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UNIVERSITY INSTITUTE OF ENGINEERING

Advanced Database Management System

Experiment 3

23CSP-339

Submitted To:
Faculty Name: Er. Juned Alam

Submitted By:
Name: Garvi Dabas
UID: 23BCS11346
Section: KRG - 2B
Semester: 5th

Experiment 5: Library Management UI with React

Aim

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

Objectives

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

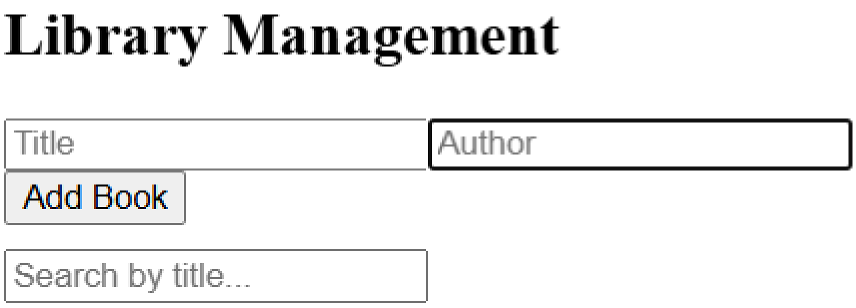
Code Implementation

App.js

```
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);

  useEffect(() => {
    fetch('http://localhost:3001/books')
      .then(res => res.json())
      .then(data => setBooks(data));
  }, []);

  const handleChange = e => {
    setFormData({ ...formData, [e.target.name]: e.target.value });
  };

  const handleSubmit = e => {
    e.preventDefault();
    if (editingBookId) {
      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 {
    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: '' });
      });
  }
};

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

const handleDelete = id => {
  fetch(`http://localhost:3001/books/${id}`, {
    method: 'DELETE',
  }).then(() => {
    setBooks(books.filter(book => book.id !== id));
  });
};

const filteredBooks = books.filter(book =>
  book.title.toLowerCase().includes(searchTerm.toLowerCase())
);

return (
  <div style={{ padding: '20px' }}>
    <h2>Library Management</h2>
    <form onSubmit={handleSubmit}>
      <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>
   <input
    placeholder="Search by title..."
    value={searchTerm}
    onChange={e => setSearchTerm(e.target.value)}
    style={{ marginTop: '10px' }}
   />
   <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;
```

Output:



Learning Outcomes

* Learned to create and manage React functional components.
* Gained experience using useState and useEffect hooks for state management and side effects.
* Practiced handling forms with controlled components for adding and updating data.