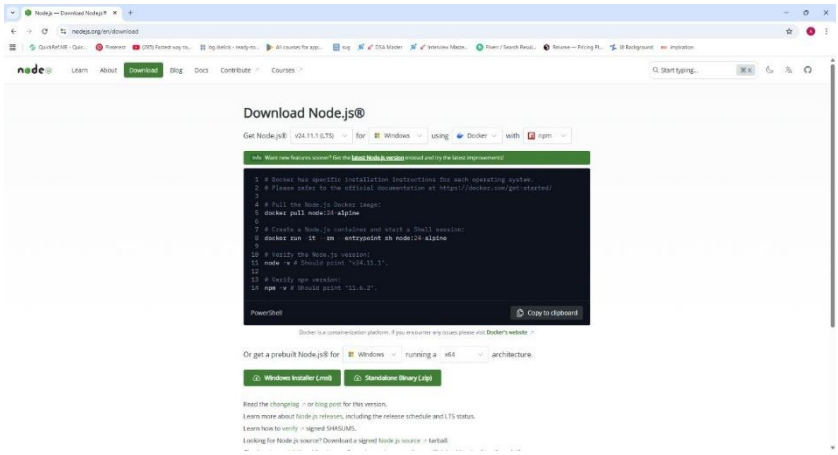
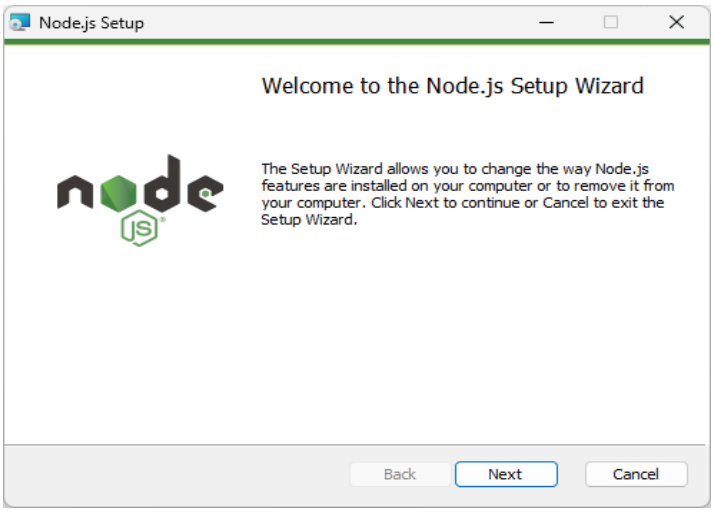
Practical No 1

