

Week 10 Portfolio

Name: Deepak Kumar

Student ID: 2284279

Backend for Online library

1. Screenshots

a. Project Set Up

I created a folder for the project, navigated to the backend folder, and ran `npm init -y` to set up the backend. Then I installed `express`, `mongoose`, `cors`, and `body-parser` using the `npm install` command to prepare for the backend setup.

```
● einsstark@Einsstarks-Air onlinelibrary % npm init -y

Wrote to /Users/einsstark/Documents/University/Web and Mobile Application Development - CN5006/
onlinelibrary/package.json:

{
  "name": "onlinelibrary",
  "version": "1.0.0",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC",
  "description": ""
}

● einsstark@Einsstarks-Air onlinelibrary % npm install express mongoose cors body-parser --save

added 94 packages, and audited 95 packages in 6s

18 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
● einsstark@Einsstarks-Air onlinelibrary % cd backend
● einsstark@Einsstarks-Air backend % npm install express mongoose cors body-parser --save

removed 1 package, changed 4 packages, and audited 95 packages in 1s

18 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
○ einsstark@Einsstarks-Air backend %
```

b. Backend Files

1. BooksSchema.js

I created a file `BooksSchema.js`, defined fields like `booktitle`, `author`, and exported the schema using `mongoose.model()`.

```
backend > JS BooksSchema.js > ...
1  const mongoose = require('mongoose');
2
3  const BookSchema = new mongoose.Schema({
4    booktitle: { type: String, required: true },
5    PubYear: Number,
6    author: String,
7    Topic: String,
8    formate: String, // 'Electronic' or 'Hard
    Copy'
9  });
10
11 module.exports = mongoose.model('Book',
    BookSchema, 'BooksCollection');
12
```

2. MongoDBConnect.js

In `MongoDBConnect.js`, I connected to a MongoDB database using Mongoose and added error handling for connection issues.

```

1  const mongoose = require('mongoose');
2
3  const MONG_URI = 'mongodb://localhost:27017/BooksData';
4
5  mongoose.connect(MONG_URI, {
6    useUnifiedTopology: true,
7    useNewUrlParser: true,
8  });
9
10 const db = mongoose.connection;
11
12 Tabnine | Edit | Test | Explain | Document | Ask
13 db.on('error', (err) => {
14   console.log('Error:', err);
15 });
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17 Tabnine | Edit | Test | Explain | Document | Ask
18 db.once('connected', () => {
19   console.log('Connected to MongoDB:', MONG_URI);
20 });
21
22 module.exports = db;
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```

3. Server.js

I made a `server.js` file, used Express to create an app, and added middleware like `body-parser` and `cors`. And added RESTful routes (`/allbooks`, `/getbook/:id`, etc.) in `server.js` to handle adding, updating, deleting, and retrieving books.

```
1  const express = require('express');
2  const bodyParser = require('body-parser');
3  const cors = require('cors');
4  const Books = require('./BooksSchema');
5  const db = require('./MongoDBConnect');
6
7  const app = express();
8  const PORT = 5000;
9
10 app.use(bodyParser.json());
11 app.use(bodyParser.urlencoded({ extended: false }));
12 app.use(cors());
13
14 // REST API Endpoints
15
16 // Display all books
17 app.get('/allbooks', async (req, res) => {
18   try {
19     const books = await Books.find();
20     res.json(books);
21   } catch (error) {
22     res.status(500).send(error.message);
23   }
24 });
25
26 // Display a single book by ID
27 app.get('/getbook/:id', async (req, res) => {
28   try {
29     const book = await Books.findById(req.params.id);
30     res.json(book);
31   } catch (error) {
32     res.status(500).send(error.message);
33   }
34 });
35
36 // Add a new book
37 app.post('/addbook', async (req, res) => {
38   try {
39     const newBook = new Books(req.body);
40     await newBook.save();
41     res.status(201).json({ message: 'Book added successfully' });
42   } catch (error) {
43     res.status(500).send(error.message);
44   }
45 });
46
47 // Update a book by ID
48 app.put('/updatebook/:id', async (req, res) => {
49   try {
50     await Books.findByIdAndUpdate(req.params.id, req.body);
51     res.json({ message: 'Book updated successfully' });
52   } catch (error) {
53     res.status(500).send(error.message);
54   }
55 });
```

```
51     res.json({ message: 'Book updated successfully' });
52   } catch (error) {
53     res.status(500).send(error.message);
54   }
55 });
56
57 // Delete a book by ID
58 app.delete('/deletebook/:id', async (req, res) => {
59   try {
60     await Books.findByIdAndDelete(req.params.id);
61     res.json({ message: 'Book deleted successfully' });
62   } catch (error) {
63     res.status(500).send(error.message);
64   }
65 });
66
67 app.listen(PORT, () => {
68   console.log(`Server running on http://localhost:${PORT}`);
69 });
70
```

c. Testing the server

I tested the server and it is successfully running.

```
backend > JS server.js > ...
1  const express = require('express');
2  const bodyParser = require('body-parser');
3  const cors = require('cors');
4  const Books = require('./BooksSchema');
5  const db = require('./MongoDBConnect');
6
7  const app = express();
8  const PORT = 50000;
9
10 app.use(bodyParser.json());
11 app.use(bodyParser.urlencoded({ extended: false }));
12 app.use(cors());
```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** COMMENTS

```
node - backend + - [ ] [ ] ... ^ X
einsstark@Einsstarks-Air onlinelibrary % cd backend
einsstark@Einsstarks-Air backend % node server.js
(node:86933) [MONGODB DRIVER] Warning: useNewUrlParser is a deprecated option: useNewUrlParser has no effect since Node.js Driver version 4.0.0 and will be removed in the next major version
(node:86933) [MONGODB DRIVER] Warning: useUnifiedTopology is a deprecated option: useUnifiedTopology has no effect since Node.js Driver version 4.0.0 and will be removed in the next major version
Server running on http://localhost:50000
Connected to MongoDB: mongodb://localhost:27017/BooksData
█
```

2. Reflection

In this lab, I learned how to create the backend for an online library system using Node.js, Express, and MongoDB. First, I defined the book schema using Mongoose, which included fields like `booktitle`, `author`, and `format`. Then, I connected the backend to a MongoDB database and built REST API endpoints for CRUD operations. Fixing the port error (after port was busy) and removing deprecated options in Mongoose was tricky but taught me how to handle real-world problems.

Compared to previous labs, this felt more like building an actual project. In earlier labs, I only worked on simple JavaScript functions and parts of backend and frontend. Those helped me understand logic and structure, but this lab showed me how to apply those skills to something bigger. Next week, I will learn how the backend to the frontend because it will give me a idea of how full online library will work.