Middleware Technologies

CSIWZG524

Assignment 1.2

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📚 Books Inventory Management System

A responsive and user-friendly web application to manage and search book inventory with real-time availability status.

- **GitHub Repository Link:** *https://github.com/2021wa86905/Books-Inventory-Management-System.git*
- **Live Application Link:** *https://2021wa86905.github.io/Books-Inventory-Management-System/*

✨ Features

- 🔍 **Search by Title**: Instantly filter books by typing in the search bar.
- 📦 **Inventory Display**: Shows quantity and availability status for each book.
- ✅ **Availability Indicator**: Clearly marks books as "Available" or "Unavailable".
- 📱 **Responsive Design**: Optimized for desktops, tablets, and mobile devices.
- 🚫 **No Results Handling**: Displays a friendly message when no books match the search.

🛠️ Technologies Used

- **Frontend**: HTML5, CSS3
- **Styling**: Bootstrap 4, custom CSS
- **Programming**: JavaScript (ES6+)

🚀 How to Run the Project

Open the Project

- Navigate to the project folder.
- Open index.html in your browser.

Customize Inventory

- Modify the inventory array in the <script> section of index.html to add or update books.

🌟 How It Works

1. Type a book title in the search input.
2. The app filters and displays matching books.
3. Each result shows:
   - 📘 **Title**
   - 🔢 **Quantity**
   - ✅ / ❌ **Availability Status**
4. If no match is found, a message is shown.

📂 Project Structure

```
📁 books-inventory/
├── index.html      # Main HTML structure and JavaScript logic
├── style.css       # Custom styling for layout and components
└── README.md       # Project documentation
```

📖 Learning Points

- 🔄 **Dynamic DOM Manipulation**: Used JavaScript to update the UI based on user input.
- 🧠 **Conditional Rendering**: Displayed availability status based on quantity.
- 🎨 **Responsive UI**: Combined Bootstrap and custom CSS for a clean layout.

🔮 Future Enhancements

- 📝 Add functionality to edit or delete books.
- 📥 Connect to a backend (e.g., Firebase or Node.js) for persistent storage.

- 📊 Add analytics for most searched or out-of-stock books.

🌐 Web Services Architecture Overview

- **Frontend**: HTML/CSS/JS runs in the browser.
- **Backend (optional)**: Can be added for persistent inventory storage.
- **Data Source**: Currently hardcoded in JavaScript; can be replaced with API/database.

📈 Scalability Considerations

Aspect	**Current State**	**Suggested Enhancements**
Scalability	Static data in JS	Add backend with database (e.g., MongoDB, Firebase)
Fault Tolerance	Basic error handling	Add input validation, fallback UI for data load failures
Performance	Lightweight, fast loading	Lazy load results, optimize DOM updates

