**UML – EXTERNAL**

**Question 1: Object Diagram and State Chart Diagram for Order a Book by Online Management System**

1. **AIM**

To design an Object Diagram and a State Chart Diagram for an online book ordering management system to visualize the structure and behavior of the system during different stages of the book order lifecycle.

1. **DESCRIPTION**

The online book ordering system allows users to browse, select, and order books online. The system manages user accounts, book details, orders, payments, and shipment statuses. The Object Diagram represents a snapshot of the system's objects at a given time, while the State Chart Diagram models the states an order goes through, from initiation to delivery.

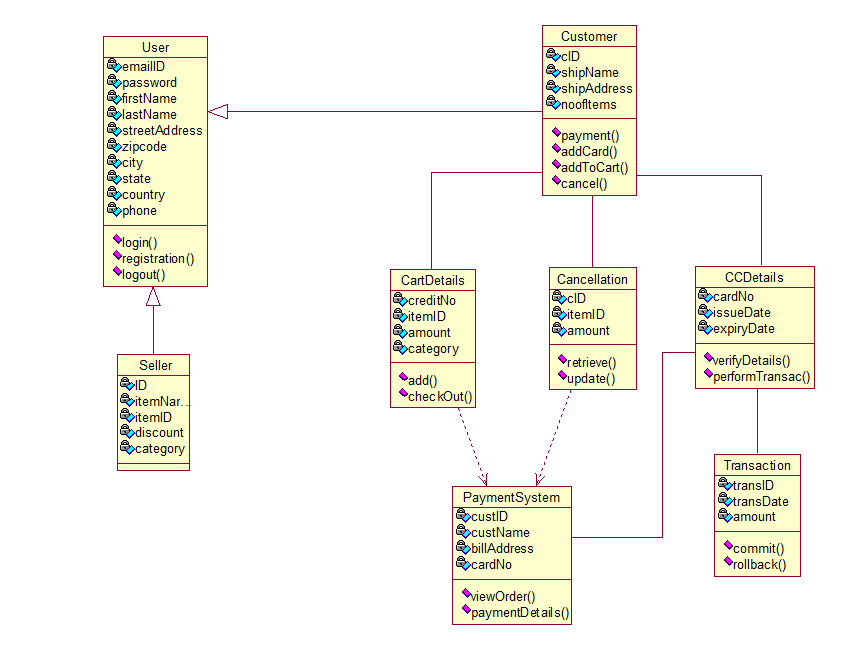
1. **NOTATIONS**
   * Object Diagram Notations: Objects are represented by rectangles with object names and attributes inside. Links between objects represent relationships.
   * State Chart Diagram Notations: States are represented by rounded rectangles, and transitions are shown with arrows. Initial and final states are depicted with filled circles and circled-filled symbols, respectively.
2. **UML DIAGRAM**
   * **Object Diagram** for Order a Book Online Management System:
     + Objects: User, Book, Order, Payment, Shipment
     + Relationships: User places Order, Order contains Book, Order has Payment and Shipment associated
   * **State Chart Diagram** for Order Lifecycle:
     + States: New, Confirmed, Paid, Shipped, Delivered, Canceled
     + Transitions: Payment processing, shipment initiation, delivery, cancellation
3. **OUTCOMES OR OBSERVATIONS**

The Object Diagram provides a clear view of the system's objects and their relationships during the book ordering process.  
The State Chart Diagram effectively captures the different states and transitions of an order, illustrating how it progresses from creation to completion or cancellation.

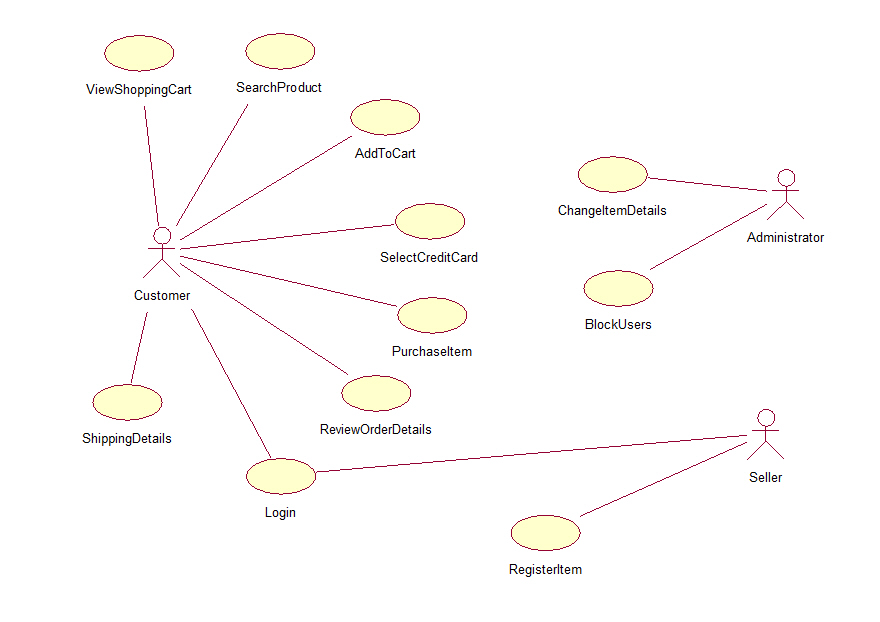
1. **CONCLUSION**

This exercise demonstrates the structure and behavior of the online book ordering system using UML. The Object Diagram illustrates relationships among objects, while the State Chart Diagram outlines the lifecycle of an order, providing insights into the system's dynamic behavior.