Aim : Installation and initialization of Node.js

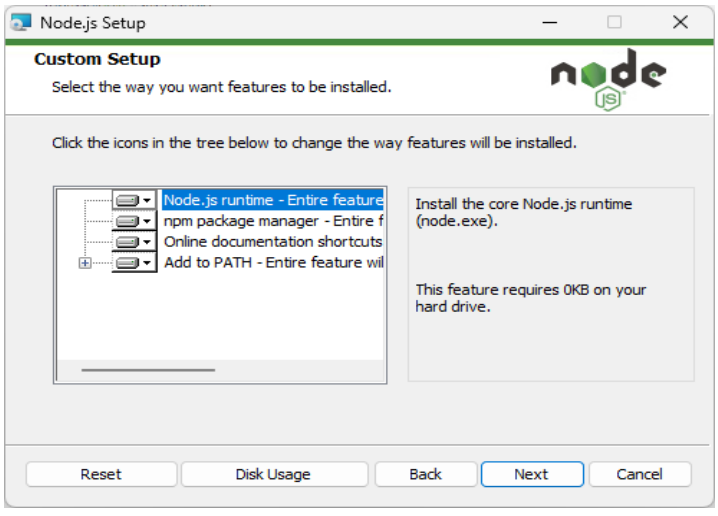
Step 1



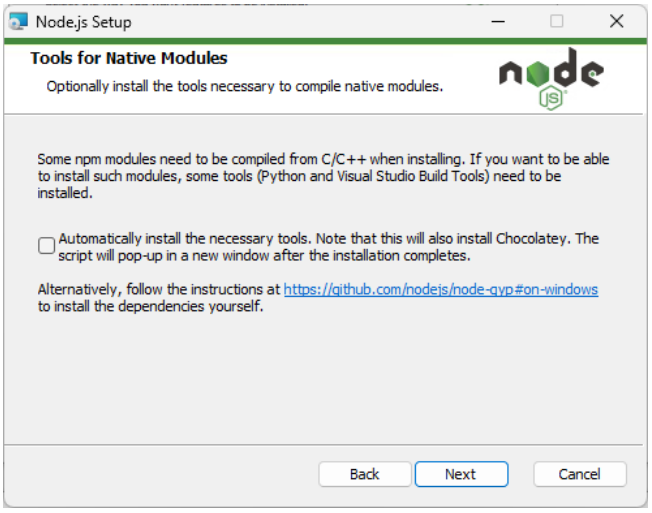
Step 2



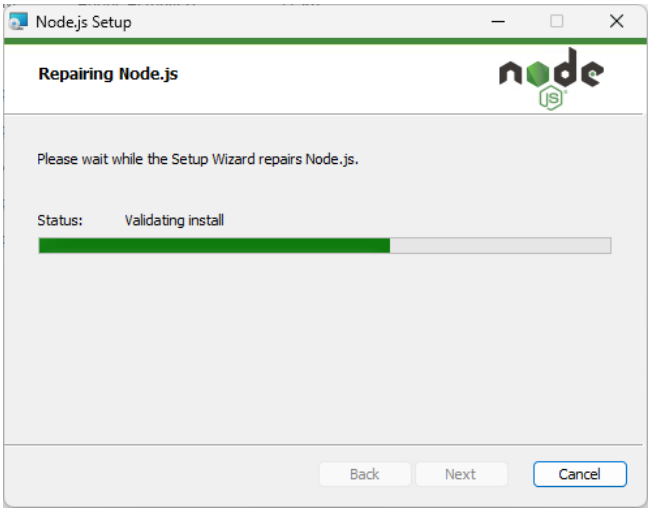
Step 3



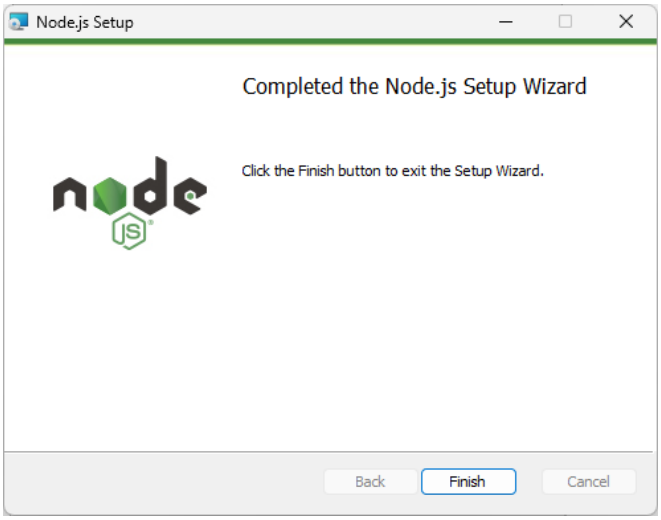
Step 4



Step 5



Step 6



Step 7

```
C:\Users\Administrator>node --version
v25.0.0
```

Practical No: 2

AIM: Write a Program to demonstrate creation and understanding of package.json and usage of npm

```
$ npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See `npm help init` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (js(node)) crud-operation
version: (1.0.0)
description: project
entry point: (first.js)
test command:
git repository:
keywords:
author: Habiba
license: (ISC)
type: (commonjs)
About to write to C:\Clg\JS(Node)\package.json:

{
  "name": "crud-operation",
  "version": "1.0.0",
  "description": "project",
  "main": "first.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "author": "Habiba",
  "license": "ISC",
  "type": "commonjs"
}
```

Package.json

```
{
  "name": "crud-operation",
  "version": "1.0.0",
  "description": "project",
  "license": "ISC",
  "author": "Habiba",
  "type": "commonjs",
  "main": "first.js",
  ▷Debug
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  }
}
```

Practical No: 3

AIM: Write a program to demonstrate creating module and using module .export or require

Input:

1.index.js

```
import add from "./math.js";

console.log(add(3,4))
```

2.math.js

```
function add(a,b){
    console.log("addition")
    return a + b
}
export default add;
```

Output:

```
addition
7
PS C:\MeanStack>
```

Practical No: 4

AIM: Write a program to demonstrate the node.js in Event Loop

1: Set Timeout

Input:

```
1   console.log("A");
2   setTimeout(() => {
3       console.log("Habiba (Run after 2 seconds)");
4   },2000);
5
6   console.log("B");
```

