Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

Aim : Build a basic demo application for illustrating Microservices with Node.js

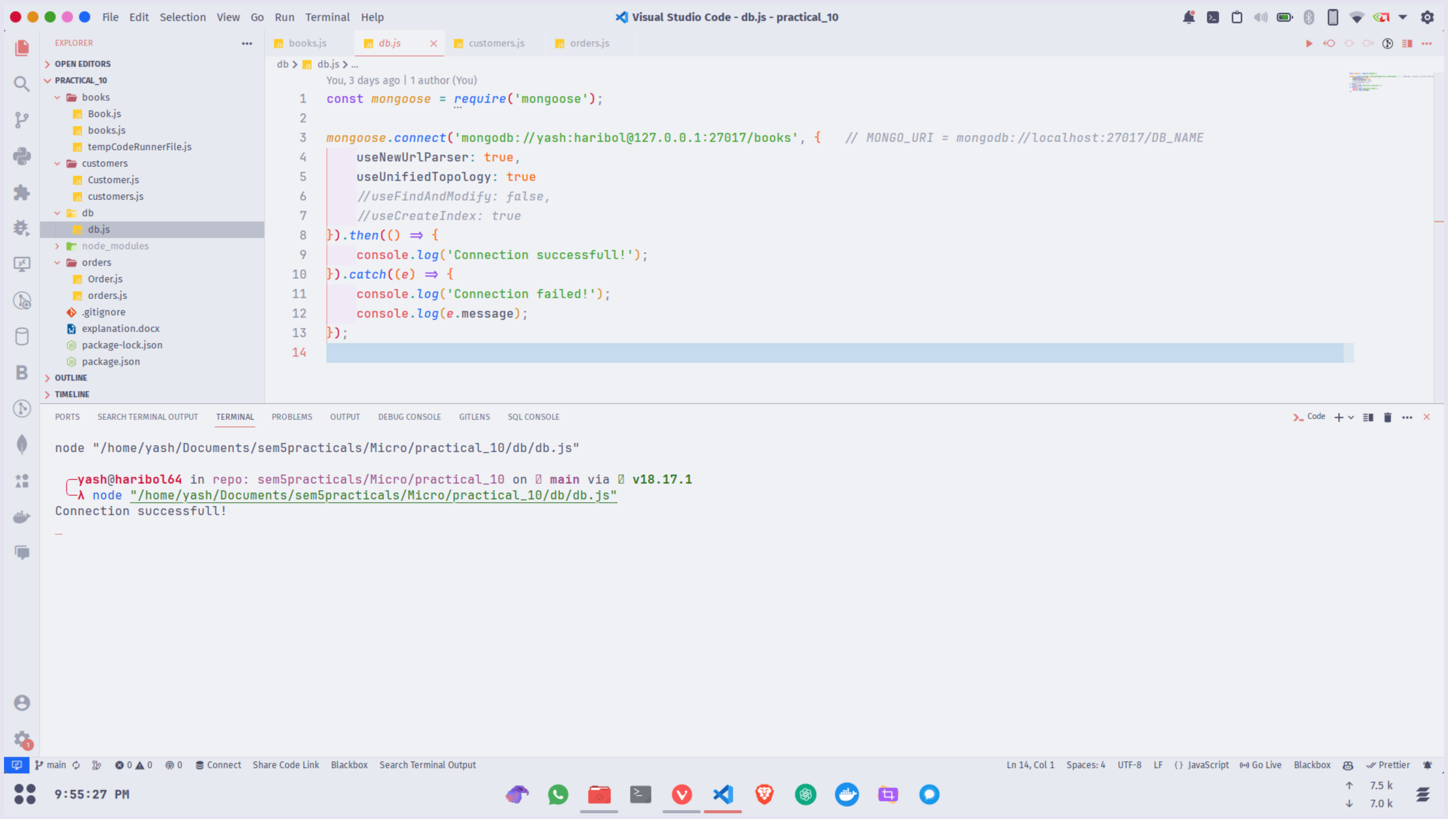
Scenario : Implement an application on Microservices using Node js where each of the services will have individual servers running on different ports. These services will communicate with each other through REST APIs. Example application three services : Book, Customer, and Order services. The following tasks should be performed:

Tasks, Code and Screenshots :

1. Creating Database Connection.

```
const mongoose = require('mongoose');


mongoose.connect('mongodb://yash@127.0.0.1:27017/books', { // MONGO_URI =
mongodb://localhost:27017/DB_NAME
useNewUrlParser: true,
useUnifiedTopology: true
//useFindAndModify: false,
//useCreateIndex: true
}).then(() => {
console.log('Connection successfull!');
}).catch((e) => {
console.log('Connection failed!');
console.log(e.message);
});
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10



```
const mongoose = require('mongoose');

mongoose.connect('mongodb://yash:haribol@127.0.0.1:27017/books', {   // MONGO_URI = mongodb://localhost:27017/DB_NAME
    useNewUrlParser: true,
    useUnifiedTopology: true
    //useFindAndModify: false,
    //useCreateIndex: true
}).then(() ⇒ {
    console.log('Connection successfull!');
}).catch((e) ⇒ {
    console.log('Connection failed!');
    console.log(e.message);
});
```

```
node "/home/yash/Documents/sem5practicals/Micro/practical_10/db/db.js"

yash@haribol64 in repo: sem5practicals/Micro/practical_10 on main via v18.17.1
λ node "/home/yash/Documents/sem5practicals/Micro/practical_10/db/db.js"
Connection successfull!
```

2. Creating Book Service.

