Subject: **20CS2036L – Web Technology Lab** **URK22AI1048**
Lab Exercise: **10. NodeJS Server-side Application with MongoDB Database (Duration: 2 hours)** **HARIHARAN K**

Instructions: Odd no's (Q1), Even no's (Q2)
Note: Apply your creativity to design the templates

Aim:
To develop a NodeJS Server application with HTML forms and MongoDB database to perform CRUD operations.

Q1:
Develop a NodeJS Server application to main Employee database with MongoDB.

- The application should have a welcome page with Navigation to Create, Read, Update, and Delete
- Schema includes name, empid, experience, designation, company, salary.

Q2:
Develop a NodeJS Server application to main Student database with MongoDB.

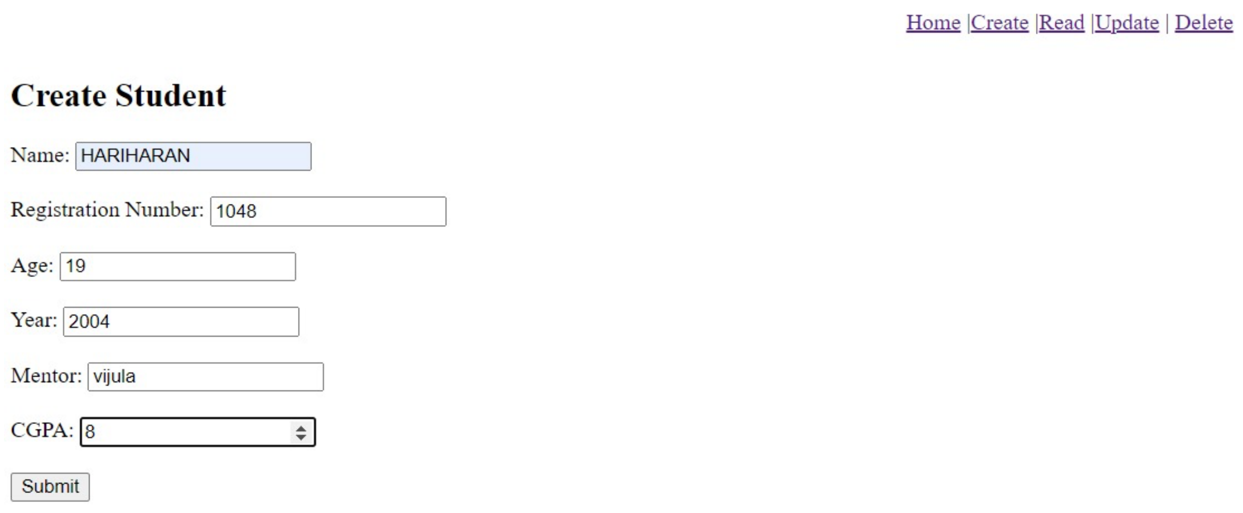
- The application should have a welcome page with Navigation to Create, Read , Update, and Delete
- Schema includes name, regno, age, year, mentor, cgpa.

Source Code
Index.html:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Student Management</title>
  <script src="text.js"></script>
  <link rel="stylesheet" type="text/css" href="styles.css">
</head>
<body>
  <div class="navbar">
    <a href="/">Home</a> |
    <a href="/create">Create</a> |
    <a href="/read">Read</a> |
    <a href="/update">Update</a> |
    <a href="/delete">Delete</a>
  </div>
  <p>Welcome to the Home Page</p>
</body>
</html>
```

Create.html

