Lab Mid



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Registration #: SP22-BSE-023

Course Title: Advanced Web Technologies

Program: Bachelor Science in Software Engineering

Department of Computer Science

COMSATS UNIVERSITY ISLAMABAD, Vehari Campus

Backend:

```
Welcome
                                          ₃ db.js
                                                            Js Book.js
FOLDERS: ... 🖺 🛱 🖰 🗗
                                                        ×
                                                                             us booksController.js
v 📻 backend
                          backend > config > Js db.js > ...
                                  const connectDB = async () => {
 v 📺 config
    us db.js
                                      console.log('MongoDB Connected...');
                                      catch (err) {
                            10
   controllers
                            11
                                      console.error(err.message);
    Js booksController.js
                            12
                                      process.exit(1);
 models
                            13
     s Book.js

✓ image routes

                            15
    us books.js
                                  module.exports = connectDB;
   tt .env
   <sub>Js</sub> server.js
frontend
 style.css
 🗸 📺 js
    us addBook.js
    us app.js
   add-book.html
   index.html
> node_modules
  package-lock.json
  package.json
```

```
FOLDERS: ... 口口口
                         Welcome
                                          us db.js
                                                           Js Book.js
                                                                             us booksController.js •
backend
                          backend > controllers > Js booksController.js > ...
                                 const Book = require('../models/Book');
 config
                                 exports.getAllBooks = async (req, res) => {
                            2
    <sub>Js</sub> db.js
                            3
                                    try {

✓ 

    controllers

                                      const books = await Book.find();
                            4
    Js booksController.js
                                      res.json(books);
                            5

✓ ■ models

                                      catch (err) {
                            6
    Js Book.js
                                      res.status(500).json({ message: err.message });
                            7

✓ image routes

                            8
                            9
    Js books.js
                                 exports.searchBooksByAuthor = async (req, res) => {
                           10
   # .env
                           11
   us server.js
                                      const books = await Book.find({
                           12

✓ Image: Frontend

                                       author: { $regex: req.query.author, $options: 'i' }
                           13

✓ Image: CSS

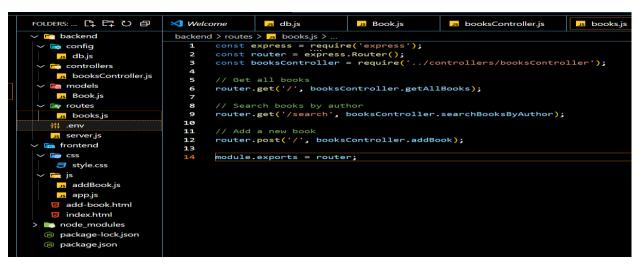
                           14
                                      });
    style.css
                           15
                                      res.json(books);
                                      catch (err) {
🗸 📺 js
                           16
                                      res.status(500).json({ message: err.message });
                           17
    us addBook.js
                           18
    us app.js
                            19
   add-book.html
                                 exports.addBook = async (req, res) => {
                            20
   index.html
                                   const book = new Book({
                           21
> node_modules
                                      title: req.body.title,
                           22
                                      author: req.body.author,
  package-lock.json
                           23
                                      price: req.body.price
                           24
  package.json
                           25
                                    });
                           26
                           27
                                      const newBook = await book.save();
                            28
                            29
                                      res.status(201).json(newBook);
                                      catch (err) {
```

```
v 📻 backend
                             backend > models > __s Book.js > ...

3     const BookSchema = new mongoose.Schema({
   config
     <sub>Js</sub> db.js
                               15
                                        },
                               16
                                        createdAt: {
 controllers
                                          type: Date,
                               17
     Js booksController.js
                                          default: Date.now
                               18
   models
                               19
   Js Book.js
                               20
                                     });
 🗸 📑 routes
                               21
   」s books.js
밲 .env
                                     module.exports = mongoose.model('Book', BookSchema);
    us server.js
frontend

✓ □ css

    style.css
 🗸 📺 js
     us addBook.js
us app.js
    add-book.html
    index.html
> node_modules
  package-lock.json
  package.json
```



```
v 🚞 backend
                         backend > Js server.js > ...
                                 app.use(express.json());
 > 🙀 config
                           15
 16
                                 // Routes
    Js booksController.js
                           17
                                 app.use('/api/books', booksRouter);

✓ ■ models

                           18
    Js Book.js
                           19
                                 const PORT = process.env.PORT | 5000;

✓ image routes

                                 app.listen(PORT, () => {
                           20
                                     console.log(`Server is running at:`);
                           21
    Js books.js
                           22
                                     console.log(`- Local: http://localhost:${PORT}`);
   tt .env
                           23
   us server.js
                                  });
                           24
> 🔚 frontend
> node_modules
  package-lock.json
  package.json
```