```
//require("dotenv").config();
const express = require('express');


// Connect
require('../db/db');


const Book = require('./Book');


const app = express();
const port = 4200;
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

```javascript
app.use(express.json());
app.post('/book', (req, res) => {
const newBook = new Book({
//  ...req.body
title: req.body.title,
author: req.body.author,
numberPages: req.body.numberPages,
publisher: req.body.publisher,
});
newBook.save().then(() => {
res.send('New Book created successfully!');
}).catch((err) => {
res.status(500).send('Internal Server Error!' + err);
});
});

app.get('/books', (req, res) => {
Book.find().then((books) => {
if (books.length !== 0) {
res.json(books);
} else {
res.status(404).send('Books not found');
}
}).catch((err) => {
```

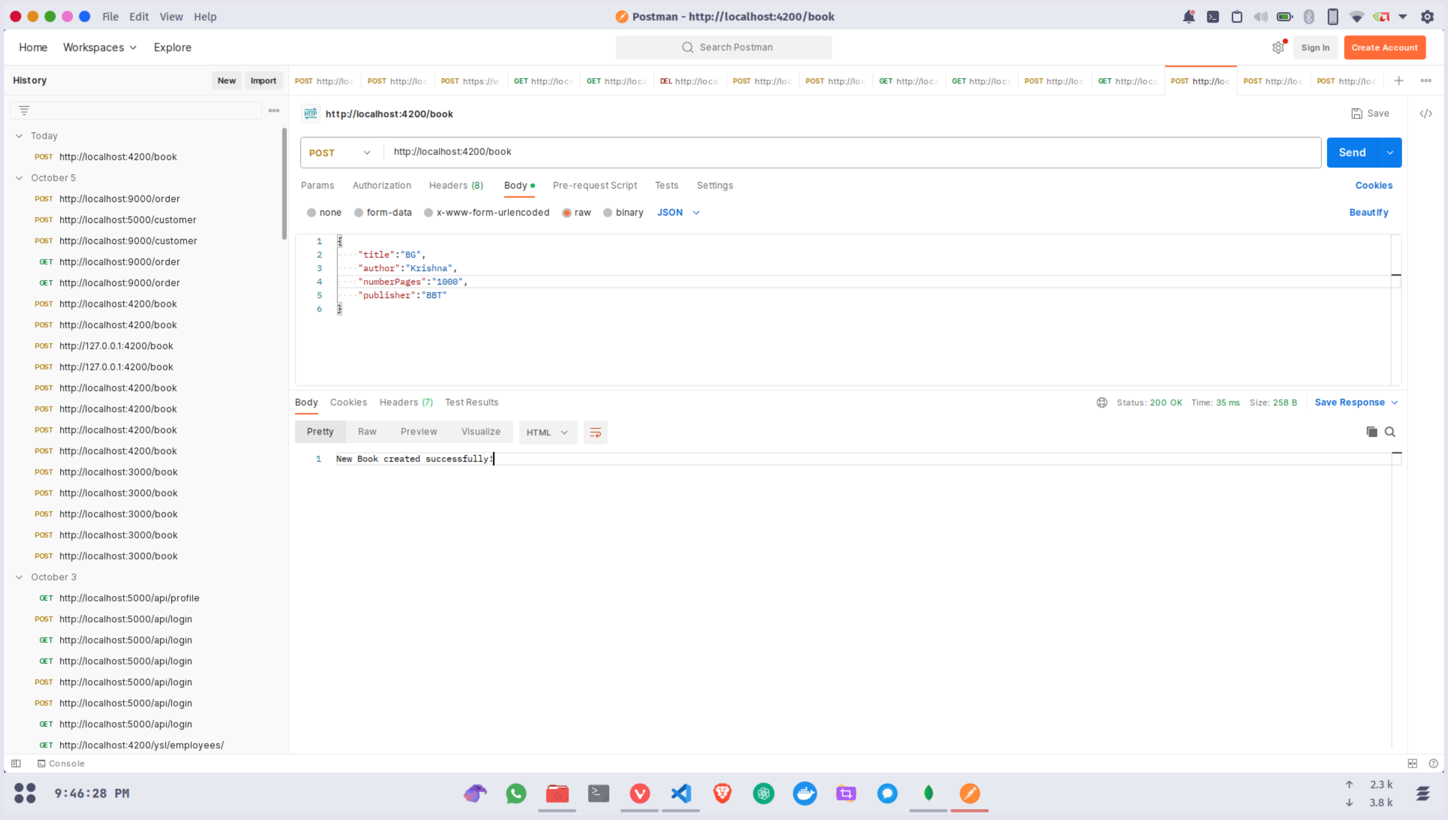
Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

```
res.status(500).send('Internal Server Error!');
});
});

app.get('/book/:id', (req, res) ⇒ {
Book.findById(req.params.id).then((book) ⇒ {
if (book) {
res.json(book);
} else {
res.status(404).send('Books not found');
}
}).catch((err) ⇒ {
res.status(500).send('Internal Server Error!');
});
});

app.delete('/book/:id', (req, res) ⇒ {
Book.findOneAndRemove(req.params.id).then((book) ⇒ {
if (book) {
res.json('Book deleted Successfully!');
} else {
res.status(404).send('Book Not found!');
}
}).catch((err) ⇒ {
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

