IRIS Applications Programmer position at UM

Documentation for Book Store Application

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Dependencies for the Bookstore Application

Frontend Dependencies (React)

react: The core React library for building user interfaces.
react-dom: Allows the use of DOM-specific methods in React.
react-router-dom: Enables declarative routing in your React application.

Install these dependencies using npm or yarn:
npm install react react-dom react-router-dom

Backend Dependencies (Express.js)

express: A minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications.

cors: A node.js package for providing a Connect/Express middleware that can be used to enable CORS (Cross-Origin Resource Sharing).

nodemon (optional, for development): A utility that monitors for any changes in your source code and automatically restarts your server.

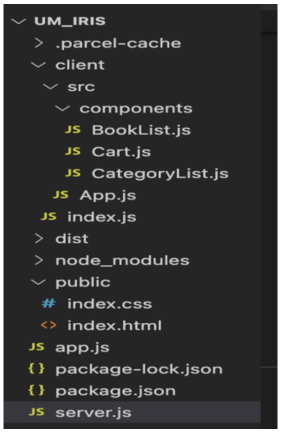
Install these dependencies using npm:

npm install express cors npm install --save-dev nodemon

Bundler: parcel

Application Working:
server.js → loads **index.html** → loads **index.js** → loads App component (**App.js**)

Application File Structure:



```
UM_IRIS
  .parcel-cache
  client
    src
      components
        BookList.js
        Cart.js
        CategoryList.js
      App.js
    index.js
  dist
  node_modules
  public
    index.css
    index.html
  app.js
  package-lock.json
  package.json
  server.js
```

Frontend (React)

The frontend is built with React and is responsible for rendering the user interface, handling user interactions and communicating with the backend server.

Components

1). **CategoryList**

Purpose: Displays a list of book categories.
Functionality: Each category is represented by a button. Clicking on a button fetches and displays books from that category.

2). **BookList**

Purpose: Shows books based on the selected category.
Functionality: Lists books with their titles, descriptions, and an 'Add to Cart' button for each book.

3). **Cart**
Purpose: Displays items in the shopping cart.
Functionality: Shows books added to the cart with an option to remove them from the cart.

4). **App Component Overview** (App.js)

Function and Responsibility

App.js functions as the central component in the React-based Bookstore Application. It orchestrates the application's primary operations and manages the interaction between the user interface and the backend services.

Key Features

1). State Management: App.js maintains the application state, including the list of categories (categories), the selected category (selectedCategory), books within the selected category (books), and items in the shopping cart (cartItems).

2). API Integration: It handles API calls to fetch data from the backend server, such as retrieving book categories and books, and managing the shopping cart (adding and removing items).

3). User Interaction Handling: The component manages user actions, like selecting book categories and manipulating the shopping cart.

4). Component Rendering: It renders key child components - CategoryList, BookList, and Cart - passing relevant data and callbacks as props to facilitate user interaction and data display.

Workflow

Upon initialization, App.js loads the book categories and listens for user interactions. Selections made in the CategoryList component trigger updates in the BookList component, reflecting the books from the chosen category. User actions to add or remove books from the cart are managed through corresponding API calls, with real-time updates reflected in the Cart component.

State Management

The application uses React hooks (useState, useEffect) for state management, handling tasks like fetching data, updating the UI, and responding to user inputs.

API Interactions

The frontend communicates with the backend via API calls (GET, POST, DELETE) to fetch categories and books, add items to the cart, and remove items from the cart.

Backend (Express.js) → (server.js)

The backend is an Express.js server that handles API requests from the frontend, processes them, and sends back responses.

Endpoints

1). GET /api/categories
Returns a list of book categories.

2). GET /api/books/:categoryId
Returns books belonging to a specified category.

3). GET /api/cart
Retrieves the current state of the shopping cart.

