K.R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

COMPUTER SCIENCE FUNDAMENTAL AND CAREER PATHWAYS

B.TECH CSE CORE SECTION (A) SEMESTER-I

COURSE CODE: ETCCCP105

ASSIGNMENT NO. : 1

ASSIGNMENT TITLE: DESIGN AND SIMULATE A REAL-WORLD PROCESS USING FLOWCHARTS

SUBMITTED BY

MANPREET KAUR

SUBMITTED TO

RAJESH KUMAR SIR

INTRODUCTION:-

LIBRARY BOOK BORROWING SYSTEM

In a student's life there is a great importance of a library. Library is a place where they can go and study without any disturbance. Students can borrow books from the library for their study and can read these books while sitting there also. My problem statement is **" *LIBRARY BOOK BORROWING SYSTEM* "**, this is a system in which students can search books, borrow books, return books etc. Then the records will be maintained in the library records and will be updated on any new issuance or return of the books. Every student will have a library membership due to which every student can do all the above mentioned things.

PROBLEM ANALYSIS:-

- **ABSTRACTION:-**

The " Library Book Borrowing System " have following essential elements :-

- Book Management
- Members Management
- Issuing Books
- Returning Books
- Searching Books
- Reports Making and Updating

- **DECOMPOSITION:-**

All the above mentioned essential elements can be decomposed in the following way:-

- BOOK MANAGEMENT:-

The BOOK MANAGEMENT includes the storing of the details of the books, adding new books on arrival, removing old books and books those are in bad conditions and adding new edition of these books.

- MEMBERS MANAGEMENT:-

The MEMBERS MANAGEMENT includes adding new members and updating their records in the library record and including all the necessary details of the student in the library record.

- ISSUING BOOKS:-

The ISSUING BOOKS includes the searching for the book and checking for its availability and then borrowing or issuing the books to the student. The book will be issued if the student have not exceeded the issued books limits (for example: 5 books at a time).

- RETURNING BOOKS:-

Before the time period gets over, the student must return the book back to the library (let say after 15 days). If the student fails to do then he/she have to pay the fine on exceeding the day limit and the fine will be applied on daily basis (let say 10 RS. per day).

- SEARCHING BOOKS:-

The students can search the books and check that the particular book is available in the library or not.

- REPORT MAKING:-

The librarian have to make the detailed reports about everything like which book is issued, which book is returned, which book is available which book is not and which book is old or in bad condition and is to be replaced or changed etc. They also have to maintain and update the students account that who have issued books and returned book and how many books they have issued and to check for the fine amount of the students who have not returned the book within the time limit.

