Name : Nayan Mandliya

Roll No. : 1911027

Batch : MERN 1

Experiment No. : 4

Title: Implementation of CRUD operations with Mongoose.

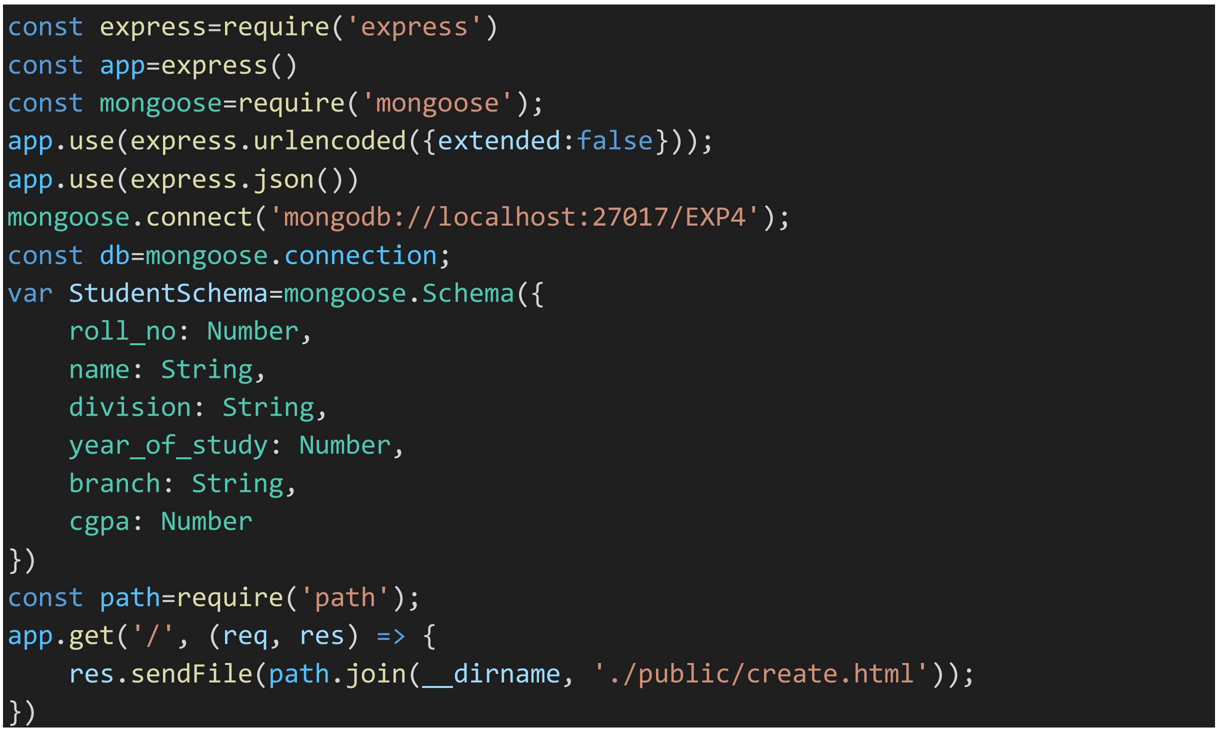
Problem statement: A teacher wants to create a mongodb database to store the details of students. Details include roll no., name, division, year_of_study, branch, cgpa. Teacher wants a mongodb database to be made with the fields which are mentioned in the details as schema for the database. And also perform different operations specified below.

Mongoose CRUD Operations: Demonstrate the behavior of Create, Read, update and delete with the help of MongoDB

1) Create and insert:

CODE:

Create.js:



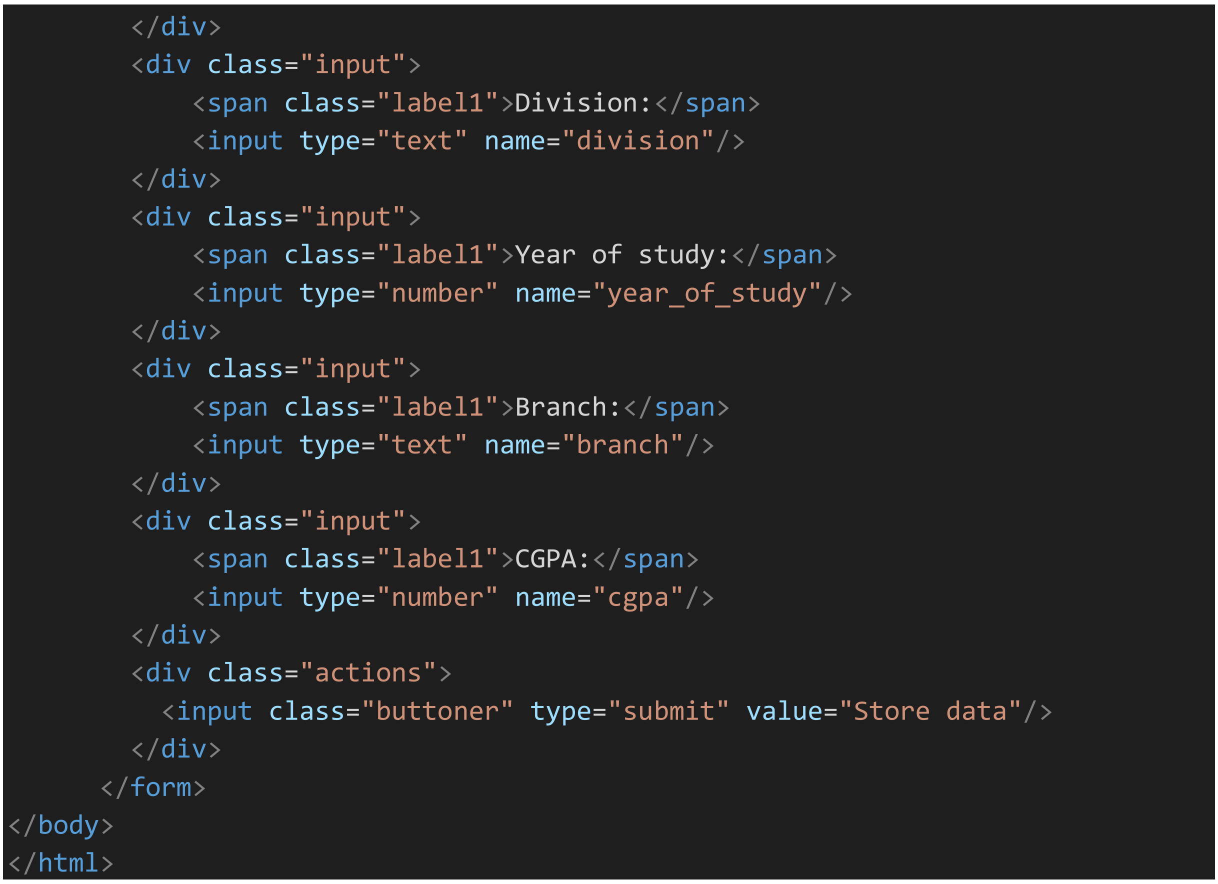
```
const express=require('express')
const app=express()
const mongoose=require('mongoose');
app.use(express.urlencoded({extended:false}));
app.use(express.json())
mongoose.connect('mongodb://localhost:27017/EXP4');
const db=mongoose.connection;
var StudentSchema=mongoose.Schema({
    roll_no: Number,
    name: String,
    division: String,
    year_of_study: Number,
    branch: String,
    cgpa: Number
})
const path=require('path');
app.get('/', (req, res) => {
    res.sendFile(path.join(__dirname, './public/create.html'));
})
```

```
app.post('/',(req,res)=>{
    var Student=mongoose.model('EXP4',StudentSchema,'Students')
    var s=new Student({
        roll_no: req.body.roll_no,
        name: req.body.name,
        division: req.body.division,
        year_of_study: req.body.year_of_study,
        branch: req.body.branch,
        cgpa: req.body.cgpa
    })
    s.save((err,stu)=>{
        if(err)
        {
            console.log(err);
        }
        else
        {
            console.log("Insertion successfull!!!");
            res.send("Insertion successfull!!!");
            res.end()
        }
    })
})
app.listen(5000,()=>{
    console.log('Server is listening on port 5000!!!!');
})
module.exports=mongoose.model('EXP4',StudentSchema,'Students');
```

(model is exported from this file so that it can be used in another files as well)

Create.html:

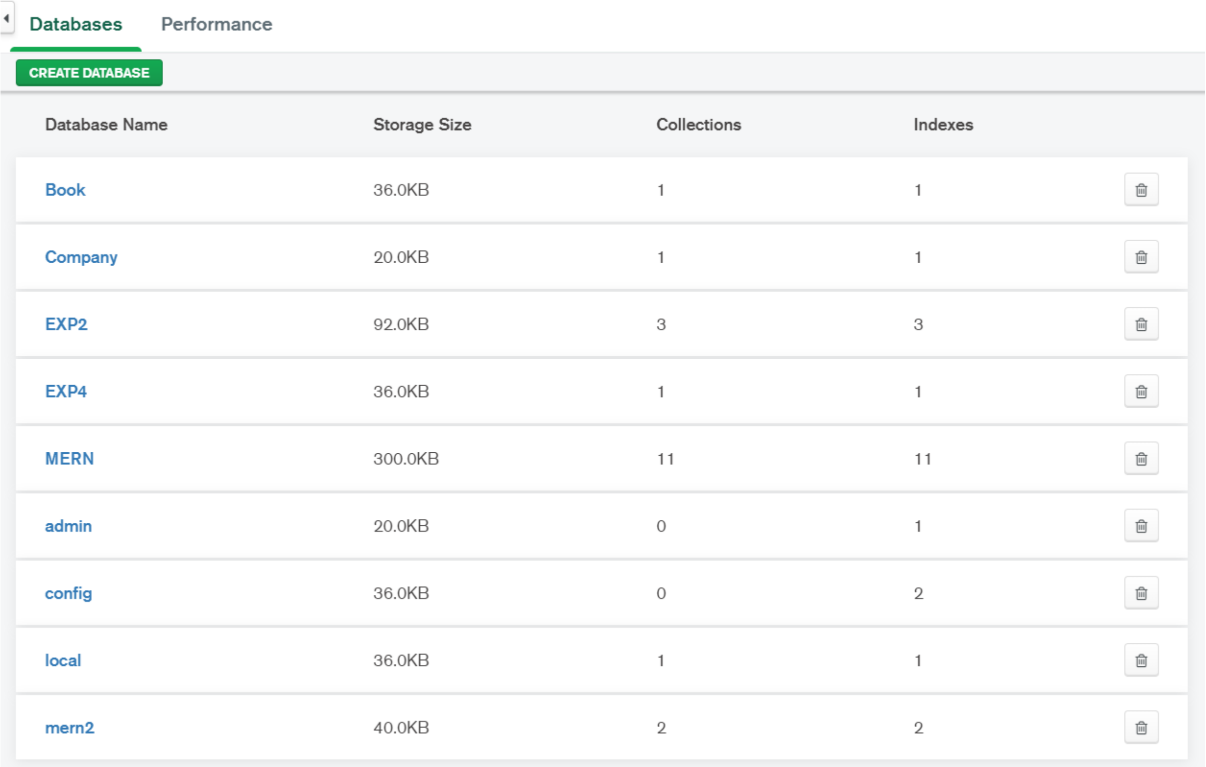
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <form name="addstudent" method="post">
        <div class="input">
            <span class="label1">Roll No.:</span>
            <input type="number" name="roll_no"/>
        </div>
        <div class="input">
            <span class="label1">Name:</span>
            <input type="text" name="name"/>
```



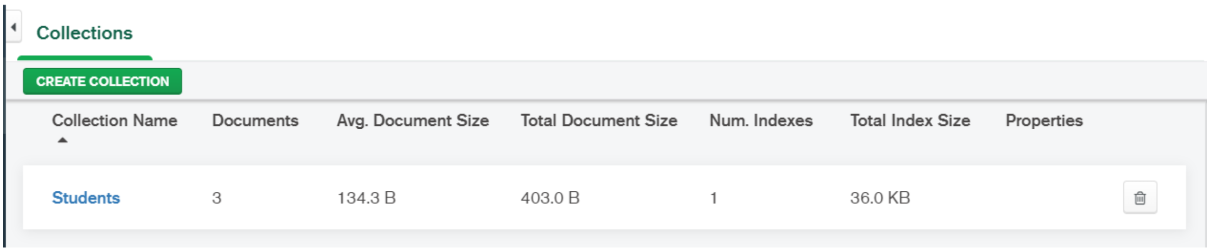
```
        </div>
        <div class="input">
            <span class="label1">Division:</span>
            <input type="text" name="division"/>
        </div>
        <div class="input">
            <span class="label1">Year of study:</span>
            <input type="number" name="year_of_study"/>
        </div>
        <div class="input">
            <span class="label1">Branch:</span>
            <input type="text" name="branch"/>
        </div>
        <div class="input">
            <span class="label1">CGPA:</span>
            <input type="number" name="cgpa"/>
        </div>
        <div class="actions">
          <input class="buttoner" type="submit" value="Store data"/>
        </div>
      </form>
</body>
</html>
```

OUTPUT:

Database (EXP4) and collection (Students) creation:

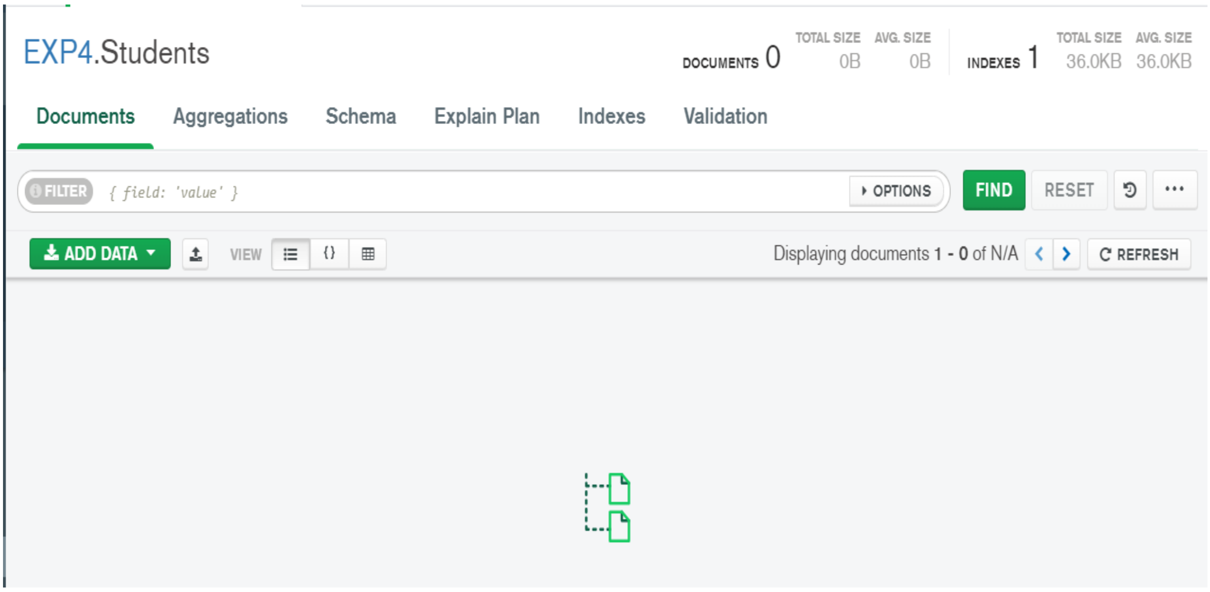


Database Name	Storage Size	Collections	Indexes
Book	36.0KB	1	1
Company	20.0KB	1	1
EXP2	92.0KB	3	3
EXP4	36.0KB	1	1
MERN	300.0KB	11	11
admin	20.0KB	0	1
config	36.0KB	0	2
local	36.0KB	1	1
mern2	40.0KB	2	2



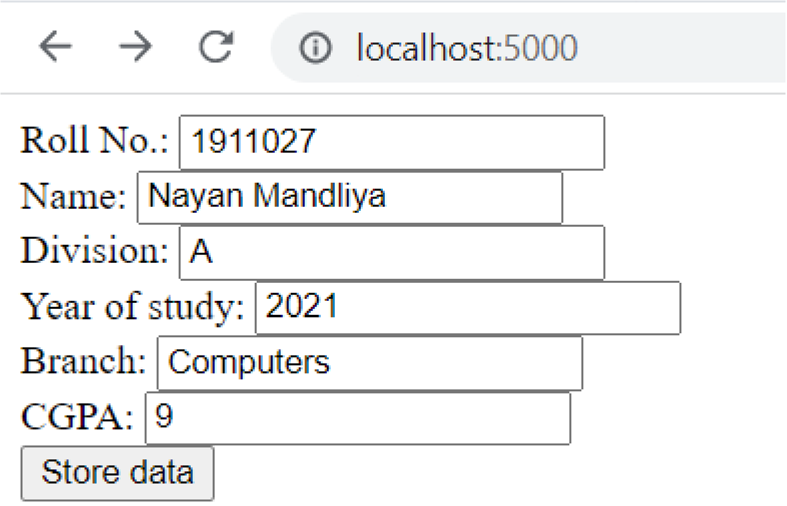
Collection Name	Documents	Avg. Document Size	Total Document Size	Num. Indexes	Total Index Size	Properties
Students	3	134.3 B	403.0 B	1	36.0 KB	

Mongodb database: (Before Insertion)



Displaying documents 1 - 0 of N/A

Browser: (Before button clicked)



Roll No.: 1911027

Name: Nayan Mandliya

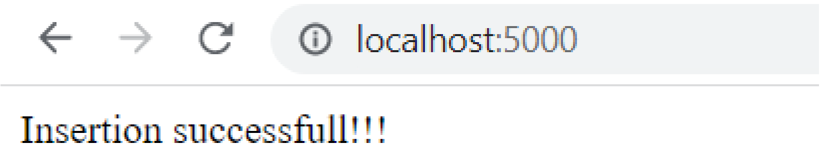
Division: A

Year of study: 2021

Branch: Computers

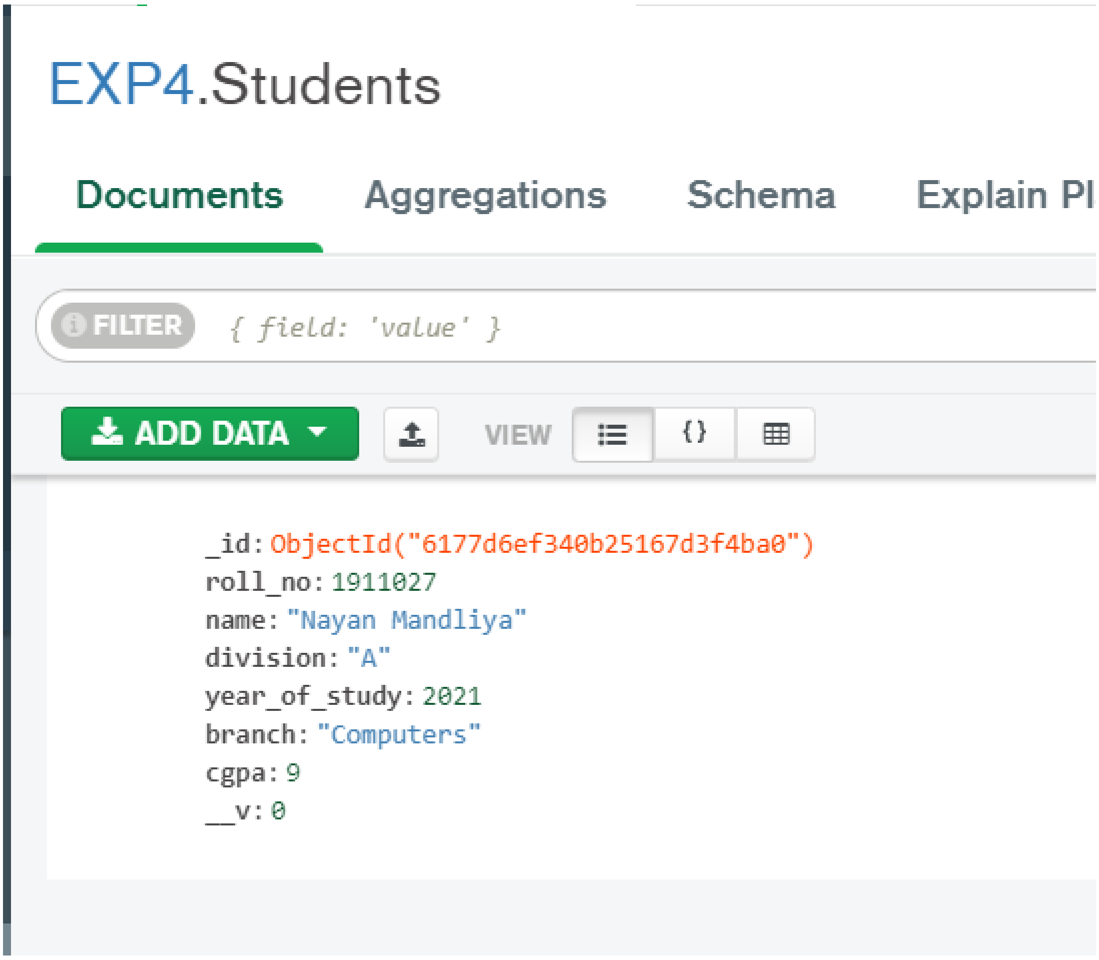
CGPA: 9

Browser: (After button clicked)



Insertion successfull!!!

Mongodb database: (After insertion)

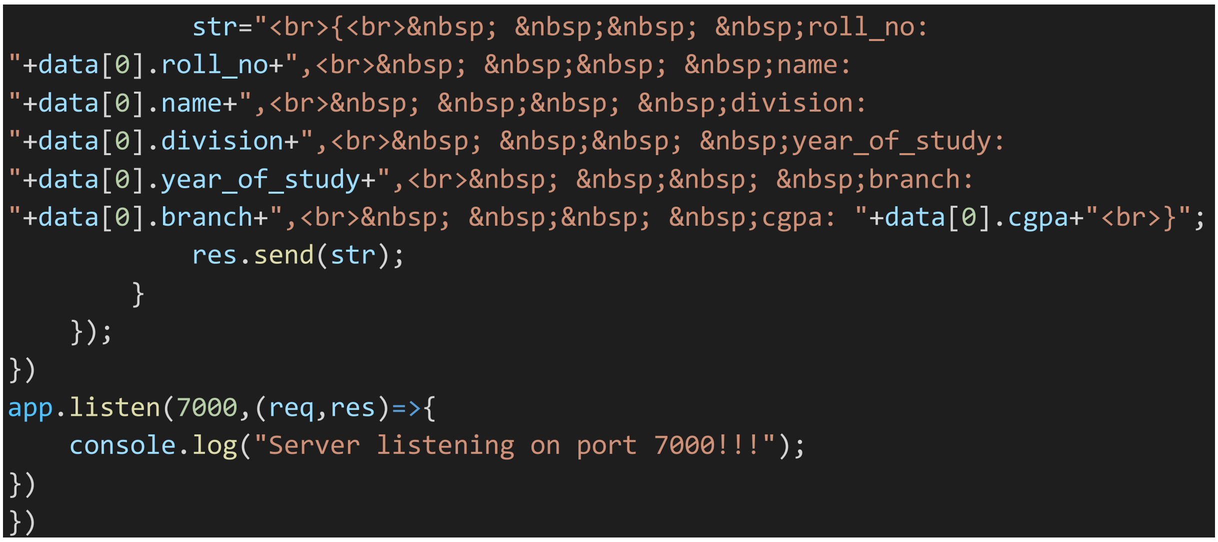