Output:

```
A
B
Habiba (Run after 2 seconds)
```

2: Set Immediate

Input:

```
1   console.log("A");
2
3   setImmediate(() => {
4       console.log("Habiba");
5   });
6
7   console.log("B");
```

Output:

```
PS C:\Users\Admin\Documents
A
B
Habiba
```

3: Set Interval

Input:

```
1   console.log("A");
2   setInterval(() => {
3       console.log("Habiba (Run after every  2 seconds)");
4   },2000);
5
6   console.log("B");
```

Output:

```
A
B
Habiba (Run after every  2 seconds)
Habiba (Run after every  2 seconds)
Habiba (Run after every  2 seconds)
```

4 Process.Next tick

Input:

```
1   console.log("A");
2   process.nextTick(() => {
3       console.log("Habiba (Next tick)");
4   });
5   console.log("B");
```

Output:

```
PS C:\Users\Admin\Documents\
A
B
Habiba (Next tick)
```

5 Asynchronous Function

Input:

```
1   async function name(params) {
2       console.log(params);
3   }
4   await name("Habiba")
```

Output:

```
PS C:\Users\Admin\Documents\
Habiba
PS C:\Users\Admin\Documents\
```

Practical No: 5

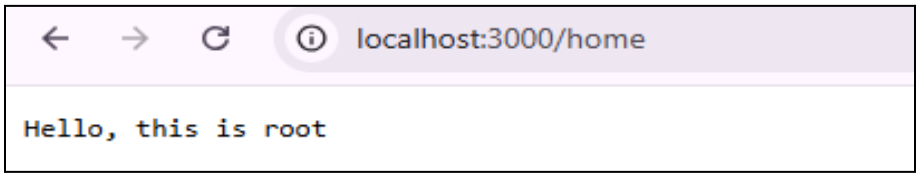
AIM: Write a program to demonstrate handling routes and requests in a node.js serve

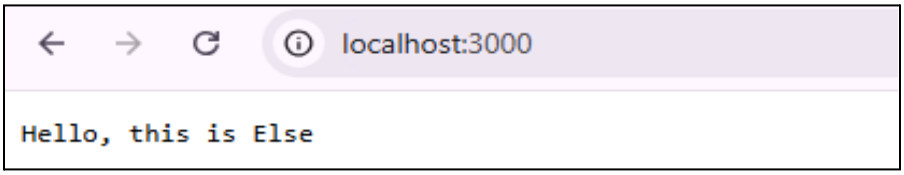
Input:

```
const http =require("http");
const Server = http.createServer((req, res) => {
    if (req.url === "/home") {
        res.write("Hello, this is root");
        res.end();
    }
    else if (req.url === "/about") {
        res.write("Hello, this is about page");
        res.end();
    }
    else {
        res.write("Hello, this is Else");
        res.end();
    }
});
Server.listen(3000, () => console.log('Server is running at 3000'));
```

Output:

```
PS C:\Users\Admin\Documents\
Server is running at 3000
```

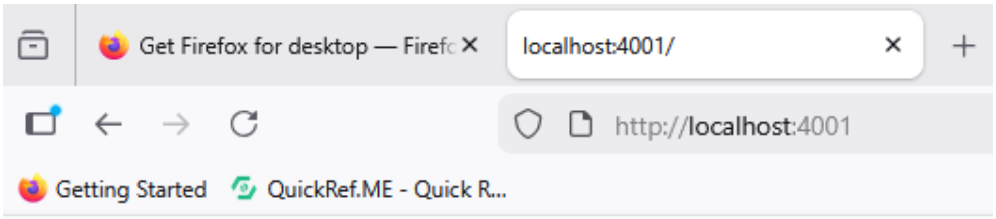




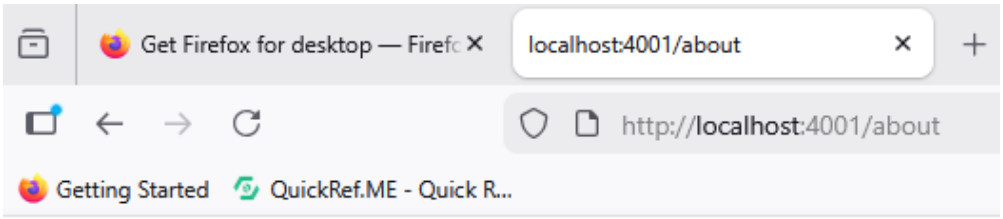
Practical No 6

Aim : Write A Program To Demonstrate Handling Routes And Request In A Node.js Server

