

# COMPUTER SCIENCE PROJECT

SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS OF CBSE  
**SUBJECT CODE: 083**



## SHIV NADAR SCHOOL

Education for Life

**CLASS XII**  
**SESSION 2023-24**

Under the guidance of	Submitted by
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	<b>Roll no:</b>

SHIV NADAR SCHOOL, FARIDABAD



# SHIV NADAR SCHOOL

Education for Life

## **CERTIFICATE**

This is to certify that Ashutosh Sundresh of Grade XII CBSE  
Roll No. ....has successfully completed his/her  
Computer Science project under my guidance, during the  
academic year 2023-24. They have shown utmost sincerity in  
completing this project.

I certify that this project is up to my expectations and as per  
the guidelines issued by Central Board of Secondary  
Education for the subject code 083.

**Ms. Urvashi Virmani**  
(Computer Science Faculty)

**Ms. Anju Wal**  
(Principal)

SHIV NADAR SCHOOL, FARIDABAD

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### ACKNOWLEDGEMENT

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I express my heartfelt gratitude to my parents for constant encouragement while carrying out this project.

I gratefully acknowledge the contribution of the individuals who contributed in bringing this project up to this level, who continues to look after me despite my flaws.

I express my deep sense of gratitude to the luminary The Principal, Shiv Nadar School Faridabad who has been continuously motivating and extending their helping hand to us.

I am overwhelmed to express my thanks to The Administrative Officer for providing me an infrastructure and moral support while carrying out this project in the school.

My sincere thanks to Ms. Urvashi Virmani, Master In-charge, a guide, mentor and all the above a friend, who critically reviewed my project and helped in solving each problem, occurred during implementation of the project.

The guidance and support received from all the members who contributed and who are contributing to this project, was vital for the success of the project. I am grateful for their constant support and help.

## **PROJECT ON LIBRARY MANAGEMENT SYSTEM**

### **INTRODUCTION**

In this project, we will use Python and MySQL to create a library management system, which will help librarians and users to manage the books and other resources in a library. The library management system will have the following functionalities:

- **Book management:** The system will allow the librarians to add, display, search, update, and delete the records of the books in the library. The system will also keep track of the book code, name, author, and price of each book.
- **Member management:** The system will allow the librarians to add, display, search, update, and delete the records of the members of the library. The system will also keep track of the member code, name, and mobile number of each member.
- **Issue/Return management:** The system will allow the librarians to issue and return the books to and from the members of the library. The system will also keep track of the book code, member code, date of issue, and date of return of each transaction.

### OBJECTIVES OF THE PROJECT

The objective of this project is to let the students apply the programming knowledge into a real- world situation/problem and exposed the students how programming skills helps in developing a good software.

1. **Utilizing Modern Software Tools:** The project involves using Python, a modern programming language, and MySQL, a widely-used database management system. It also utilizes various Python modules for database connectivity and other functionalities.
2. Apply object-oriented programming principles effectively when developing small to medium sized projects.
3. **Writing Effective Procedural Code:** The project involves writing efficient and effective procedural code in Python to manage library operations, demonstrating the ability to solve real-world problems.
4. **Demonstrating Breadth of Knowledge in Computer Science:** This project covers various areas of computer science, including software development (Python programming), systems (database management with MySQL), and theory (data structures, algorithms).
5. **Conducting Research or Applied Computer Science Project:** The project represents an applied Computer Science project where students research library management systems, design and implement a solution, and present their work in a scholarly style.

### **PROPOSED SYSTEM**

1. Adapting to Modern Needs: In today's competitive environment, relying on fallible human processes is no longer viable. Mistakes cannot be rationalized as "human error". To keep pace with time and to achieve the best results without malfunctioning, we need to replace traditional methods with more sophisticated systems.