```
res.status(500).send('Internal Server Error!');
});
});


app.listen(port, () => {
console.log(`Up and Running on port ${port} - This is Book service`);
});
```

Adding book details


Postman - http://localhost:4200/book
Home
Workspaces
Explore
Search Postman
Sign In
Create Account
History
New
Import
Today
POST http://localhost:4200/book
October 5
POST http://localhost:9000/order
POST http://localhost:5000/customer
POST http://localhost:9000/customer
GET http://localhost:9000/order
GET http://localhost:9000/order
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://127.0.0.1:4200/book
POST http://127.0.0.1:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
October 3
GET http://localhost:5000/api/profile
POST http://localhost:5000/api/login
GET http://localhost:5000/api/login
GET http://localhost:5000/api/login
POST http://localhost:5000/api/login
POST http://localhost:5000/api/login
GET http://localhost:5000/api/login
GET http://localhost:4200/ysl/employees/
Save
Send
Params
Authorization
Headers (8)
Body
Pre-request Script
Tests
Settings
Cookies
Beautify
Cookies
Headers (7)
Test Results
Save Response
Pretty
Raw
Preview
Visualize
HTML
Console
9:46:28 PM

http://localhost:4200/book

POST http://localhost:4200/book

Body: ( ) none ( ) form-data ( ) x-www-form-urlencoded (●) raw ( ) binary JSON

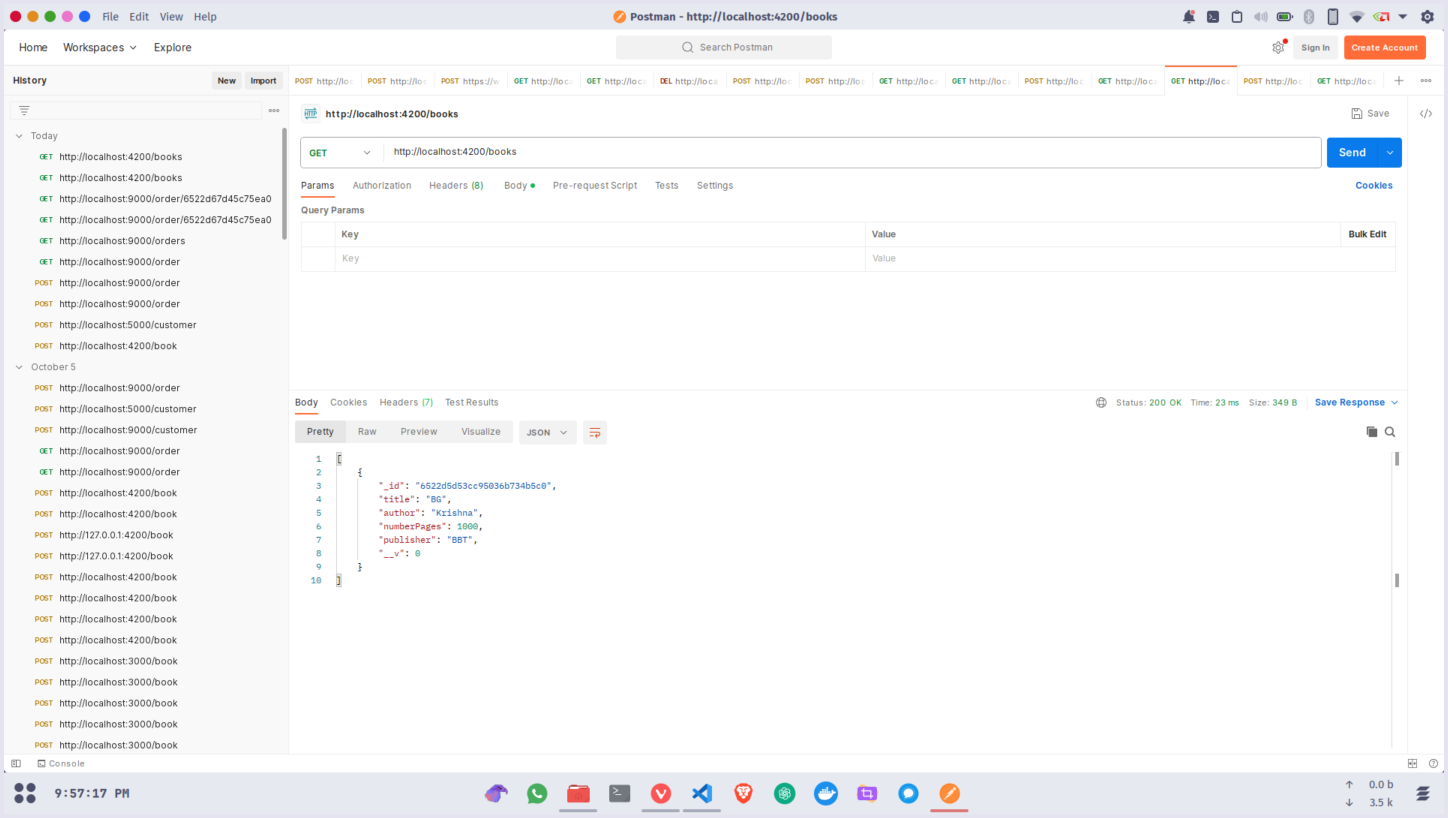
```
{
    "title":"BG",
    "author":"Krishna",
    "numberPages":"1000",
    "publisher":"BBT"
}
```

Status: 200 OK   Time: 35 ms   Size: 258 B

```
New Book created successfully!
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

Getting book details



Postman - http://localhost:4200/books

History

Today
- GET http://localhost:4200/books
- GET http://localhost:4200/books
- GET http://localhost:9000/order/6522d67d45c75ea0
- GET http://localhost:9000/order/6522d67d45c75ea0
- GET http://localhost:9000/orders
- GET http://localhost:9000/order
- POST http://localhost:9000/order
- POST http://localhost:9000/order
- POST http://localhost:5000/customer
- POST http://localhost:4200/book

October 5
- POST http://localhost:9000/order
- POST http://localhost:5000/customer
- POST http://localhost:9000/customer
- GET http://localhost:9000/order
- GET http://localhost:9000/order
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://127.0.0.1:4200/book
- POST http://127.0.0.1:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book

