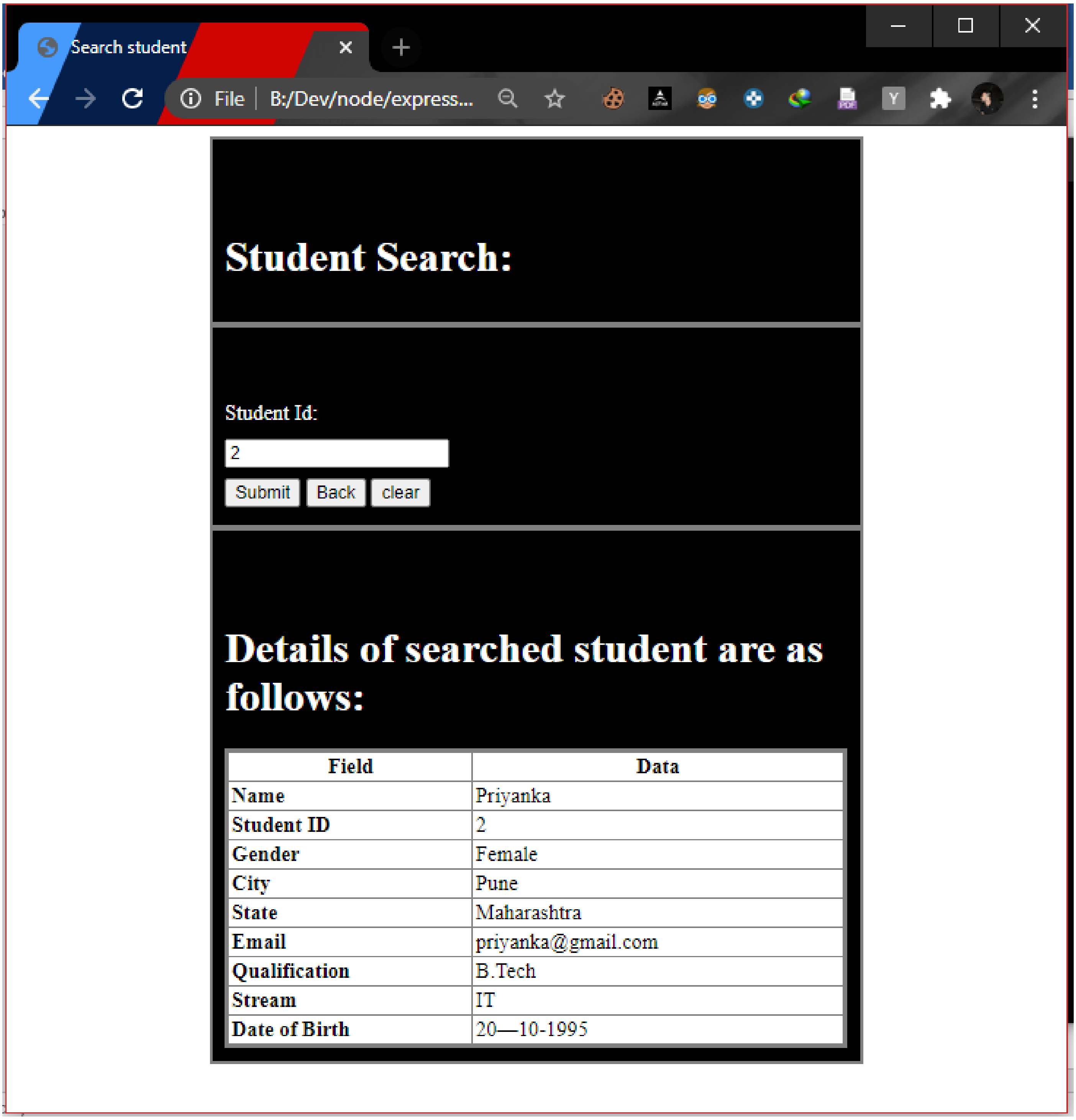
After pressing the <back> button and then selecting the <Search Student By Id> option.
Landing page: search.html



