



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment - 3

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Branch: BE-CSE

Semester: 5th

Subject Name: Full Stack- I

Subject Code: 23CSP-339

UID: 23BCS12931

Section/Group: KRG-2B

Date of Performance: 11/9/25

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.



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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
```



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```
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 });  
  
};
```



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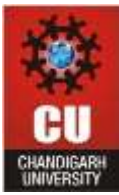
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```
// Delete book
```

```
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}>
```



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```
<input  
  
  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
```



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

value={searchTerm}

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...		