GET http://localhost:4200/books

Status: 200 OK Time: 23 ms Size: 349 B

```
[
    {
        "_id": "6522d5d53cc95036b734b5c0",
        "title": "BG",
        "author": "Krishna",
        "numberPages": 1000,
        "publisher": "BBT",
        "__v": 0
    }
]
```

9:57:17 PM

3. Creating Customer Service.

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

// Connect
require('../db/db');

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

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

```
const app = express();

const port = 5000;

app.use(express.json())


app.post('/customer', (req, res) ⇒ {

const newCustomer = new Customer({...req.body});

newCustomer.save().then(() ⇒ {

res.send('New Customer created successfully!');

}).catch((err) ⇒ {

res.status(500).send('Internal Server Error!');

})

})


app.get('/customers', (req, res) ⇒ {

Customer.find().then((customers) ⇒ {

if (customers) {

res.json(customers)

} else {

res.status(404).send('customers not found');

}

}).catch((err) ⇒ {

res.status(500).send('Internal Server Error!');

});

})
```

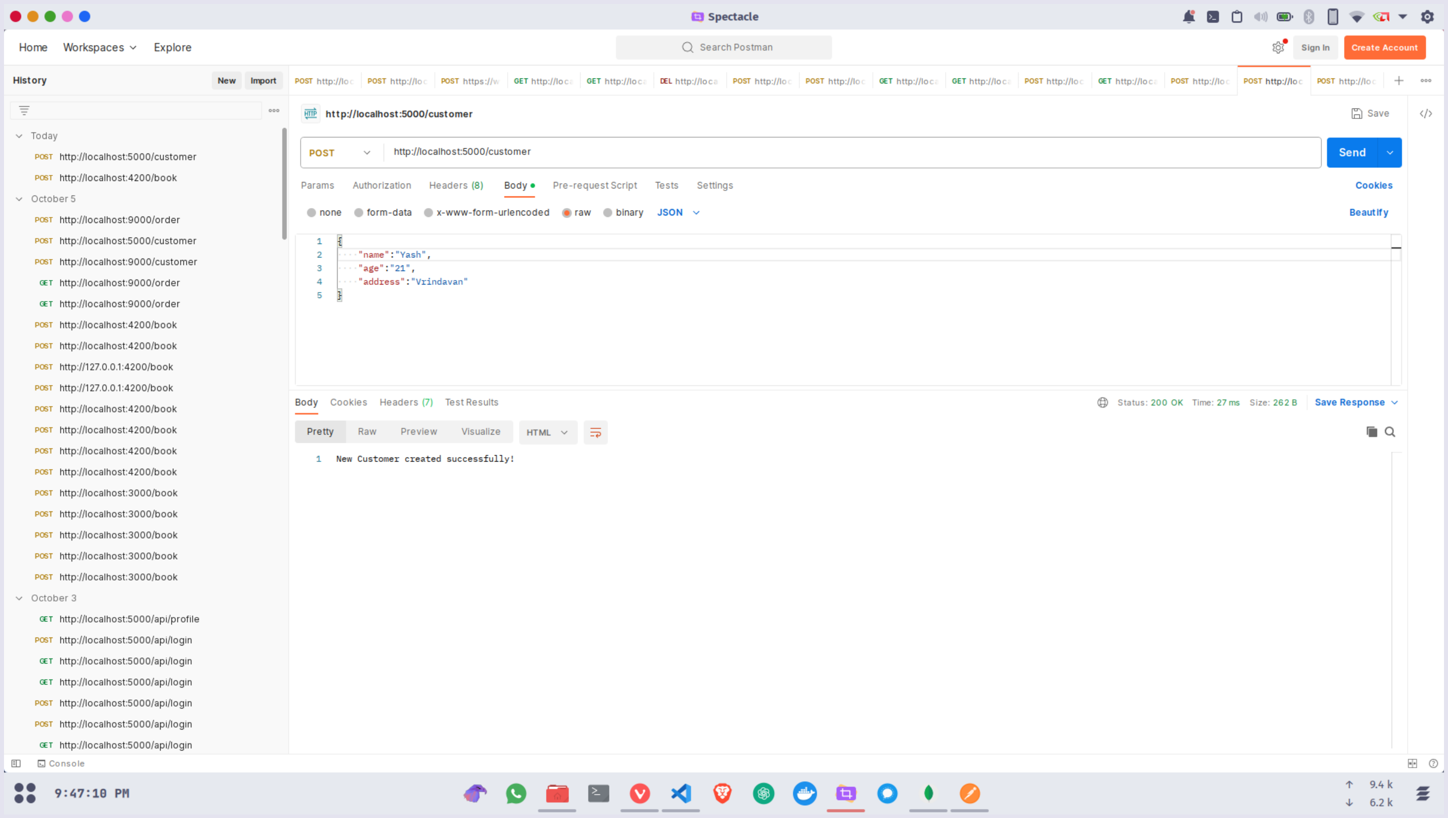
Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

```
app.get('/customer/:id', (req, res) => {
Customer.findById(req.params.id).then((customer) => {
if (customer) {
res.json(customer)
} else {
res.status(404).send('customer not found');
}
}).catch((err) => {
res.status(500).send('Internal Server Error!');
});
})

app.delete('/customer/:id', (req, res) => {
Customer.findByIdAndRemove(req.params.id).then((customer) => {
if (customer) {
res.json('customer deleted Successfully!')
} else {
res.status(404).send('Customer Not Found!');
}
}).catch((err) => {
res.status(500).send('Internal Server Error!');
});
});
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

```
app.listen(port, () ⇒ {
console.log(`Up and Running on port ${port}- This is Customer service`);
})
```

Adding customer details



POST http://localhost:5000/customer