🛡️ Fault Tolerance Considerations

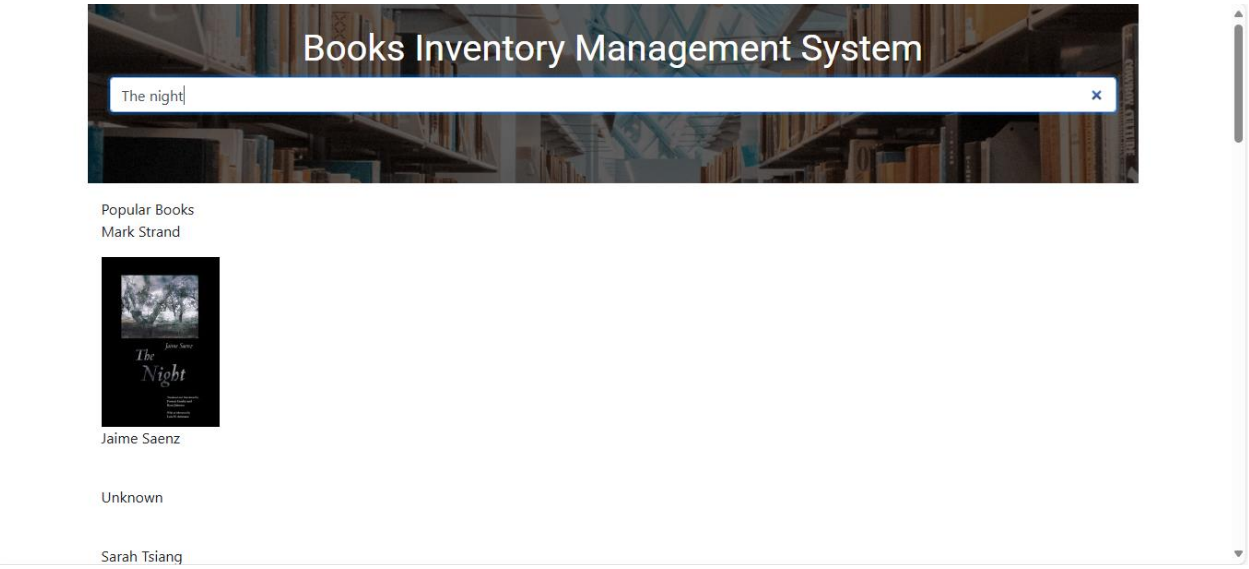
- **Current**: Basic handling for no search results.
- **Improvements**:
  - Add input validation.
  - Show fallback message if data fails to load.
  - Use localStorage to cache last known inventory.

⚡ Performance Considerations

- **Current**: Fast due to minimal dependencies.

- **Improvements**:
    - Minify CSS/JS.
    - Use service workers for offline support.
    - Optimize DOM updates using virtual DOM or frameworks like React.

Application Snips:-



Books Inventory Management System

The night ×

Popular Books
Mark Strand

Jaime Saenz

Unknown

Sarah Tsiang

INDEX code –[HTML]

```
<!DOCTYPE html>

<html>



<head>

  <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css"

      integrity="sha384-
JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z"
crossorigin="anonymous" />

  <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"

      integrity="sha384-
DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj"

      crossorigin="anonymous"></script>

  <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js"
```

```
    integrity="sha384-
9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN"

    crossorigin="anonymous"></script>

  <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"

    integrity="sha384-
B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV"

    crossorigin="anonymous"></script>

  <link rel="stylesheet" href="style.css">

</head>


<body>

  <div class="container">

    <div class="row">

      <div class="searchContainer col-12 p-4">

        <h1 class="heading">Books Inventory Management System</h1>

        <input type="search" id="searchInput" class="search w-90 form-control"
placeholder="Type book title">

      </div>

      <div class="col-12">

        <div class="mt-3 text-center">

          <div id="spinner" class="d-none spinner-border text-dark" role="status">

            <span class="sr-only">Loading...</span>

          </div>

          <p id="message"></p>

        </div>

      </div>

      <div class="col-12" id="searchResults"></div>

    </div>
  </div>

  <script src="script.js"></script>

</body>


</html>
```

CSS code [Java script]

```
@import
url("https://fonts.googleapis.com/css2?family=Bree+Serif&family=Caveat:wght@400;700&family=Lobster&f
amily=Monoton&family=Open+Sans:ital,wght@0,400;0,700;1,400;1,700&family=Playfair+Display+SC:ital,wg
ht@0,400;0,700;1,700&family=Playfair+Display:ital,wght@0,400;0,700;1,700&family=Roboto:ital,wght@0,400;0,700;1,400;1,700&family=Source+Sans+Pro:ital,wght@0,400;0,700;1,700&family=Work+Sans:ital,wght@0,400;0,700;1,700&display=swap");


.searchContainer {
  background-image: url('https://assets.ccbp.in/frontend/dynamic-webapps/library-management-bg.png');
  background-size: cover;
  height: 32vh;
  width: 100%;
  text-align: center;
}


.heading {
  font-family: 'Roboto';
  font-size: 40px;
  color: #ffffff;
  text-align: center;
}
```