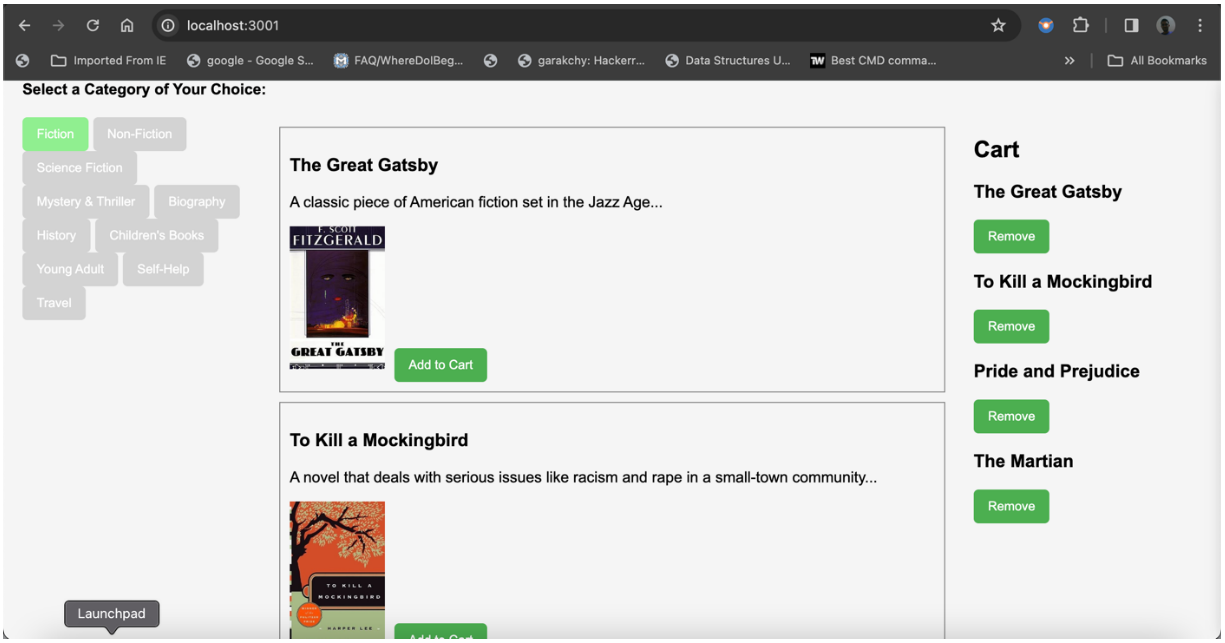
To test below API endpoints use **Postman or Thunder Client**.

4). POST /api/cart
Adds a book to the shopping cart.

5). DELETE /api/cart/:bookId
Removes a book from the shopping cart.

Output Screenshots:

1). Click on multiple categories to list the books and add to cart and remove from the cart



Select a Category of Your Choice:

The Great Gatsby

A classic piece of American fiction set in the Jazz Age...

To Kill a Mockingbird

A novel that deals with serious issues like racism and rape in a small-town community...