```
{
    "name":"Yash",
    "age":"21",
    "address":"Vrindavan"
}
```

Status: 200 OK Time: 27 ms Size: 262 B

```
New Customer created successfully!
```

History

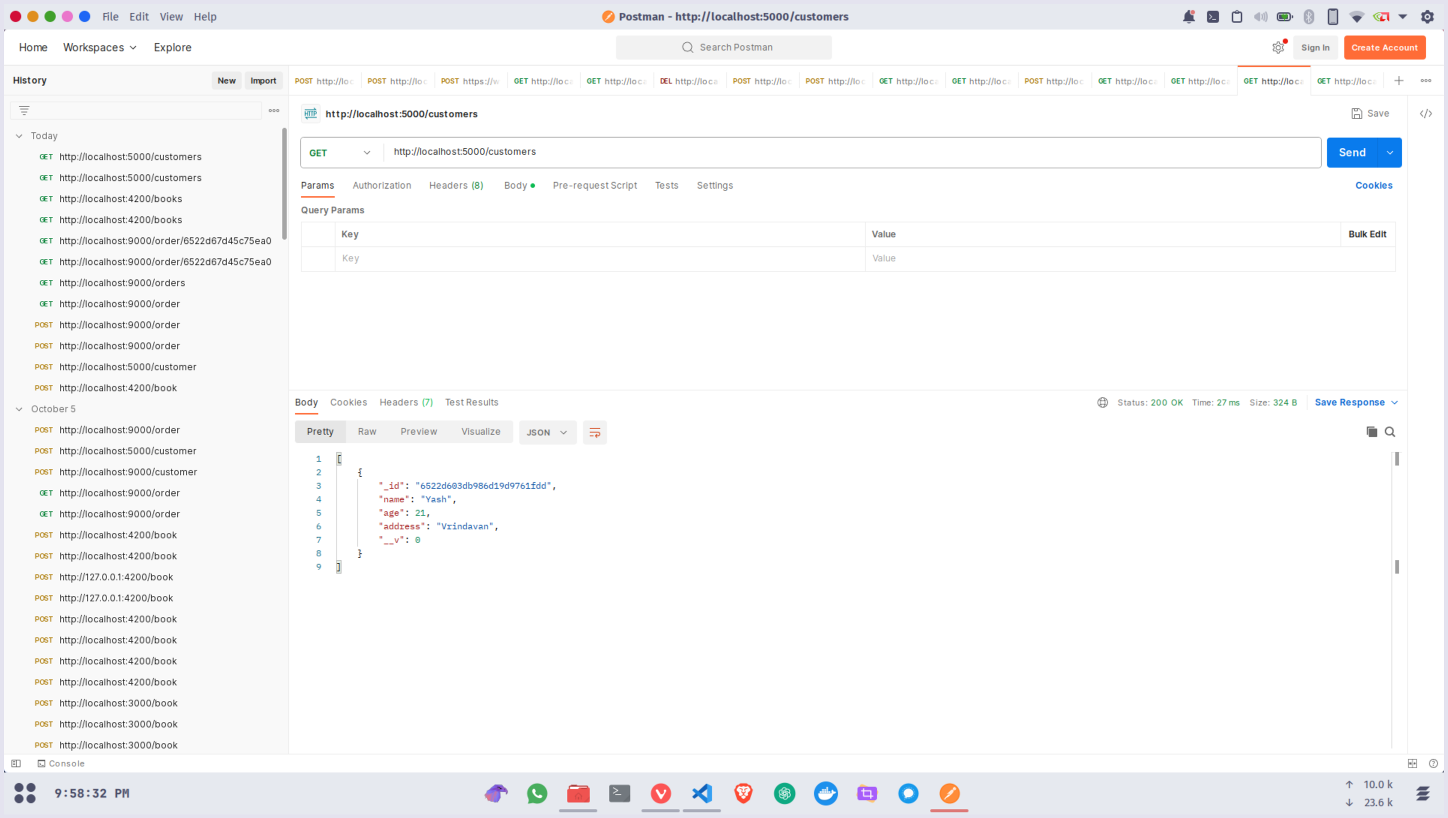
Today
- POST http://localhost:5000/customer
- POST http://localhost:4200/book

October 5
- POST http://localhost:9000/order
- POST http://localhost:5000/customer
- POST http://localhost:9000/customer
- GET http://localhost:9000/order
- GET http://localhost:9000/order
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://127.0.0.1:4200/book
- POST http://127.0.0.1:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book

October 3
- GET http://localhost:5000/api/profile
- POST http://localhost:5000/api/login
- GET http://localhost:5000/api/login
- GET http://localhost:5000/api/login
- POST http://localhost:5000/api/login
- POST http://localhost:5000/api/login
- GET http://localhost:5000/api/login

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

Fetching customer details


Postman - http://localhost:5000/customers

History

Today
GET http://localhost:5000/customers
GET http://localhost:5000/customers
GET http://localhost:4200/books
GET http://localhost:4200/books
GET http://localhost:9000/order/6522d67d45c75ea0
GET http://localhost:9000/order/6522d67d45c75ea0
GET http://localhost:9000/orders
GET http://localhost:9000/order
POST http://localhost:9000/order
POST http://localhost:9000/order
POST http://localhost:5000/customer
POST http://localhost:4200/book

October 5
POST http://localhost:9000/order
POST http://localhost:5000/customer
POST http://localhost:9000/customer
GET http://localhost:9000/order
GET http://localhost:9000/order
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://127.0.0.1:4200/book
POST http://127.0.0.1:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book

GET http://localhost:5000/customers

Status: 200 OK Time: 27 ms Size: 324 B

```
[
    {
        "_id": "6522d603db986d19d9761fdd",
        "name": "Yash",
        "age": 21,
        "address": "Vrindavan",
        "__v": 0
    }
]
```

9:58:32 PM

4. Creating Order Service.