```
_id: ObjectId("6177d6ef340b25167d3f4ba0")
roll_no: 1911027
name: "Nayan Mandliya"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 9
__v: 0
```

2) Read:

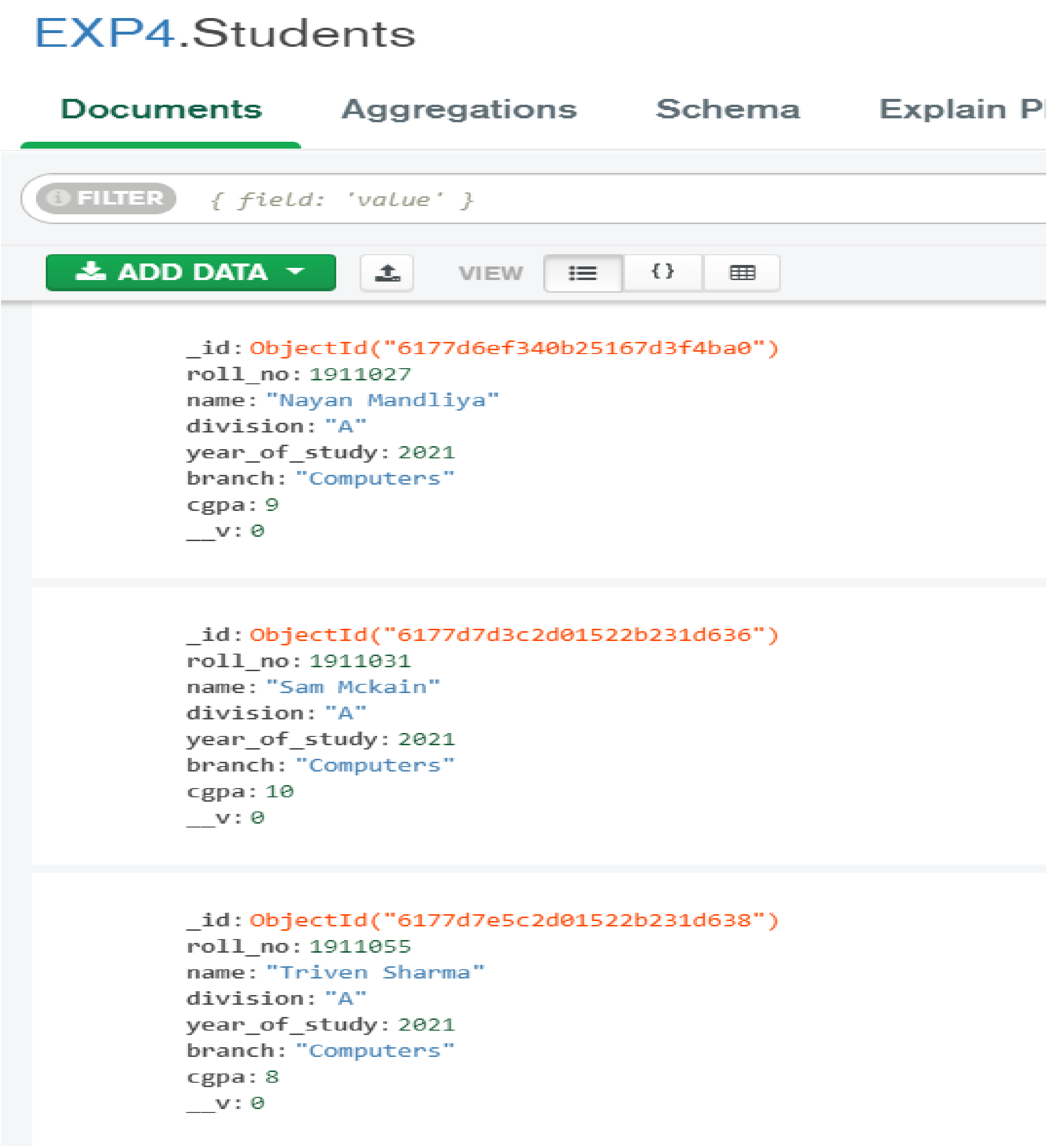
CODE:

```
const express=require('express')
const app=express()
const mongoose=require('mongoose');
app.use(express.urlencoded({extended:false}));
app.use(express.json())
mongoose.connect('mongodb://localhost:27017/EXP4');
const db=mongoose.connection;
var Student=require('./1create');
app.get('/',(req,res)=>{
    Student.find((err, data)=>{
        if(err)
        {
            console.log(err);
        }
        else
        {
            var str=" ";
            for(var i=0;i<data.length;i++)
            {
                str=str+"<br>{<br>&nbsp; &nbsp;&nbsp; &nbsp;roll_no: "+data[i].roll_no+",<br>&nbsp; &nbsp;&nbsp; &nbsp;name: "+data[i].name+",<br>&nbsp; &nbsp;&nbsp; &nbsp;division: "+data[i].division+",<br>&nbsp; &nbsp;&nbsp; &nbsp;year_of_study: "+data[i].year_of_study+",<br>&nbsp; &nbsp;&nbsp; &nbsp;branch: "+data[i].branch+",<br>&nbsp; &nbsp;&nbsp; &nbsp;cgpa: "+data[i].cgpa+"<br>},";
            }
            res.send(str);
        }
    });
})
app.get('/:id',(req,res)=>{
    Student.find({roll_no: req.params.id},(err, data)=>{
        if(err)
        {
            console.log(err);
        }
        else if(data.length==0)
        {
            res.send("Invalid roll number!!!");
        }
        else
        {
            var str;
```



```
            str="<br>{<br>&nbsp; &nbsp;&nbsp; &nbsp;roll_no: 
"+data[0].roll_no+",<br>&nbsp; &nbsp;&nbsp; &nbsp;name: 
"+data[0].name+",<br>&nbsp; &nbsp;&nbsp; &nbsp;division: 
"+data[0].division+",<br>&nbsp; &nbsp;&nbsp; &nbsp;year_of_study: 
"+data[0].year_of_study+",<br>&nbsp; &nbsp;&nbsp; &nbsp;branch: 
"+data[0].branch+",<br>&nbsp; &nbsp;&nbsp; &nbsp;cgpa: "+data[0].cgpa+"<br>}";
            res.send(str);
        }
    });
})
app.listen(7000,(req,res)=>{
    console.log("Server listening on port 7000!!!");
})
})
```

Mongodb database:

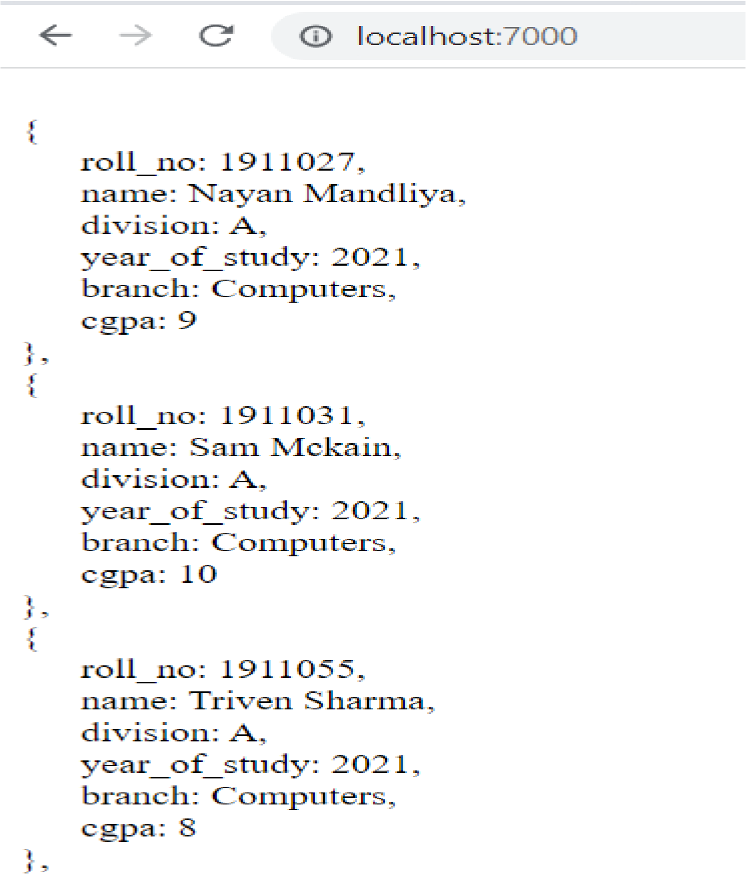


```
_id: ObjectId("6177d6ef340b25167d3f4ba0")
roll_no: 1911027
name: "Nayan Mandliya"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 9
__v: 0
```

```
_id: ObjectId("6177d7d3c2d01522b231d636")
roll_no: 1911031
name: "Sam Mckain"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 10
__v: 0
```

```
_id: ObjectId("6177d7e5c2d01522b231d638")
roll_no: 1911055
name: "Triven Sharma"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 8
__v: 0
```

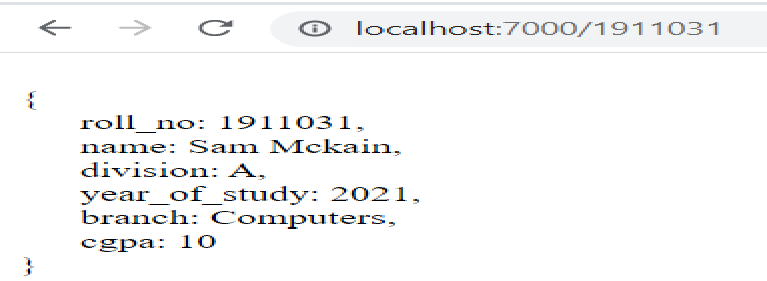
OUTPUT:



```
{
    roll_no: 1911027,
    name: Nayan Mandliya,
    division: A,
    year_of_study: 2021,
    branch: Computers,
    cgpa: 9
},
{
    roll_no: 1911031,
    name: Sam Mckain,
    division: A,
    year_of_study: 2021,
    branch: Computers,
    cgpa: 10
},
{
    roll_no: 1911055,
    name: Triven Sharma,
    division: A,
    year_of_study: 2021,
    branch: Computers,
    cgpa: 8
},
```

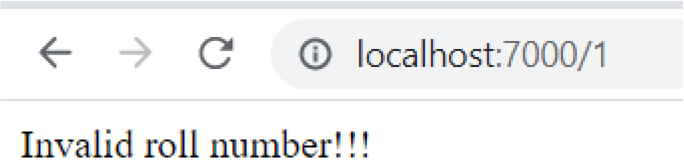
After entering any roll number in url:

If roll number found:



```
{
    roll_no: 1911031,
    name: Sam Mckain,
    division: A,
    year_of_study: 2021,
    branch: Computers,
    cgpa: 10
}
```

If roll number not found:



```
Invalid roll number!!!
```

3) Update:

Updateone:

CODE:

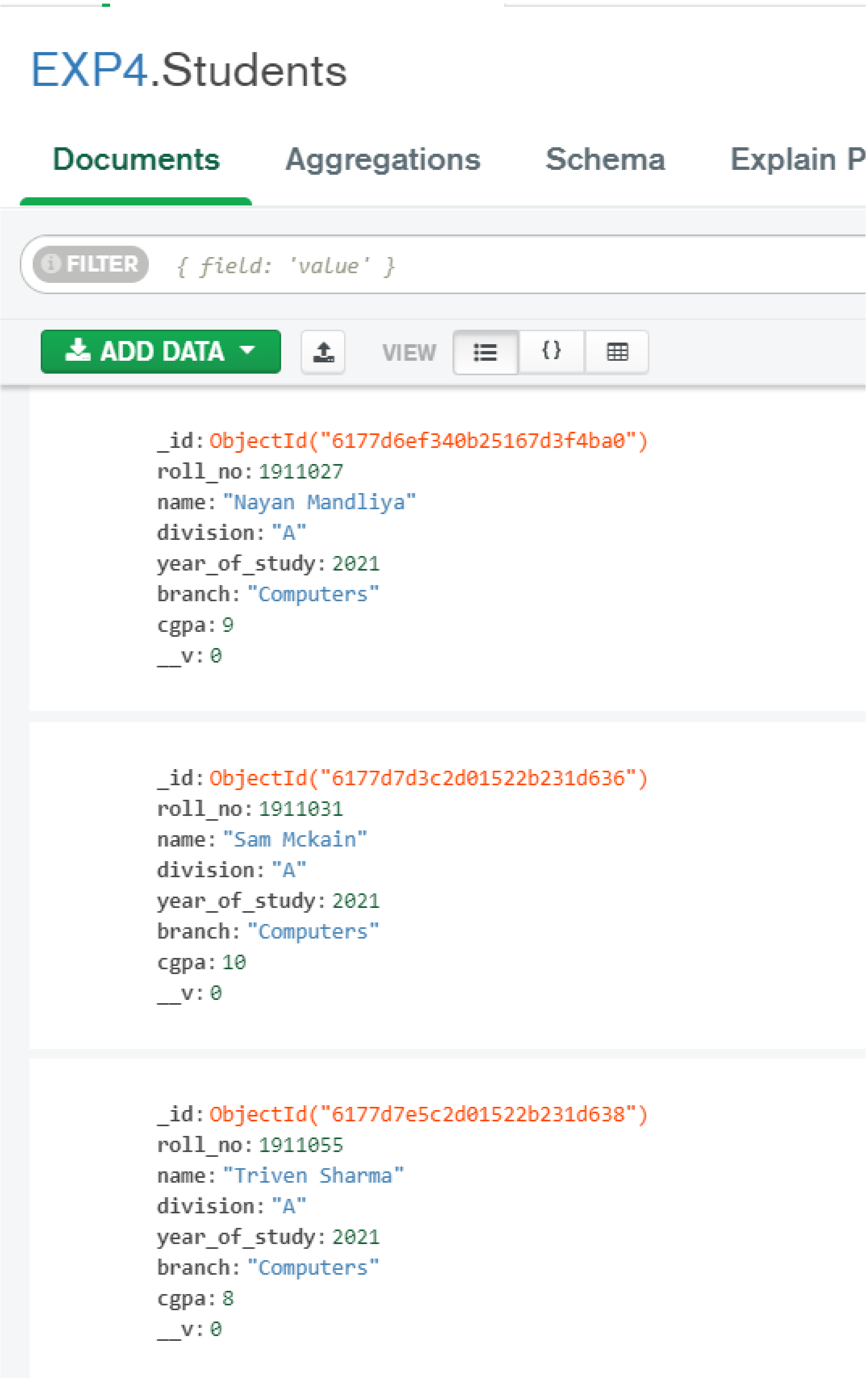
Update.js:

```
const express=require('express');
const app=express();
app.engine('html', require('ejs').renderFile);
app.set('view engine', 'html');
const mongoose=require('mongoose');
app.use(express.urlencoded({extended:false}));
app.use(express.json())
mongoose.connect('mongodb://localhost:27017/EXP4');
const db=mongoose.connection;
var Student=require('./1create');
const path=require('path');
app.get('/:id',(req,res)=>{
    Student.find({name: req.params.id},(err, data)=>{
        if(err)
        {
            console.log(err);
        }
        else if(data.length==0)
        {
            res.send("Invalid name!!!");
        }
        else
        {
            var str;
            str=[data[0].roll_no,data[0].name,data[0].division,data[0].year_of_study,data[0].branch,data[0].cgpa]
            res.render(path.join(__dirname, '/public', 'update.html'), {stri: str});
        }
    });
})
app.post('/:id',(req,res)=>{
    Student.updateOne({name:req.params.id},{cgpa:Number(req.body.cgpa)},(err,data)=>{
        if(err)
        {
            console.log(err);
        }
        else
        {
            res.send("CGPA updated successfully!!!!");
        }
    });
})
app.listen(7000,(req,res)=>{
    console.log("Server listening on port 7000!!!");
})
```

Update.html:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <form name="updatestudent" method="post">
        <h4>Roll No. : <%= stri[0] %></h4>
        <h4>Name : <%= stri[1] %></h4>
        <h4>Division : <%= stri[2] %></h4>
        <h4>Year of study : <%= stri[3] %></h>
        <h4>Branch : <%= stri[4] %></h4>
        <h4>CGPA : <%= stri[5] %></h4>
        <div class="input">
            <span class="label1">CGPA:</span>
            <input type="number" name="cgpa"/>
        </div>
        <br>
        <div class="actions">
          <input class="buttoner" type="submit" value="Update data"/>
        </div>
      </form>
</body>
</html>
```

MongoDB database:



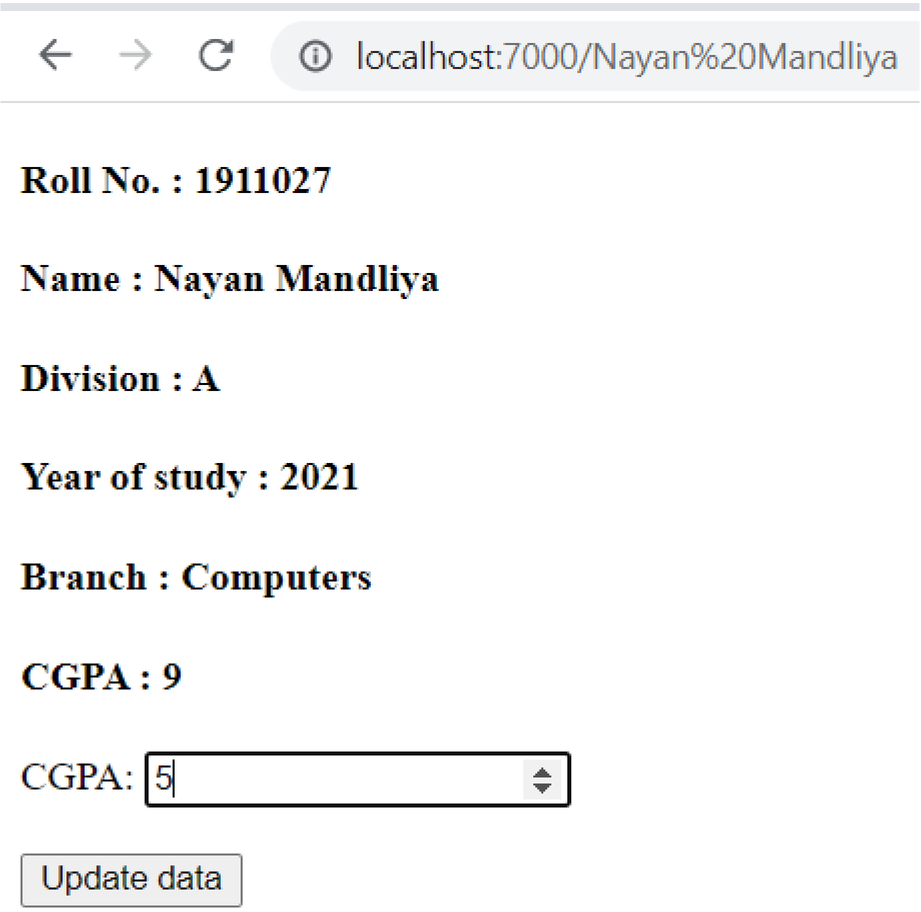
```
_id: ObjectId("6177d6ef340b25167d3f4ba0")
roll_no: 1911027
name: "Nayan Mandliya"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 9
__v: 0
```

```
_id: ObjectId("6177d7d3c2d01522b231d636")
roll_no: 1911031
name: "Sam Mckain"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 10
__v: 0
```

```
_id: ObjectId("6177d7e5c2d01522b231d638")
roll_no: 1911055
name: "Triven Sharma"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 8
__v: 0
```

OUTPUT:

If valid name entered in url:



localhost:7000/Nayan%20Mandliya

Roll No. : 1911027

Name : Nayan Mandliya

Division : A

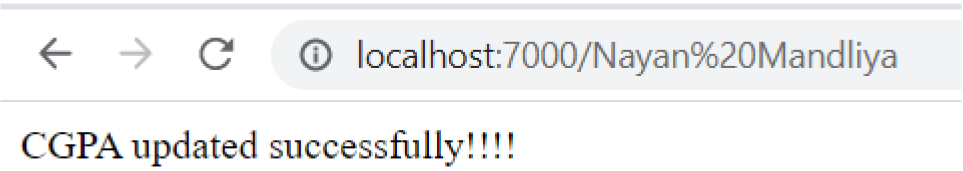
Year of study : 2021

Branch : Computers

CGPA : 9

CGPA: 5

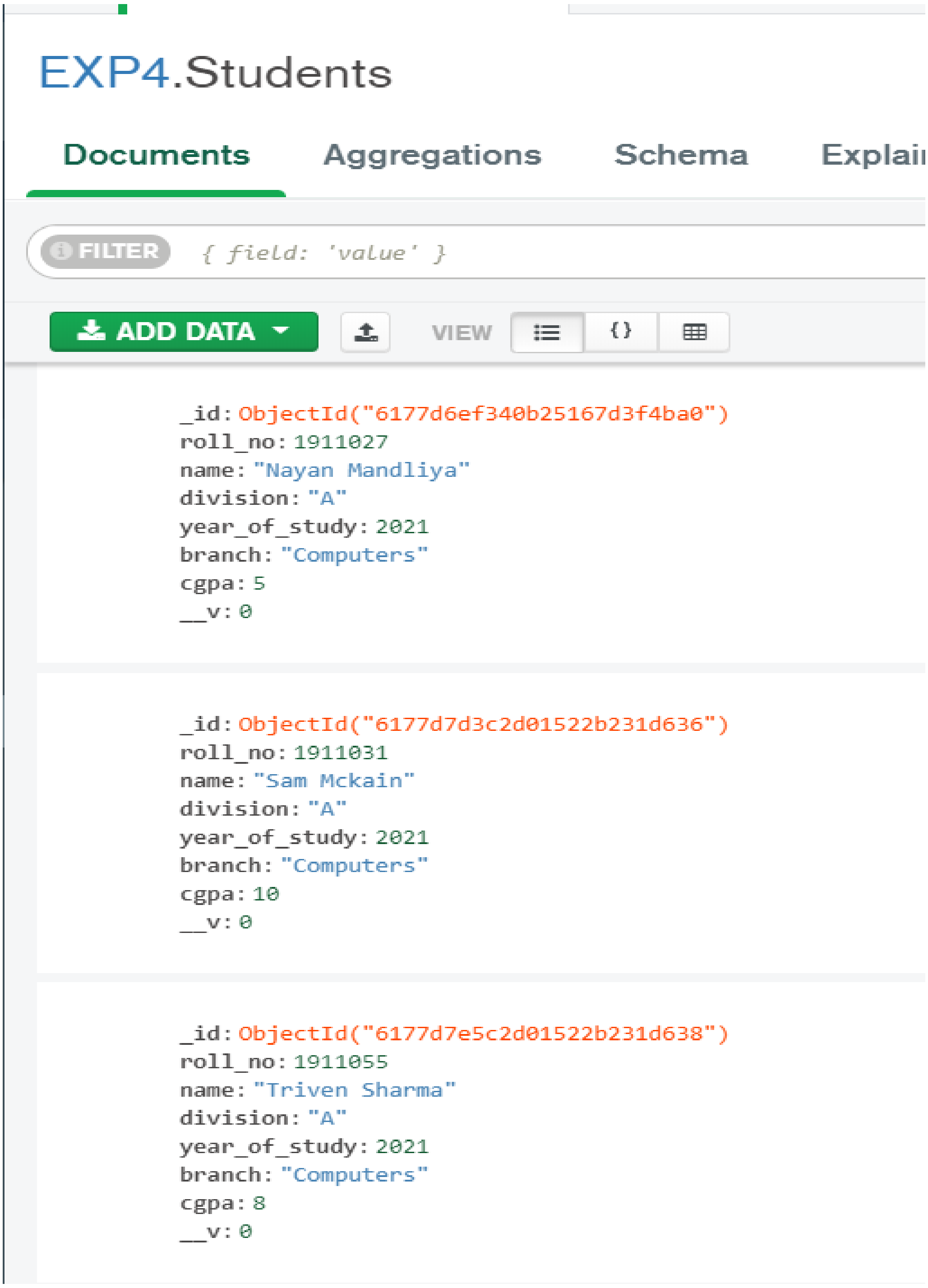
After update button is clicked:



localhost:7000/Nayan%20Mandliya

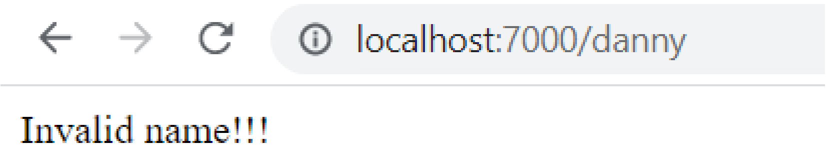
CGPA updated successfully!!!!