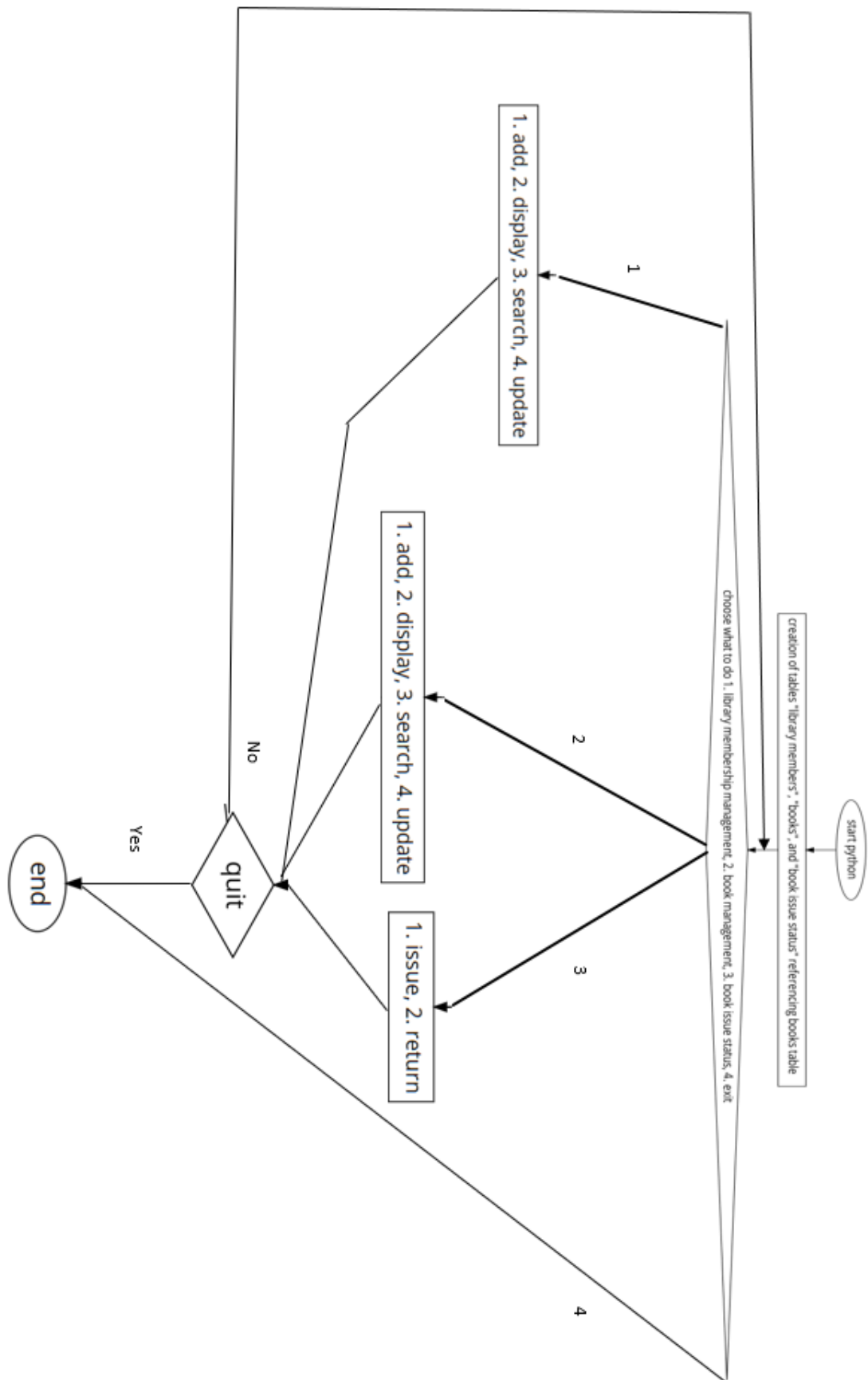
2. Data Management Software: The use of data management software has been on the rise in various organizations. Many software products are now available in the market that have made organizational work easier and more efficient.

3. Transition from Paper to Digital: Data management initially involved maintaining numerous ledgers and extensive paperwork. However, with the advent of software products, work has become faster and easier. All that is needed is to load the software onto a computer.

4. Time and Cost Efficiency: The use of software for data management saves a significant amount of time and money. The work becomes fully automated and any information regarding the organization can be obtained with a click of a button.

5. Automation and Improved Aesthetics: In this age of computers, automating an organization not only makes it more efficient but also gives it a modern and sophisticated look.