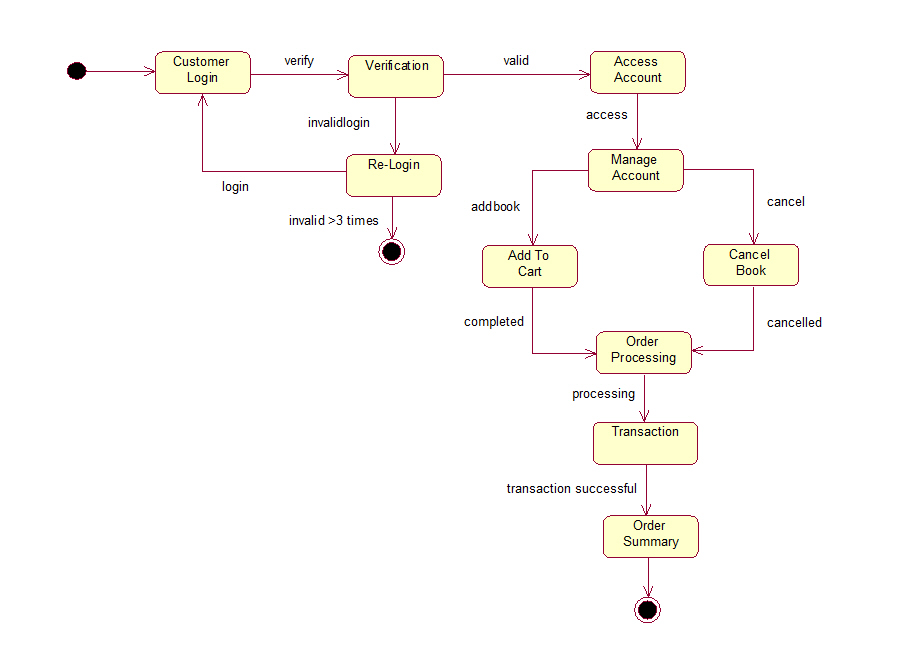
# Class Diagram



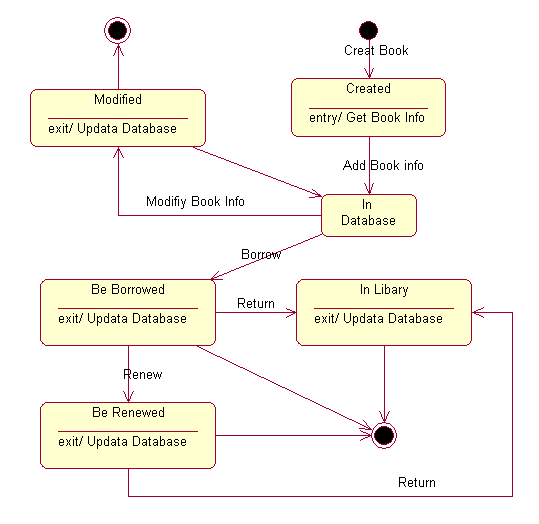
# Use Case Diagram



Statechart Diagram

[](http://www.startertutorials.com/uml/wp-content/uploads/2013/11/OBS-Statechart-Diagram.jpg)

Object Diagram:



**Question 2: Use Case and Activity Diagram for ATM Application**

1. **AIM**

To design a Use Case Diagram and an Activity Diagram for an ATM application, illustrating the interactions between users and the system, as well as the steps involved in ATM transactions.

1. **DESCRIPTION**

An ATM application allows users to perform transactions such as checking balances, withdrawing cash, and depositing funds. The Use Case Diagram depicts the various functionalities accessible to the user, while the Activity Diagram illustrates the flow of a typical transaction (e.g., cash withdrawal).

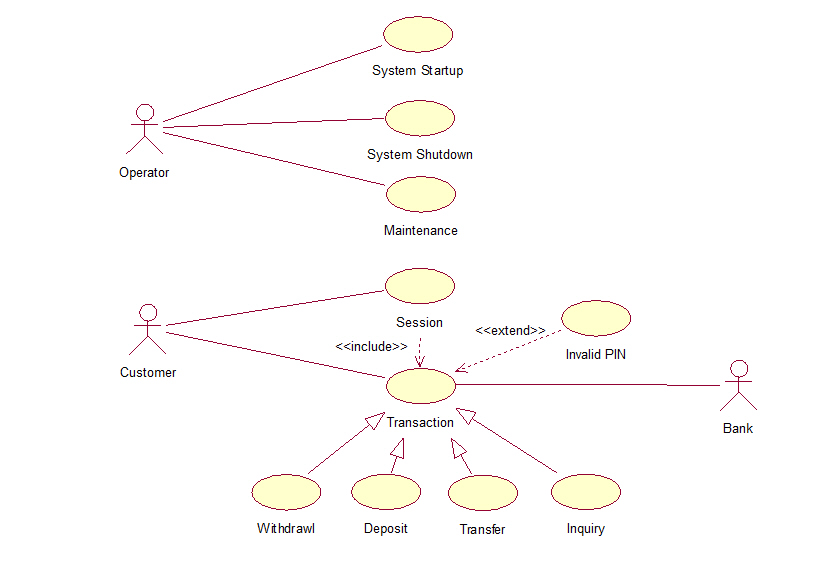
1. **NOTATIONS**
   * Use Case Diagram Notations: Use cases are represented as ovals, actors as stick figures, and associations as lines connecting actors to use cases.
   * Activity Diagram Notations: Actions are represented by rectangles, and transitions are depicted as arrows. Initial and final states are marked by filled circles and circled-filled symbols, respectively.
2. **UML DIAGRAM**
   * **Use Case Diagram** for ATM Application:
     + Actors: Customer, Bank System
     + Use Cases: Check Balance, Withdraw Cash, Deposit Cash, Transfer Funds, Change PIN, View Mini Statement
   * **Activity Diagram** for Withdraw Cash Use Case:
     + Steps: Insert Card, Authenticate User, Select Withdraw Option, Enter Amount, Check Balance, Dispense Cash, Print Receipt, End Session
3. **OUTCOMES OR OBSERVATIONS**

The Use Case Diagram provides a high-level overview of ATM functionalities and user interactions.  
The Activity Diagram breaks down the sequence of steps for a cash withdrawal, clarifying the flow of actions within the system.

1. **CONCLUSION**

This design exercise provides an overview of an ATM application's functionalities and internal processes. The Use Case Diagram captures user interactions, while the Activity Diagram illustrates the transaction flow, helping in understanding the ATM application's workings.