MongoDB database: As you can see in the initial DB cgpa for “Nayan Mandliya” was 9 and after updation cgpa is 5.



```
_id: ObjectId("6177d6ef340b25167d3f4ba0")
roll_no: 1911027
name: "Nayan Mandliya"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 5
__v: 0

_id: ObjectId("6177d7d3c2d01522b231d636")
roll_no: 1911031
name: "Sam Mckain"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 10
__v: 0

_id: ObjectId("6177d7e5c2d01522b231d638")
roll_no: 1911055
name: "Triven Sharma"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 8
__v: 0
```

If invalid name entered in url:

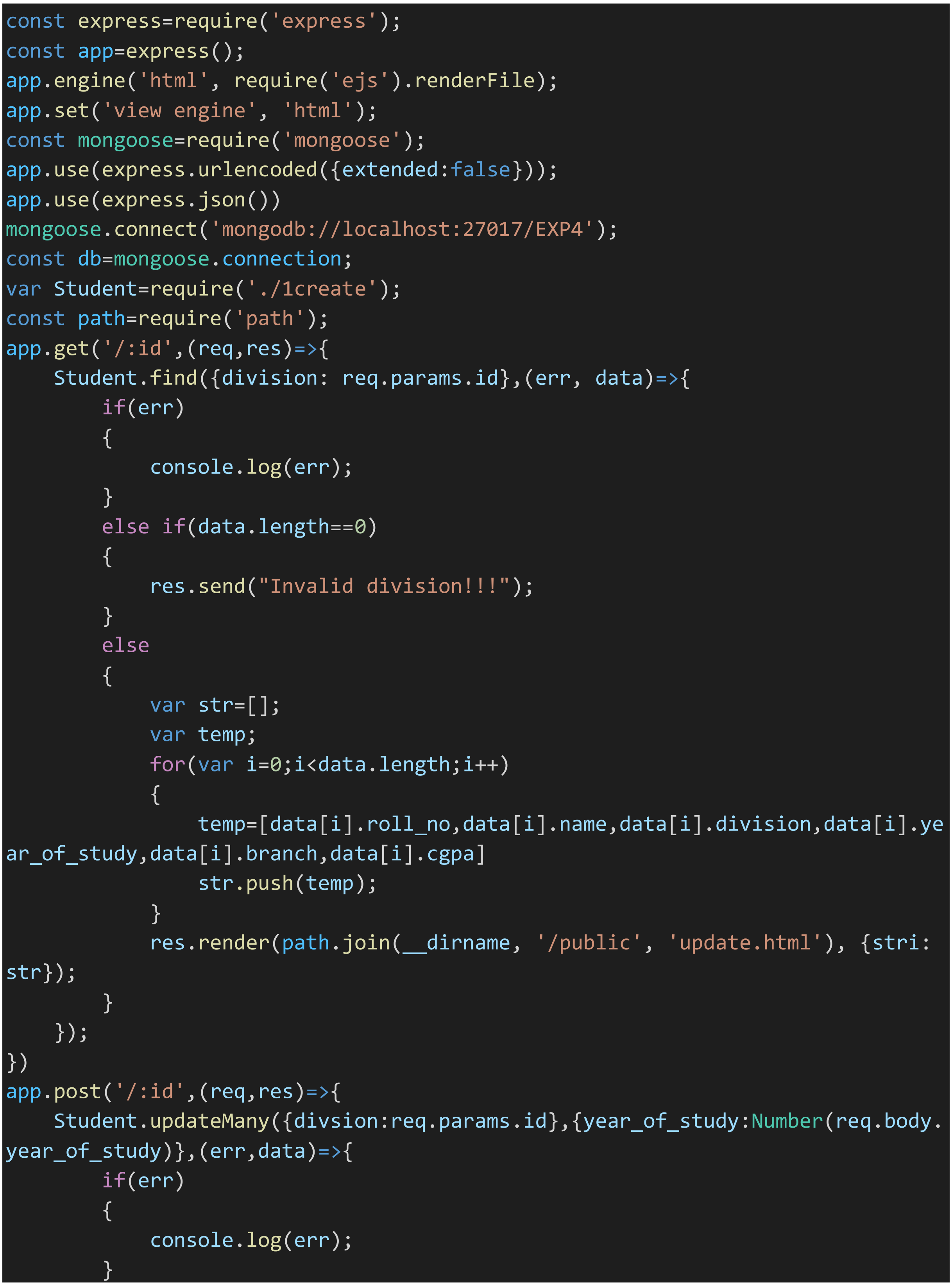


Invalid name!!!

Updatemany:

CODE:

Update.js:



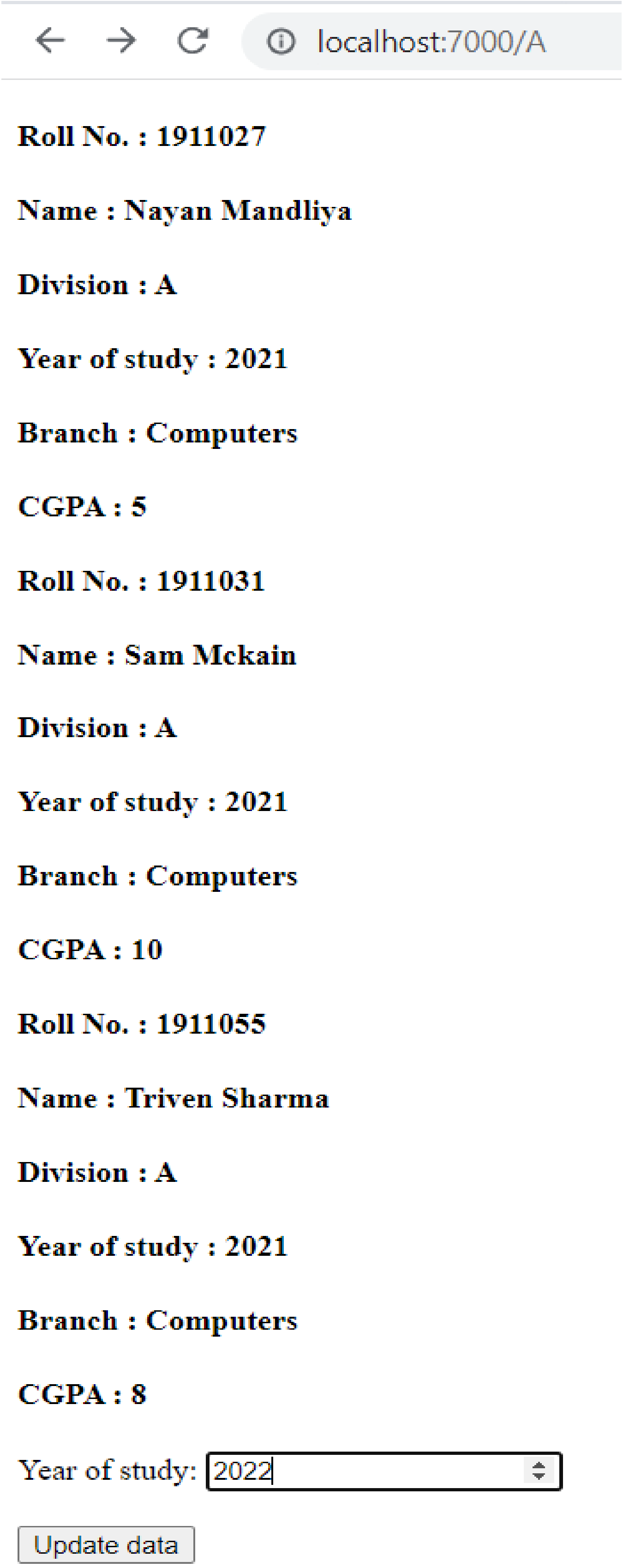
```
const express=require('express');
const app=express();
app.engine('html', require('ejs').renderFile);
app.set('view engine', 'html');
const mongoose=require('mongoose');
app.use(express.urlencoded({extended:false}));
app.use(express.json())
mongoose.connect('mongodb://localhost:27017/EXP4');
const db=mongoose.connection;
var Student=require('./1create');
const path=require('path');
app.get('/:id',(req,res)=>{
    Student.find({division: req.params.id},(err, data)=>{
        if(err)
        {
            console.log(err);
        }
        else if(data.length==0)
        {
            res.send("Invalid division!!!");
        }
        else
        {
            var str=[];
            var temp;
            for(var i=0;i<data.length;i++)
            {
                temp=[data[i].roll_no,data[i].name,data[i].division,data[i].ye
ar_of_study,data[i].branch,data[i].cgpa]
                str.push(temp);
            }
            res.render(path.join(__dirname, '/public', 'update.html'), {stri:
str});
        }
    });
})
app.post('/:id',(req,res)=>{
    Student.updateMany({divsion:req.params.id},{year_of_study:Number(req.body.
year_of_study)},(err,data)=>{
        if(err)
        {
            console.log(err);
        }
        else
        {
            res.send("Updations successful!!!!");
        }
    });
})
app.listen(7000,(req,res)=>{
    console.log("Server listening on port 7000!!!");
})
```

Update.html:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <form name="updatestudent" method="post">
        <% for(var i=0; i < stri.length; i++) { %>
            <h4>Roll No. : <%= stri[i][0] %></h4>
            <h4>Name : <%= stri[i][1] %></h4>
            <h4>Division : <%= stri[i][2] %></h4>
            <h4>Year of study : <%= stri[i][3] %></h>
            <h4>Branch : <%= stri[i][4] %></h4>
            <h4>CGPA : <%= stri[i][5] %></h4>
         <% } %>
        <div class="input">
            <span class="label1">Year of study:</span>
            <input type="number" name="year_of_study"/>
        </div>
        <br>
        <div class="actions">
          <input class="buttoner" type="submit" value="Update data"/>
        </div>
      </form>
</body>
</html>
```

OUTPUT:

If valid division entered in url:



Roll No. : 1911027

Name : Nayan Mandliya

Division : A

Year of study : 2021

Branch : Computers

CGPA : 5

Roll No. : 1911031

Name : Sam Mckain

Division : A

Year of study : 2021

Branch : Computers

CGPA : 10

Roll No. : 1911055

Name : Triven Sharma

Division : A

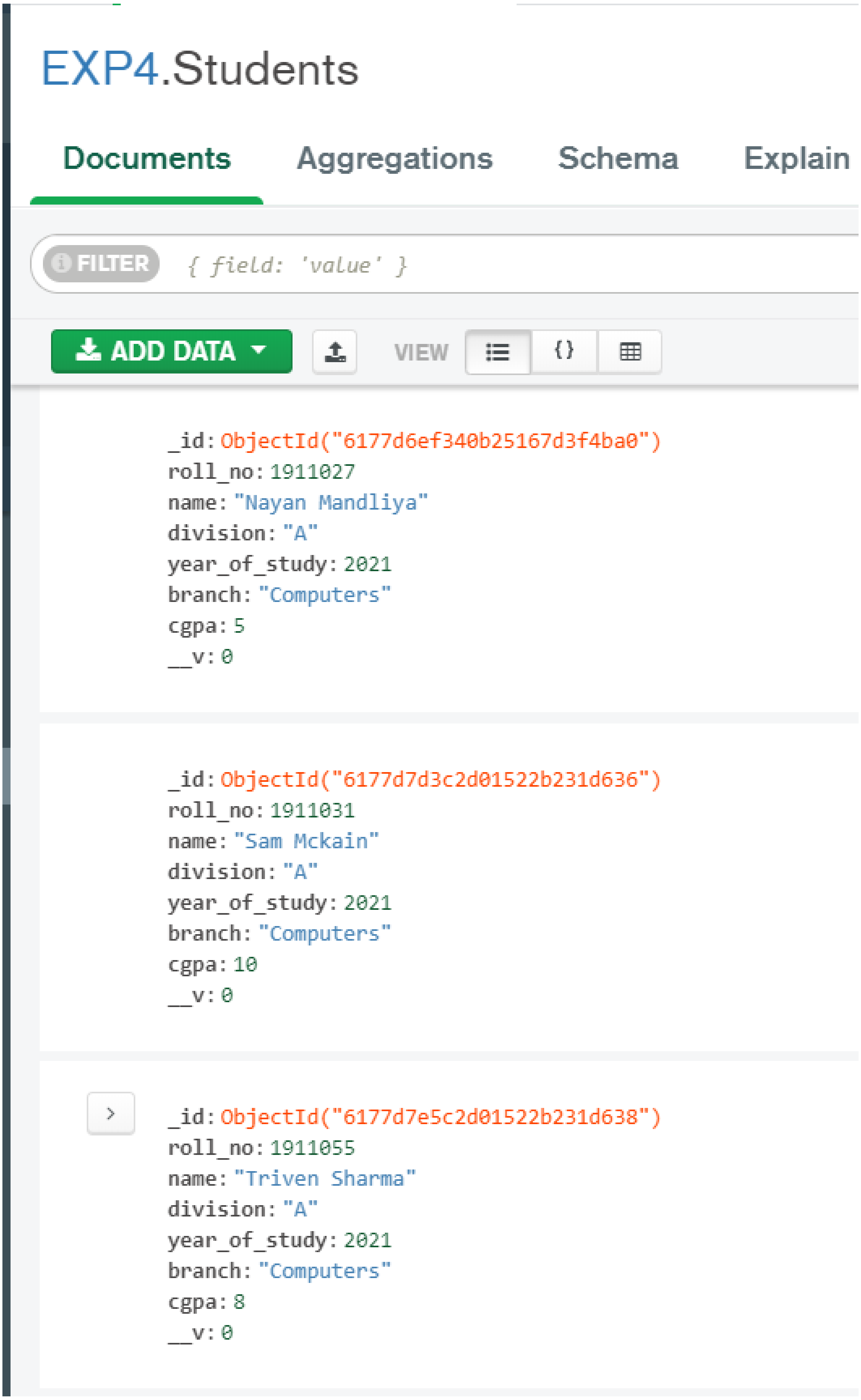
Year of study : 2021

Branch : Computers

CGPA : 8

Year of study: 2022

Before update database:

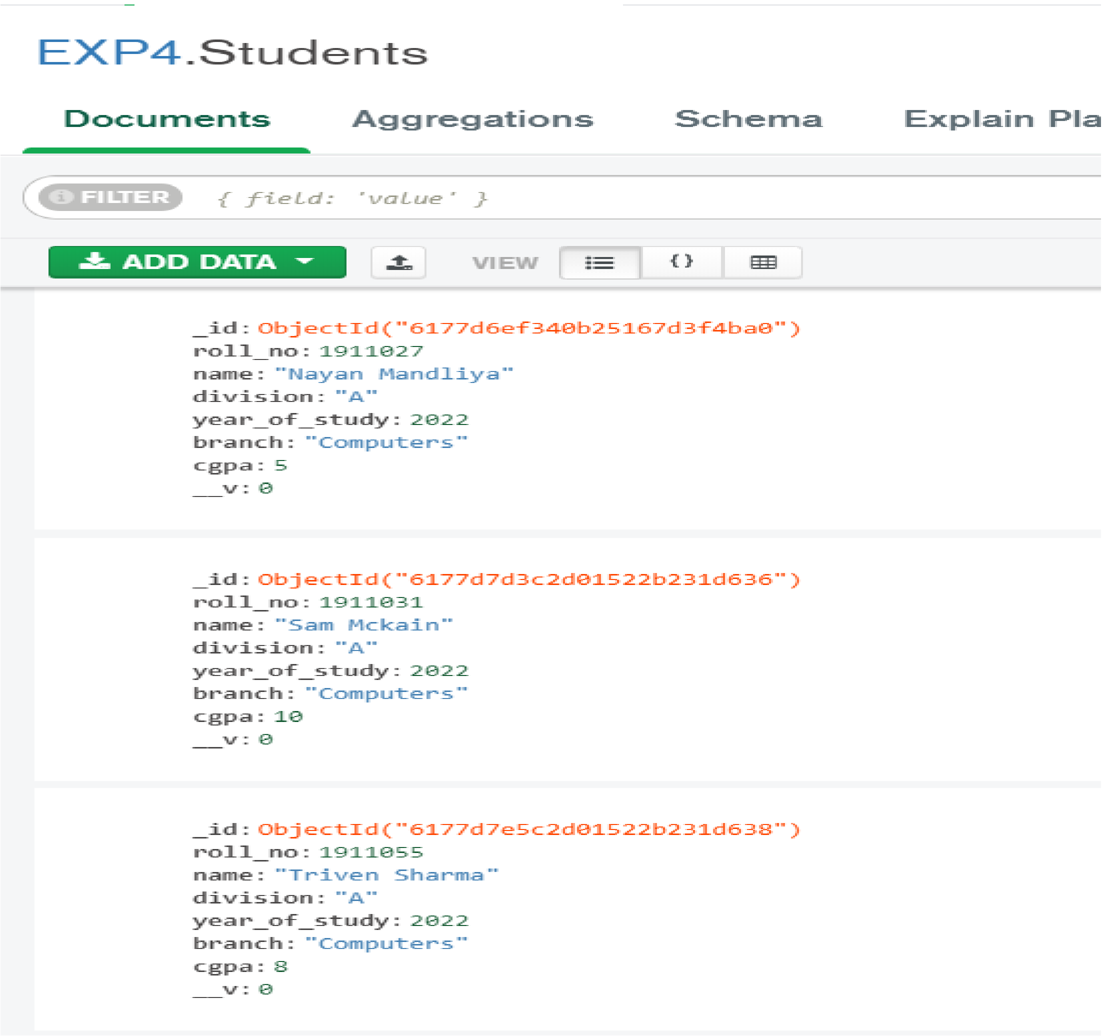