Frontend:

```
> 📭 backend
                        frontend > css > ∃ style.css > {} @media (max-width: 768px)
frontend
                                /* General Styles */
                           2
                                body {
V 📻 CSS
                                    background-color: #f8f9fa;
   style.css
                                    font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif; color: □#343a40;
                           4
 v 📻 js
                           5
    us addBook.js
                           6
    us app.js
                           7
   add-book.html
                           8
                                  /* Container Styling */
                           9
                                  .container {
    index.html
                          10
                                   max-width: 800px;
> node_modules
                          11
                                   padding: 2rem;
 package-lock.json
                                    background-color: #ffffff;
                          12
 package.json
                          13
                                    border-radius: 10px;
                          14
                                   box-shadow: 0 4px 12px □rgba(0, 0, 0, 0.1);
                          15
                                   margin-top: 3rem;
                          16
                                   margin-bottom: 3rem;
                          18
                          19
                                  /* Header Styling */
                          20
                                 h1 {
                                   color: □#2c3e50;
                          21
                          22
                                    font-weight: 700;
                                    23
                          24
                                    position: relative;
                          25
                                   padding-bottom: 0.5rem;
                          26
                          27
                                 h1::after {
    content: '';
    position: absolute;
                          28
                          29
                          30
```

```
frontend > css > ∃ style.css > ...
> 📄 backend
                           27

✓ Image frontend

                           28
                                   h1::after {

✓ Image: CSS

                           29
                                     content: '';
  style.css
                           30
                                     position: absolute;
 V 📑 js
                           31
                                     bottom: 0;
    us addBook.js
                           32
                                     left: 50%;
                                     transform: translateX(-50%);
                           33
    us app.js
                           34
                                     width: 80px;
   add-book.html
                           35
                                     height: 4px;
   index.html
                                     background: linear-gradient(to right, ■#3498db, ■#2ecc71);
                           36
> node_modules
                           37
                                     border-radius: 2px;
  package-lock.json
                           38
  package.json
                           39
                           40
                                   /* Form Styling */
                                   #addBookForm {
                           41
                           42
                                     background-color: #ffffff;
                           43
                                     padding: 2rem;
                           44
                                     border-radius: 8px;
                           45
                                     box-shadow: 0 2px 8px □rgba(0, 0, 0, 0.05);
                           46
                           47
                                   .form-label {
                           48
                           49
                                     font-weight: 600;
                                     color: □#495057;
                           50
                                     margin-bottom: 0.5rem;
                           51
                           52
```

```
FOLDERS: ... 🖺 🛱 🖔 🗗
                        ooks.js
                                                        index.html
                                                                          add-book.html
                                                                                               us app.js
                                                                                                               us addB
v 📻 backend
                           frontend > js > Js addBook.js > .
                                  document.addEventListener('DOMContentLoaded', function() {
> 📭 config
                                      const addBookForm = document.getElementById('addBookForm');
                              2
 > 🔯 controllers
                                       addBookForm.addEventListener('submit', function(e) {
> 💼 models
                                         e.preventDefault();
 > 📭 routes
                                         const title = document.getElementById('title').value;
   tt .env
                                         const author = document.getElementById('author').value;
   us server.js
                                         const price = parseFloat(document.getElementById('price').value);
frontend
                                          const bookData = {
                                           title,
V 📻 CSS
                                            author,
                             10
    style.css
                             11
12
    us addBook.js
                             13
                                          fetch('http://localhost:5000/api/books', {
    us app.js
                                           method: 'POST',
                             14
   add-book.html
                                            headers: {
                             15
   index.html
                             16
                                              'Content-Type': 'application/json',
                             17
> node_modules
                             18
                                           body: JSON.stringify(bookData)
  package-lock.json
                             19
 package.json
                                         .then(response => response.json())
                             20
                                          then(data => {
  alert('Book added successfully!');
  window.location.href = 'index.html';
                             21
                             22
                             23
                             24
                                          .catch(error => {
  console.error('Error:', error);
  alert('Error adding book');
                             25
                             26
                             27
                             28
                             29
```

```
us server.js
                                                                                                                                       FOLDERS: ... LT LT O 🗗 Dooks.js
backend
                                                                 frontend > js > Js app.js > ...
                                                                                    document.addEventListener('DOMContentLoaded', function() {
   > 📭 config
                                                                                               const booksTable = document.getElementById('booksTable');
                                                                        2
   > 📭 controllers
                                                                        3
                                                                                                const searchInput = document.getElementById('searchInput');
   > nodels
                                                                        4
   > 📭 routes
                                                                        5
                                                                                                // Load all books on page load
        ∰ .env
                                                                        6
                                                                                                fetchBooks();
        <sub>Js</sub> server.js
                                                                        7

√ Image: Frontend

✓ Image:
                                                                                                // Search functionality
                                                                        8
                                                                        9
                                                                                               searchInput.addEventListener('input', function() {
  ∨ 🝺 css
                                                                      10
                                                                                                    const searchTerm = this.value.trim();
           ∃ style.css