```
const express = require('express');
const mongoose = require("mongoose");
const axios = require('axios');
// Connect
require('../db/db');


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

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

```
const app = express();

const port = 9000;

app.use(express.json());


// app.post('/order', (req, res) ⇒ {

// const newOrder = new Order({

// customerID: mongoose.Types.ObjectId(req.body.customerID),

// bookID: mongoose.Types.ObjectId(req.body.bookID),

// initialDate: req.body.initialDate,

// deliveryDate: req.body.deliveryDate

// });

// newOrder.save().then(() ⇒ {

// res.send('New Order created successfully!')

// }).catch((err) ⇒ {

// res.status(500).send('Internal Server Error!');

// })

// })


app.post('/order', (req, res) ⇒ {

const customerID = new mongoose.Types.ObjectId(req.body.customerID);

const bookID = new mongoose.Types.ObjectId(req.body.bookID);

const newOrder = new Order({

customerID: customerID,

bookID: bookID,
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

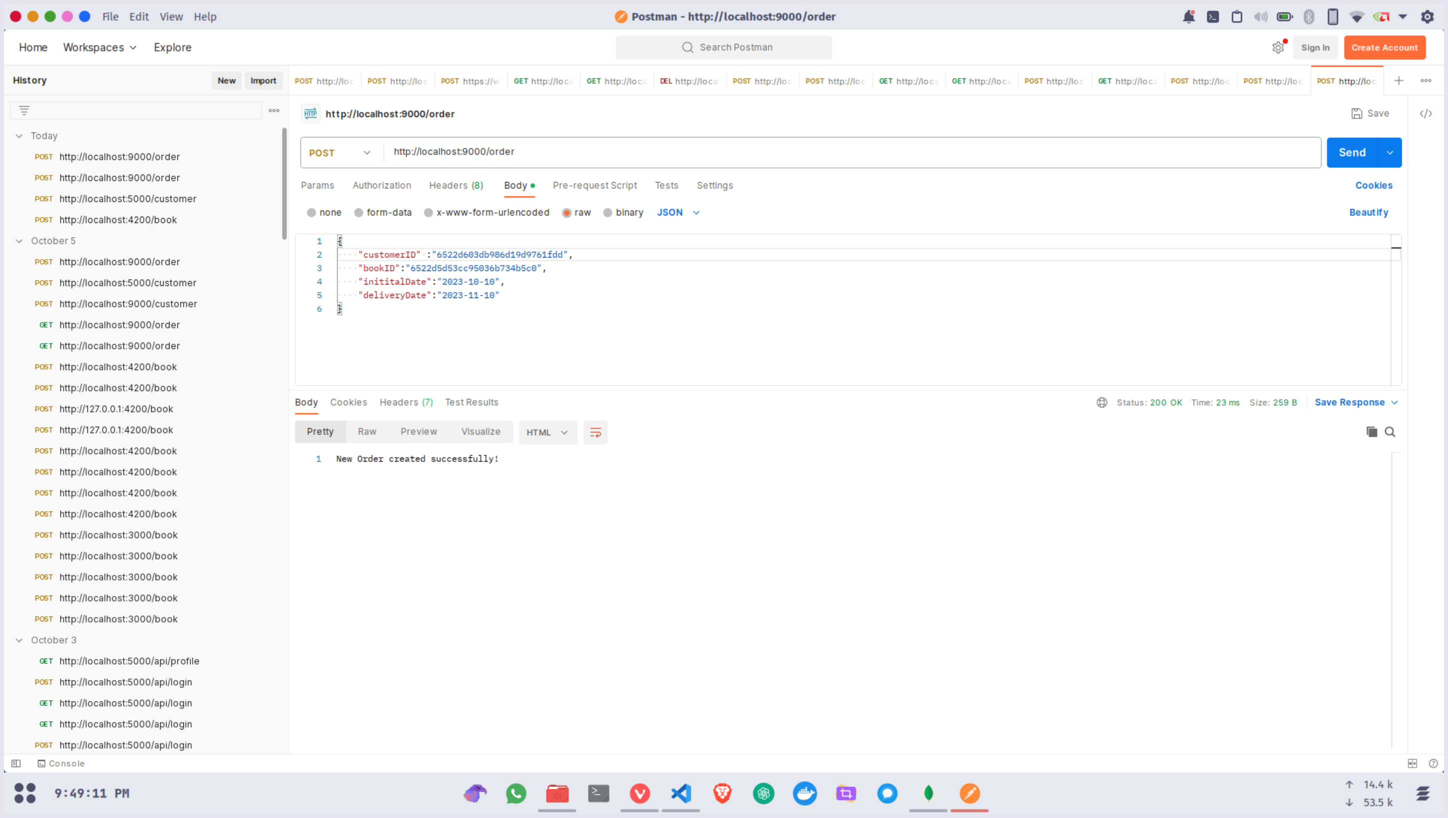
```
initialDate: req.body.initialDate,
deliveryDate: req.body.deliveryDate
});
newOrder.save().then(() => {
res.send('New Order created successfully!');
}).catch((err) => {
res.status(500).send('Internal Server Error!');
});
});

app.get('/orders', (req, res) => {
Order.find().then((orders) => {
if (orders) {
res.json(orders);
} else {
res.status(404).send('Orders not found');
}
}).catch((err) => {
res.status(500).send('Internal Server Error!');
});
});