## FLOWCHART





## SOURCE CODE

```
import mysql.connector as sql
import datetime as dt
def add_book():
    BCode = int(input('Enter book code: '))
    BName = input('Enter book name: ')
    BAuthor = input('Enter book author: ')
    BPrice = float(input('Enter book price: '))
    cur.execute('INSERT INTO bookmanagement VALUES (%s, %s, %s, %s)', (BCode, BName, BAuthor,
BPrice))
    con.commit()
    print()
    print('Book added successfully.')
    bookmanagementmenu()

def display_table(table_name, menu_function):
    strtoexecute = "SELECT * FROM " + table_name
    cur.execute(strtoexecute)
    rows = cur.fetchall()
    print()
    for row in rows:
        print(row)
    menu_function()

def search_book():
    BCode = int(input('Enter book code to search: '))
    cur.execute('SELECT * FROM bookmanagement WHERE BCode = %s', (BCode,))
    rows = cur.fetchall()
    print()
    for row in rows:
        print(row)
    bookmanagementmenu()

def update_book():
    BCode = int(input('Enter book code to update: '))
    BName = input('Enter new book name: ')
    BAuthor = input('Enter new book author: ')
    BPrice = float(input('Enter new book price: '))
    cur.execute('UPDATE bookmanagement SET BName = %s, BAuthor = %s, BPrice = %s WHERE
BCode = %s', (BName, BAuthor, BPrice, BCode))
    con.commit()
    print()
    print('Book updated successfully.')
    bookmanagementmenu()

def delete_book():
    BCode = int(input('Enter book code to delete: '))
    cur.execute('DELETE FROM bookmanagement WHERE BCode = %s', (BCode,))
    con.commit()
    print()
    print('Book deleted successfully.')
    bookmanagementmenu()

def add_member():
    MCode = int(input('Enter member code: '))
    MName = input('Enter member name: ')
```

```

MNo = int(input('Enter member mobile number: '))
cur.execute('INSERT INTO membermanagement VALUES (%s, %s, %s)', (MCode, MName, MNo))
con.commit()
print()
print('Member added successfully.')
membermanagementmenu()

def search_member():
    MCode = int(input('Enter member code to search: '))
    cur.execute('SELECT * FROM membermanagement WHERE MCode = %s', (MCode,))
    rows = cur.fetchall()
    print()
    for row in rows:
        print(row)
    membermanagementmenu()

def update_member():
    MCode = int(input('Enter member code to update: '))
    MName = input('Enter new member name: ')
    MNo = int(input('Enter new member mobile number: '))
    cur.execute('UPDATE membermanagement SET MName = %s, MNo = %s WHERE MCode = %s',
(MName, MNo, MCode))
    con.commit()
    print()
    print('Member updated successfully.')
    membermanagementmenu()

def delete_member():
    MCode = int(input('Enter member code to delete: '))
    cur.execute('DELETE FROM membermanagement WHERE MCode = %s', (MCode,))
    con.commit()
    print()
    print('Member deleted successfully.')
    membermanagementmenu()

def issue_book():
    IBCode = int(input('Enter book code to issue: '))
    IMCode = int(input('Enter member code: '))
    IDateOfIss = dt.datetime.now().strftime('%Y-%m-%d')
    cur.execute('INSERT INTO issuemanagement VALUES (%s, %s, %s, NULL)', (IBCode, IMCode,
IDateOfIss))
    con.commit()
    print()
    print('Book issued successfully.')
    issuemanagementmenu()

def return_book():
    IBCode = int(input('Enter book code to return: '))
    IMCode = int(input('Enter member code: '))
    IDateOfRet = dt.datetime.now().strftime('%Y-%m-%d')
    cur.execute('UPDATE issuemanagement SET IDateOfRet = %s WHERE IBCode = %s AND IMCode =
%s', (IDateOfRet, IBCode, IMCode))
    con.commit()
    print()
    print('Book returned successfully.')
    issuemanagementmenu()