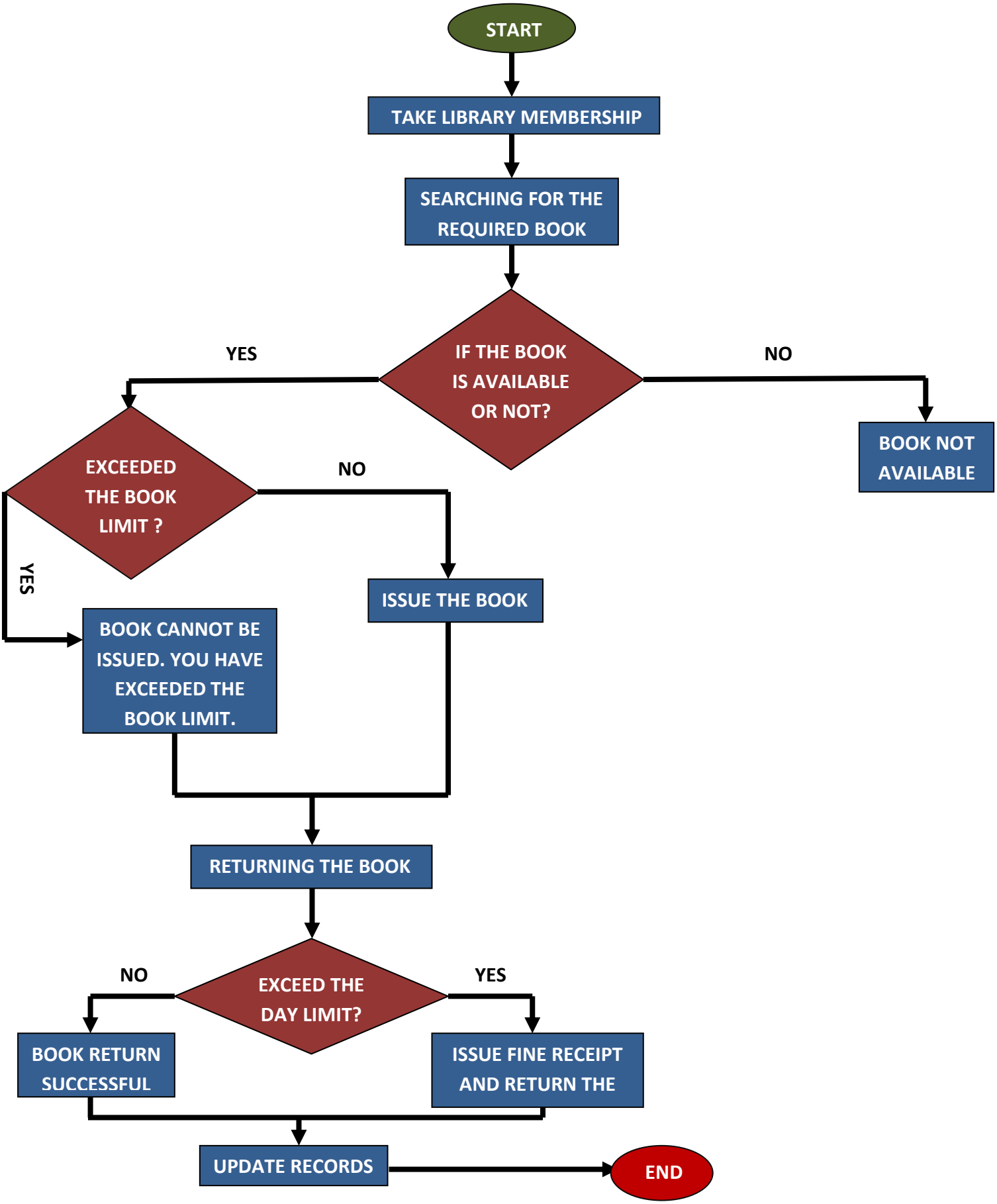
- **PATTERN RECOGNITION:-**

In this part, we have to recognize the pattern in our problem.
This problem follows the pattern that is explained below in detail:-
Each person who want to issue books etc he/she have to take the membership of the library and have to submit all their details to the library for the management of the student accounts. After that the Student can search the required book and check for its availability and issue the book if the book is available in the library. The students can issue the limited amount of books at one time (for example 5 books at a time). They have to return the book within the time limit, otherwise they have to give the fine that will apply on the daily basis (let say 10 RS. per day). All these details will get updated in the library records.

SOLUTION DESIGN:-

[A] FLOWCHART:-

The flowchart representation of the above mentioned problem is displayed below:-



[B] PSEUDO-CODE:-

The pseudo-code of the above shown flowchart is explained below.

1. START
2. Take Library Membership
3. Search for the Book
4. IF the Book is available
5. Check that the person exceed the book limit
6. IF exceed the book limit
7. PRINT "Book cannot be issued. you exceeded the book limit."
8. ELSE
9. PRINT "Book issued successfully."
10. END NESTED IF
11. ELSE
12. PRINT "Book not available."
13. returning the book
14. IF exceed the day limit
15. PRINT "Fine issued and book returned."
16. ELSE
17. PRINT "Book returned successfully."
18. END NESTED IF
19. UPDATE THE RECORDS
20. END IF
21. END

IMPLEMENTATION:-

The implementation of the above problem is shown in the following screenshot of the python code along with its output.

Please find my GITHUB repository link along with this:-

GITHUB REPOSITORY:-

https://github.com/manpreetkaur292006-design/LIBRARY-BOOK-BORROWING-SYSTEM

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main.py > ... Format

```python
"""
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"""

# LIBRARY BOOK BORROWING SYSTEM

book_list=["NP Bali","Preeti Arora","Sumita Arora","HK Dass","Engg. Physics","Computer Fundamentals","Web development"]
# book_list is a list which contains all the books that are available in the library

borrow_book=[]
# borrow_book is an empty list which will contain the list of all the books that are borrowed by the student

book_limit=5 # book_limit contain the maximum number of books that a student can borrow at a time
day_limit=15 # day_limit contain the maximum number of days that a student can borrow a book

print("----WELCOME TO KRMU LIBRARY----")
```