Cart

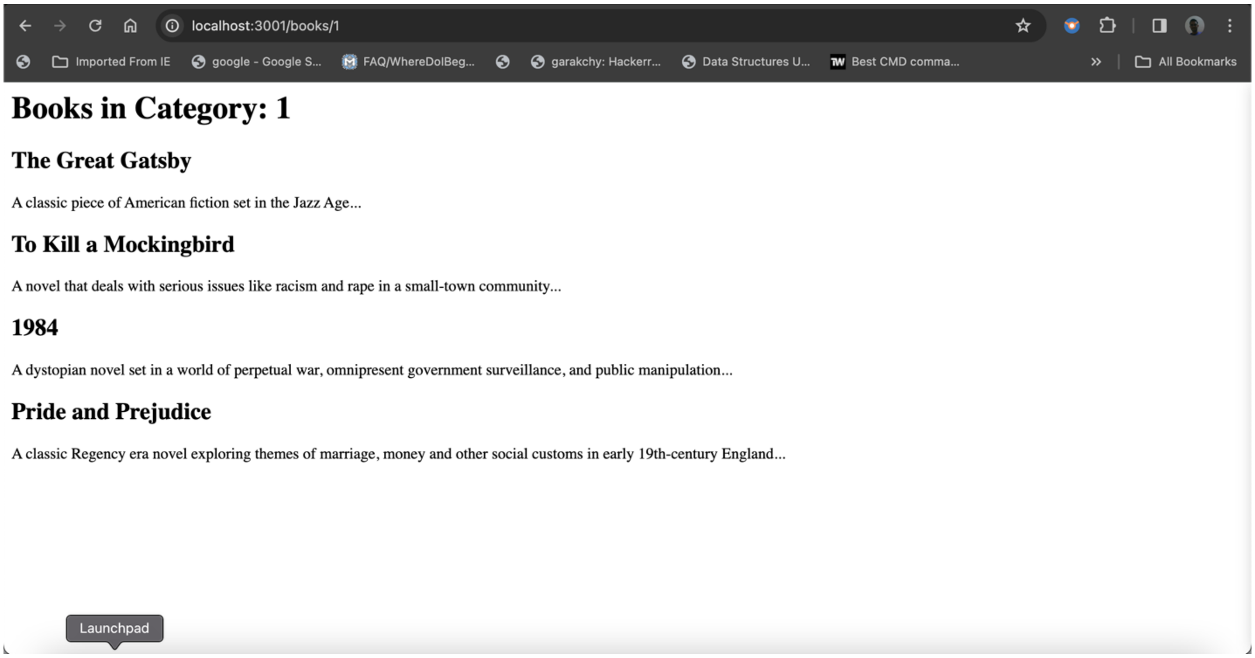
The Great Gatsby

To Kill a Mockingbird

Pride and Prejudice

The Martian

2). /get/books/:bookId



Books in Category: 1

The Great Gatsby

A classic piece of American fiction set in the Jazz Age...

To Kill a Mockingbird

A novel that deals with serious issues like racism and rape in a small-town community...

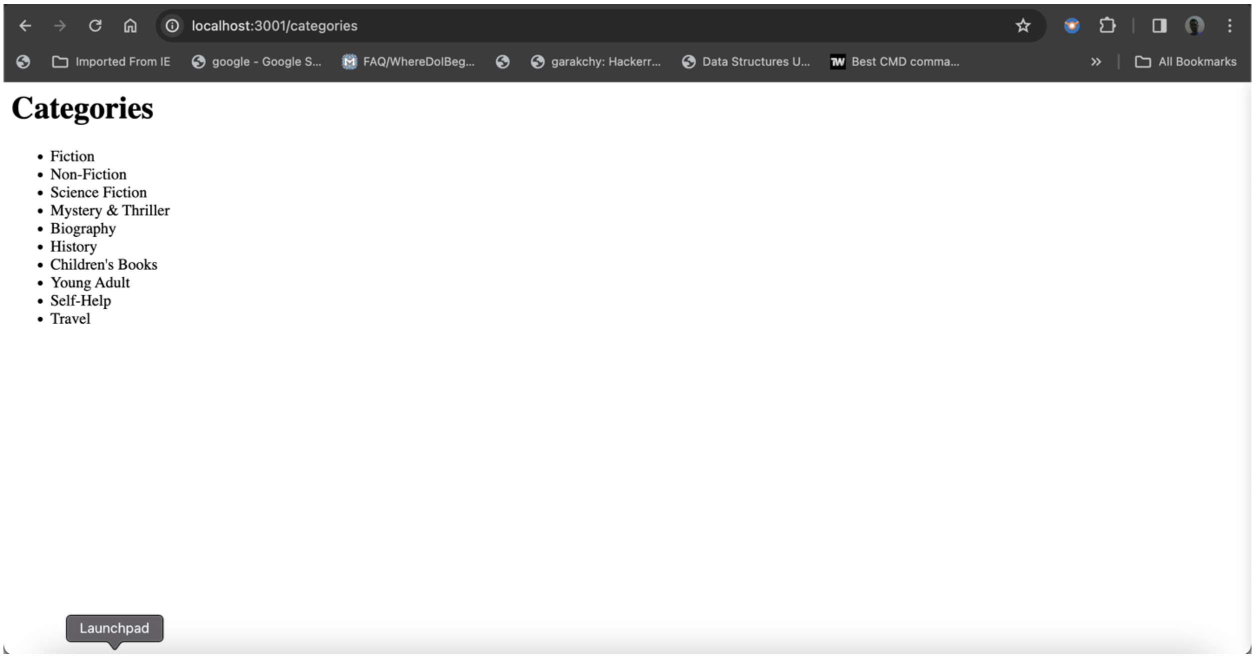
1984

A dystopian novel set in a world of perpetual war, omnipresent government surveillance, and public manipulation...