```

```

def bookmanagementmenu():
    print()
    print('1. Add Book')
    print('2. Display Books')
    print('3. Search Book')
    print('4. Update Book')
    print('5. Delete Book')
    print('6. Back to Main Menu')
    choice = int(input('Enter your choice: '))
    if choice == 1:
        add_book()
    elif choice == 2:
        display_table("bookmanagement", bookmanagementmenu)
    elif choice == 3:
        search_book()
    elif choice == 4:
        update_book()
    elif choice == 5:
        delete_book()
    elif choice == 6:
        main_menu()
    else:
        print('Invalid choice. Please try again.')
        bookmanagementmenu()

def membermanagementmenu():
    print()
    print('1. Add Member')
    print('2. Display Members')
    print('3. Search Member')
    print('4. Update Member')
    print('5. Delete Member')
    print('6. Back to Main Menu')
    choice = int(input('Enter your choice: '))
    if choice == 1:
        add_member()
    elif choice == 2:
        display_table("membermanagement", membermanagementmenu)
    elif choice == 3:
        search_member()
    elif choice == 4:
        update_member()
    elif choice == 5:
        delete_member()
    elif choice == 6:
        main_menu()
    else:
        print('Invalid choice. Please try again.')
        membermanagementmenu()

def issuemanagementmenu():
    print()
    print('1. Issue Book')
    print('2. Return Book')
    print('3. View Current Books Status')

```

```

print('4. Back to Main Menu')
choice = int(input('Enter your choice: '))
if choice == 1:
    issue_book()
elif choice == 2:
    return_book()
elif choice == 3:
    display_table("issuemanagement", issuemanagementmenu)
elif choice == 4:
    main_menu()
else:
    print('Invalid choice. Please try again.')
    issuemanagementmenu()
def main_menu():
    print()
    print('=====WELCOME TO START LIBRARY MANAGEMENT
SYSTEM=====')
    print(dt.datetime.now())
    print()
    print('1. BOOK MANAGEMENT')
    print('2. MEMBER MANAGEMENT')
    print('3. ISSUE/RETURN BOOK')
    print('4. EXIT')
    print()
    initchoice=int(input('enter your choice='))
    if initchoice == 1:
        bookmanagementmenu()
    elif initchoice == 2:
        membermanagementmenu()
    elif initchoice == 3:
        issuemanagementmenu()
    elif initchoice == 4:
        print('Exiting the system. Thank you.')
    else:
        print('Invalid choice. Please try again.')
        main_menu()

con = sql.connect(host='localhost', user='root', password='Admin123', database='LIBRARY')
cur = con.cursor()
cur.execute('CREATE TABLE IF NOT EXISTS bookmanagement(BCode INT PRIMARY KEY, BName
VARCHAR(20), BAuthor VARCHAR(20), BPrice FLOAT)')
cur.execute('CREATE TABLE IF NOT EXISTS membermanagement(MCode INT PRIMARY KEY, MName
VARCHAR(20), MNo BIGINT)')
cur.execute('CREATE TABLE IF NOT EXISTS issuemanagement(IBCode INT, IMCode INT, IDateOfIss
DATE, IDateOfRet DATE)')
cur.execute('ALTER TABLE issuemanagement ADD FOREIGN KEY(IBCode) REFERENCES
bookmanagement(BCode)')
cur.execute('ALTER TABLE issuemanagement ADD FOREIGN KEY(IMCode) REFERENCES
membermanagement(MCode)')
main_menu()

```

## OUTPUT

```
=====WELCOME TO START LIBRARY MANAGEMENT SYSTEM=====
2023-11-27 17:02:28.199763

1. BOOK MANAGEMENT
2. MEMBER MANAGEMENT
3. ISSUE/RETURN BOOK
4. EXIT

enter your choice=1

1. Add Book
2. Display Books
3. Search Book
4. Update Book
5. Delete Book
6. Back to Main Menu
Enter your choice: 1
Enter book code: 1
Enter book name: harry potter
Enter book author: jk rowling
Enter book price: 400

Book added successfully.

1. Add Book
2. Display Books
3. Search Book
4. Update Book
5. Delete Book
6. Back to Main Menu
Enter your choice: 1
Enter book code: 2
Enter book name: metamorphosis
Enter book author: franz kafka
Enter book price: 800

Book added successfully.
```