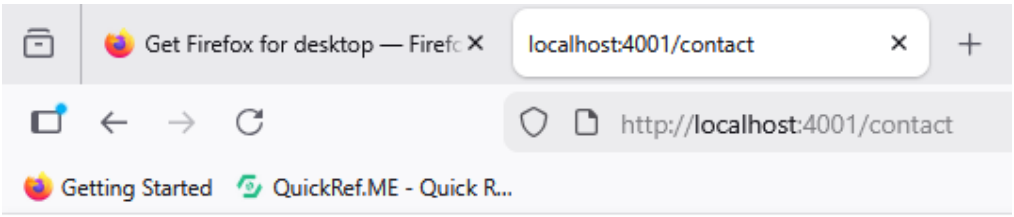
```
const http = require("http")
const { addNumber } = require("./add")

const app = http.createServer((req, res) => {
  const url = req.url

  if ("/" === url) {
    res.write("This Is Home Page")
    res.end()
  }

  else if ("/about" === url) {
    res.write("This Is About Page")
    res.end()
  }

  else if ("/add" === url) {
    res.write("This Is About Page")
    res.write("\n")
    res.write(`${addNumber(12, 24)}`)
    res.end()
  }

  else if ("/contact" === url) {
    res.write("This Is Contact Page")
    res.end()
  }

  else {
    res.write("Page Not Found")
    res.end()
  }

})

app.listen(4001, () => {
  console.log("Server Started At Port ", 4001)
})
```



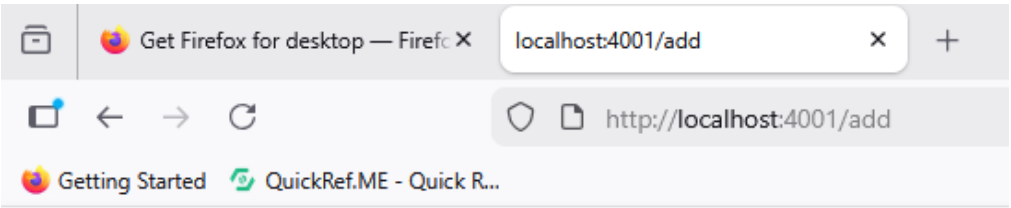

```
This Is Home Page
```



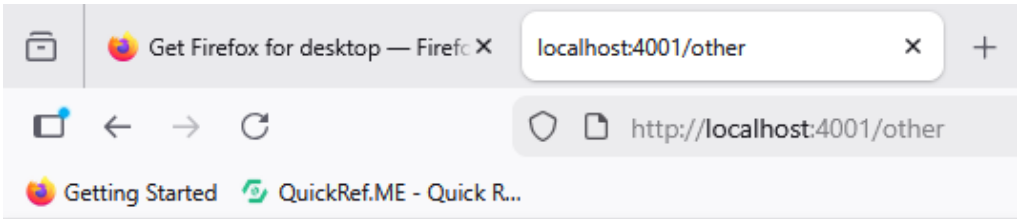

```
This Is About Page
```




```
This Is Contact Page
```




```
This Is About Page
36
```

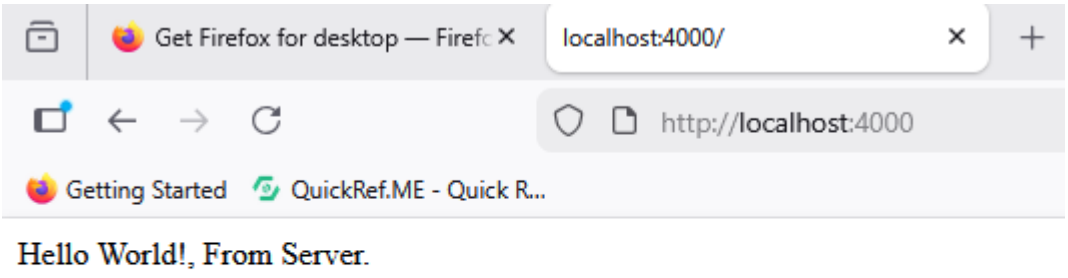



```
Page Not Found
```

Practical No 7

Aim : Write A Program To Demonstrate Introduction And Creation Of Express.js Application.