Pride and Prejudice

A classic Regency era novel exploring themes of marriage, money and other social customs in early 19th-century England...

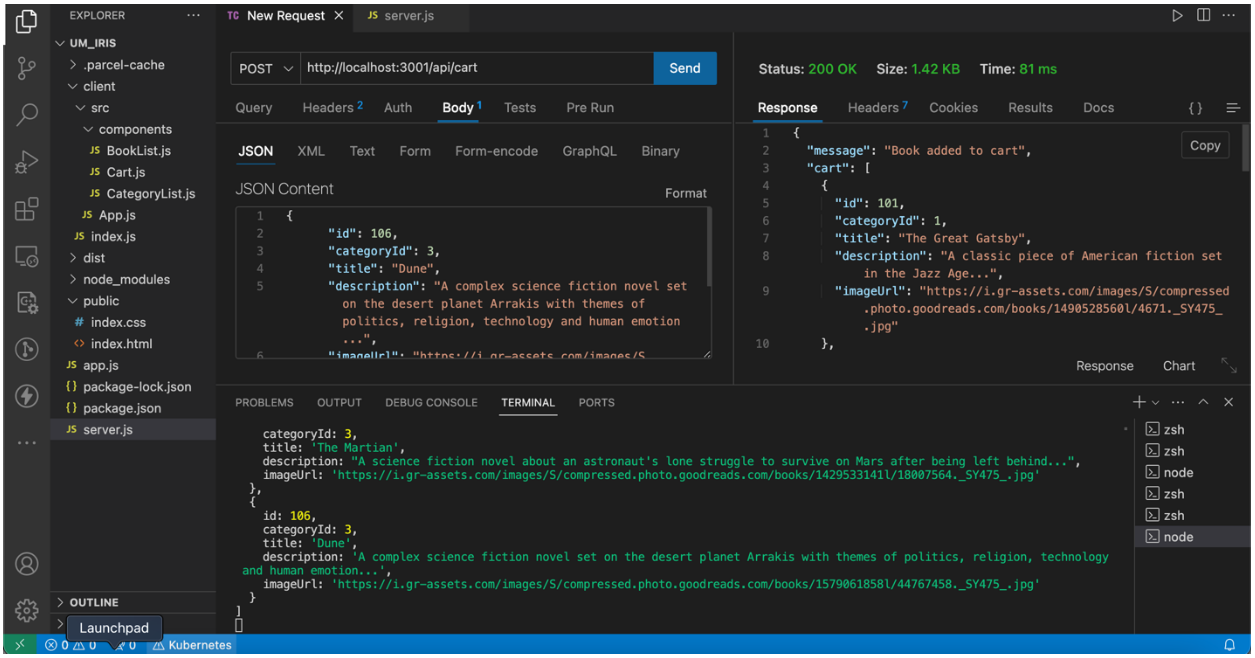
3). /get/categories



Categories

- Fiction
- Non-Fiction
- Science Fiction
- Mystery & Thriller
- Biography
- History
- Children's Books
- Young Adult
- Self-Help
- Travel

4). The below screenshots are post and delete request.