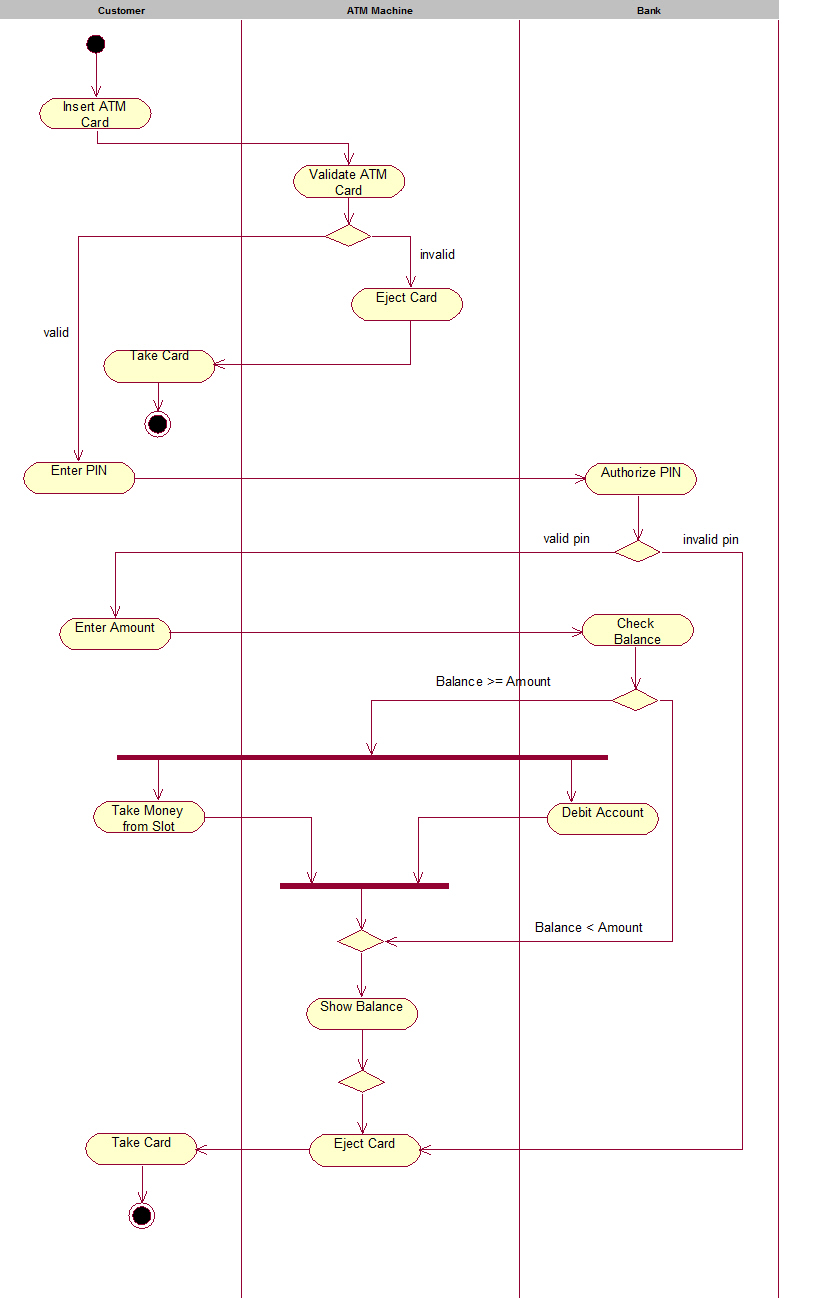
# Use case diagram

[](http://www.startertutorials.com/uml/wp-content/uploads/2013/10/ATM-usecase-diagram.jpg)

# Class diagram

# [ATM class diagram](http://www.startertutorials.com/uml/wp-content/uploads/2013/10/ATM-class-diagram.jpg)

# Activity diagram

[](http://www.startertutorials.com/uml/wp-content/uploads/2013/10/ATM-activity-diagram.jpg)

**Question 3: Complete UML Model for Stock Maintenance System**

1. **AIM**

To create a complete UML model for a stock maintenance system, covering the system’s structure, interactions, and workflow. The model includes Class Diagram, Sequence Diagram, and Activity Diagram, as these offer a comprehensive view of the system.

1. **DESCRIPTION**

The stock maintenance system manages stock information for items, including tracking inventory levels, updating stock, generating reports, and notifying when stock falls below minimum levels. This system is essential for businesses to monitor and maintain adequate stock levels, ensuring timely replenishment.

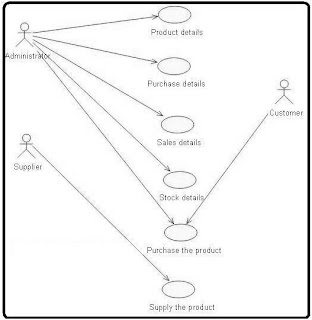
1. **NOTATIONS**
   * Class Diagram Notations: Classes are represented by rectangles with compartments for the class name, attributes, and methods. Associations between classes are shown by lines with multiplicity indicators.
   * Sequence Diagram Notations: Objects are represented as rectangles at the top, with lifelines extending downwards. Messages are arrows between lifelines indicating the interaction sequence.
   * Activity Diagram Notations: Actions are shown as rectangles, with transitions represented by arrows connecting actions. Initial and final states are marked by filled circles and circled-filled symbols, respectively.
2. **UML DIAGRAM**
   * **Class Diagram** for Stock Maintenance System:
     + Classes: StockItem, Inventory, Supplier, Order, StockReport
     + Relationships: Inventory has multiple StockItems; Supplier supplies StockItems; Order includes StockItems; StockReport generates information on StockItems.
   * **Sequence Diagram** for Stock Update Process:
     + Flow: The Inventory checks stock levels, requests new stock from the Supplier if necessary, updates the stock item quantity, and confirms the update.
   * **Activity Diagram** for Order Processing:
     + Steps: Receive Order, Check Inventory, Place Order, Update Inventory, Generate Report
3. **OUTCOMES OR OBSERVATIONS**

The Class Diagram provides a structural overview, showing how different entities like StockItem, Supplier, and Inventory relate to each other.  
The Sequence Diagram offers insight into the stock update process, capturing interactions among components.  
The Activity Diagram presents the workflow of order processing, detailing each step from receiving an order to generating a report.

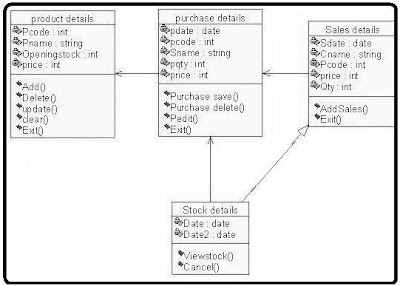
1. **CONCLUSION**

This complete UML model gives a comprehensive view of the stock maintenance system. The Class Diagram defines the system’s structural components, the Sequence Diagram visualizes stock update interactions, and the Activity Diagram highlights order processing steps, making it easier to understand the overall system functionality.

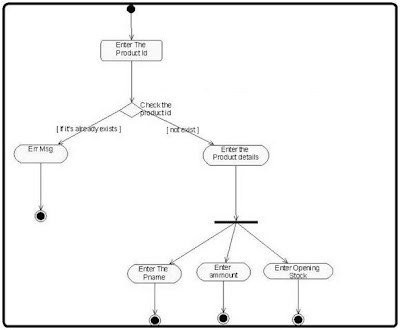
# USE Case Diagram Stock Maintenance :-

[](https://blogger.googleusercontent.com/img/b/R29vZ2xl/AVvXsEgEbnGM8EVajVEX_7H3o_e6MkcZZJyF67mgnXAr0TO3ioYYILqTg4RSCCVF3zvVEsmTY7ab-yGx2HOxebTekYknC1sKzkzxWUi_h54zv4O4pB-6lHSNIuMhw-_KXgdpQmiRDVRd1JOgRJk/s1600/use+case+diagram+stock+maintainence.JPG)