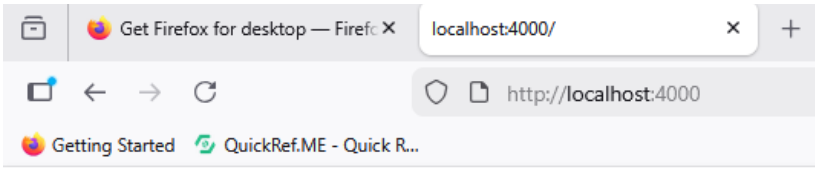
```
import express from "express"

const port = 4000
const app = express()

app.get("/", (req, res) => {
  res.send("Hello World!, From Server.")
})

app.listen(port, () => {
  console.log(`Server Started On : localhost:${port}`)
})
```



Practical No 8

Aim : Write A Program To Demonstrate The Use Of Middleware In Express.js.

```
import express from "express"
import { logger } from "./middleware/looger.js";


const port = 4000
const app = express()

// Middleware
app.use(express.json())
app.use(logger)

app.get("/", (req, res) => {
  res.send("Hello World!, From Server.")
})

app.listen(port, () => {
  console.log(`Server Started On : localhost:${port}`)
})
```

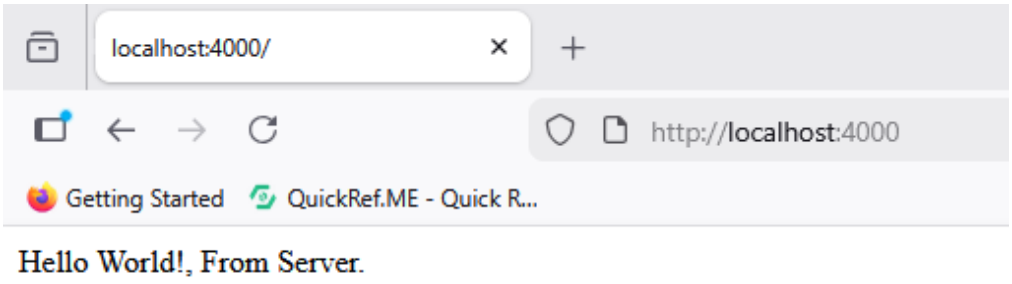


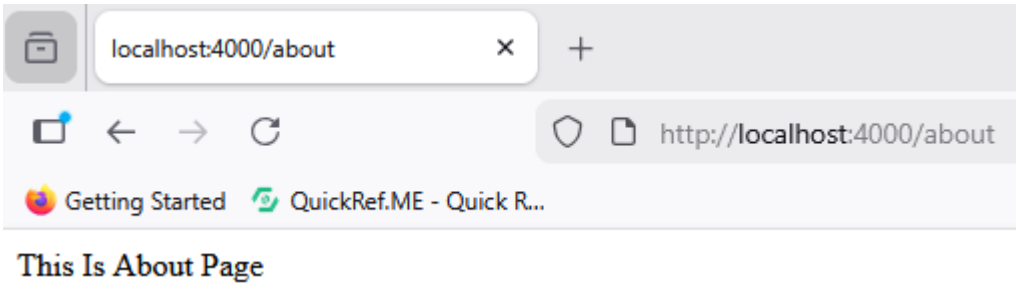
Hello World!, From Server.

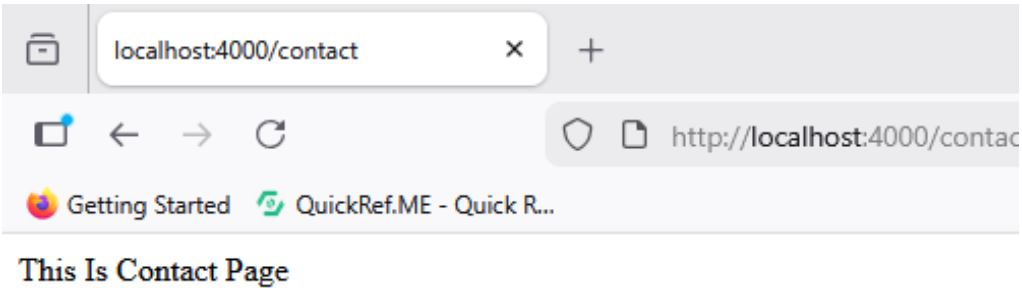
Practical No 9

Aim : Write A Program To Demonstrate Routing In Express.js.

```
import express from "express"

const port = 4000
const app = express()

app.get("/", (req, res) => {
  res.send("Hello World!, From Server.")
})

app.get("/about", (req, res) => {
  res.send("This Is About Page")
})

app.get("/contact", (req, res) => {
  res.send("This Is Contact Page")
})

app.listen(port, () => {
  console.log(`Server Started On : localhost:${port}`)
})
```