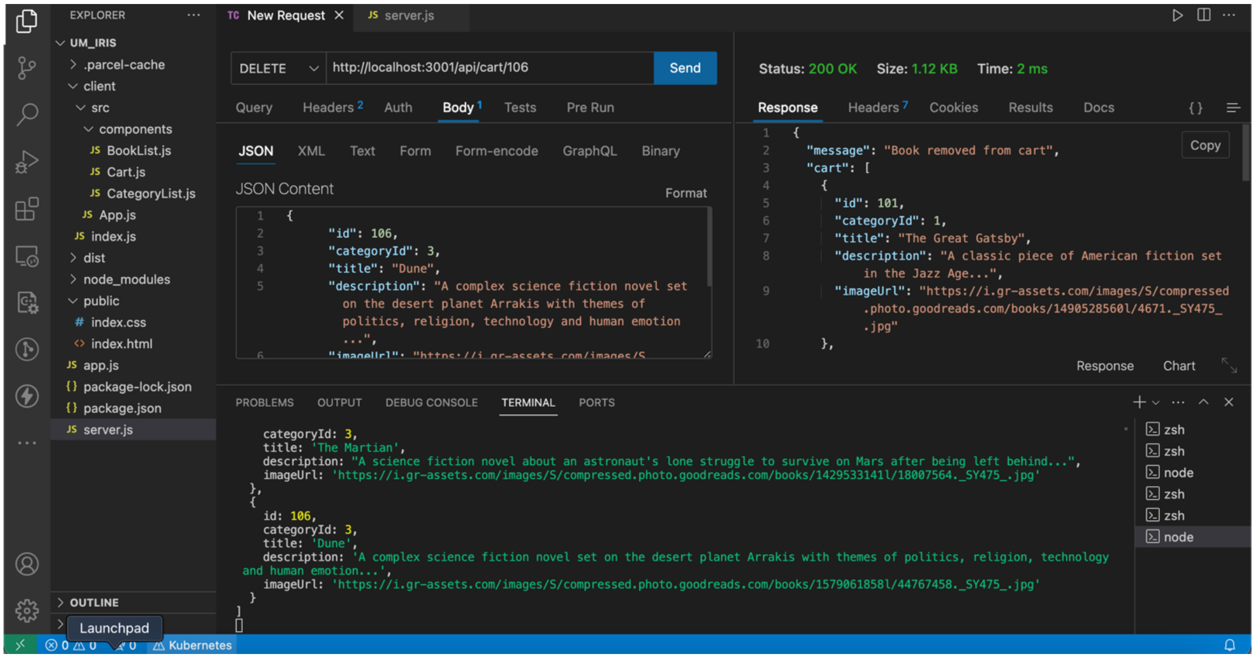
POST http://localhost:3001/api/cart Send

```
{
        "id": 106,
        "categoryId": 3,
        "title": "Dune",
        "description": "A complex science fiction novel set on the desert planet Arrakis with themes of politics, religion, technology and human emotion ...",
        "imageUrl": "https://i.gr-assets.com/images/S
```

Status: 200 OK Size: 1.42 KB Time: 81 ms

```
{
  "message": "Book added to cart",
  "cart": [
    {
      "id": 101,
      "categoryId": 1,
      "title": "The Great Gatsby",
      "description": "A classic piece of American fiction set in the Jazz Age...",
      "imageUrl": "https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/1490528560l/4671._SY475_.jpg"
    },
```

```
    categoryId: 3,
    title: 'The Martian',
    description: "A science fiction novel about an astronaut's lone struggle to survive on Mars after being left behind...",
    imageUrl: 'https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/1429533141l/18007564._SY475_.jpg'
  },
  {
    id: 106,
    categoryId: 3,
    title: 'Dune',
    description: 'A complex science fiction novel set on the desert planet Arrakis with themes of politics, religion, technology and human emotion...',
    imageUrl: 'https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/1579061858l/44767458._SY475_.jpg'
  }
]
```



```
DELETE  http://localhost:3001/api/cart/106
```

```
{
        "id": 106,
        "categoryId": 3,
        "title": "Dune",
        "description": "A complex science fiction novel set
          on the desert planet Arrakis with themes of
          politics, religion, technology and human emotion
          ...",
        "imageUrl": "https://i.gr-assets.com/images/S
```

Status: 200 OK   Size: 1.12 KB   Time: 2 ms

```
{
  "message": "Book removed from cart",
  "cart": [
    {
      "id": 101,
      "categoryId": 1,
      "title": "The Great Gatsby",
      "description": "A classic piece of American fiction set
          in the Jazz Age...",
      "imageUrl": "https://i.gr-assets.com/images/S/compressed
          .photo.goodreads.com/books/1490528560l/4671._SY475_
          .jpg"
    },
```

```
    categoryId: 3,
    title: 'The Martian',
    description: "A science fiction novel about an astronaut's lone struggle to survive on Mars after being left behind...",
    imageUrl: 'https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/1429533141l/18007564._SY475_.jpg'
  },
  {
    id: 106,
    categoryId: 3,
    title: 'Dune',
    description: 'A complex science fiction novel set on the desert planet Arrakis with themes of politics, religion, technology
 and human emotion...',
    imageUrl: 'https://i.gr-assets.com/images/S/compressed.photo.goodreads.com/books/1579061858l/44767458._SY475_.jpg'
  }
]
```