



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment - 3

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Semester: 5th

Subject Name: Full Stack- I

Subject Code: 23CSP-339

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Aim: To build an interactive library management interface using React components with full CRUD (Create, Read, Update, Delete) functionality.

Objective: The main objective is to-

1. Design a book listing component.
2. Implement search functionality.
3. Add a form for new book entries.
4. Enable update and delete capabilities for each book.
5. Manage state using React hooks.

Hardware/Software Requirements:

1. Processor: Intel i5/Ryzen 5 or higher
2. RAM: 8GB minimum.
3. Display: 1920x1080 resolution.
4. Node.js v18+
5. React.js v18+
6. VS code with ES7 + extensions.
7. JSON server(for mock PIs).

About the Experiment -

This experiment demonstrates how to build a dynamic and responsive Library Management System using React.

Concepts covered-

1. Component-based architecture.
2. State management with hooks(useState, useEffect).
3. Controlled forms and event handling.
4. Conditional rendering.
5. RESTful API interaction with fetch.



Code implementation -

```
import React, { useState, useEffect } from 'react';
```

```
function App() {
```

```
  const [books, setBooks] = useState([]);
```

```
  const [formData, setFormData] = useState({ title: "", author: "" });
```

```
  const [searchTerm, setSearchTerm] = useState("");
```

```
  const [editingBookId, setEditingBookId] = useState(null);
```

```
  // Fetch initial books from JSON Server
```

```
  useEffect(() => {
```

```
    fetch('http://localhost:3001/books')
```

```
      .then(res => res.json())
```

```
      .then(data => setBooks(data));
```

```
  }, []);
```

```
  // Handle form input change
```

```
  const handleChange = e => {
```

```
    setFormData({ ...formData, [e.target.name]: e.target.value });
```

```
  };
```



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```
// Handle Add / Update book

const handleSubmit = e => {

  e.preventDefault();

  if (editingBookId) {

    // Update book

    fetch(`http://localhost:3001/books/${editingBookId}`, {

      method: 'PUT',

      headers: { 'Content-Type': 'application/json' },

      body: JSON.stringify(formData),

    })

    .then(res => res.json())

    .then(updatedBook => {

      setBooks(books.map(book => (book.id === editingBookId ? updatedBook :

book))));

      setEditingBookId(null);

      setFormData({ title: "", author: "" });

    });

  } else {

    // Add new book
```



```

fetch('http://localhost:3001/books', {
  method: 'POST',
  headers: { 'Content-Type': 'application/json' },
  body: JSON.stringify(formData),
})

.then(res => res.json())

.then(newBook => {
  setBooks([...books, newBook]);
  setFormData({ title: "", author: "" });
});
}

};

// Edit book

const handleEdit = book => {
  setEditingBookId(book.id);
  setFormData({ title: book.title, author: book.author });
};

// Delete book

```



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```
const handleDelete = id => {

  fetch(`http://localhost:3001/books/${id}`, {

    method: 'DELETE',

  }).then(() => {

    setBooks(books.filter(book => book.id !== id));

  });

};

// Filtered books for search

const filteredBooks = books.filter(book =>

  book.title.toLowerCase().includes(searchTerm.toLowerCase())

);

return (

  <div style={{ padding: '20px' }}>

    <h2>Library Management</h2>

    { /* Add / Update Book Form */ }

    <form onSubmit={handleSubmit}>

      <input
```



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```
name="title"
```

```
placeholder="Title"
```

```
value={formData.title}
```

```
onChange={handleChange}
```

```
required
```

```
<input
```

```
name="author"
```

```
placeholder="Author"
```

```
value={formData.author}
```

```
onChange={handleChange}
```

```
required
```

```
<button type="submit">{editingBookId ? 'Update' : 'Add'} Book</button>
```

```
</form>
```

```
{/* Search Bar */}
```

```
<input
```

```
placeholder="Search by title..."
```

```
value={searchTerm}
```



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```
        onChange={e => setSearchTerm(e.target.value)}

        style={{ marginTop: '10px' }}

    />

    { /* Book List */}

    <ul>

      {filteredBooks.map(book => (

        <li key={book.id}>

          <strong>{book.title}</strong> by {book.author}

          <button onClick={() => handleEdit(book)}>Edit</button>

          <button onClick={() => handleDelete(book.id)}>Delete</button>

        </li>

      ))}

    </ul>

  </div>

);

}

export default App;
```



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Output:

Library Management

Title	Author	Add Book
Search by title...		