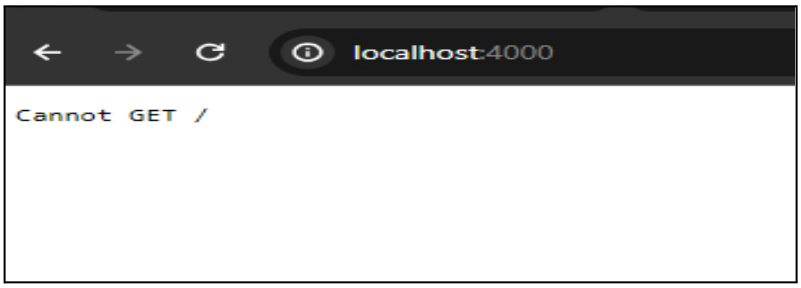


Practical No 10

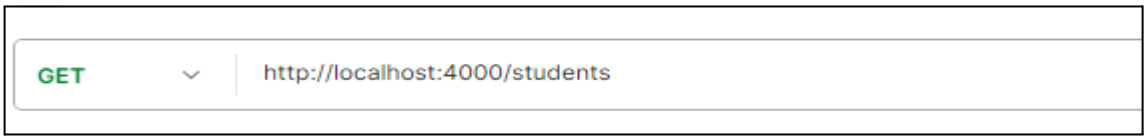
Aim : Write A Program To Demonstrate RESTFul API In Expess.js (GET, POST, PUT, DELETE)

```
const express = require("express");
const app = express()
app.use(express.json());
let students = [
    { id: 1, name: "Habiba" },
    { id: 2, name: "Mahek"},
    {id : 3, name: "Zaberiya" }
];
app.get("/students", (req, res) => {
    res.send(students);
});
app.get("/students/:id", (req, res) => {
    const id  = Number(req.params.id);
    const student = students.find(s => s.id === id);
    if (!student) {
        return res.status(404).send("Student not found");
    }
    res.send(student);
});
app.post("/students", (req, res) => {
    const newStudent = {
```

```
        id: students.length + 1,
        name: req.body.name
    };
    students.push(newStudent);
    res.status(201).send(newStudent);
});
app.put("/students/:id", (req, res) => {
    const id = Number(req.params.id);
    const student = students.find(s => s.id === id);
    if (!student) {
        return res.status(404).send("Student not found");
    }
    student.name = req.body.name;
    res.send(student);
});
app.delete("/students/:id", (req, res) => {
    const id = Number(req.params.id);
    students = students.filter(s => s.id !== id);
    res.send("Student deleted");
});
app.listen(4000, () => {
    console.log("Server is running at http://localhost:4000");
});
```