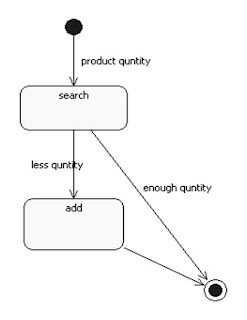
# Class Diagram :-

[](https://blogger.googleusercontent.com/img/b/R29vZ2xl/AVvXsEiPGsbOhuQSHpLueWJqN3uQcMa5jx0AIawxefzMrdUa9QaDfsF-buJVfpuZygVlSdjXP0nn9bRmqDEf5_UiWCbMUmyQLIh9zksZkHUxXN4uIQYOHDXSUGRFjaBI665SMN7JyfgmR7KooIE/s1600/class+diagram+stock+maintainence.JPG)

# **Activity Diagram Stock Maintenance :-**

[](https://blogger.googleusercontent.com/img/b/R29vZ2xl/AVvXsEjaQAhRwlavlWgqYKUZOecHhr76LNbYC9yF2kz9mVy0VMHO3Iuw9TNXoybIgoezOfIhTxKHoxxgUDgznb33fDJGMG9xLlJrRHpmx1DFG0mspJMBzLrogSwcT7CCoIuaZKeepaJvQ4brq5c/s1600/activity+Diagram+Stock+Maintainence.JPG)

# State Chart Diagram Stock Maintenance :-

[](https://blogger.googleusercontent.com/img/b/R29vZ2xl/AVvXsEhl1i0yZRYLM4d5SGKpqXM_a3-n88ByzmPF1R4GsRRyNFHNcfgaf0ys7oackUyZmVlwX6wvDNC0dyxBkhOILgPzcRCEHMzhqnSW31IlyB47ddybjRDCMxmqcLZldUtFUtoqJfV3RD0zBUw/s1600/state+diagram+for+stock+maintainence.JPG)

**Question 4: Use Case and Component Diagram for Online Shopping System**

1. **AIM**

To develop a Use Case and Component Diagram for an online shopping system that provides a user-friendly interface for purchasing products online.

1. **DESCRIPTION**

The online shopping system allows customers to browse products, add them to a cart, and make purchases. It also manages user accounts, inventory, orders, and payments. The Use Case Diagram highlights customer interactions, while the Component Diagram presents the system's software components and their interactions.

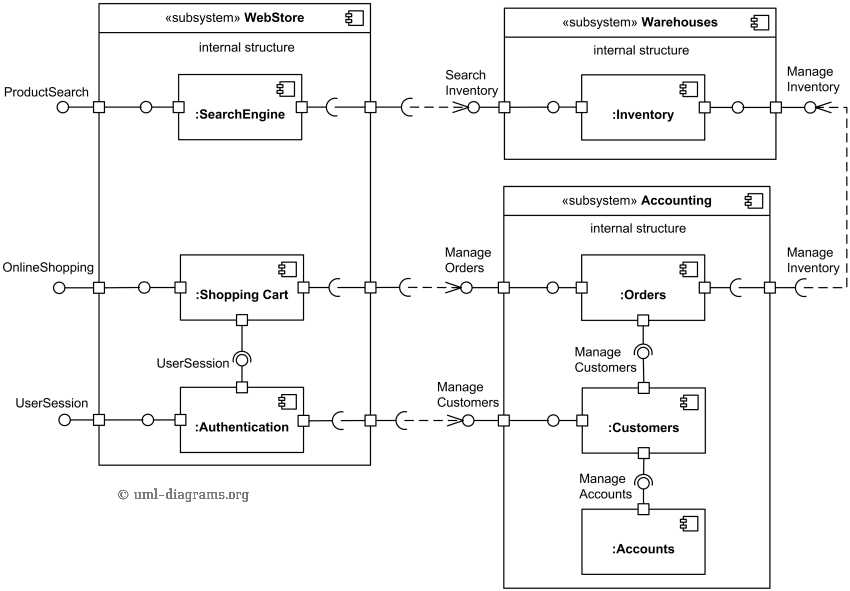
1. **NOTATIONS**
   * Use Case Diagram Notations: Actors are represented as stick figures, use cases as ovals, and associations as lines connecting actors to use cases.
   * Component Diagram Notations: Components are shown as rectangles with compartments, interfaces as lollipop symbols, and dependencies as arrows.
2. **UML DIAGRAM**
   * **Use Case Diagram** for Online Shopping System:
     + Actors: Customer, Admin, Payment Gateway
     + Use Cases: Browse Products, Add to Cart, Make Payment, View Order Status, Manage Inventory, Update Product Info
   * **Component Diagram** for Online Shopping System:
     + Components: User Interface, Product Catalog, Shopping Cart, Order Management, Payment Processor, Inventory Manager, Database
3. **OUTCOMES OR OBSERVATIONS**

The Use Case Diagram clearly shows the main functionalities available to customers and admins.  
The Component Diagram illustrates the architecture and interactions between various components in the online shopping system.