                                                                     11
                                                                                                     if (searchTerm.length > 0) {
  v 📺 js
                                                                     12
                                                                                                    searchBooks(searchTerm);
           us addBook.js
                                                                     13
          us app.js
                                                                      14
                                                                                                    fetchBooks();
         add-book.html
                                                                     15
         index.html
                                                                      16
                                                                                                });
                                                                      17
> node_modules
                                                                      18
                                                                                                // Fetch all books
      package-lock.json
                                                                                                function fetchBooks() {
                                                                     19
      package.json
                                                                      20
                                                                                                    fetch('http://localhost:5000/api/books')
                                                                      21
                                                                                                          .then(response => response.json())
                                                                      22
                                                                                                            .then(books => {
                                                                                                          renderBooks(books);
                                                                     23
                                                                      24
                                                                                                          .catch(error => console.error('Error:', error));
                                                                      25
                                                                      26
                                                                     27
                                                                      28
                                                                                                // Search books by author
                                                                                                function searchBooks(author) {
                                                                      29
                                                                                                  fetch(`http://localhost:5000/api/books/search?author=${encodeURIComponent(author)}`)
```

```
backend
                             frontend > js > Js app.js >
                                     document.addEventListener('DOMContentLoaded', function() {
 > 📭 config
                              27
 > 📴 controllers
                              28
29
 > 💼 models
                                          function searchBooks(author) {
   fetch(`http://localhost:5000/api/books/search?author=${encodeURIComponent(author)}`)
 > routes
                              30
31
   ₩ .env
                                              .then(response => response.json())
.then(books => {
    renderBooks(books);
server.js

ightharpoonup server.js
                              32
33
                               34

✓ □ css

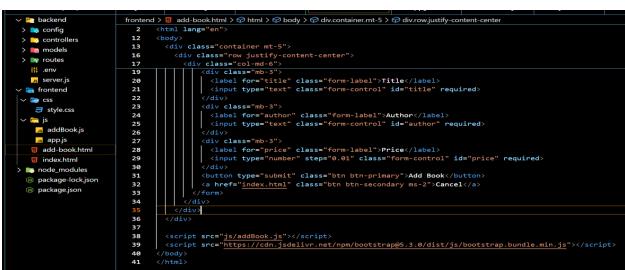
                               35
                                              .catch(error => console.error('Error:', error));
     36
37
38
39
 v 📻 js
     us addBook.js
                                          // Render books to the table
     us app.js
                                          function renderBooks(books) {
                              40
41
42
43
                                            booksTable.innerHTML = '';
books.forEach(book => {
    ■ add-book.html
    index.html
                                              const row = document.createElement('tr');
> node_modules
                                              row.innerHTML =
  package-lock.json
                              44
45
46
47
                                                 ${book.title}
  package.json
                                                 ${book.author}
                              48
49
                                              booksTable.appendChild(row);
                               50
```

```
frontend > ■ add-book.html > � html > � body > � div.container.mt-5 > � div.row.justify-content-center
                                                 <!DOCTYPE html>
<html lang="en"</pre>
      > 📪 config
      > controllers
      > models
                                                    <meta charset="UTF-8">
      > routes
                                                    <meta charset="UIF-8">
cmeta name="viewport" content="width=device-width, initial-scale=1.0">
ctitle>Add New Book</title>
clink href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">
clink href="css/style.css" rel="stylesheet">
         ₩ .env
         server.js
       frontend

✓ □ css

☐ style.css

                                                    <link href="https://fonts.googleapis.com/css2?family=Poppins:wght@400;500;600;700&display=swap" rel="stylesheet"</pre>
                                         10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
         📺 js
         Js addBook.js
Js app.js
Js add-book.html
                                                    div class="container mt-5">
     <h1 class="text-center mb-4">Add New Book</h1>
         ☐ index.html
                                                         node_modules
        package-lock.json
        package.json
                                                                required>
                                                                  div class="mb-3">
    (label fore=price" class="form-label">Price</label>
    (input type="number" step="0.01" class="form-control" id="price" required>
ஜீ & Launchpad ⊗ 0 🛦 0 🖯 Conn
                                                                                                                                                Ln 35, Col 11 Spaces: 2 UTF-8 CRLF () HTML @ Go Live
    v 📻 backend
                                          frontend > \overline{\textbf{0}} \quad add-book.html > \textcircled{\textbf{o}} \quad html > \textcircled{\textbf{o}} \quad body > \textcircled{\textbf{o}} \quad div.container.mt-5 > \textcircled{\textbf{o}} \quad div.row.justify-content-center
      > 📪 config
                                                     <html lang="en
```



```
v 💼 backend
                                                                     frontend > ⑤ index.html > ⊘ html
                                                                                         <!DOCTYPE html>
   > 📭 config
                                                                            1
                                                                                         <html lang="en">
   > 😝 controllers
                                                                                         <head>
                                                                           3
  > 📭 models
                                                                                             <meta charset="UTF-8">
                                                                           4
   > 📭 routes
                                                                                              <meta name="viewport" content="width=device-width, initial-scale=1.0">
        tt .env
                                                                                             <title>Book Management System</title>
                                                                           6
         us server.js
                                                                                             <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">
                                                                           7

√ Image: Frontend

The properties of the pr
                                                                                             <link href="css/style.css" rel="stylesheet">
                                                                          9

✓ i css

                                                                         10
            ∃ style.css
                                                                         11
                                                                                             <div class="container mt-5">
                                                                                                   <h1 class="text-center mb-4">Book Management System</h1>
