

## Group 5:

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## Exercise 8 – Activity Diagram

### Use Case Chosen: Reserve Book

### Activity Diagram Description

The following activity diagram outlines the process of reserving a book in the system, highlighting user interactions, decision points, and system operations to ensure an efficient reservation experience.

- 1. Search for a Book (User Action):**  
The user begins by searching for a book using the search bar or browsing available categories.
- 2. Select Category or Author (User Action):**  
The user refines their search by selecting a category or author to filter results.
- 3. Display Available Books (System Action):**  
The system retrieves and presents a list of books matching the search criteria.
- 4. Select a Book (User Action):**  
The user selects a book they want to reserve.
- 5. Check Availability (System Action):**  
The system checks whether the selected book is available.
- 6. Availability Decision (System Decision):**
  - If the book is **not available**, the user must select another book.
  - If the book **is available**, the system proceeds to user authentication.
- 7. User Authentication (User Action & System Action):**
  - The user enters their login credentials.
  - The system verifies the user's identity.
- 8. Authentication Decision (System Decision):**
  - If authentication **fails**, the user must re-enter their credentials.
  - If authentication **succeeds**, the system checks the user's reservation count.
- 9. Check Book Reservation Limit (System Action):**
  - If the user has exceeded the maximum reservation limit, they cannot reserve more books.
  - If they are within the allowed limit, the reservation process continues.
- 10. Update Reservation Status (System Action):**  
The system updates the database to reflect that the book has been reserved.

**11. Confirmation Message (System Action):**

The system sends a confirmation message to the user, confirming the successful reservation.

**12. Generate Notification (System Action):**

The system generates a notification and updates the database accordingly.

This activity diagram ensures a clear and structured representation of the book reservation process, incorporating user actions, system validations, and decision points.