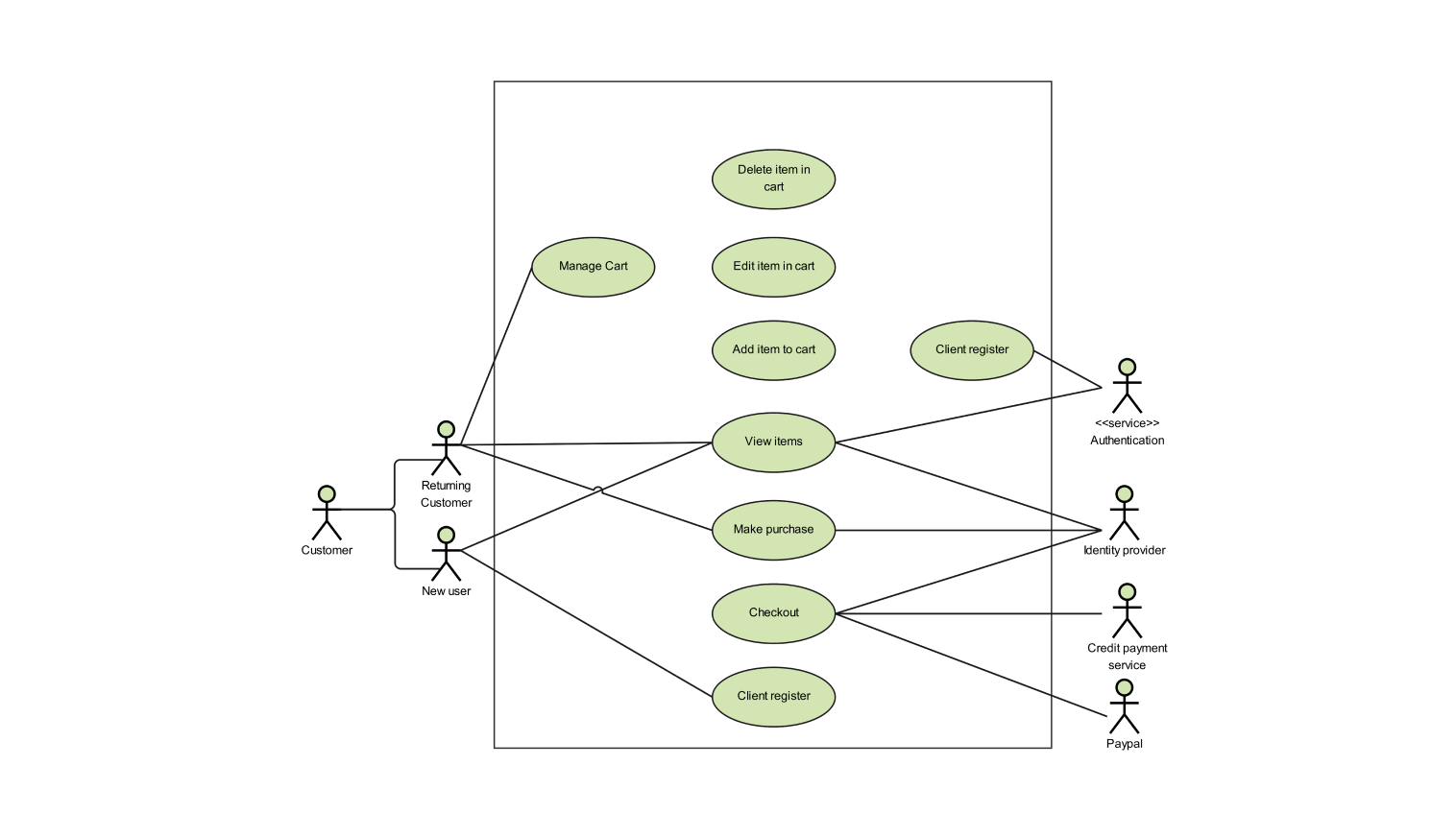
1. **CONCLUSION**

This exercise provides a structural and functional view of the online shopping system. The Use Case Diagram shows interactions, and the Component Diagram helps visualize the system's software components.

# Online shopping UML component diagram



# Use case diagram:



**Question 5: Use Case and Class Diagram for Railway Reservation System**

1. **AIM**

To design a Use Case and Class Diagram for a railway reservation system, showing the functionalities provided and the structure of core classes.

1. **DESCRIPTION**

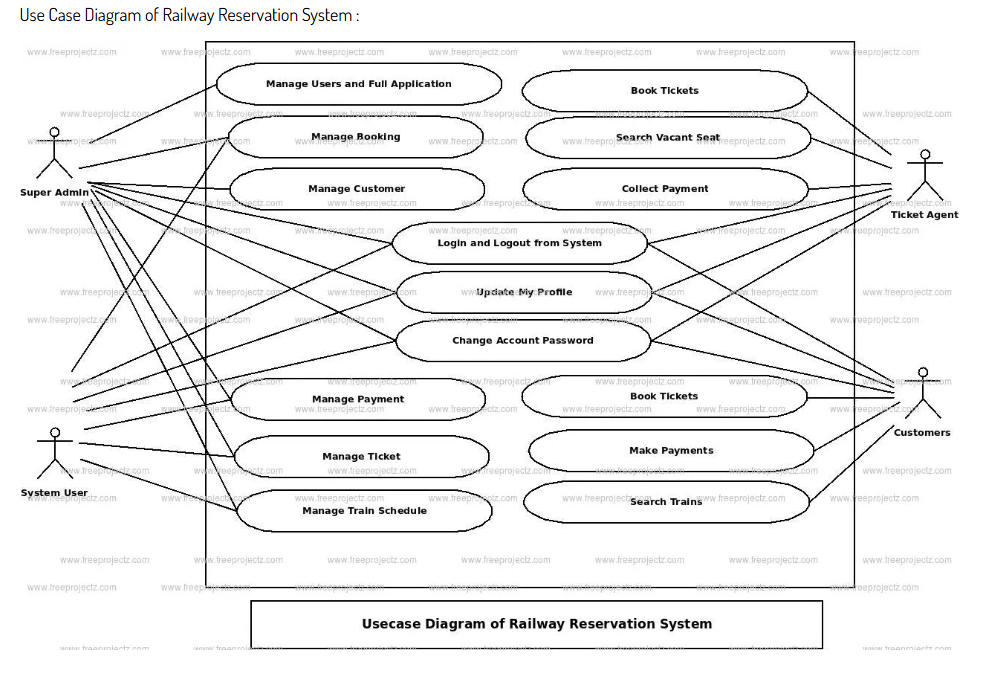
The railway reservation system enables users to search for trains, book tickets, and manage reservations. The Use Case Diagram shows customer interactions, while the Class Diagram represents the relationships between entities like trains, tickets, and users.

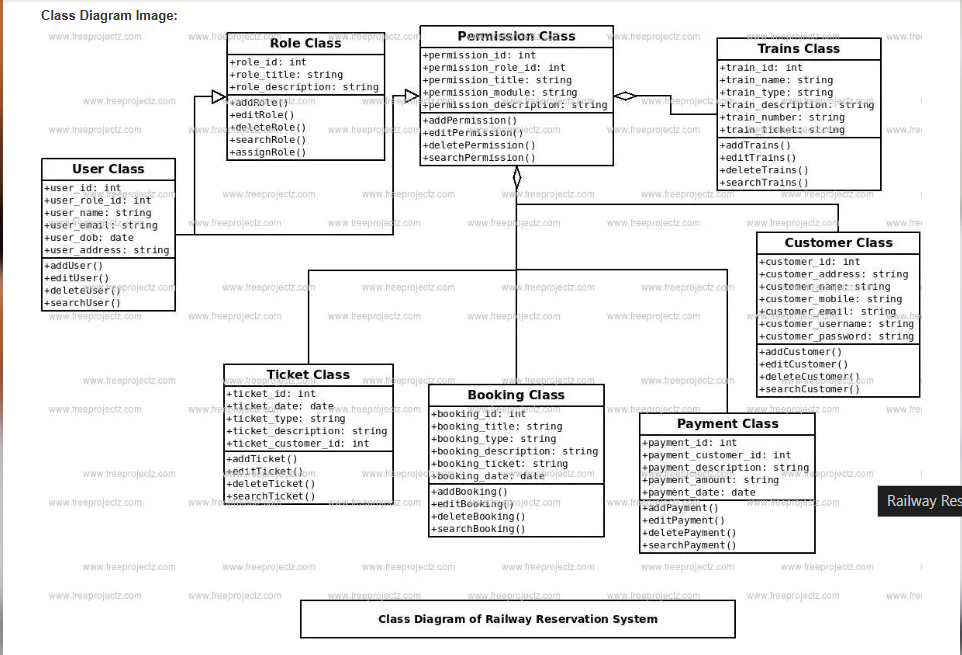
1. **NOTATIONS**
   * Use Case Diagram Notations: Actors, use cases, and associations.
   * Class Diagram Notations: Classes with attributes and methods, associations, multiplicities.
2. **UML DIAGRAM**
   * **Use Case Diagram** for Railway Reservation System:
     + Actors: Passenger, Admin
     + Use Cases: Search Train, Book Ticket, Cancel Ticket, Check Availability, Update Schedule
   * **Class Diagram** for Railway Reservation System:
     + Classes: Train, Ticket, Reservation, Passenger, Admin
     + Relationships: Train has Tickets, Passenger has Reservations
3. **OUTCOMES OR OBSERVATIONS**

The Use Case Diagram captures essential functions for both passengers and administrators.  
The Class Diagram provides a structural overview of the core entities involved in the reservation process.