Student Search:

Student Id:

After entering the student Id to search for student details and pressing <Submit> button:



Student Search:

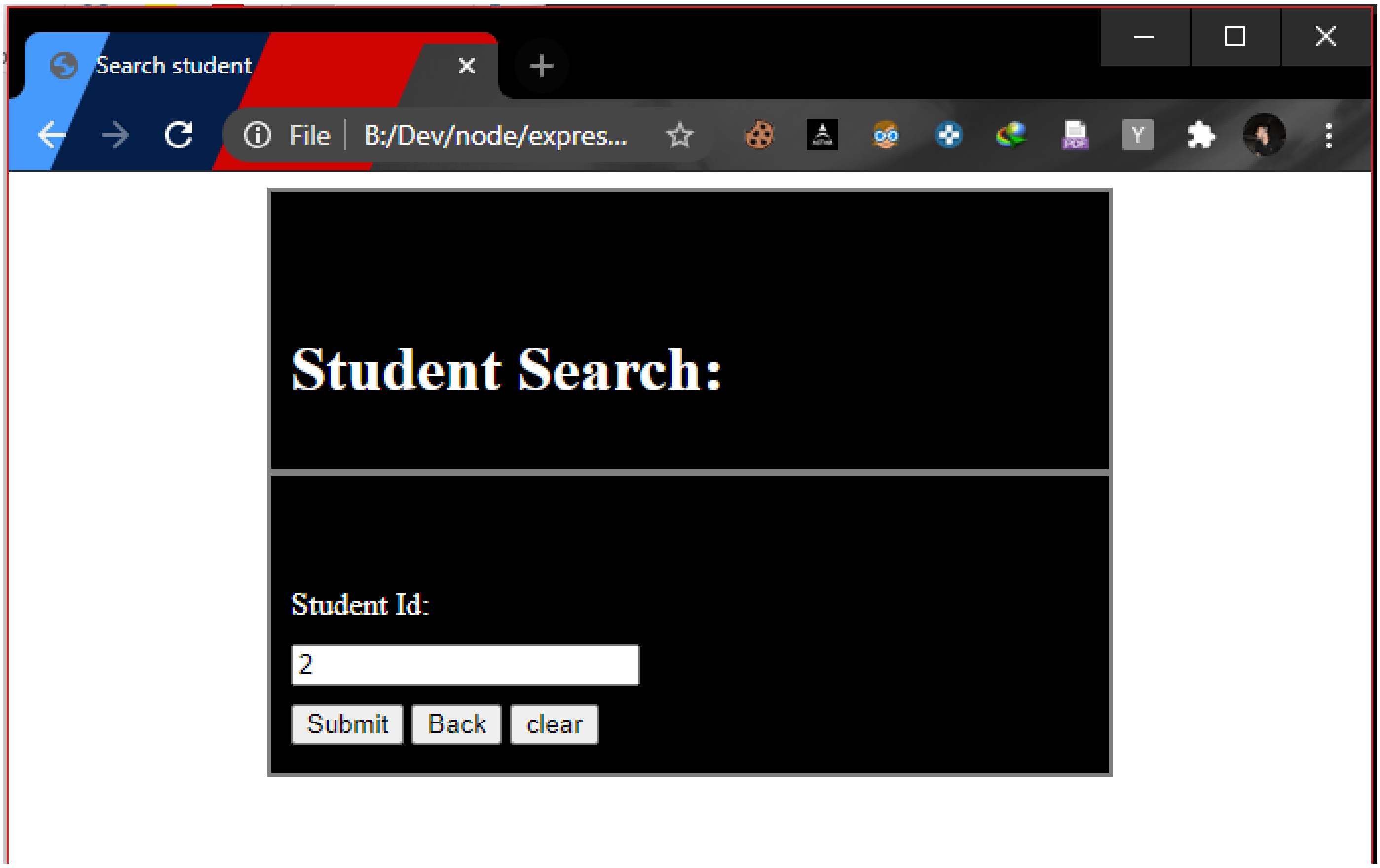
Student Id:

2

Details of searched student are as follows:

Field	Data
Name	Priyanka
Student ID	2
Gender	Female
City	Pune
State	Maharashtra
Email	priyanka@gmail.com
Qualification	B.Tech
Stream	IT
Date of Birth	20—10-1995

After pressing the clear button:

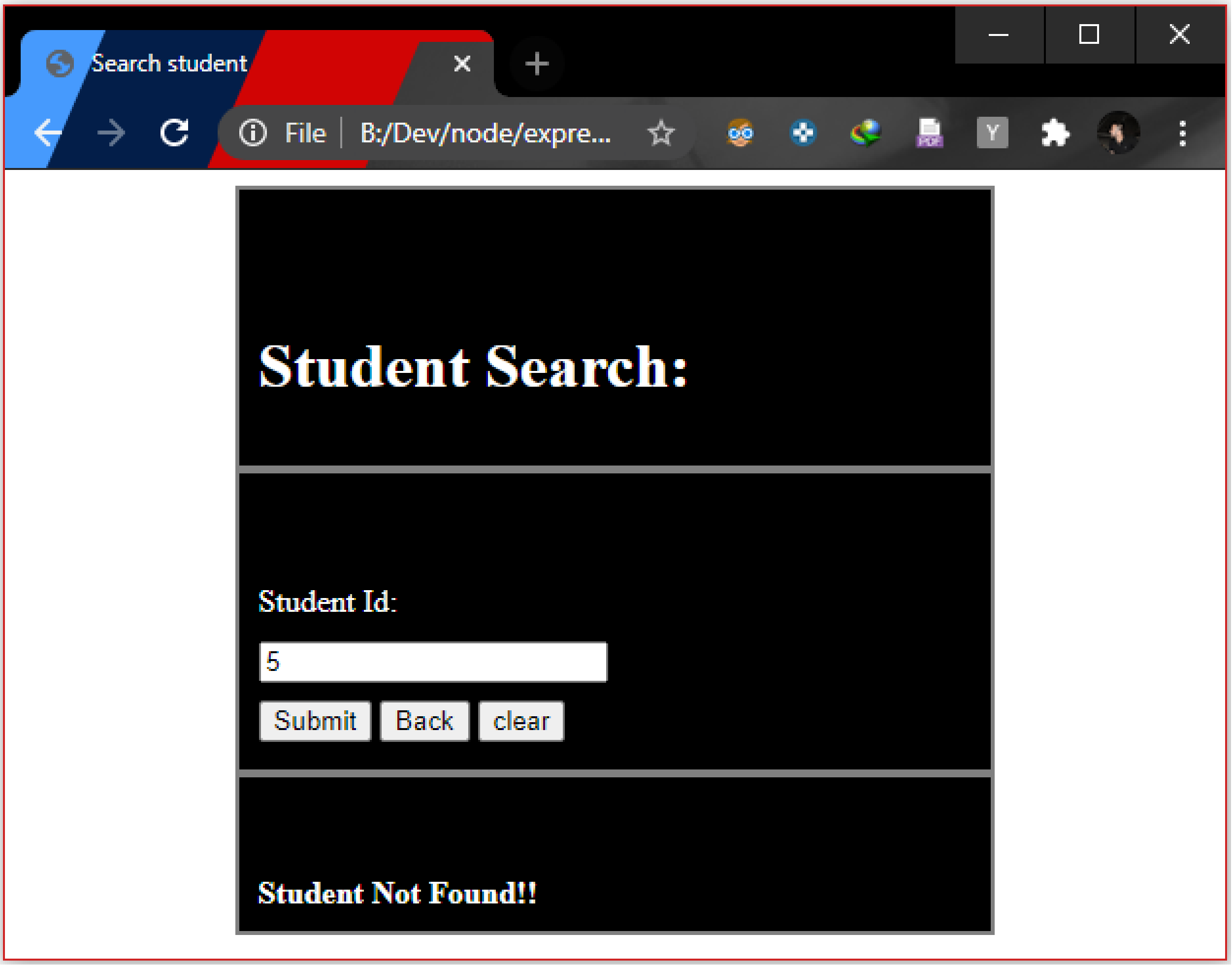


Student Search:

Student Id:

2

When a wrong student Id is provided:
Student Not Found!!



