Experiment No. 5

Aim:	To demonstrate the activity diagram to implement the library system.
Objective:	To design & analyze an activity diagram that represents the library system using UML. The activity diagram helps in understanding the flow of processes involved in a library management system, ensuring a structured & efficient workflow.

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Theory:	An activity diagram is a behavioural UML diagram that represents the flow of control or data in a system. It is used to model dynamic aspects of a system, such as business workflows & operational processes. Overview of a library system: A library system manages the activities of a library, including book issuance, returns, user registration & fine collection. It ensures that the book are available to users efficiently while maintaing records of the transactions. Key Activities of library System: i) User registration: A new user registers in system. ii) Book search: A user searches for the book. iii) Book Issue: A user borrows a book if available.

iv) Book return : The user returns a borrowed book.

v) Fine calculation : If a book is returned late, a fine is collected.

vi) Book management : The librarian adds, updates or removes books.

Activity dig. Representation:

Actors involved :

i) Librarian : Manage books, users account & fines.

ii) User (Member) : Searches, borrows & returns book.

iii) Library System : Handles book availability & transac-tions.

Process Flow :

i) The user logs in or registers in the system.

ii) The user searches for a book :

if a book is available, proceed to next step.

if unavaliable, the process terminates.

iii) The user requests to issue the book.

if the user is eligible (no dues) the book is issued.

Otherwise access is denied.

iv) The user returns the book before or on the due date.

v) If the book is returned late, the system calculates fine.

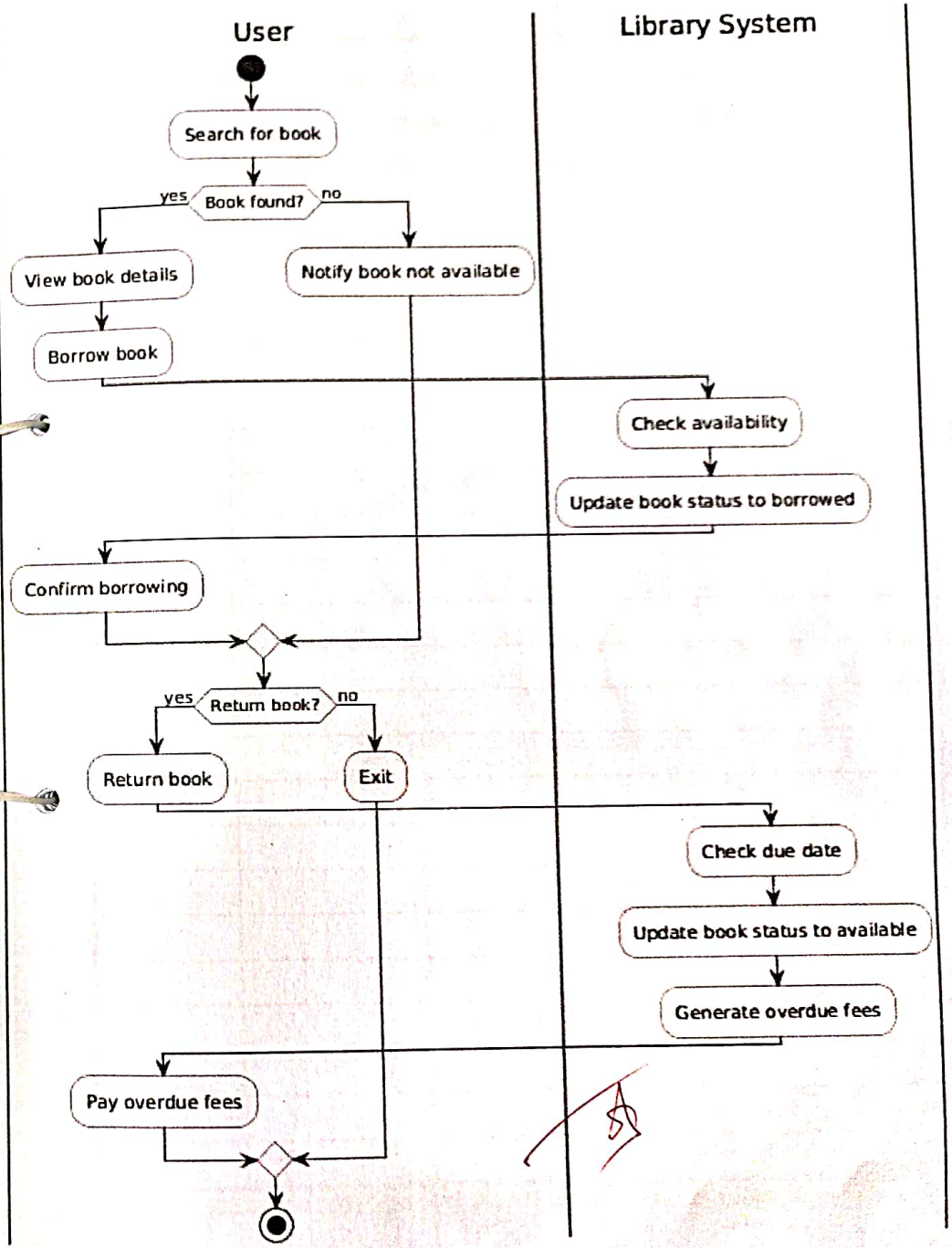
vi) The user pays the fine (if applicable).

vii) The librarian updates the book's status.

Procedure:
i) Identify the key activites involved in the library system.
ii) Define the actors & their roles in system.
iii) Establish the flow of actions & decisions that are involved.
iv) Draw the UML activity diagram using UML tool such as STAR UML, lucid charts or plant UML.
v) Verify the connections & efficiency of diagram.

Diagram Representation:
The activity diagram should include :
i) START Node : Indicates the begining of the process.
ii) Activities : Represents the step (Book search, Book issue, Return Book, Fine calculation)
iii) Decision Nodes : Represents choices (eg: is Book available ? Yes/No, Fine applicable ? Yes/No)
iv) Fork/Join Nodes : Represents ||el processing (eg: Managing multiple books at once)
v) END Node : Indicates the end of process completion.

Conclusion: An activity diagram for the library system was successfully designed, illustrating the sequence of operations & interactions between users & the system.



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