1. **CONCLUSION**

This UML model represents the functionalities and structure of the railway reservation system, showing both user interactions and relationships between entities.





**Question 6: Complete UML Model for E-Mail Client System**

1. **AIM**

To create a complete UML model for an email client system, covering the core components and interactions.

1. **DESCRIPTION**

The email client system allows users to send, receive, and organize emails. The model includes a Class Diagram, Sequence Diagram, and Activity Diagram to offer

**You said:**

Continue from question 6

**ChatGPT said:**

ChatGPT

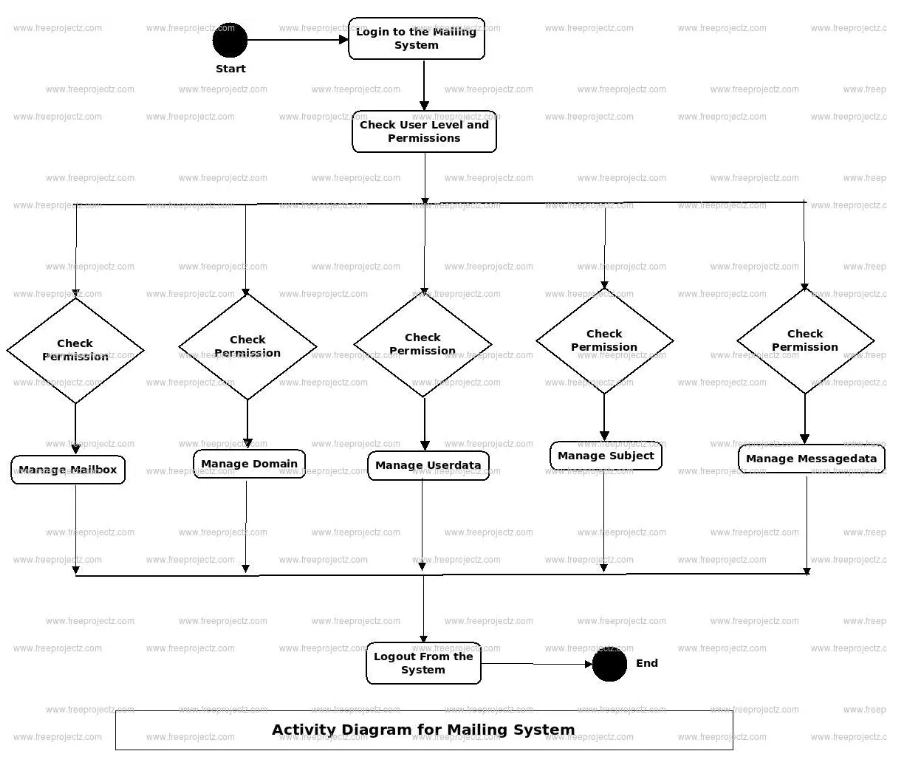
**Question 6: Complete UML Model for E-Mail Client System (continued)**

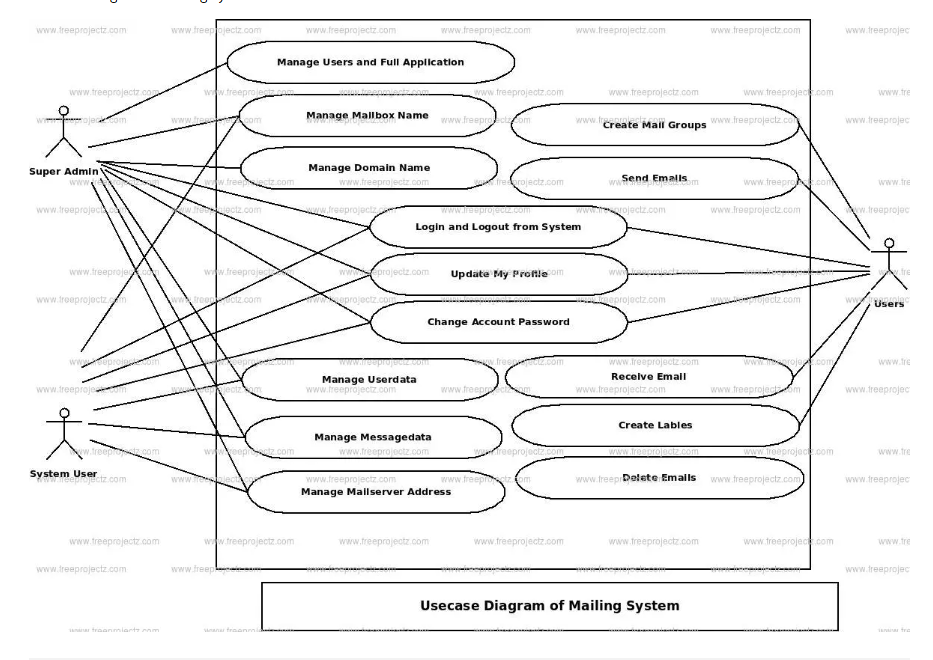
1. **NOTATIONS**
   * Class Diagram Notations: Classes with attributes and methods, associations, multiplicities.
   * Sequence Diagram Notations: Lifelines representing objects and messages representing interactions.
   * Activity Diagram Notations: Actions shown as rectangles, transitions as arrows, with initial and final states marked.
2. **UML DIAGRAM**
   * **Class Diagram** for E-Mail Client System:
     + Classes: User, Email, Inbox, Outbox, MailServer
     + Relationships: User has an Inbox and Outbox, Emails are sent to the MailServer for processing.
   * **Sequence Diagram** for Sending Email:
     + Flow: User composes an email, sends it to the MailServer, and the email is then transferred to the recipient’s Inbox.
   * **Activity Diagram** for Composing Email:
     + Steps: Open Email Client, Compose Message, Add Recipients, Send Email, Save to Sent Items
3. **OUTCOMES OR OBSERVATIONS**