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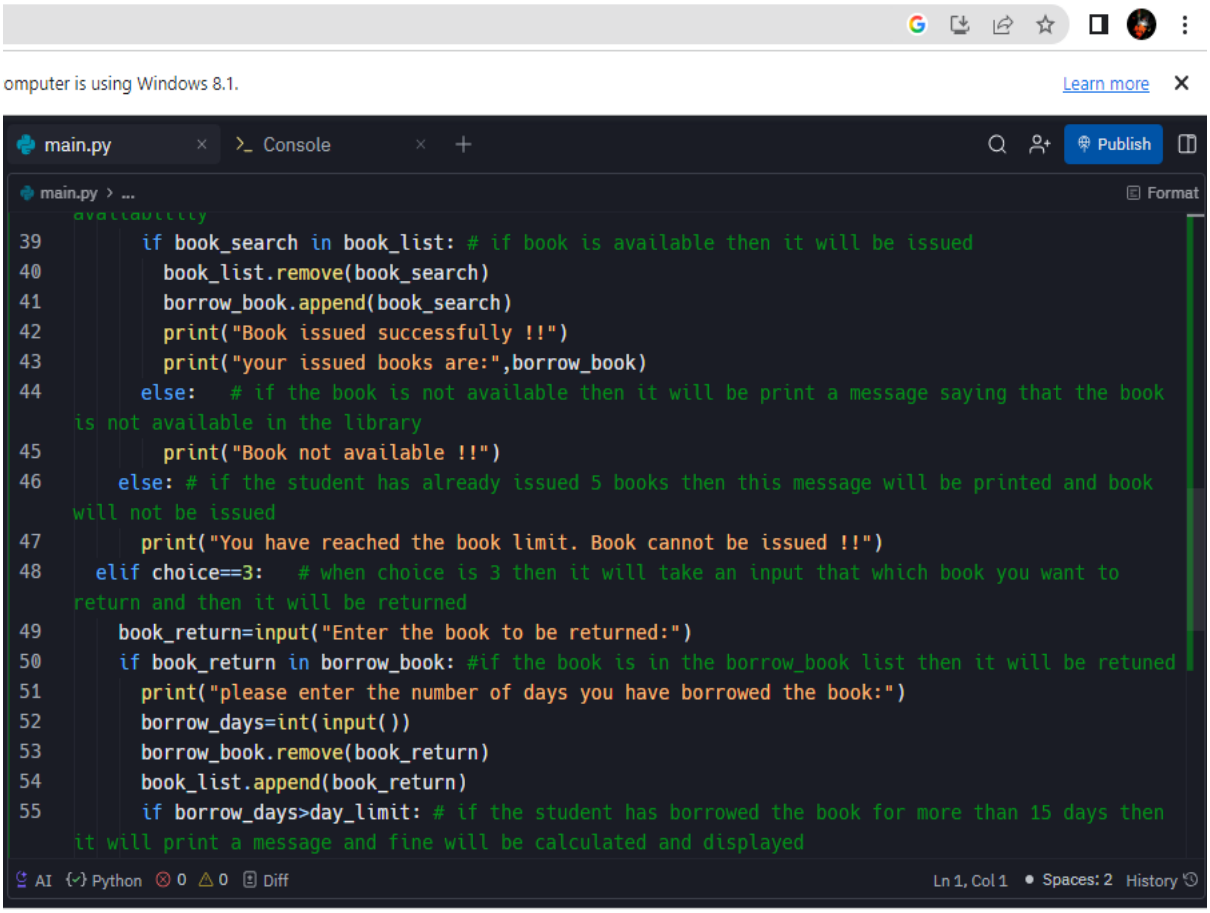
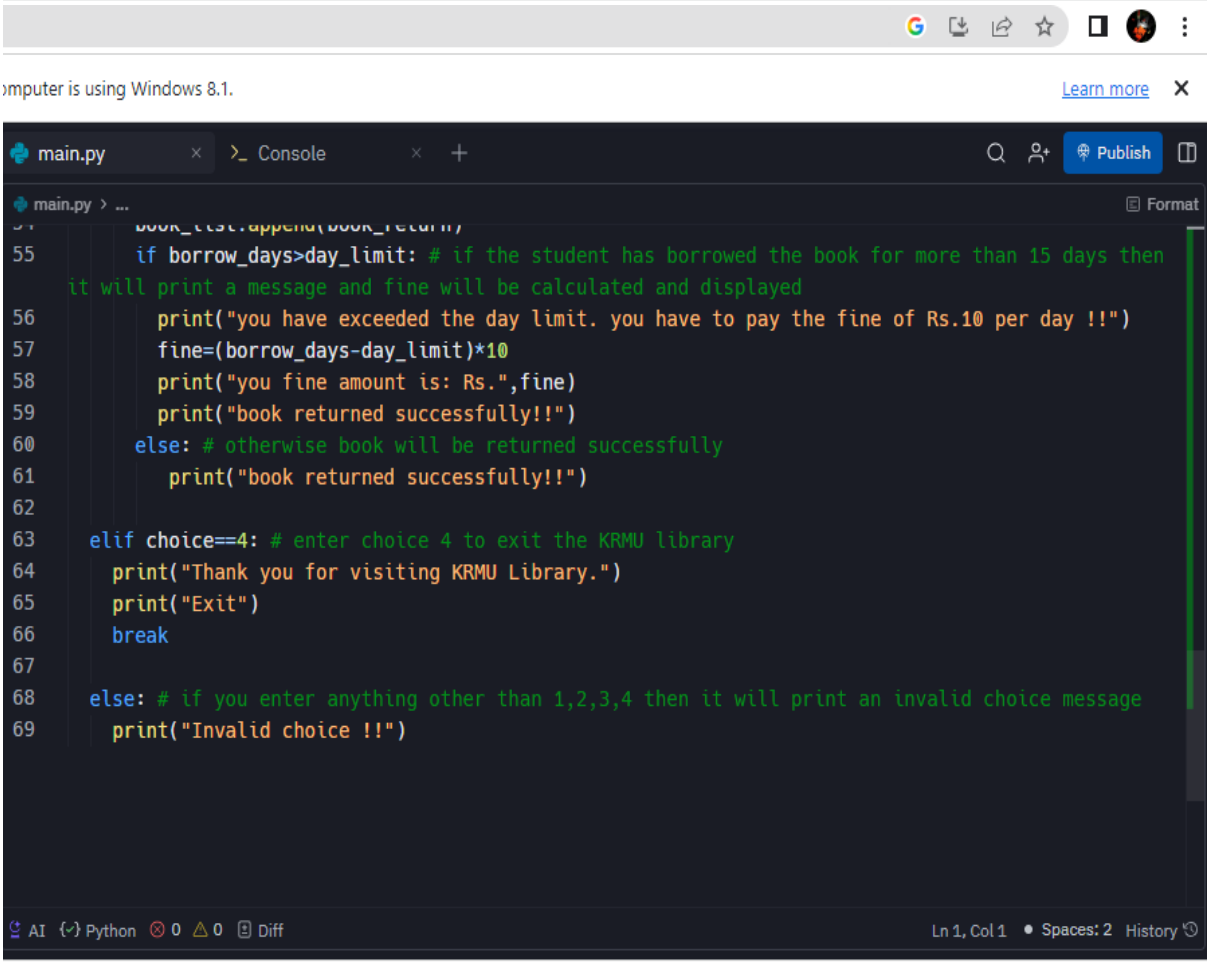
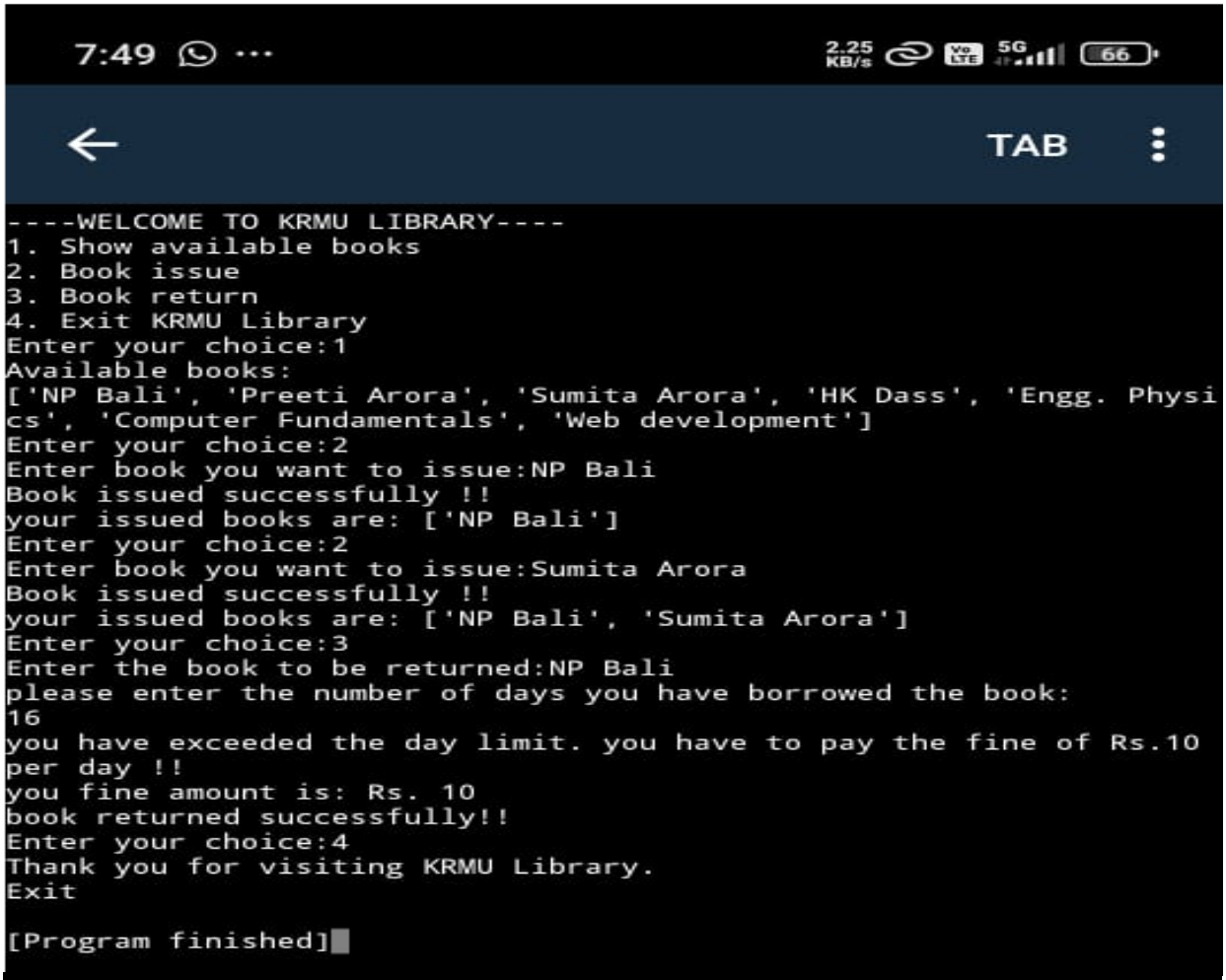
```python
print("----WELCOME TO KRMU LIBRARY----")
print("1. Show available books")
print("2. Book issue")
print("3. Book return")
print("4. Exit KRMU Library")

while True: # this while loop will run unil the user doen't exit the library

  choice=int(input("Enter your choice:"))  # enter your choice according to your requirement

  if choice==1:  # when choice is 1 then it will print all the available books in our library
    print("Available books:")
    print(book_list)

  elif choice==2:   # when choice is 2
    book_search=input("Enter book you want to issue:") # it will take input from the use that which book the student want to issue
    if len(borrow_book)!=book_limit: # if this condition is true then it will check for the book availability
      if book_search in book_list: # if book is available then it will be issued
        book_list.remove(book_search)
```

