



**TECHNIK NEST**  
INNOVATIVE MINDS, NESTING SUCCESS

**Name: M. Subhan khalid**

**Intern ID: TN/IN02/PY/016**

## **Project Report Library Management System**

### **Introduction**

*For my internship project, I developed a Library Management System using Python. The system allows users to add books, search for them, borrow, and return them. Data is stored in a JSON file so that it remains available even after the program is closed.*

### **Implementation**

*Used Python dictionaries and lists to store book details.*

*Implemented functions for adding, displaying, searching, borrowing, and returning books.*

*Used the JSON module for saving and loading data to/from a file.*

*Created a simple menu-driven interface for user interaction.*

## **Problems Faced**

*While working on the project, I encountered several challenges:*

*1. File Handling Errors – At first, when the JSON file didn't exist, the program crashed. I had to add a condition to check if the file exists before loading.*

*2. Data Persistence Issue – Initially, books were resetting after closing the program. I learned to use `json.dump` and `json.load` to maintain data.*

*3. Logic Bugs – I mistakenly allowed borrowing more books than available or returning beyond the total. Debugging and testing helped me fix this.*

*4. Case Sensitivity in Search – Searching didn't work properly if users typed uppercase vs lowercase. I solved it by converting inputs to .lower().*

*5. User Input Validation – Sometimes entering invalid data (like text instead of numbers for quantity) caused errors. I realized the importance of input validation, though some improvements are still possible.*

## **Conclusion / Learning Outcomes**

*This project helped me strengthen my Python basics, especially file handling, JSON data storage, and user input management. I also learned how to debug common logic errors and make the system more user-friendly. Overall, the project gave me a good understanding of how real-world applications manage data persistence.*