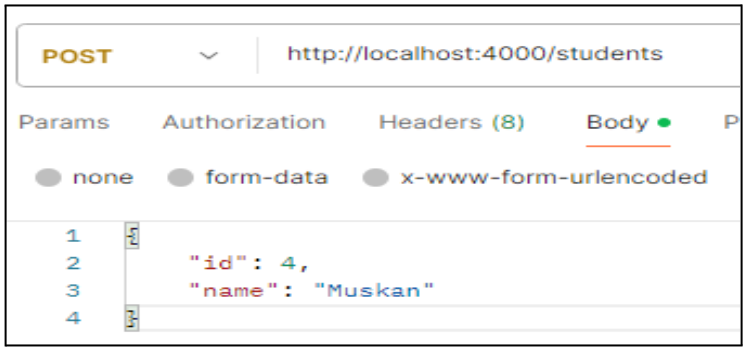

localhost:4000
Cannot GET /

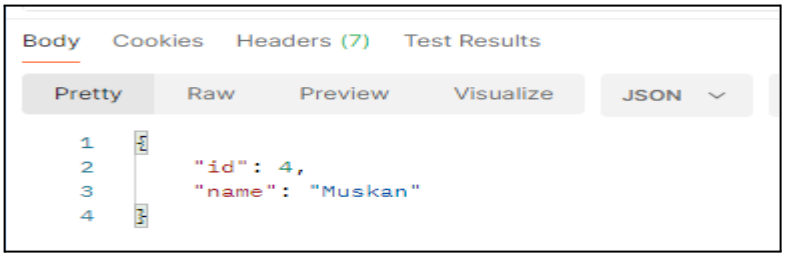
GET


GET
http://localhost:4000/students

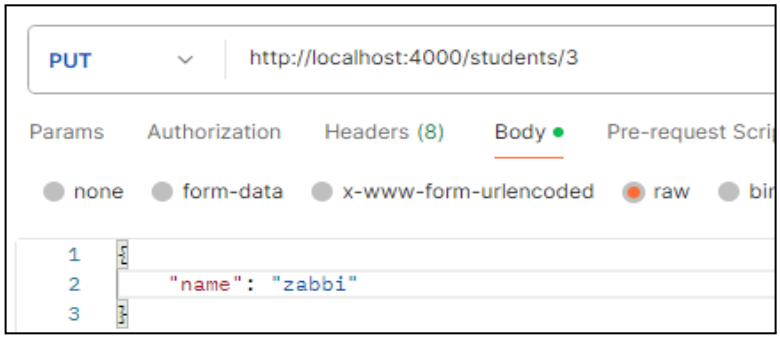

Pretty
Raw
Preview
Visualize
JSON
[
{
"id": 1,
"name": "Habiba"
},
{
"id": 2,
"name": "Mahek"
},
{
"id": 3,
"name": "Zaberiya"
}
]

POST


POST
http://localhost:4000/students
Params
Authorization
Headers (8)
Body
none
form-data
x-www-form-urlencoded
{
"id": 4,
"name": "Muskan"
}

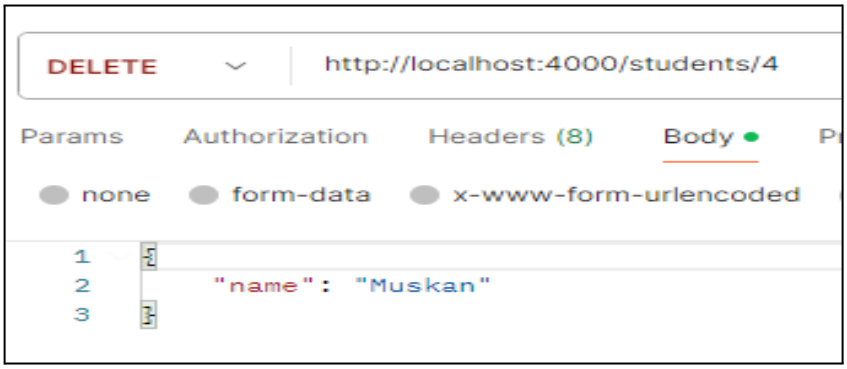

Body
Cookies
Headers (7)
Test Results
Pretty
Raw
Preview
Visualize
JSON
{
"id": 4,
"name": "Muskan"
}

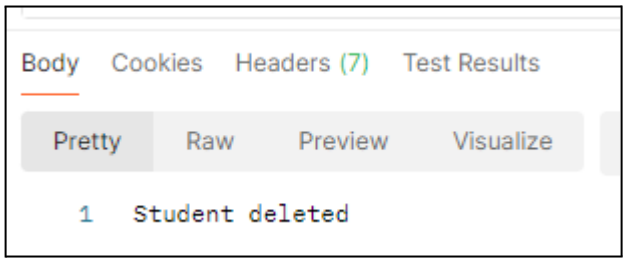
PUT


PUT
http://localhost:4000/students/3
Params
Authorization
Headers (8)
Body
Pre-request Scri
none
form-data
x-www-form-urlencoded
raw
bir
{
"name": "zabbi"
}


Body
Cookies
Headers (7)
Test Results
Pretty
Raw
Preview
Visualize
JSON
{
"id": 3,
"name": "zabbi"
}

DELETE


DELETE
http://localhost:4000/students/4
Params
Authorization
Headers (8)
Body
none
form-data
x-www-form-urlencoded
{
"name": "Muskan"
}


Body
Cookies
Headers (7)
Test Results
Pretty
Raw
Preview
Visualize
Student deleted