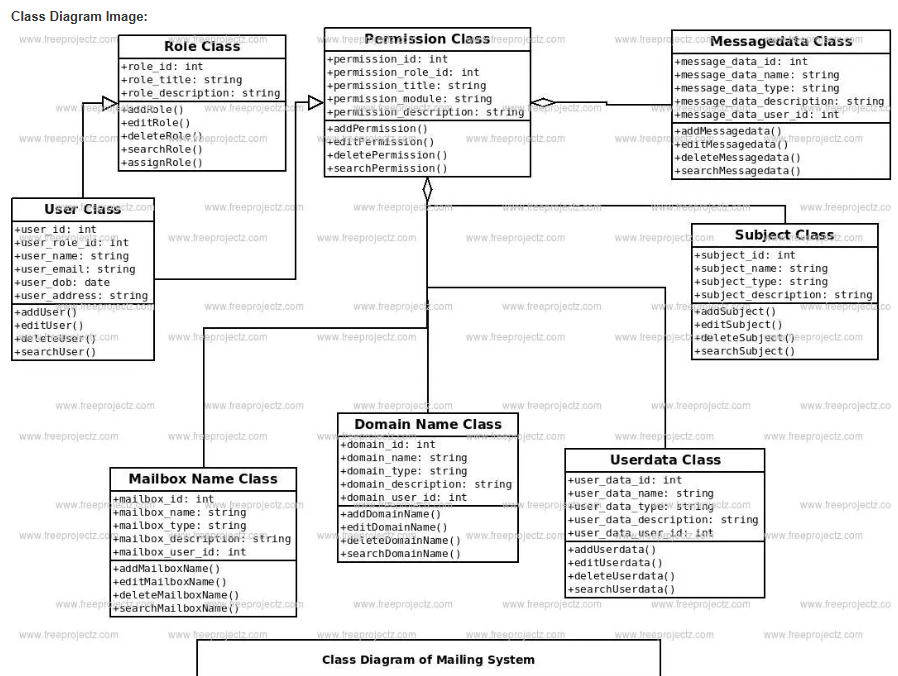
The Class Diagram provides a structural view of the email client, detailing core entities like User, Email, Inbox, Outbox, and MailServer.  
The Sequence Diagram shows the interaction flow when a user sends an email, detailing steps such as composing the email, connecting to the mail server, and transferring the email.  
The Activity Diagram illustrates the workflow of composing and sending an email, from drafting the email to confirming it has been sent.

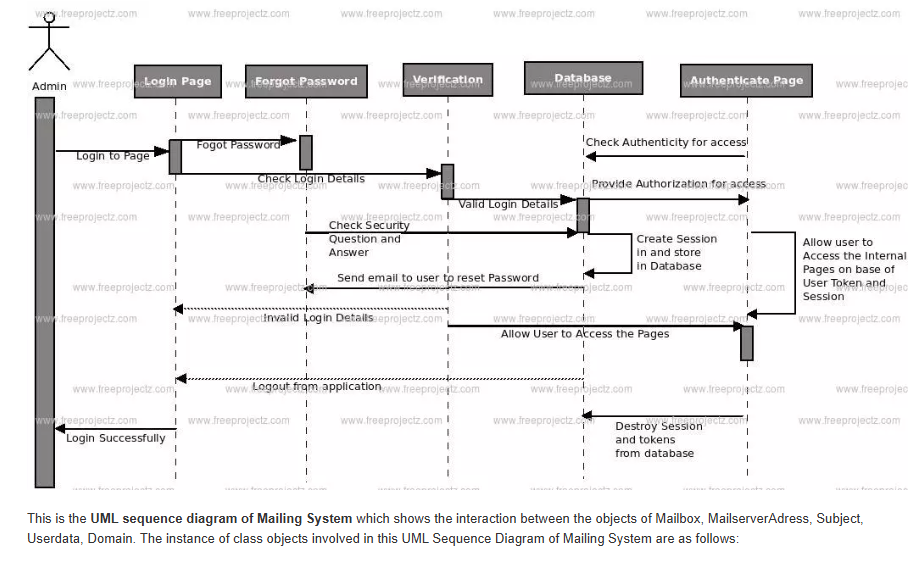
1. **CONCLUSION**

This comprehensive UML model for an email client system provides insights into the structural, interactional, and workflow aspects of the system. By analyzing the Class Diagram, Sequence Diagram, and Activity Diagram, we gain a clear understanding of the components involved in an email client and the steps taken during the email-sending process.









**Question 7: Use Case and Collaboration Diagram for Job Recruitment System**

1. **AIM**

To design a Use Case and Collaboration Diagram for a job recruitment system, focusing on user interactions and the collaboration among system components.

1. **DESCRIPTION**

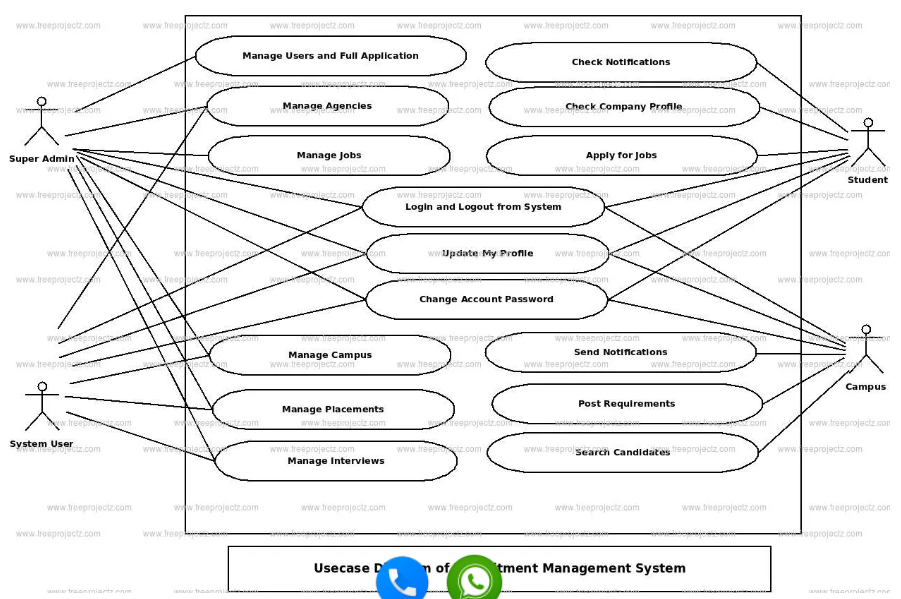
The job recruitment system enables job seekers to search for job listings, apply for jobs, and track application statuses. Employers can post jobs and review applicants. The Use Case Diagram outlines user roles and interactions, while the Collaboration Diagram shows the relationships and message flows between objects during job application processing.