```
<!-- create.html -->
<html>
  <head>
    <title>Create Student</title>
  </head>
  <body>
    <!-- Common navigation HTML (optional here since it's served by the server) -->
    <h2>Create Student</h2>
    <form action="/create" method="post">
      Name: <input type="text" name="name" required /><br /><br />
      Registration Number: <input type="number" name="regno" required /><br /><br />
      Age: <input type="number" name="age" required /><br /><br />
      Year: <input type="number" name="year" required /><br /><br />
      Mentor: <input type="text" name="mentor" required /><br /><br />
      CGPA: <input type="number" name="cgpa" required /><br /><br />
      <input type="submit" value="Submit" />
    </form>
  </body>
</html>
```



Create Student

Name: HARIHARAN

Registration Number: 1048

Age: 19

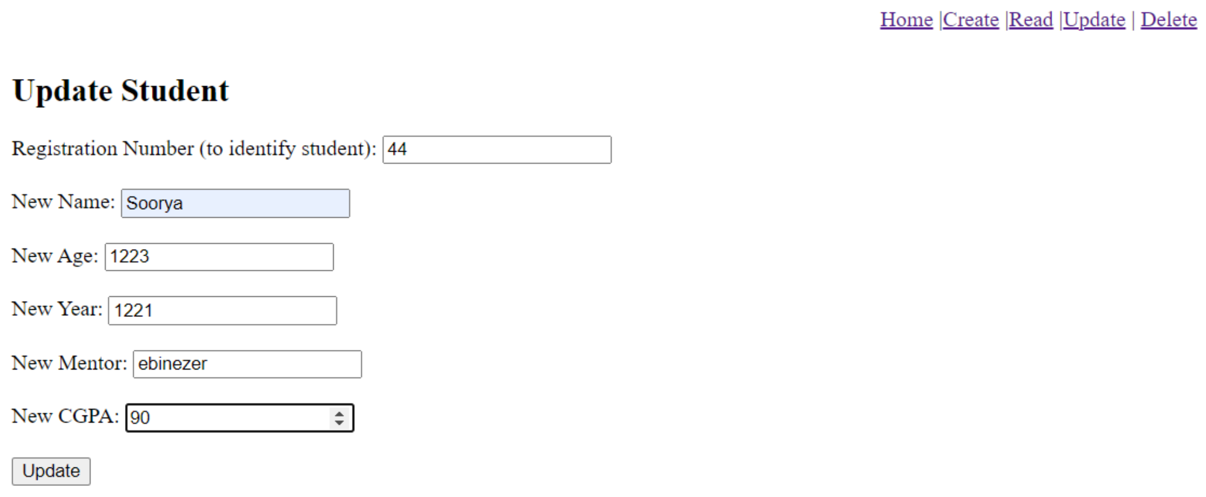
Year: 2004

Mentor: vijula

CGPA: 8

Update.html:

```
<!-- update.html -->
<html>
 <head>
  <title>Update Student</title>
 </head>
 <body>
  <h2>Update Student</h2>
  <form action="/update" method="post">
   Registration Number (to identify student):
   <input type="number" name="regno" required /><br /><br />
   New Name: <input type="text" name="name" /><br /><br />
   New Age: <input type="number" name="age" /><br /><br />
   New Year: <input type="number" name="year" /><br /><br />
   New Mentor: <input type="text" name="mentor" /><br /><br />
   New CGPA: <input type="number" name="cgpa" /><br /><br />
   <input type="submit" value="Update" />
  </form>
  <script>
   // This script will be used later for alerting if no student is found
  </script>
 </body>
</html>
```



Home |Create |Read |Update | Delete

Update Student

Registration Number (to identify student): 44

New Name: Soorya

New Age: 1223

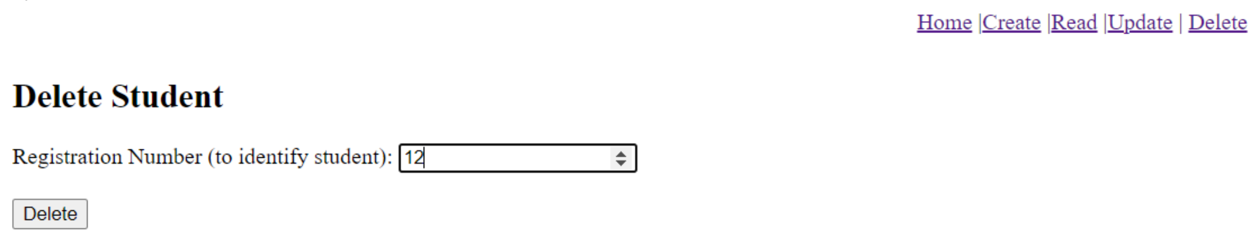
New Year: 1221

New Mentor: ebinezer

New CGPA: 90

Delete.html:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Delete Student</title>
  <link rel="stylesheet" type="text/css" href="styles.css">
</head>
<body>
  <div class="container">
    <h2>Delete Student</h2>
    <form action="/delete" method="post">
      <label for="regno">Registration Number (to identify student):</label>
      <input type="number" name="regno" required><br><br>
      <input type="submit" value="Delete">
    </form>
  </div>
</body>
</html>
```



Delete Student

Registration Number (to identify student): 12

Read.html

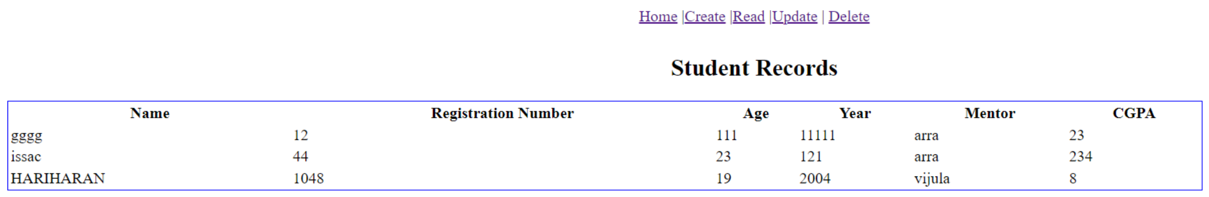
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Read</title>
</head>
<body>
    <h1>Read</h1>
    <form action="/read" method="GET">
        <button type="submit">Read</button>
    </form>

    <div id="content"></div>
</body>
</html>
```

test.js:

```
const http = require("http");
const fs = require("fs");
const url = require("url");
const path = require("path");
const mongoose = require("mongoose");
const queryString = require("querystring");

mongoose
  .connect("mongodb://localhost:27017/ex10", { useNewUrlParser: true, useUnifiedTopology:
true })
  .then(() => console.log("MongoDB Connected"))
  .catch((err) => console.error("MongoDB Connection Error:", err));

const studentSchema = new mongoose.Schema({
  name: String,
  regno: Number,
  age: Number,
  year: Number,
  mentor: String,
  cgpa: Number
}, { collection: 'students' });
const Student = mongoose.model("students", studentSchema);

const navbar = () =>
  "<div style='background-color:black; padding: 10px 0; text-align: center;'><a
href='/'>Home</a> |<a href='/create'>Create</a> |<a href='/read'>Read</a> |<a
href='/update'>Update</a> | <a href='/delete'>Delete</a></div>";

const server = http.createServer((req, res) => {
  const { pathname } = url.parse(req.url, true);

  switch (pathname) {
    case "/":
      res.writeHead(200, { "Content-Type": "text/html" });
      res.end(
        <html><body>${navbar()}<p>Welcome to the Home Page</p></body></html>
      );
      break;
    case "/create":
      if (req.method === "GET") {
        serveFormPage(res, "create.html");
      } else if (req.method === "POST") {
        collectRequestData(req, (data) => {
          Student.create(data)
            .then(() => {
              res.writeHead(302, { Location: "/read" });
              res.end();
            })
            .catch((err) => {
              console.error("Error creating student:", err);
              res.writeHead(500);
              res.end("Error creating student");
            });
        });
      }
      break;
    case "/read":
      if (req.method === "GET") {
        Student.find()
          .then(function (students) {
            res.writeHead(200, { "Content-Type": "text/html" });
            let content = ${navbar()}<div style='text-align: center;'>;
            content += "<h2>Student Records</h2>";
            content +=
              "<table style='border: 1px solid blue; cellspacing: 1px; width: 80%;'>";
            content +=
              "<tr><th>Name</th><th>Registration
Number</th><th>Age</th><th>Year</th><th>Mentor</th><th>CGPA</th></tr>";

            students.forEach((student) => {
              content += "<tr>";
              content += <td>${student.name}</td>;
              content += <td>${student.regno}</td>;
              content += <td>${student.age}</td>;
              content += <td>${student.year}</td>;
              content += <td>${student.mentor}</td>;
              content += <td>${student.cgpa}</td>;
              content += "</tr>";
            });