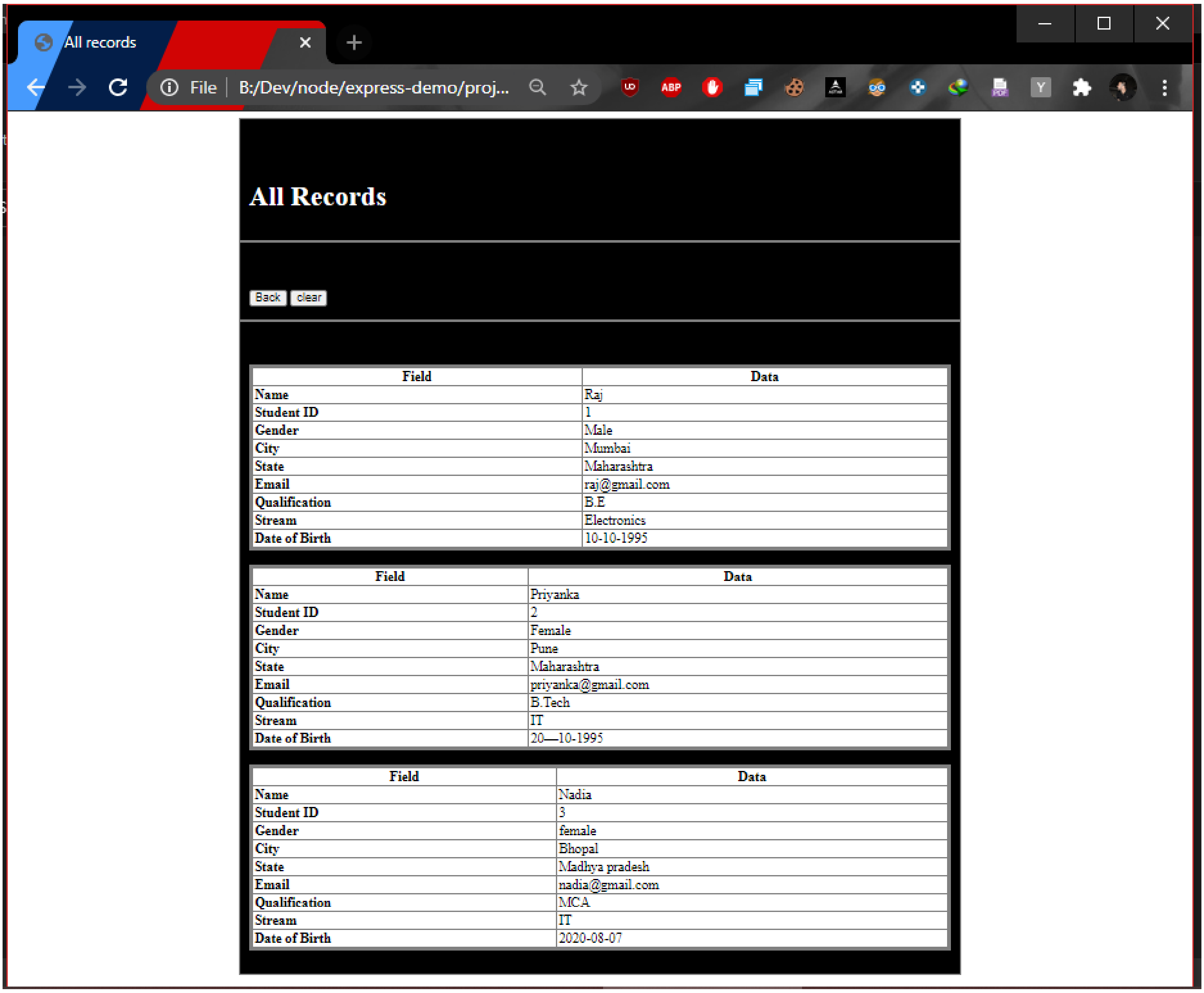
Student Search:

Student Id:

5

Student Not Found!!