---

```
1. Add Book
2. Display Books
3. Search Book
4. Update Book
5. Delete Book
6. Back to Main Menu
Enter your choice: 2

(1, 'harry potter', 'jk rowling', 400.0)
(2, 'metamorphosis', 'franz kafka', 800.0)

1. Add Book
2. Display Books
3. Search Book
4. Update Book
5. Delete Book
6. Back to Main Menu
Enter your choice: 3
Enter book code to search: 1

(1, 'harry potter', 'jk rowling', 400.0)

1. Add Book
2. Display Books
3. Search Book
4. Update Book
5. Delete Book
6. Back to Main Menu
Enter your choice: 4
Enter book code to update: 2
Enter new book name: metamorphosis
Enter new book author: franz kafka
Enter new book price: 900

Book updated successfully.
```

---

---

```
1. Add Book
2. Display Books
3. Search Book
4. Update Book
5. Delete Book
6. Back to Main Menu
Enter your choice: 6
```

```
=====WELCOME TO START LIBRARY MANAGEMENT SYSTEM=====
2023-11-27 17:04:58.636562
```

```
1. BOOK MANAGEMENT
2. MEMBER MANAGEMENT
3. ISSUE/RETURN BOOK
4. EXIT
```

```
enter your choice=2
```

```
1. Add Member
2. Display Members
3. Search Member
4. Update Member
5. Delete Member
6. Back to Main Menu
Enter your choice: 1
Enter member code: 1
Enter member name: manaasve
Enter member mobile number: 9810593694

Member added successfully.
```

---

```
1. Add Member
2. Display Members
3. Search Member
4. Update Member
5. Delete Member
6. Back to Main Menu
Enter your choice: 1
Enter member code: 2
Enter member name: lavanya
Enter member mobile number: 9992357238

Member added successfully.
```

```
1. Add Member
2. Display Members
3. Search Member
4. Update Member
5. Delete Member
6. Back to Main Menu
Enter your choice: 2

(1, 'manaasve', 9810593694)
(2, 'lavanya', 9992357238)

1. Add Member
2. Display Members
3. Search Member
4. Update Member
5. Delete Member
6. Back to Main Menu
Enter your choice: 4
Enter member code to update: 2
Enter new member name: lavanya
Enter new member mobile number: 9231710023

Member updated successfully.
```

---

=====WELCOME TO START LIBRARY MANAGEMENT SYSTEM=====

2023-11-27 17:24:13.660103

1. BOOK MANAGEMENT
2. MEMBER MANAGEMENT
3. ISSUE/RETURN BOOK
4. EXIT

enter your choice=3

1. Issue Book
2. Return Book
3. View Current Books Status
4. Back to Main Menu

Enter your choice: 1

Enter book code to issue: 2

Enter member code: 2

Book issued successfully.

1. Issue Book
  2. Return Book
  3. View Current Books Status
  4. Back to Main Menu
- Enter your choice: 3

(2, 1, datetime.date(2023, 11, 27), datetime.date(2023, 11, 27))

(2, 2, datetime.date(2023, 11, 27), None)

1. Issue Book
2. Return Book
3. View Current Books Status
4. Back to Main Menu

Enter your choice: 1

Enter book code to issue: 1

Enter member code: 1

Book issued successfully.

- 
1. Issue Book
  2. Return Book
  3. View Current Books Status
  4. Back to Main Menu

Enter your choice: 2

Enter book code to return: 1

Enter member code: 1

Book returned successfully.

1. Issue Book
2. Return Book
3. View Current Books Status
4. Back to Main Menu

Enter your choice: 3

(2, 1, datetime.date(2023, 11, 27), datetime.date(2023, 11, 27))

(2, 2, datetime.date(2023, 11, 27), None)

(1, 1, datetime.date(2023, 11, 27), datetime.date(2023, 11, 27))

1. Issue Book
2. Return Book
3. View Current Books Status
4. Back to Main Menu

Enter your choice: 4

=====WELCOME TO START LIBRARY MANAGEMENT SYSTEM=====

2023-11-27 17:25:49.383100

1. BOOK MANAGEMENT
2. MEMBER MANAGEMENT
3. ISSUE/RETURN BOOK
4. EXIT

enter your choice=4

Exiting the system. Thank you.

---

### **BIBLIOGRAPHY**

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