            content += "</table></div>";
            res.end(content);
          })
          .catch((err) => {
            console.error("Error fetching students:", err);
            res.writeHead(500);
            res.end("Error fetching students");
          });
      }
      break;
    case "/update":
      if (req.method === "GET") {
        serveFormPage(res, "update.html");
      } else if (req.method === "POST") {
        collectRequestData(req, (data) => {
          const { regno, ...updateData } = data;
          Student.findOneAndUpdate({ regno: regno }, updateData)
            .then(() => {
              res.writeHead(302, { Location: "/read" });
              res.end();
            })
            .catch((err) => {
              console.error("Error updating student:", err);
              res.writeHead(500);
              res.end("Error updating student");
            });
        });
      }
      break;
    case "/delete":
      if (req.method === "GET") {
        serveFormPage(res, "delete.html");
      } else if (req.method === "POST") {
        collectRequestData(req, (data) => {
          Student.findOneAndDelete({ regno: data.regno })
            .then(() => {
              res.writeHead(302, { Location: "/read" });
              res.end();
            })
            .catch((err) => {
              console.error("Error deleting student:", err);
              res.writeHead(500);
              res.end("Error deleting student");
            });
        });
      }
      break;
    default:
      res.writeHead(404);
      res.end("<html><body><p>Not Found</p></body></html>");
   }
});

function serveFormPage(res, pageName) {
   const filePath = path.join(__dirname, pageName);
   fs.readFile(filePath, (err, data) => {
    if (err) {
      console.error(Error reading ${filePath}:, err);
      res.writeHead(500);
      res.end("Server Error: Unable to read form page.");
      return;
    }
    res.writeHead(200, { "Content-Type": "text/html" });
    res.end(<html><body>${navbar()}${data}</body></html>);
   });
}

function collectRequestData(request, callback) {
   let data = "";
   request.on("data", (chunk) => (data += chunk));
   request.on("end", () => {
    callback(queryString.parse(data));
   });
}
```

```
 server.listen(9200, () => {
   console.log("Server running on http://localhost:9200");
});
```

After Create :

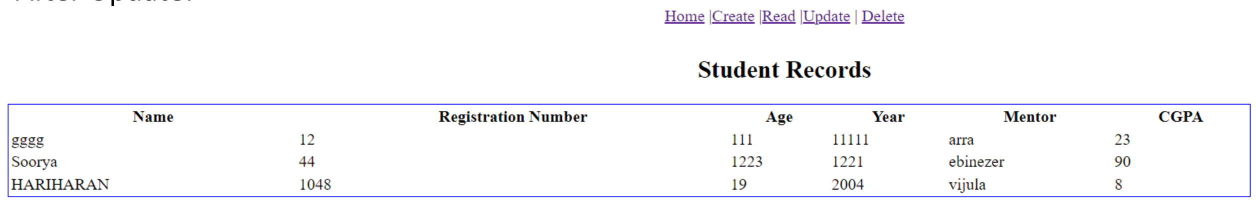


Home |Create |Read |Update | Delete

Student Records

Name	Registration Number	Age	Year	Mentor	CGPA
gggg	12	111	11111	arra	23
issac	44	23	121	arra	234
HARIHARAN	1048	19	2004	vijula	8

After Update:

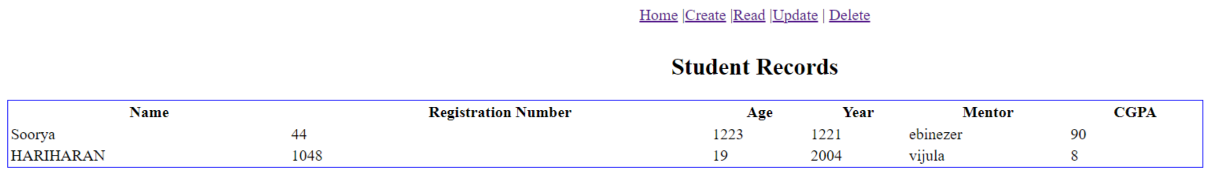


Home |Create |Read |Update | Delete

Student Records

Name	Registration Number	Age	Year	Mentor	CGPA
gggg	12	111	11111	arra	23
Soorya	44	1223	1221	ebinezer	90
HARIHARAN	1048	19	2004	vijula	8

After Delete:



Home |Create |Read |Update | Delete

Student Records

Name	Registration Number	Age	Year	Mentor	CGPA
Soorya	44	1223	1221	ebinezer	90
HARIHARAN	1048	19	2004	vijula	8

Result:

Successfully created a NodeJS Server application to main Student database with MongoDB.