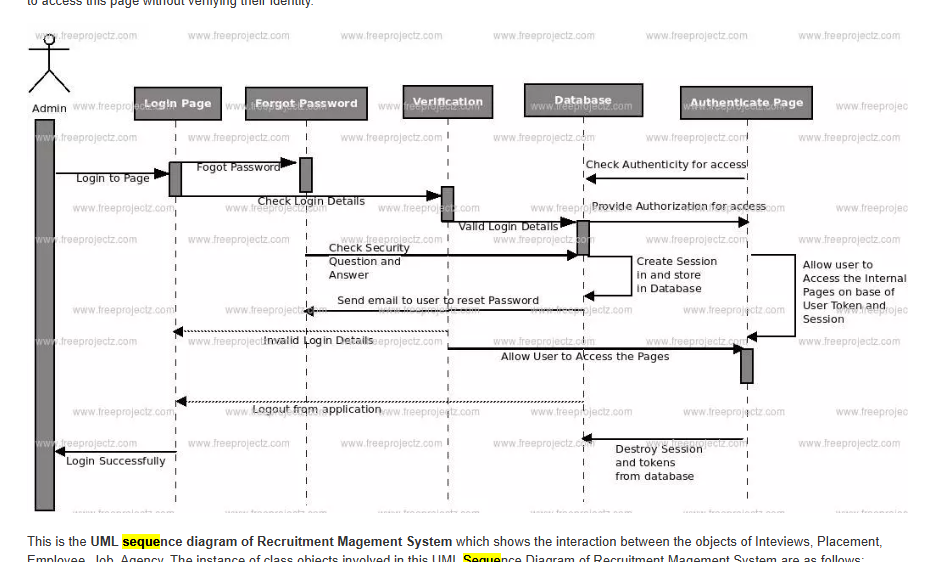
1. **NOTATIONS**
   * Use Case Diagram Notations: Actors, use cases, associations.
   * Collaboration Diagram Notations: Objects represented by rectangles, messages shown as numbered arrows.
2. **UML DIAGRAM**
   * **Use Case Diagram** for Job Recruitment System:
     + Actors: Job Seeker, Employer, Admin
     + Use Cases: Search Job, Apply for Job, Post Job, Review Applicants, Track Application
   * **Collaboration Diagram** for Job Application Processing:
     + Objects: Job Seeker, Job Listing, Application, Employer
     + Messages: Sequence of actions in applying for a job.
3. **OUTCOMES OR OBSERVATIONS**

The Use Case Diagram provides a functional overview, showing how job seekers, employers, and admins interact with the system.  
The Collaboration Diagram illustrates the process flow during a job application, capturing the sequence of interactions between job seekers and employers.

1. **CONCLUSION**

This UML model provides a structured view of the job recruitment system, showcasing both the functionalities and inter-object communications. The Use Case Diagram highlights primary user actions, while the Collaboration Diagram offers a detailed view of the job application process.





**Question 8: Use Case and Sequence Diagram for Library Management System**

1. **AIM**

To create a Use Case and Sequence Diagram for a library management system, focusing on user interactions and the sequence of events for book borrowing.

1. **DESCRIPTION**

The library management system allows users to browse the catalog, borrow books, and return books. The Use Case Diagram shows library functionalities, while the Sequence Diagram details the steps in borrowing a book.

1. **NOTATIONS**
   * Use Case Diagram Notations: Actors, use cases, associations.
   * Sequence Diagram Notations: Objects, lifelines, messages.
2. **UML DIAGRAM**
   * **Use Case Diagram** for Library Management System:
     + Actors: Member, Librarian
     + Use Cases: Browse Catalog, Borrow Book, Return Book, Manage Inventory
   * **Sequence Diagram** for Borrow Book Use Case:
     + Flow: Member searches for a book, requests borrowing, and librarian confirms availability.
3. **OUTCOMES OR OBSERVATIONS**

The Use Case Diagram covers core library functionalities for both members and librarians.  
The Sequence Diagram provides a clear sequence of steps involved in the book-borrowing process.

1. **CONCLUSION**

This model demonstrates the library management system’s functions and processes. The Use Case Diagram identifies key user actions, and the Sequence Diagram describes the book-borrowing workflow.

# https://www.startertutorials.com/uml/uml-diagrams-library-management-system.html

**Question 9: Use Case and Deployment Diagram for Online Exam Registration System**

1. **AIM**

To design a Use Case and Deployment Diagram for an online exam registration system, highlighting functionalities and system deployment.

1. **DESCRIPTION**

The online exam registration system enables students to register for exams, check schedules, and view results. The Use Case Diagram shows interactions, while the Deployment Diagram displays the system’s physical deployment.

1. **NOTATIONS**
   * Use Case Diagram Notations: Actors, use cases, associations.
   * Deployment Diagram Notations: Nodes represent hardware, and dependencies are shown as connections.
2. **UML DIAGRAM**
   * **Use Case Diagram** for Online Exam Registration System:
     + Actors: Student, Admin
     + Use Cases: Register Exam, View Schedule, View Results, Manage Registrations
   * **Deployment Diagram** for Online Exam Registration System:
     + Nodes: Web Server, Application Server, Database Server, Client Device
3. **OUTCOMES OR OBSERVATIONS**

The Use Case Diagram outlines functionalities accessible to students and administrators.  
The Deployment Diagram provides an overview of the physical setup, showing how different servers and client devices interact.

1. **CONCLUSION**

This model provides both functional and deployment perspectives of the exam registration system, helping understand both user interactions and system architecture.

# https://creately.com/diagram/example/jlm5lpm01/online-examination-system-classic

**Question 10: Use Case and Object Diagram for Online Shopping System**

1. **AIM**

To develop a Use Case and Object Diagram for an online shopping system, focusing on user functionalities and object interactions.

1. **DESCRIPTION**

The online shopping system allows customers to browse, add items to the cart, and complete purchases. The Use Case Diagram shows user functionalities, while the Object Diagram represents the relationships between objects like Customer, Order, and Product.

1. **NOTATIONS**
   * Use Case Diagram Notations: Actors, use cases, associations.
   * Object Diagram Notations: Objects with attributes and links between them.
2. **UML DIAGRAM**
   * **Use Case Diagram** for Online Shopping System:
     + Actors: Customer, Payment Gateway
     + Use Cases: Browse Products, Add to Cart, Make Payment, Track Order
   * **Object Diagram** for Online Shopping System:
     + Objects: Customer, Cart, Product, Order, Payment
     + Relationships: Customer has Cart, Cart contains Products, Order includes Cart, and Order has an associated Payment.
3. **OUTCOMES OR OBSERVATIONS**

The Use Case Diagram illustrates the essential features available to customers, such as browsing products, adding to cart, making payments, and tracking orders.  
The Object Diagram shows the relationships between key objects in the online shopping process, helping to visualize how entities like Customer, Cart, Product, Order, and Payment interact within the system.

1. **CONCLUSION**

This model provides a detailed view of the functionalities and structure of an online shopping system. The Use Case Diagram outlines customer interactions, while the Object Diagram depicts relationships between key objects, offering a clear perspective of the system's organization and flow.

# https://www.scribd.com/document/235682525/Online-Shopping-Uml-Examples