```
_id: ObjectId("6177d6ef340b25167d3f4ba0")
roll_no: 1911027
name: "Nayan Mandliya"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 5
__v: 0
```

```
_id: ObjectId("6177d7d3c2d01522b231d636")
roll_no: 1911031
name: "Sam Mckain"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 10
__v: 0
```

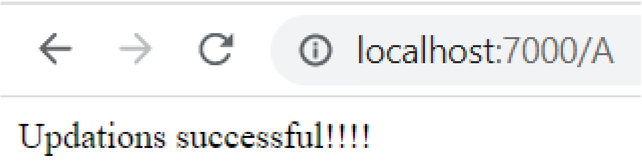
```
_id: ObjectId("6177d7e5c2d01522b231d638")
roll_no: 1911055
name: "Triven Sharma"
division: "A"
year_of_study: 2021
branch: "Computers"
cgpa: 8
__v: 0
```

After update database: As you can see year_of_study for all the A division students are updated



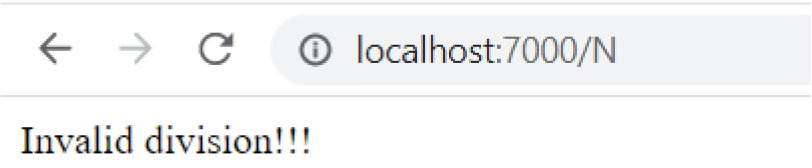
```
_id: ObjectId("6177d6ef340b25167d3f4ba0")
roll_no: 1911027
name: "Nayan Mandliya"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 5
__v: 0

_id: ObjectId("6177d7d3c2d01522b231d636")
roll_no: 1911031
name: "Sam Mckain"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 10
__v: 0

_id: ObjectId("6177d7e5c2d01522b231d638")
roll_no: 1911055
name: "Triven Sharma"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 8
__v: 0
```

After update browser:



Updations successful!!!!

If invalid division entered in url:



Invalid division!!!

4) Delete:

Deleteone:

CODE:

Delete.js:

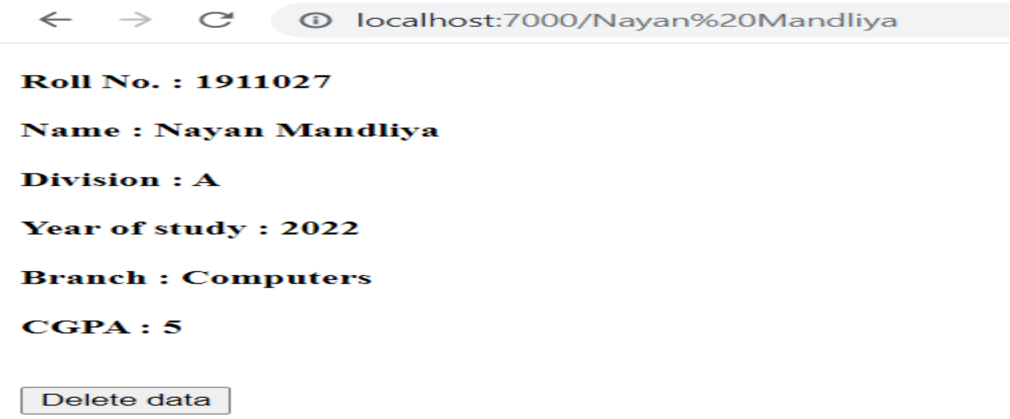
```
const express=require('express');
const app=express();
app.engine('html', require('ejs').renderFile);
app.set('view engine', 'html');
const mongoose=require('mongoose');
app.use(express.urlencoded({extended:false}));
app.use(express.json())
mongoose.connect('mongodb://localhost:27017/EXP4');
const db=mongoose.connection;
var Student=require('./1create');
const path=require('path');
app.get('/:id',(req,res)=>{
    Student.find({name: req.params.id},(err, data)=>{
        if(err)
        {
            console.log(err);
        }
        else if(data.length==0)
        {
            res.send("Invalid name!!!");
        }
        else
        {
            var str;
            str=[data[0].roll_no,data[0].name,data[0].division,data[0].year_of_study,data[0].branch,data[0].cgpa]
            res.render(path.join(__dirname, '/public', 'delete.html'), {stri: str});
        }
    });
})
app.post('/:id',(req,res)=>{
    Student.deleteOne({name:req.params.id},(err,data)=>{
        if(err)
        {
            console.log(err);
        }
        else
        {
            res.send("Data deleted successfully!!!!");
        }
    });
})
app.listen(7000,(req,res)=>{
    console.log("Server listening on port 7000!!!");
})
```

Delete.html:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <form name="deletestudent" method="post">
        <h4>Roll No. : <%= stri[0] %></h4>
        <h4>Name : <%= stri[1] %></h4>
        <h4>Division : <%= stri[2] %></h4>
        <h4>Year of study : <%= stri[3] %></h>
        <h4>Branch : <%= stri[4] %></h4>
        <h4>CGPA : <%= stri[5] %></h4>
        <br>
        <div class="actions">
          <input class="buttoner" type="submit" value="Delete data"/>
        </div>
      </form>
</body>
</html>
```

OUTPUT:

If valid name entered in url:



localhost:7000/Nayan%20Mandliya

Roll No. : 1911027

Name : Nayan Mandliya

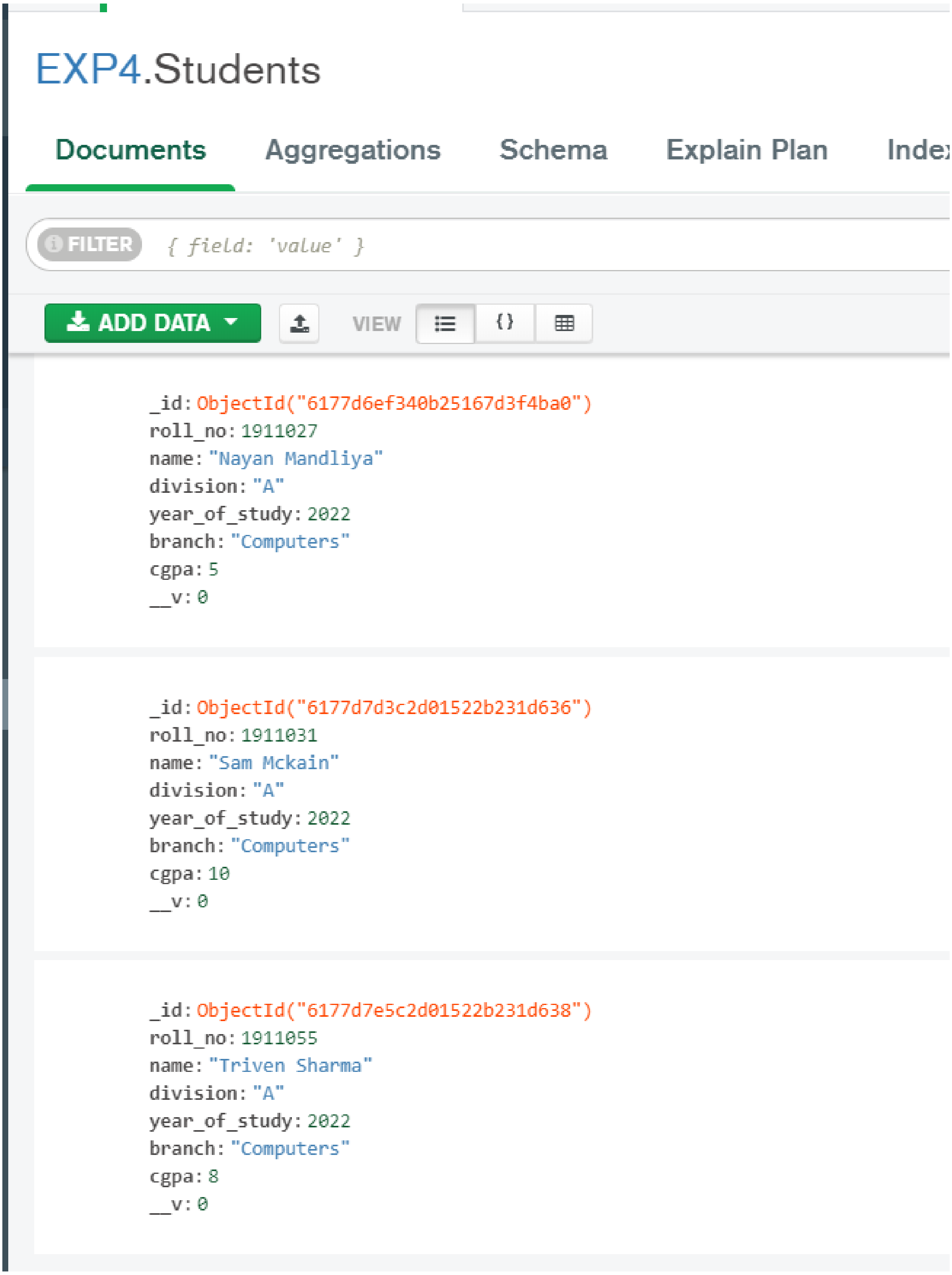
Division : A

Year of study : 2022

Branch : Computers

CGPA : 5

Before delete database:

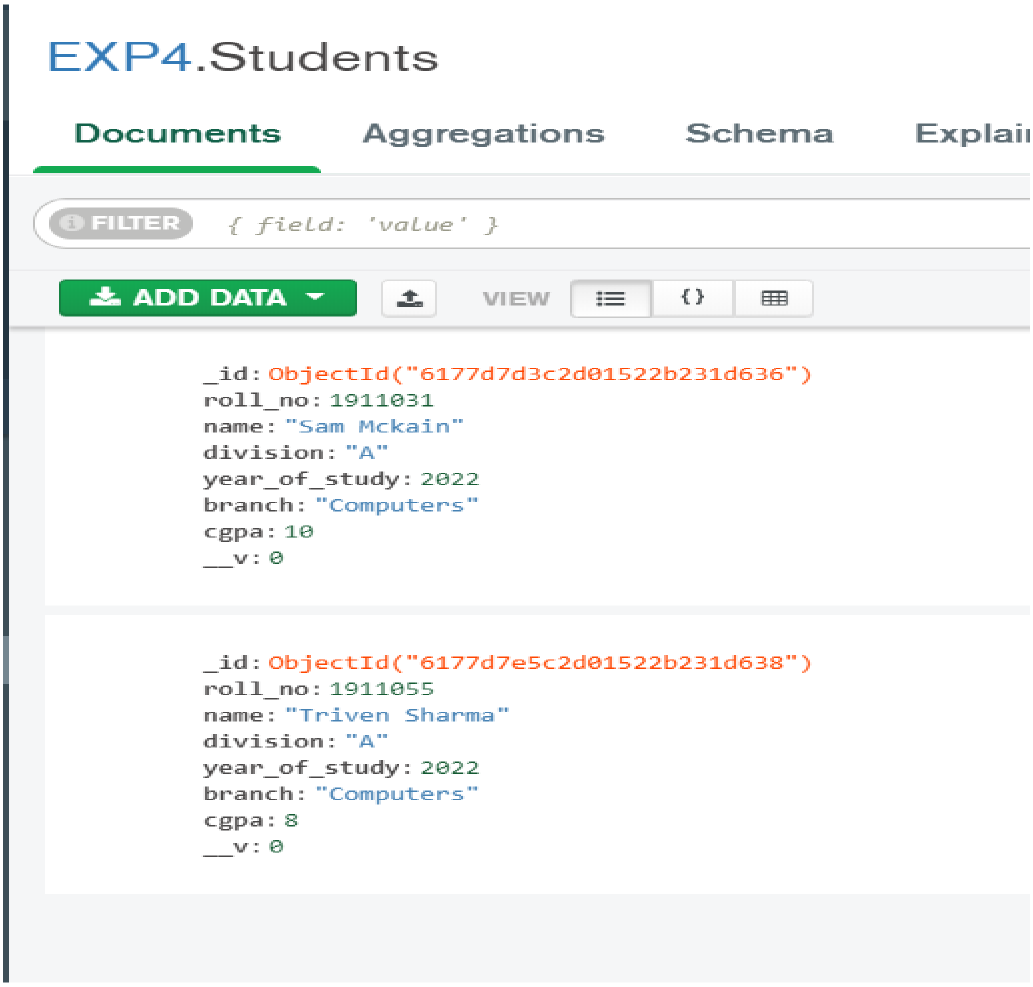


```
_id: ObjectId("6177d6ef340b25167d3f4ba0")
roll_no: 1911027
name: "Nayan Mandliya"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 5
__v: 0
```

```
_id: ObjectId("6177d7d3c2d01522b231d636")
roll_no: 1911031
name: "Sam Mckain"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 10
__v: 0
```

```
_id: ObjectId("6177d7e5c2d01522b231d638")
roll_no: 1911055
name: "Triven Sharma"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 8
__v: 0
```

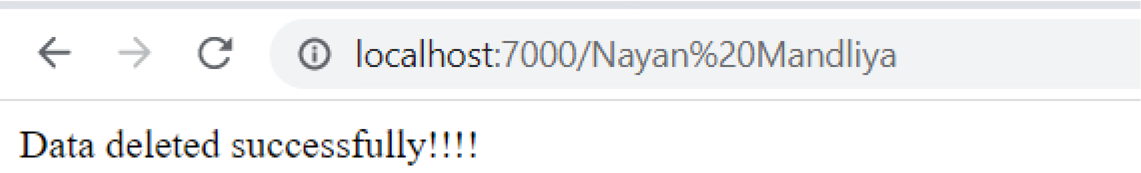
After delete database: As you can see the student with name “Nayan Mandliya” is deleted.



```
_id: ObjectId("6177d7d3c2d01522b231d636")
roll_no: 1911031
name: "Sam Mckain"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 10
__v: 0
```

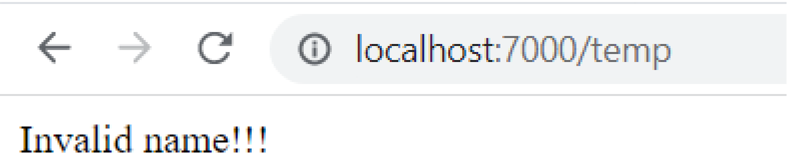
```
_id: ObjectId("6177d7e5c2d01522b231d638")
roll_no: 1911055
name: "Triven Sharma"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 8
__v: 0
```

After delete browser:



```
Data deleted successfully!!!!
```

If invalid name entered in url:



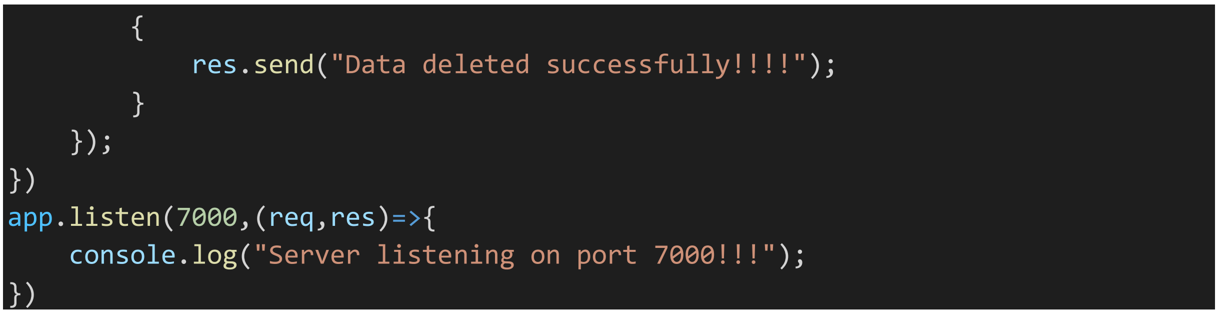
```
Invalid name!!!
```

Deletemany:

CODE:

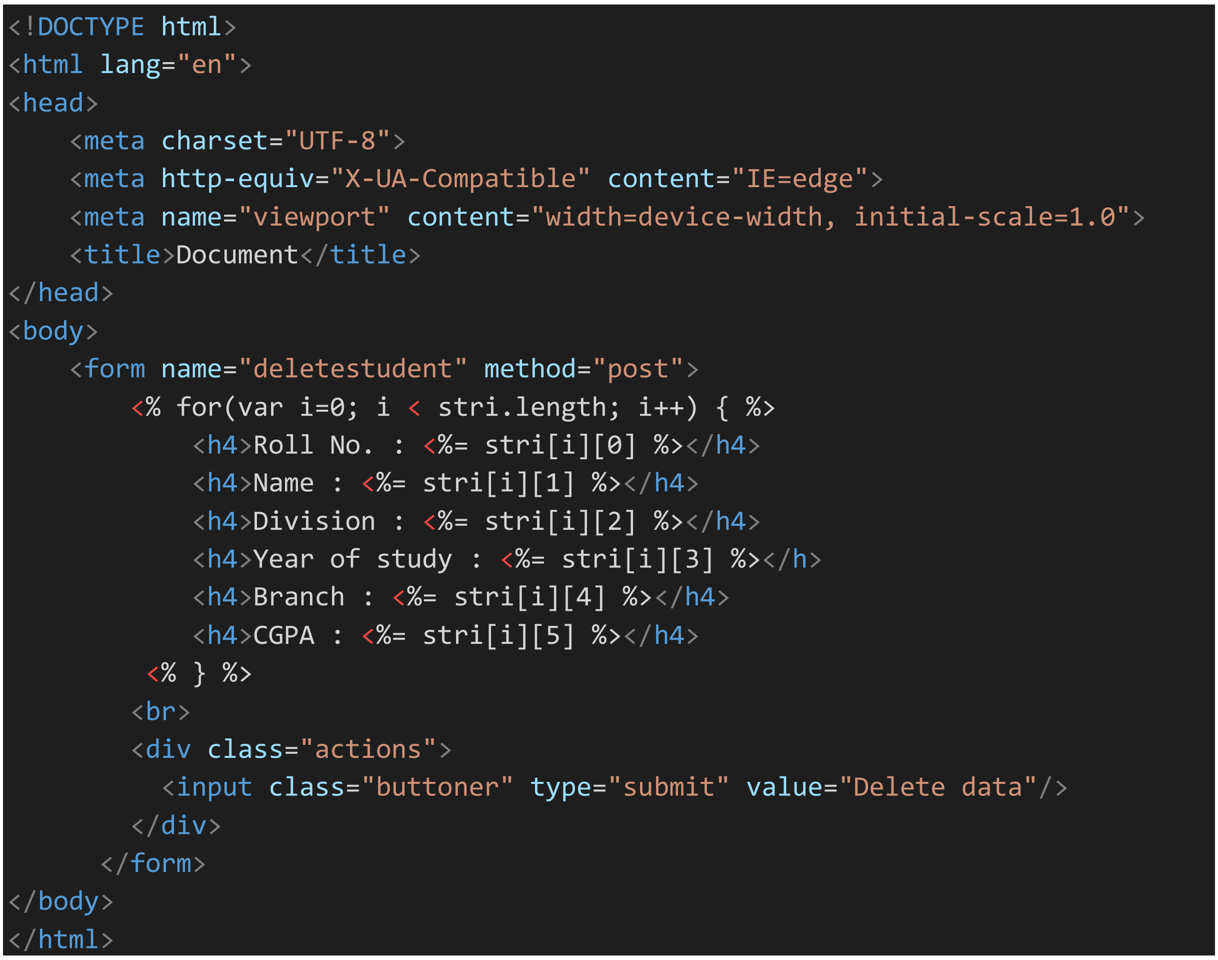
Delete.js:

```
const express=require('express');
const app=express();
app.engine('html', require('ejs').renderFile);
app.set('view engine', 'html');
const mongoose=require('mongoose');
app.use(express.urlencoded({extended:false}));
app.use(express.json())
mongoose.connect('mongodb://localhost:27017/EXP4');
const db=mongoose.connection;
var Student=require('./1create');
const path=require('path');
app.get('/:id',(req,res)=>{
    Student.find({division: req.params.id},(err, data)=>{
        if(err)
        {
            console.log(err);
        }
        else if(data.length==0)
        {
            res.send("Invalid division!!!");
        }
        else
        {
            var str=[];
            var temp;
            for(var i=0;i<data.length;i++)
            {
                temp=[data[i].roll_no,data[i].name,data[i].division,data[i].year_of_study,data[i].branch,data[i].cgpa]
                str.push(temp);
            }
            res.render(path.join(__dirname, '/public', 'delete.html'), {stri:str});
        }
    });
})
app.post('/:id',(req,res)=>{
    Student.deleteMany({division:req.params.id},(err,data)=>{
        if(err)
        {
            console.log(err);
        }
        else
```



```
        {
            res.send("Data deleted successfully!!!!");
        }
    });
})
app.listen(7000,(req,res)=>{
    console.log("Server listening on port 7000!!!");
})
```