After clicking on the <back> button and selecting the <Display all the students> option
Landing page: display.html



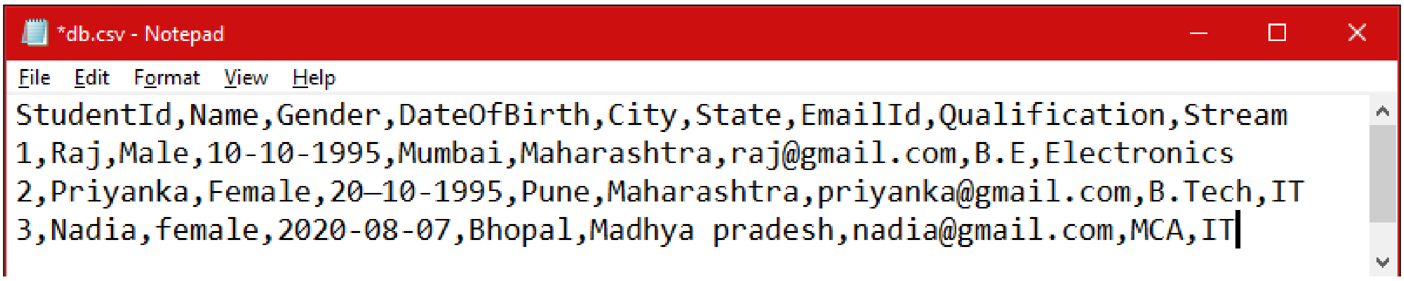
All Records

Field	Data
Name	Raj
Student ID	1
Gender	Male
City	Mumbai
State	Maharashtra
Email	raj@gmail.com
Qualification	B.E
Stream	Electronics
Date of Birth	10-10-1995

Field	Data
Name	Priyanka
Student ID	2
Gender	Female
City	Pune
State	Maharashtra
Email	priyanka@gmail.com
Qualification	B.Tech
Stream	IT
Date of Birth	20—10-1995