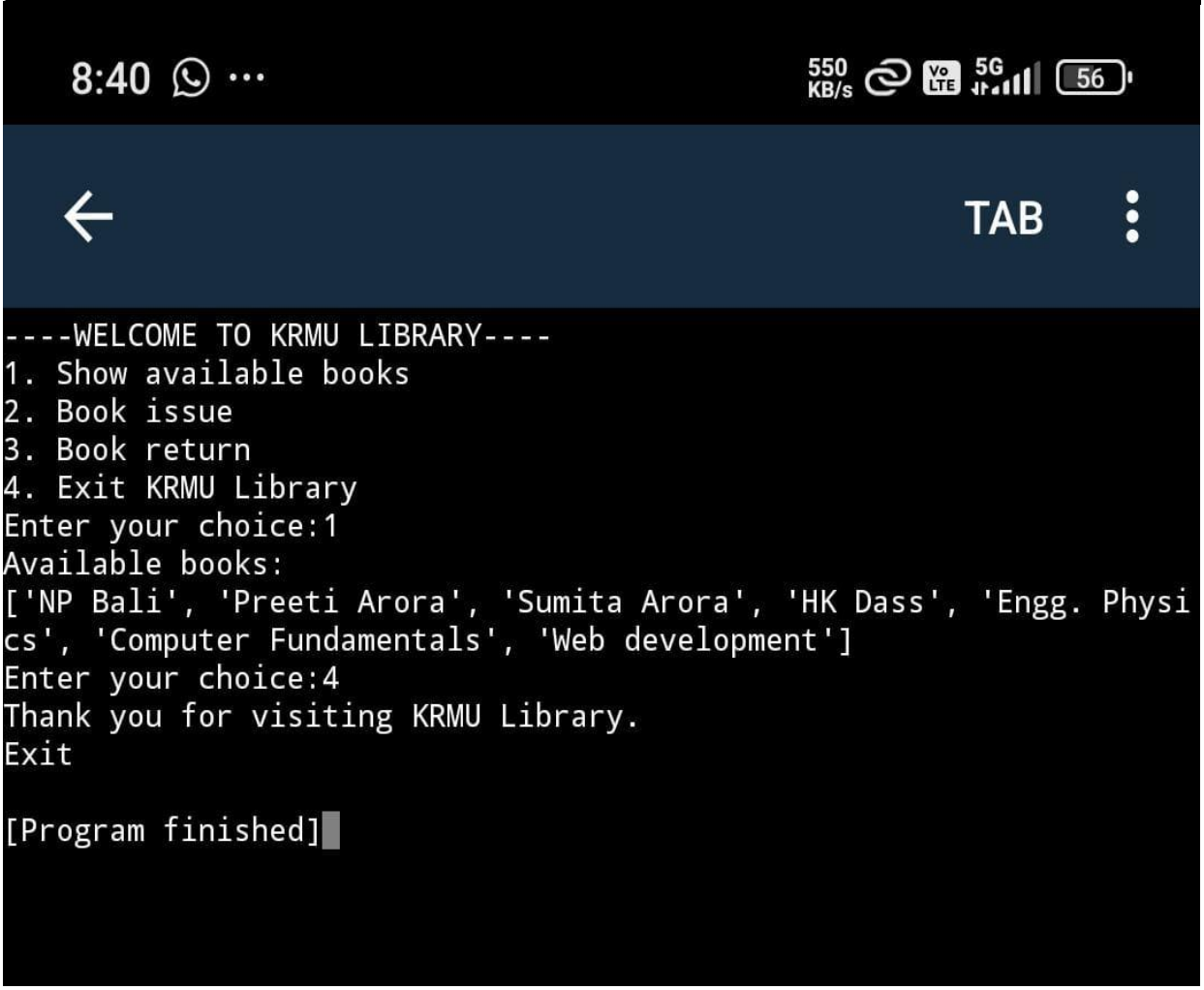
AI Python 0 0 Diff Ln 1, Col 1 Spaces: 2 History