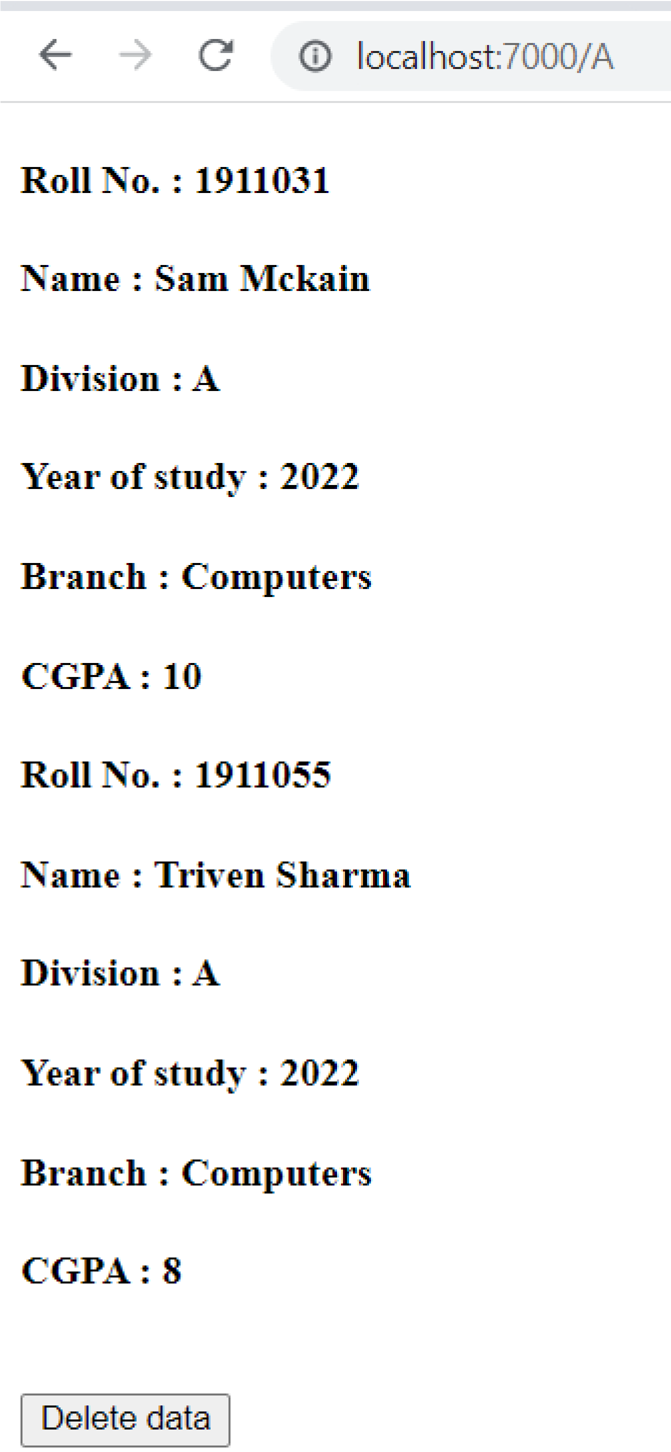
Delete.html:



```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <form name="deletestudent" method="post">
        <% for(var i=0; i < stri.length; i++) { %>
            <h4>Roll No. : <%= stri[i][0] %></h4>
            <h4>Name : <%= stri[i][1] %></h4>
            <h4>Division : <%= stri[i][2] %></h4>
            <h4>Year of study : <%= stri[i][3] %></h>
            <h4>Branch : <%= stri[i][4] %></h4>
            <h4>CGPA : <%= stri[i][5] %></h4>
         <% } %>
        <br>
        <div class="actions">
          <input class="buttoner" type="submit" value="Delete data"/>
        </div>
      </form>
</body>
</html>
```

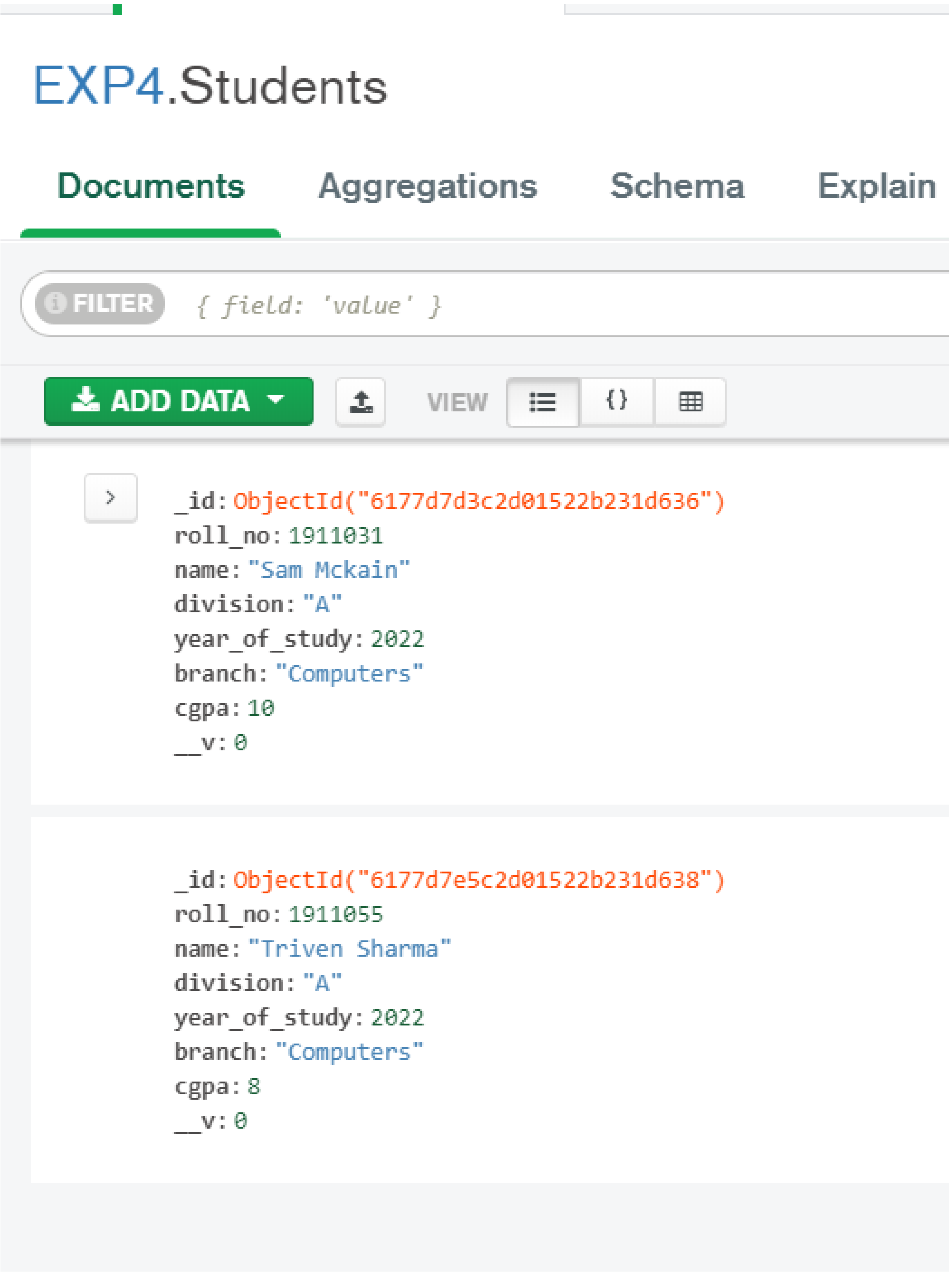
OUTPUT:

If valid division entered:



```
Roll No. : 1911031

Name : Sam Mckain

Division : A

Year of study : 2022

Branch : Computers

CGPA : 10

Roll No. : 1911055

Name : Triven Sharma

Division : A

Year of study : 2022

Branch : Computers

CGPA : 8
```

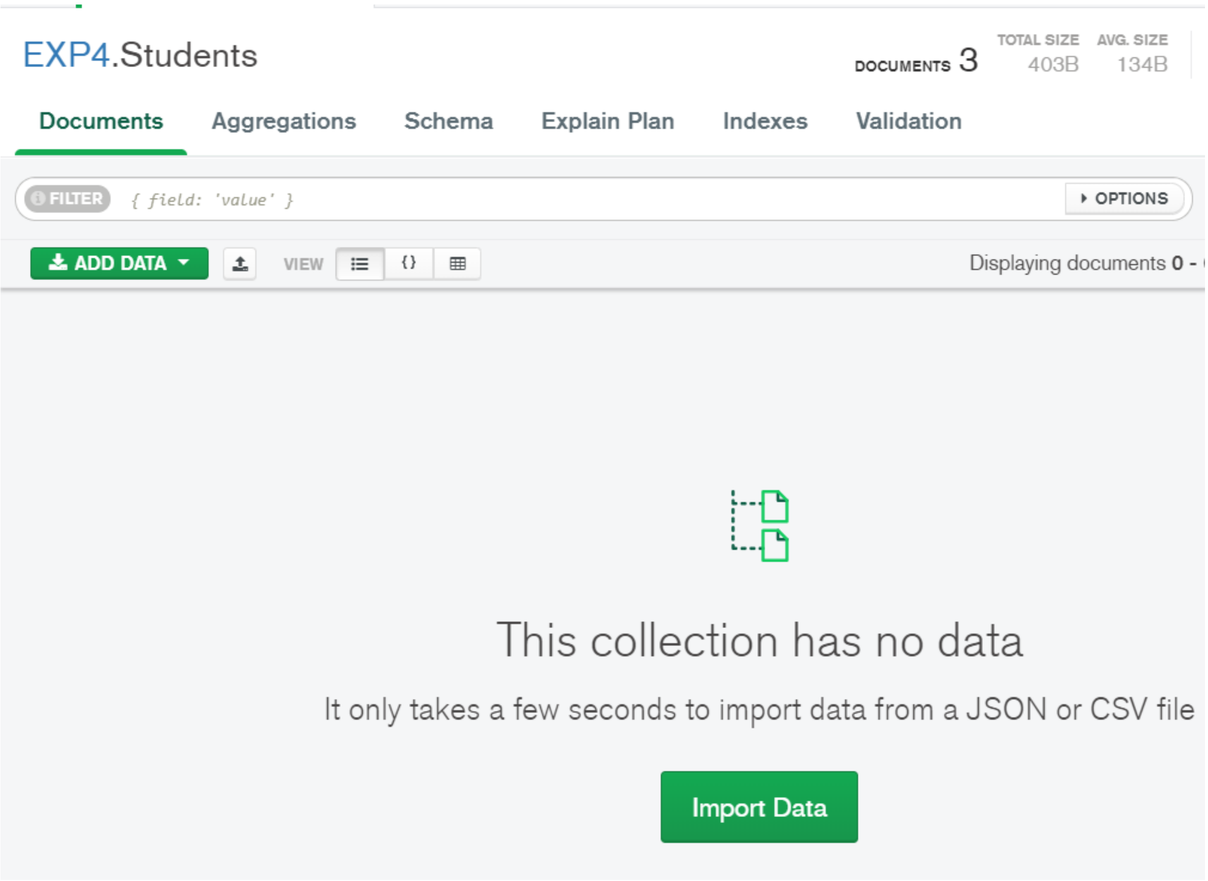
Before delete database:



```
_id: ObjectId("6177d7d3c2d01522b231d636")
roll_no: 1911031
name: "Sam Mckain"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 10
__v: 0
```

```
_id: ObjectId("6177d7e5c2d01522b231d638")
roll_no: 1911055
name: "Triven Sharma"
division: "A"
year_of_study: 2022
branch: "Computers"
cgpa: 8
__v: 0
```

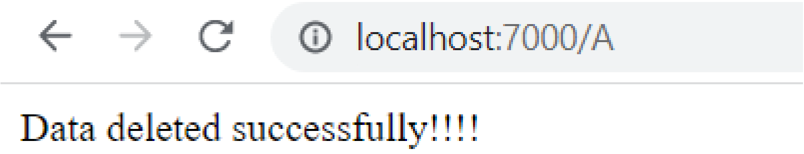
After delete database:



This collection has no data

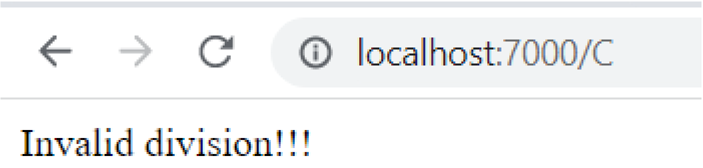
It only takes a few seconds to import data from a JSON or CSV file

After delete browser:



Data deleted successfully!!!!

If invalid division entered:



Invalid division!!!