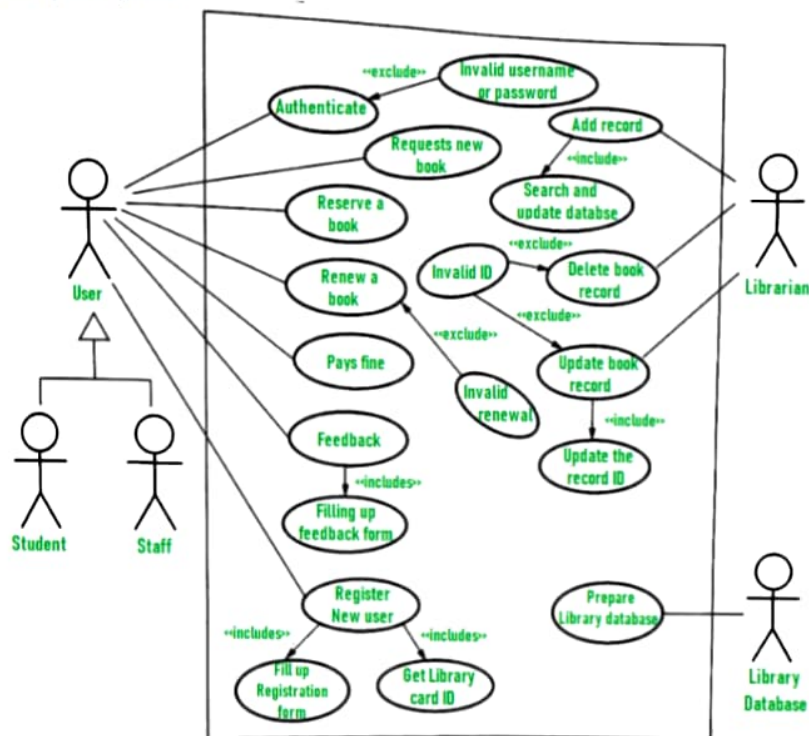


3. Design an UML representation of interactions in an Online Book Shop, emphasizing system components, user roles, transaction processes, and scalability features for future enhancements.

Use Case Diagram:

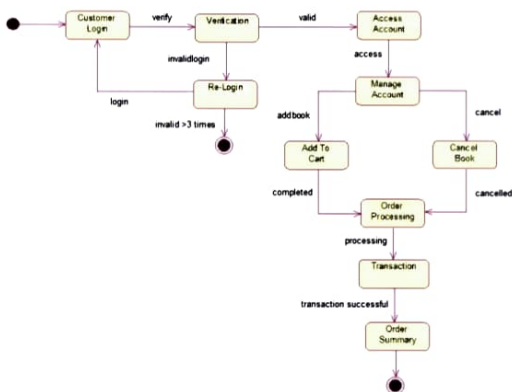
Use case diagrams referred as a behavior model or diagram. It simply describes and displays the relation or interaction between the users or customers and providers of application service or the system. It describes different actions that a system performs in collaboration to achieve something with one or more users of the system. Use case diagram is used a lot nowadays to manage the system.



Here, we will understand the designing use case diagram for the library management system. Some scenarios of the system are as follows:

1. User who registers himself as a new user initially is regarded as staff or student for the library system.
 - For the user to get registered as a new user, registration forms are available that is needed to be fulfilled by the user.

- After registration, a library card is issued to the user by the librarian. On the library card, an ID is assigned to cardholder or user.
2. After getting the library card, a new book is requested by the user as per there requirement.
 3. After, requesting, the desired book or the requested book is reserved by the user that means no other user can request for that book.
 4. Now, the user can renew a book that means the user can get a new due date for the desired book if the user has renewed them.
 5. If the user somehow forgets to return the book before the due date, then the user pays fine. Or if the user forgets to renew the book till the due date, then the book will be overdue and the user pays fine.
 6. User can fill the feedback form available if they want to.
 7. Librarian has a key role in this system. Librarian adds the records in the library database about each student or user every time issuing the book or returning the book, or paying fine.
 8. Librarian also deletes the record of a particular student if the student leaves the college or passed out from the college. If the book no longer exists in the library, then the record of the particular book is also deleted.
 9. Updating database is the important role of Librarian.



An activity diagram is a type of UML (Unified Modeling Language) diagram that visually represents the flow of actions within a system or a process. In the context of an online bookshop, an activity diagram can illustrate the different activities and interactions involved in the process of purchasing a book online. Here's a description of the key elements you might

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include in an activity diagram for an online bookshop:

- **Start/End Point:** The diagram typically starts with a circle to represent the beginning and end of the process.
- **Customer Activities:** The customer initiates the process by browsing the online bookshop.
- Activities include searching for books, viewing book details, and adding books to the shopping cart.
- **Account Management:** If the customer is a registered user, there might be activities related to logging in or creating an account.
- **Shopping Cart:** Once a customer selects a book, it goes into the shopping cart.
- The customer can add or remove items from the cart.
- **Checkout Process:** Activities related to initiating the checkout process.
- This may involve providing shipping information, selecting a payment method, and confirming the order.
- **Payment Processing:** Interaction with payment gateways to handle the financial transaction securely.
- Activities such as entering credit card information or using other payment methods.
- **Order Confirmation:** After successful payment, the customer receives an order confirmation.
- This might involve sending an email or displaying a confirmation message on the website.
- **Inventory Management:** Behind the scenes, there are activities related to managing the book inventory.
- Updating stock levels after a successful purchase.
- **Shipping Process:** If physical books are being shipped, activities related to packaging and dispatching the order.
- Generating shipping labels and tracking information.
- **Customer Support:** Activities related to customer support, such as handling inquiries or addressing issues with orders.
- **Feedback and Reviews:** Optionally, activities related to collecting customer feedback and reviews.
- **End Point:** The process concludes with the delivery of the books and customer satisfaction.
- Activity diagrams provide a high-level overview of the flow of activities without

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detailing the internal workings of each activity. They are useful for understanding the sequential order of actions and the interactions between different elements in a system.