app.get('/order/:id', (req, res) => {
Order.findById(req.params.id).then((order) => {
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

```
if (order) {
axios.get(`http://localhost:5000/customer/${order.customerID}`).then((resp
onse) => {
let orderObject = { CustomerName: response.data.name, BookTitle: '' };

axios.get(`http://localhost:4200/book/${order.bookID}`).then((response) =>
{
orderObject.BookTitle = response.data.title;
res.json(orderObject);
});
});

} else {
res.status(404).send('Orders not found');
}
}).catch((err) => {
res.status(500).send('Internal Server Error!');
});
});

app.listen(port, () => {
console.log(`Up and Running on port ${port} - This is Order service`);
});
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

Adding order details



Postman - http://localhost:9000/order

History

Today
- POST http://localhost:9000/order
- POST http://localhost:9000/order
- POST http://localhost:5000/customer
- POST http://localhost:4200/book

October 5
- POST http://localhost:9000/order
- POST http://localhost:5000/customer
- POST http://localhost:9000/customer
- GET http://localhost:9000/order
- GET http://localhost:9000/order
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://127.0.0.1:4200/book
- POST http://127.0.0.1:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:4200/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book
- POST http://localhost:3000/book

October 3
- GET http://localhost:5000/api/profile
- POST http://localhost:5000/api/login
- GET http://localhost:5000/api/login
- GET http://localhost:5000/api/login
- POST http://localhost:5000/api/login

POST http://localhost:9000/order

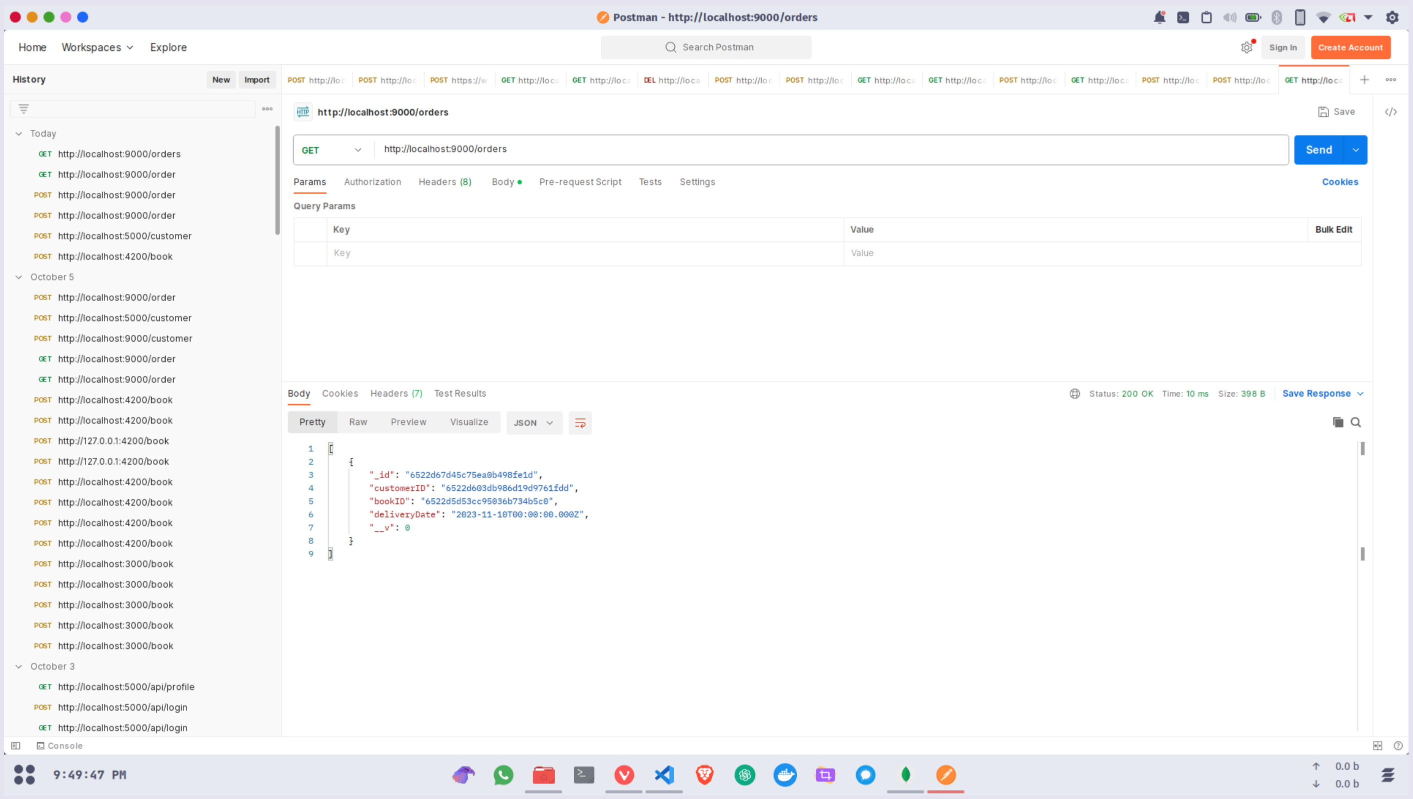
```
{
    "customerID" :"6522d603db986d19d9761fdd",
    "bookID":"6522d5d53cc95036b734b5c0",
    "inititalDate":"2023-10-10",
    "deliveryDate":"2023-11-10"
}
```

Status: 200 OK Time: 23 ms Size: 259 B

```
New Order created successfully!
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA   Batch - 51
Microservices Practical 10