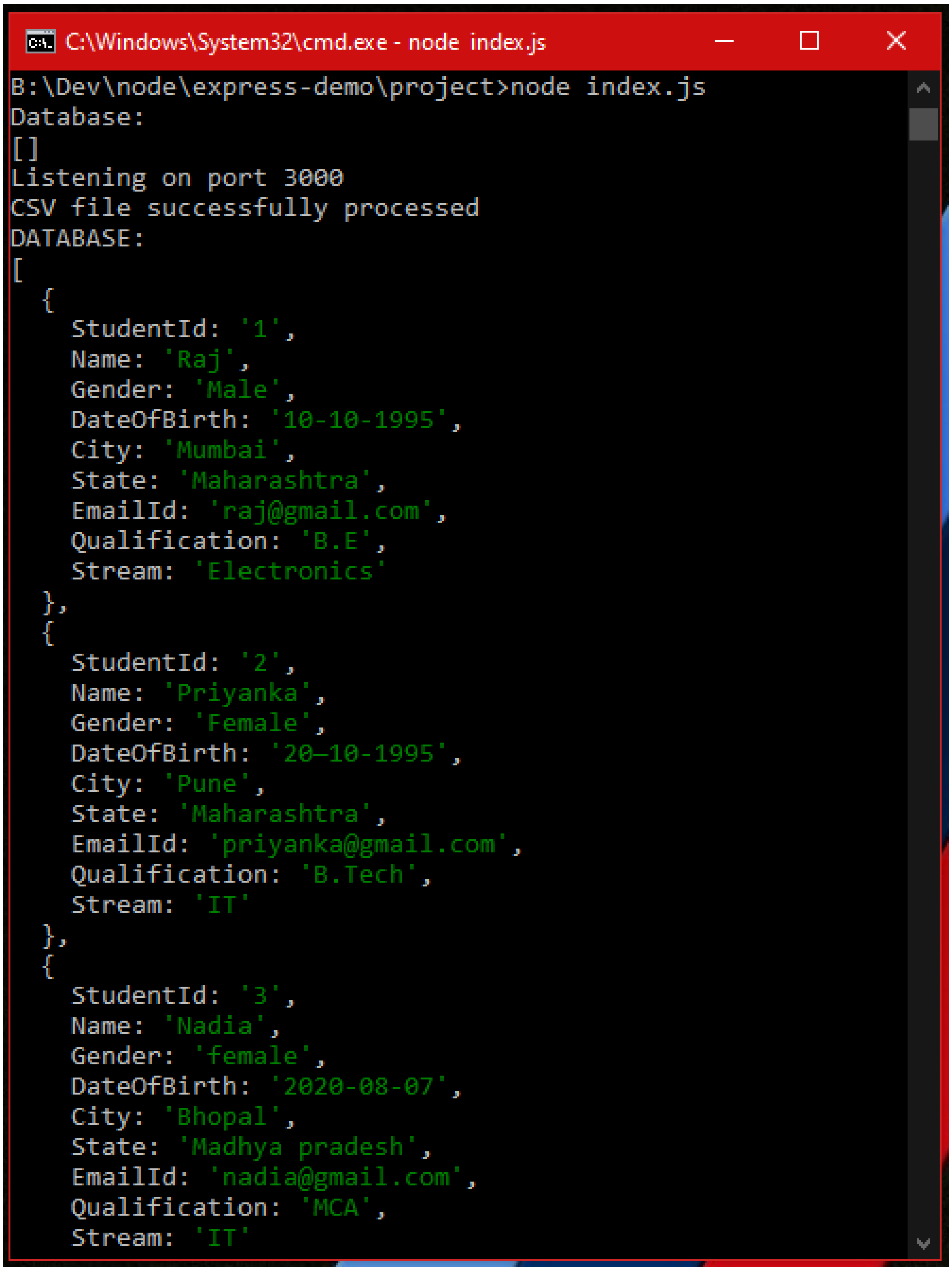
Field	Data
Name	Nadia
Student ID	3
Gender	female
City	Bhopal
State	Madhya pradesh
Email	nadia@gmail.com
Qualification	MCA
Stream	IT
Date of Birth	2020-08-07

db.csv : present state



```
StudentId,Name,Gender,DateOfBirth,City,State,EmailId,Qualification,Stream
1,Raj,Male,10-10-1995,Mumbai,Maharashtra,raj@gmail.com,B.E,Electronics
2,Priyanka,Female,20—10-1995,Pune,Maharashtra,priyanka@gmail.com,B.Tech,IT
3,Nadia,female,2020-08-07,Bhopal,Madhya pradesh,nadia@gmail.com,MCA,IT
```

After restarting the server to read the db.csv contents.



```
B:\Dev\node\express-demo\project>node index.js
Database:
[]
Listening on port 3000
CSV file successfully processed
DATABASE:
[
  {
    StudentId: '1',
    Name: 'Raj',
    Gender: 'Male',
    DateOfBirth: '10-10-1995',
    City: 'Mumbai',
    State: 'Maharashtra',
    EmailId: 'raj@gmail.com',
    Qualification: 'B.E',
    Stream: 'Electronics'
  },
  {
    StudentId: '2',
    Name: 'Priyanka',
    Gender: 'Female',
    DateOfBirth: '20–10-1995',
    City: 'Pune',
    State: 'Maharashtra',
    EmailId: 'priyanka@gmail.com',
    Qualification: 'B.Tech',
    Stream: 'IT'
  },
  {
    StudentId: '3',
    Name: 'Nadia',
    Gender: 'female',
    DateOfBirth: '2020-08-07',
    City: 'Bhopal',
    State: 'Madhya pradesh',
    EmailId: 'nadia@gmail.com',
    Qualification: 'MCA',
    Stream: 'IT'
```

Hence the csv file is successfully updated with new records!