The output of the above code is shown below:-


7:49
TAB
----WELCOME TO KRMU LIBRARY----
1. Show available books
2. Book issue
3. Book return
4. Exit KRMU Library
Enter your choice:1
Available books:
['NP Bali', 'Preeti Arora', 'Sumita Arora', 'HK Dass', 'Engg. Physi
cs', 'Computer Fundamentals', 'Web development']
Enter your choice:2
Enter book you want to issue:NP Bali
Book issued successfully !!
your issued books are: ['NP Bali']
Enter your choice:2
Enter book you want to issue:Sumita Arora
Book issued successfully !!
your issued books are: ['NP Bali', 'Sumita Arora']
Enter your choice:3
Enter the book to be returned:NP Bali
please enter the number of days you have borrowed the book:
16
you have exceeded the day limit. you have to pay the fine of Rs.10
per day !!
you fine amount is: Rs. 10
book returned successfully!!
Enter your choice:4
Thank you for visiting KRMU Library.
Exit
[Program finished]


8:40
TAB
----WELCOME TO KRMU LIBRARY----
1. Show available books
2. Book issue
3. Book return
4. Exit KRMU Library
Enter your choice:1
Available books:
['NP Bali', 'Preeti Arora', 'Sumita Arora', 'HK Dass', 'Engg. Physi
cs', 'Computer Fundamentals', 'Web development']
Enter your choice:4
Thank you for visiting KRMU Library.
Exit
[Program finished]

REFLECTION:-

The challenges faced me while doing this assignment is that, it took a lot of time for me to find that how the library management system works i.e. what are the things included in the library management system and the schedule of the library.

I have understood the concept of all the steps of computational thinking in detail while doing this assignment and I improved my flowchart making skills, pseudo-code writing skills and Researching skills.

This project also helped me in recapping the while loop in python and revising topics like append and remove functions in lists , loops and if-else statements.

In a nutshell, I have improved my knowledge, computational thinking skills and python programming skills by the completion of this assignment.

THANK YOU !!