                                                                         12
            us addBook.js
                                                                         13
           <sub>Js</sub> app.js
                                                                         14
                                                                                                     <div class="row mb-4">
        add-book.html
                                                                                                         <div class="col-md-6">
                                                                         15
        index.html
                                                                         16
                                                                                                         <input type="text" id="searchInput" class="form-control" placeholder="Search by author...">
                                                                         17
> node_modules
                                                                                                          <div class="col-md-6">
                                                                         18
      package-lock.json
                                                                         19
                                                                                                         <a href="add-book.html" class="btn btn-primary float-end">Add New Book</a>
      package.json
                                                                         20
                                                                         22
                                                                         23
                                                                                                     <div class="table-responsive">
                                                                         24
                                                                                                          25
                                                                         26
                                                                         27
                                                                                                                          Title
                                                                         28
                                                                                                                           Author
                                                                                                                           Price
                                                                         29
                                                                          30
```

```
v 📻 backend
                                                                                                                    frontend > 5 index.html > .
                                                                                                                                                   <html lang="en">
      > 📭 config
                                                                                                                             2
                                                                                                                         10
      > 😽 controllers
                                                                                                                                                             <div class="container mt-5">
      > 📭 models
                                                                                                                         14
17
                                                                                                                                                                       <div class="row mb-4">
      > routes
               壯 .env
                                                                                                                                                                                 <div class="col-md-6">
                                                                                                                          18
                                                                                                                                                                              <a href="add-book.html" class="btn btn-primary float-end">Add New Book</a>
               us server.js
                                                                                                                          19
                                                                                                                          20

√ Image: Frontend

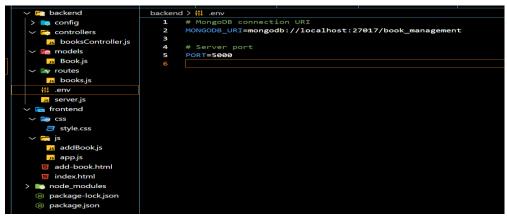
✓ Image:
                                                                                                                         21
    ∨ 📻 css
                                                                                                                         22
                    ∃ style.css
                                                                                                                                                                       <div class="table-responsive">
                                                                                                                         23
     v 📺 js
                                                                                                                          24
                                                                                                                                                                               Js addBook.js
                                                                                                                          25
                   us app.js
                                                                                                                          26
                                                                                                                         27
                                                                                                                                                                                                          Title
               add-book.html
                                                                                                                         28
                                                                                                                                                                                                           Author
              index.html
                                                                                                                                                                                                 Price
                                                                                                                          29
  > node_modules
                                                                                                                          30
          package-lock.json
          package.json
                                                                                                                          32
                                                                                                                                                                                          33
                                                                                                                                                                                        <!-- Books will be loaded here -->
                                                                                                                          34
                                                                                                                                                                                         35
                                                                                                                                                                               36
                                                                                                                          37
                                                                                                                          38
                                                                                                                                                            <script src="js/app.js"></script>
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js"></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script></script>
                                                                                                                          39
                                                                                                                          40
                                                                                                                          41
                                                                                                                          42
```