Fetching order details


Postman - http://localhost:9000/orders

History

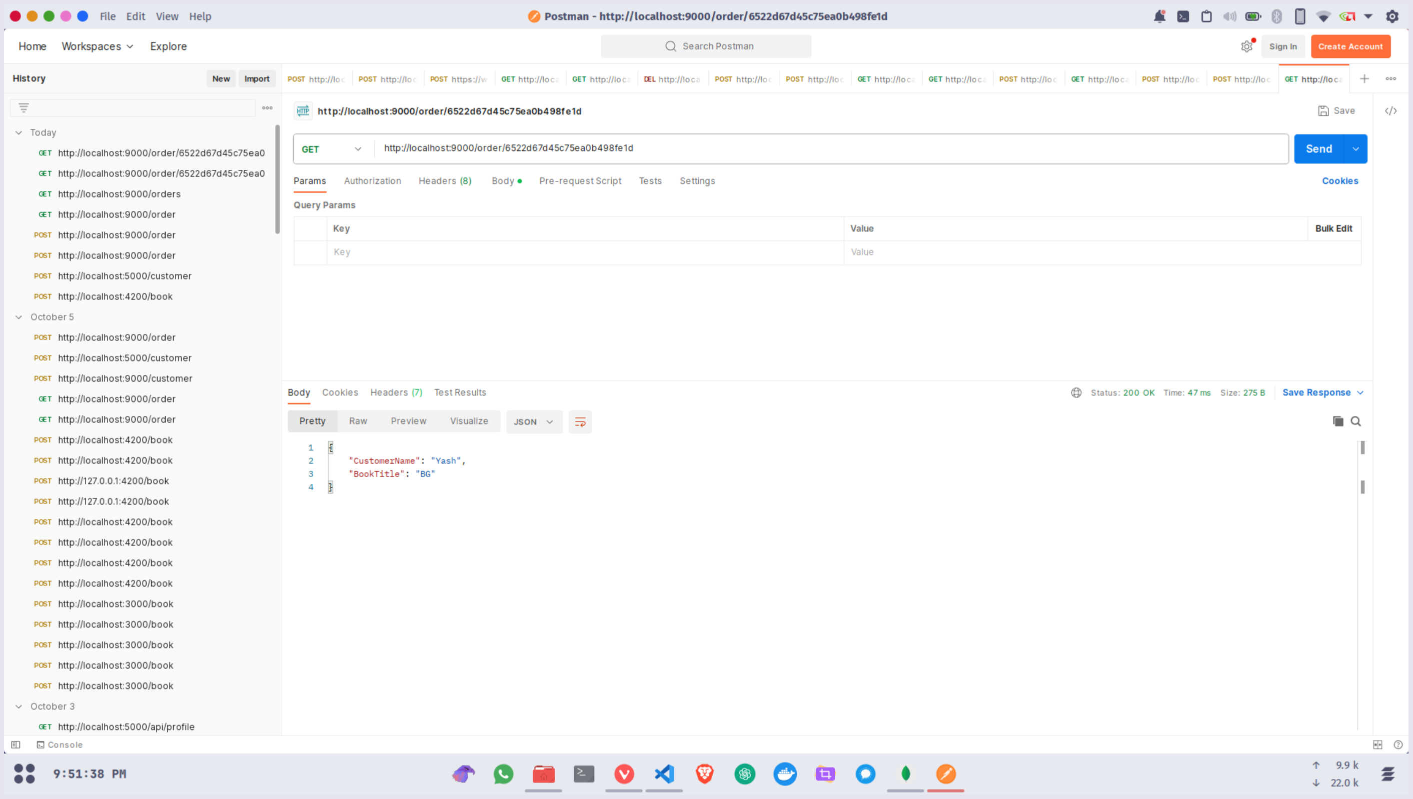
```
Today
GET  http://localhost:9000/orders
GET  http://localhost:9000/order
POST http://localhost:9000/order
POST http://localhost:9000/order
POST http://localhost:5000/customer
POST http://localhost:4200/book
October 5
POST http://localhost:9000/order
POST http://localhost:5000/customer
POST http://localhost:9000/customer
GET  http://localhost:9000/order
GET  http://localhost:9000/order
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://127.0.0.1:4200/book
POST http://127.0.0.1:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
October 3
GET  http://localhost:5000/api/profile
POST http://localhost:5000/api/login
GET  http://localhost:5000/api/login
```

GET http://localhost:9000/orders

Status: 200 OK   Time: 10 ms   Size: 398 B

```
[
    {
        "_id": "6522d67d45c75ea0b498fe1d",
        "customerID": "6522d603db986d19d9761fdd",
        "bookID": "6522d5d53cc95036b734b5c0",
        "deliveryDate": "2023-11-10T00:00:00.000Z",
        "__v": 0
    }
]
```

9:49:47 PM


Postman - http://localhost:9000/order/6522d67d45c75ea0b498fe1d

History

```
Today
GET  http://localhost:9000/order/6522d67d45c75ea0
GET  http://localhost:9000/order/6522d67d45c75ea0
GET  http://localhost:9000/orders
GET  http://localhost:9000/order
POST http://localhost:9000/order
POST http://localhost:9000/order
POST http://localhost:5000/customer
POST http://localhost:4200/book
October 5
POST http://localhost:9000/order
POST http://localhost:5000/customer
POST http://localhost:9000/customer
GET  http://localhost:9000/order
GET  http://localhost:9000/order
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://127.0.0.1:4200/book
POST http://127.0.0.1:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:4200/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
POST http://localhost:3000/book
October 3
GET  http://localhost:5000/api/profile
```

GET http://localhost:9000/order/6522d67d45c75ea0b498fe1d

Status: 200 OK   Time: 47 ms   Size: 275 B

```
{
    "CustomerName": "Yash",
    "BookTitle": "BG"
}
```

9:51:38 PM