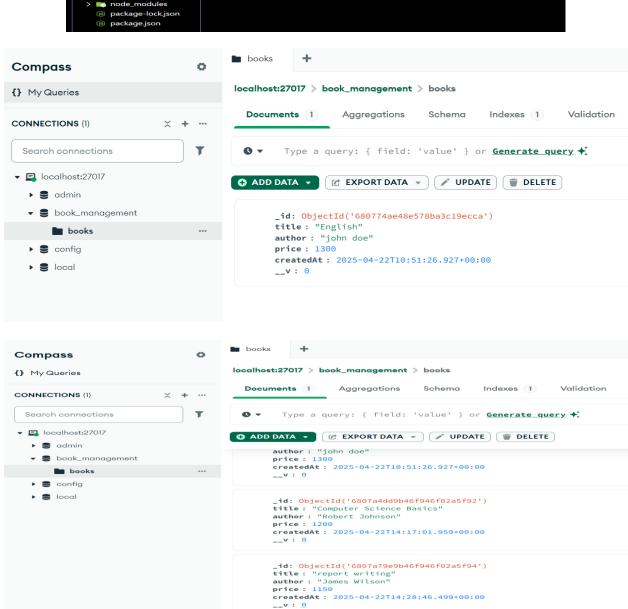
Postman:

Post method

Get method

Mongo DB:





Output:

