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CS6304 – SOFTWARE ENGINEERING

ASSIGNMENT

E - COMMERCE

- CLASS DIAGRAM
- SYSTEM SEQUENCE DIAGRAM
- ACTIVITY DIAGRAM
- STATE MACHINE DIAGRAM
- PACKAGE DIAGRAM
- DEPLOYMENT DIAGRAM
- COMPONENT DIAGRAM

CLASS DIAGRAM

OVERVIEW:

This system has progressed to the next stage in modelling journey. Here, I have made a visual representation of conceptual classes or real situation objects which are in this problem domain. I have tried to extract concepts from the domain and find relations between them. I have made an attempt to maintain LRG (Lower Representational Gap) by having the internal structure of the software to closely relate and reflect the actual structure of the domain that the software is designed to fit.

CASE STUDY:

- E - Commerce

FINDING CLASSES:

Order	Product	Cart	Payment	User	Admin	Address
Mode of payment	Customer	Manager	transaction	Profile	Delivery	
Order status	Inventory	Refund	Feedback	Issues or Queries	Stock_Supplier	

REFINING CLASSES:

GOOD CLASSES:

Order	Product	Cart	Payment	User
Delivery	Customer	Manager	Admin	Profile
Stock_Supplier	Inventory	Refund	Feedback	Issues or Queries

ATTRIBUTES:

- Address
- Transaction
- Order Status
- Mode of Payment

DATA DICTIONARY:

- **Order**
  - Here the details of orders like order_id, order status, etc. can be seen.
- **Product**
  - Here the information about products like product_id, name, price, stock available etc. are displayed.
- **Cart**
  - Here the products selected by the customers can be seen.
- **Payment**
  - Payment can be made for the order placed. Transaction status is given to the customer.
- **User**
  - One who uses the software.
- **Customer**
  - One who places orders.
- **Admin**
  - One who manages the database.
- **Manager**
  - One who maintains inventory.
- **Profile**
  - Here profile details such as id, name, phone number, etc. can be updated.
- **Delivery**
  - Here delivery details like delivery_id, address, status, etc. can be seen.
- **Inventory**
  - Here the stock details can be seen.
- **Refund**
  - Here the customer can request for refund.
- **Feedback**
  - Here the customer can give feedback.
- **Issues or Queries**

- Here the customer can raise issues.

- **Stock Supplier**
  - Here the manager can request stock from the stock supplier when the stock is low.

ATTRIBUTES AND OPERATIONS IN CLASSES:

CLASS	ATTRIBUTES	OPERATIONS
Order	• Order_ID • Product_Deatils • Total_Items • Status	• addOrder() • editOrder() • deleteOrder()
Product	• Product_ID • Name • Stock_Available • Vendor • Price	• getProduct() • setProduct() • searchProduct()
Cart	• Product_Details • Total_Items	• addToCart() • editCart() • deleteCart()
Payment	• Order_Details • Transaction_Details • Mode • Total_Cost • Transaction_Status	• makePayment() • getTransactionDetails() • getStatus()
User	• Username • Password	• getUsername() • getPassword()
Customer	• Profile	• registerCustomer()
Admin	• Profile	• registerAdmin()
Manager	• Profile	• registerManager()

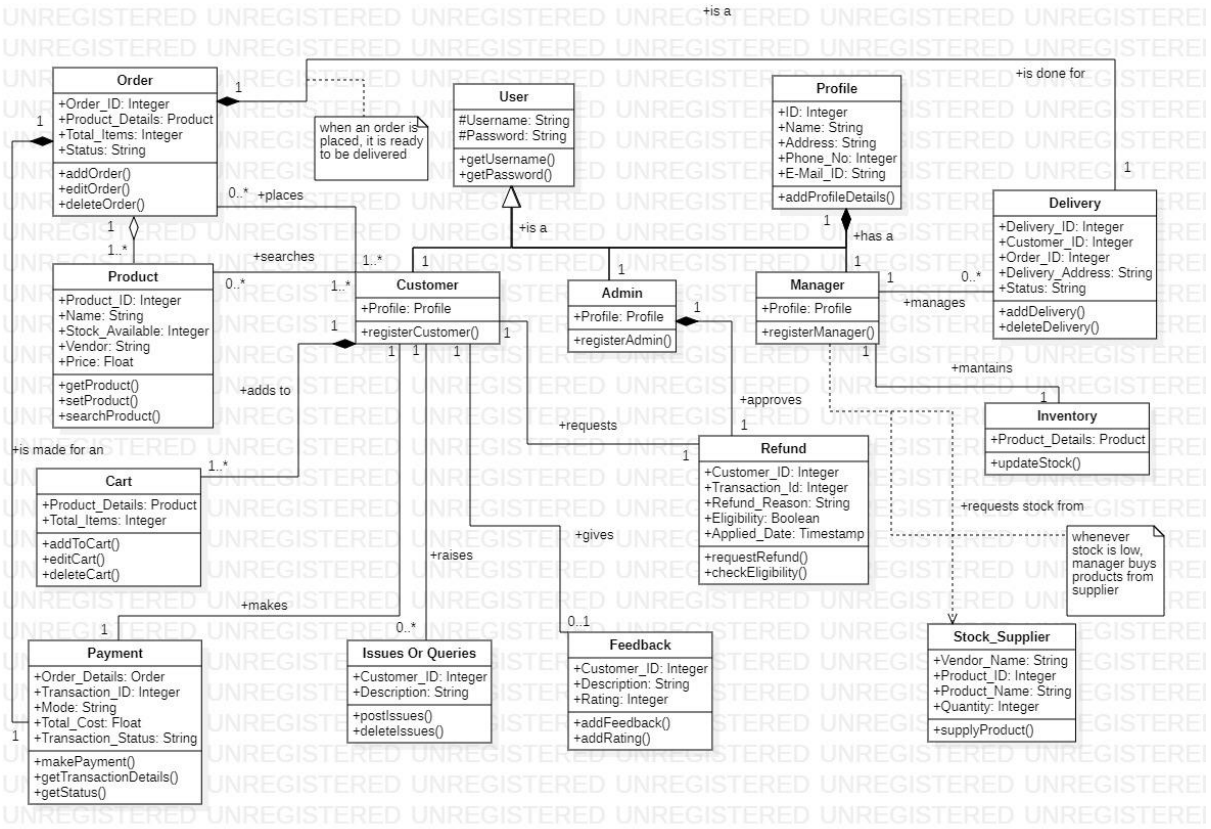
Delivery	• Delivery_ID • Customer_ID • Order_ID • Delivery_Address • Status	• addDelivery() • deleteDelivery()
Inventory	• Product_Details	• updateStock()
Refund	• Customer_ID • Transaction_ID • Refund_Reason • Eligibility • Applied_Date	• requestRefund() • checkEligibilty()
Stock_Supplier	• Vendor_Name • Product_ID • Product_Name • Quantity	• supplyProduct()
Feedback	• Customer_ID • Description • Rating	• addFeedback() • addRating()
Issues or Queries	• Customer_ID • Description	• postIssues() • deleteIssues()

ASSOCIATION AND MULTIPLICITY:

CLASS A	ASSOCIATION	CLASS B	MULTIPLICITY
Customer	Is A (Generalisation)	User	-
Admin	Is A (Generalisation)	User	-
Manager	Is A (Generalisation)	User	-
Customer	Has A (Composition)	User	1-1

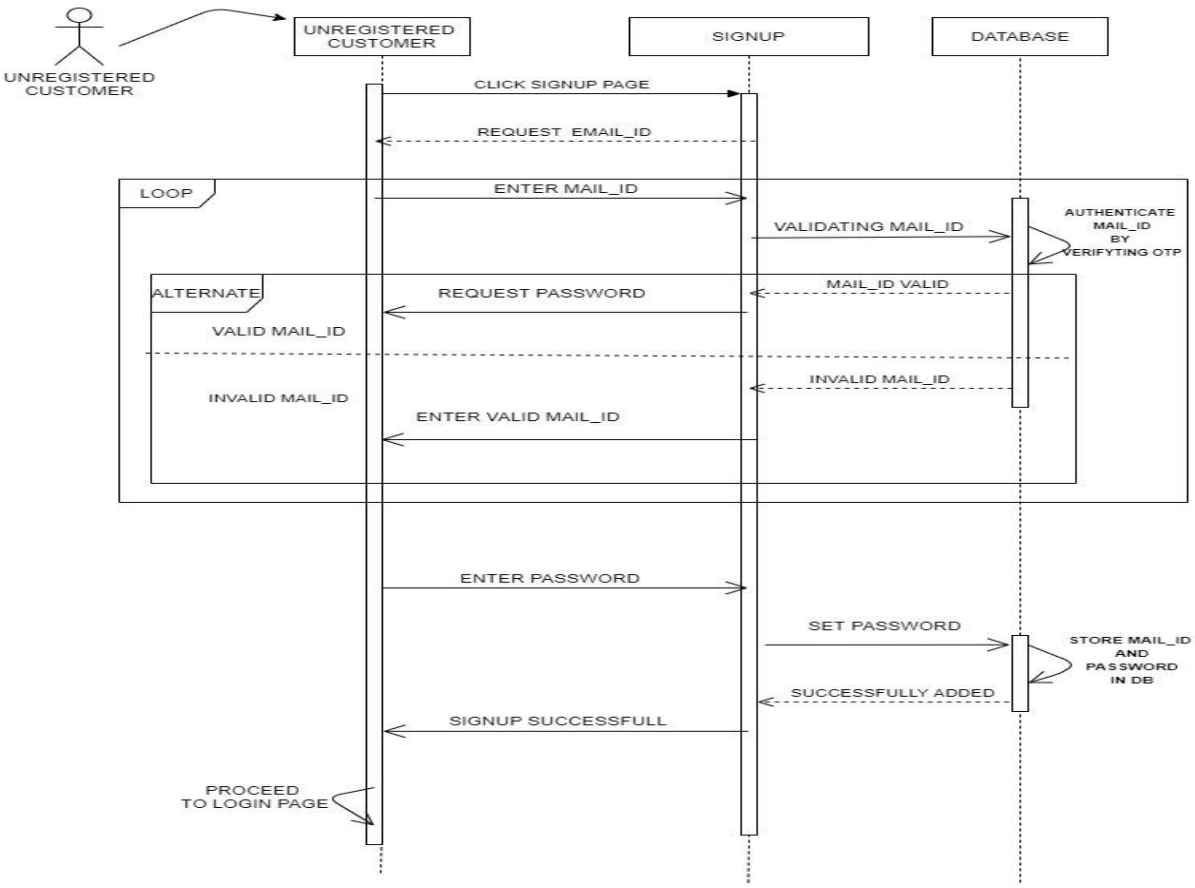
Admin	Has A (Composition)	User	1-1
Manager	Has A (Composition)	User	1-1
Payment	is made for an (composition)	Order	1-1
Product	aggregation	Order	1..*-1
Delivery	is done for (composition)	Order	1-1
Customer	places	Order	1..*-0..*
Customer	adds to (composition)	Cart	1-1..*
Customer	makes	Payment	1-1
Customer	raises	Issues or Queries	1-0.*
Customer	gives	Feedback	1-0..1
Customer	searches	Product	1..*-0..*
Customer	requests	Refund	1-1
Admin	Approves (composition)	Refund	1-1
Manager	maintains	Delivery	1-0..*
Manager	maintains	Inventory	1-1
Manager	requests stock from (dependency)	Stock_Supplier	-

CLASS DIAGRAM:



SYSTEM SEQUENCE DIAGRAM (SSD)

SIGN UP:



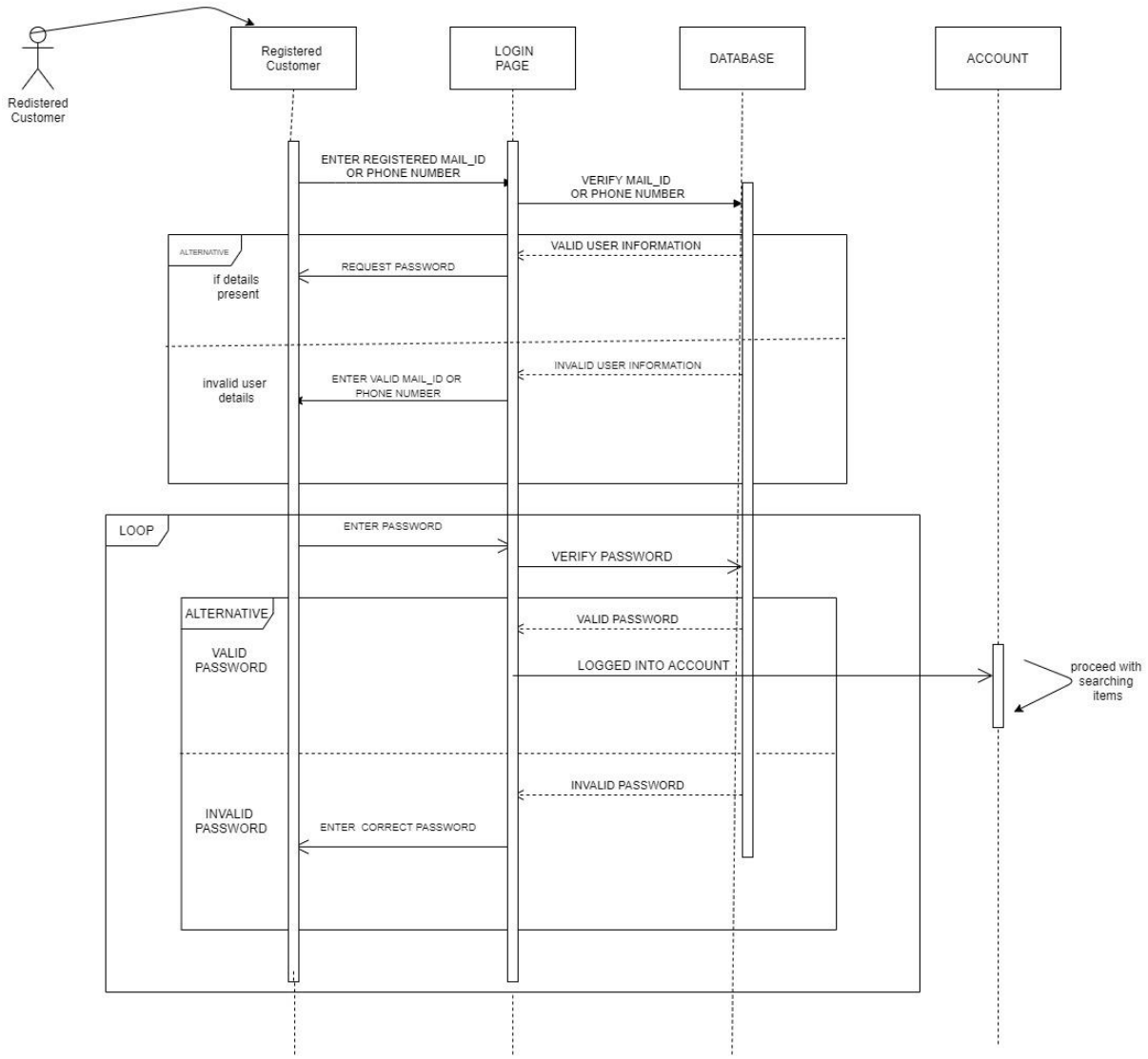
SCENARIO:

- ✓ Customers or owner or admin must sign up if they haven't registered before because only registered people can use this software.

BRIEF DESCRIPTION:

In sign up page, first email id is asked. After the e-mail id is given, it is verified and if it is valid email id password is asked else valid email id is asked which is in a loop frame. After the password is entered, the details are stored in the database and sign up process is completed and they can navigate to login page.

LOGIN:



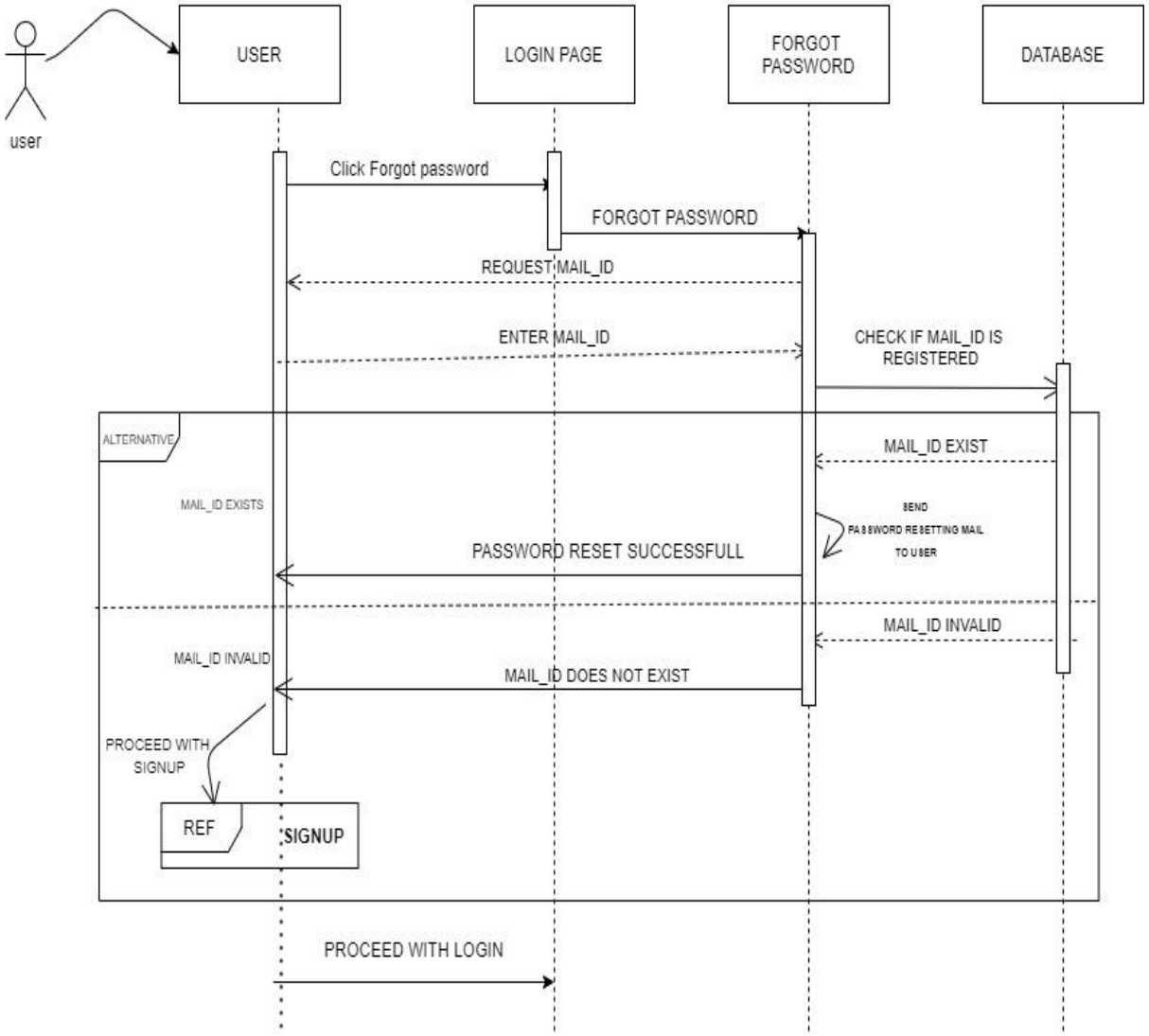
SCENARIO:

- ✓ Customer or owner or manager log into the account if they already have an account.

BRIEF DESCRIPTION:

An existing user enters login details and it is verified using loop frames. If the customer has given correct credentials, he/ she is allowed to search the products. If invalid email id or password is given, they are requested again to give valid details.

FORGOT PASSWORD:



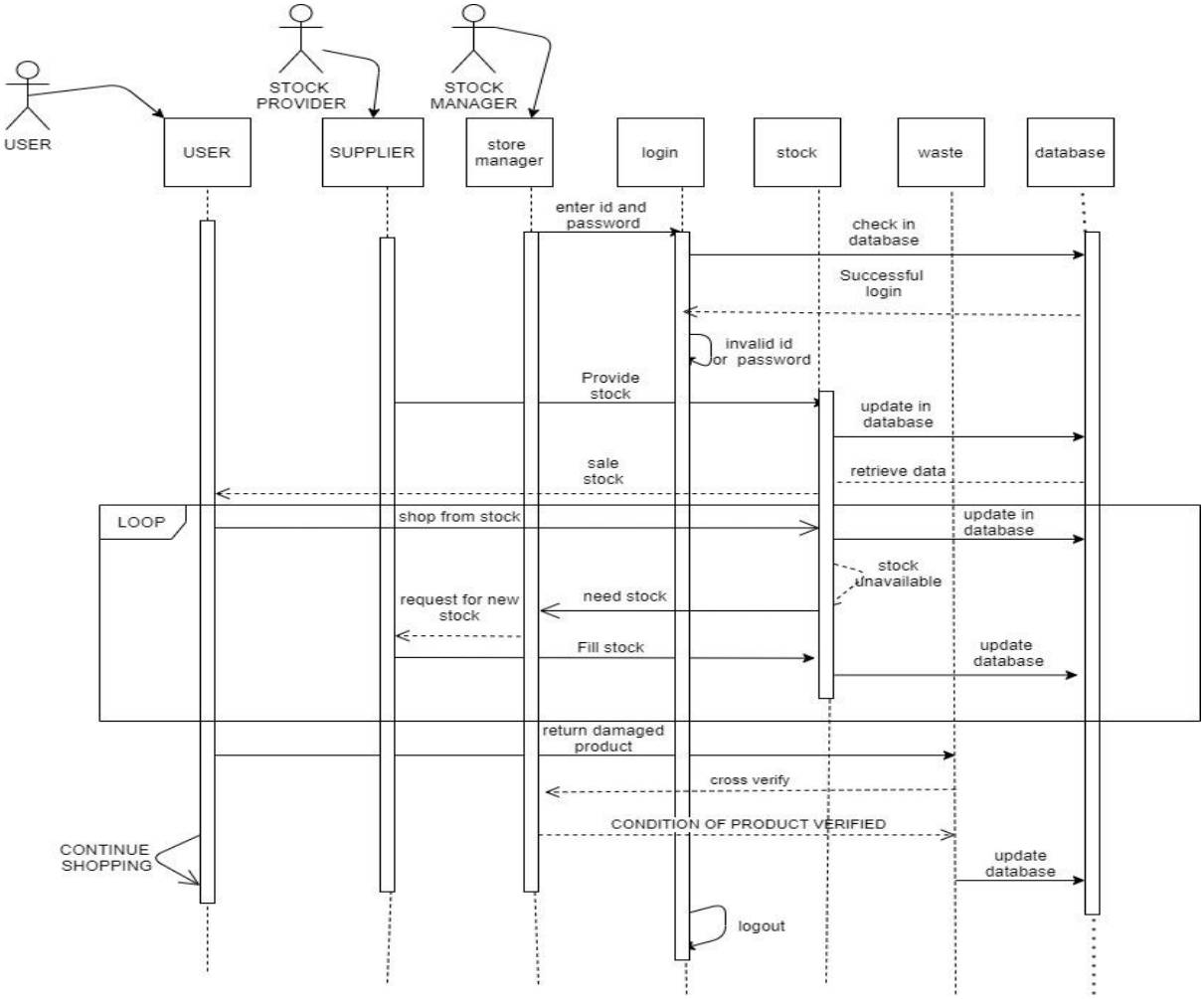
SCENARIO:

- ✓ If the users forgot their password, they can reset it.

BRIEF DESCRIPTION:

If the user has clicked forgot password option, email id is requested and if it is valid, password reset link is sent to email id. If email id is not valid, they are prompted to sign up (shown using reference frame) first. Once they reset the password successfully, they can continue their login process.

MAINTAIN STOCK:



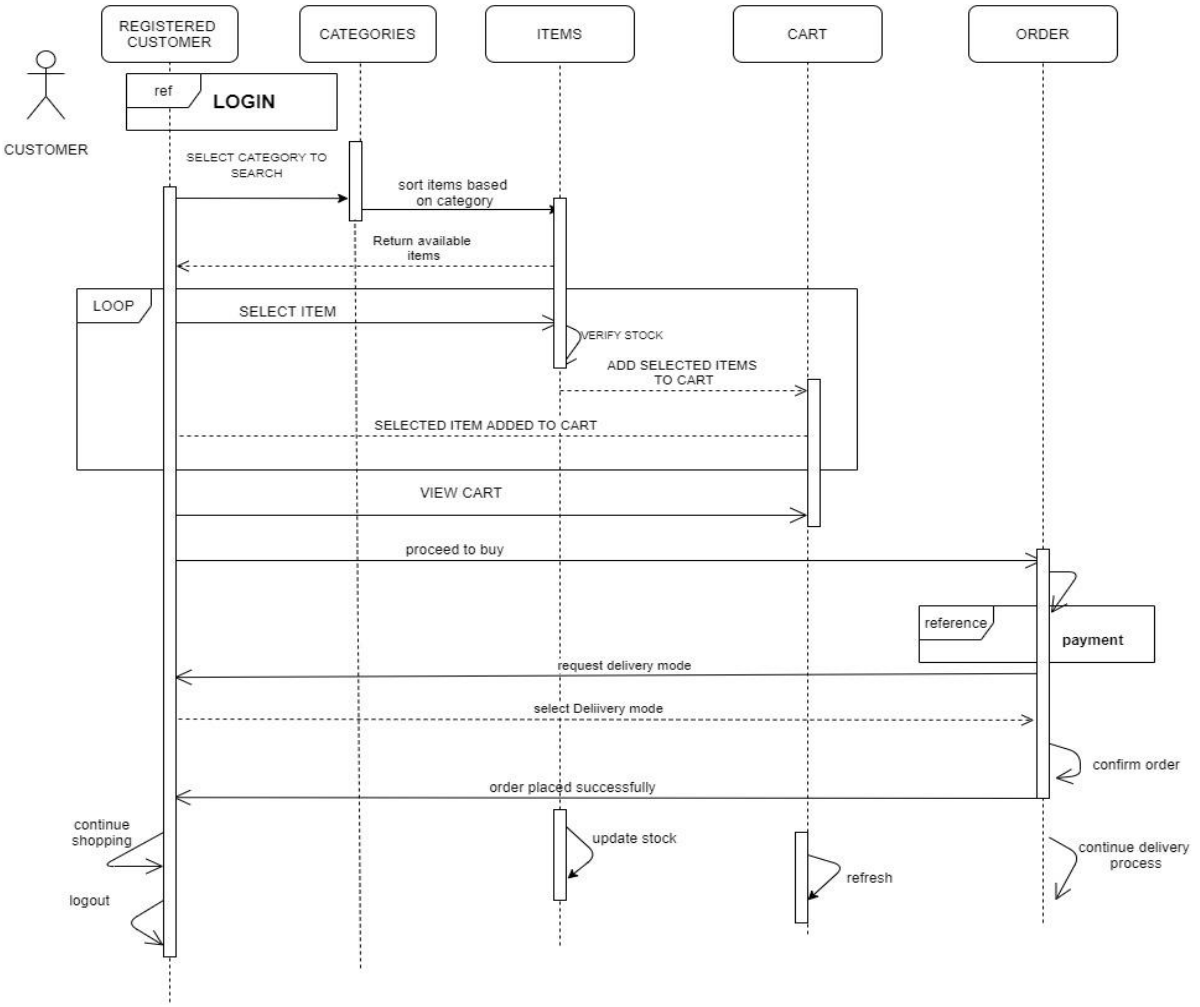
SCENARIOS:

- ✓ Stock availability is checked.
- ✓ If unavailable or low, stock supplier is contacted to purchase items.
- ✓ Database (i.e., inventory details) is updated.

BRIEF DESCRIPTION:

Inventory is checked by the manager and if stock is low, stock supplier is contacted to purchase items. Inventory is updated every time after any product is sold and also when items are purchased from the stock supplier. When user returns a damaged product, it is verified and the inventory is updated.

PLACE ORDER:



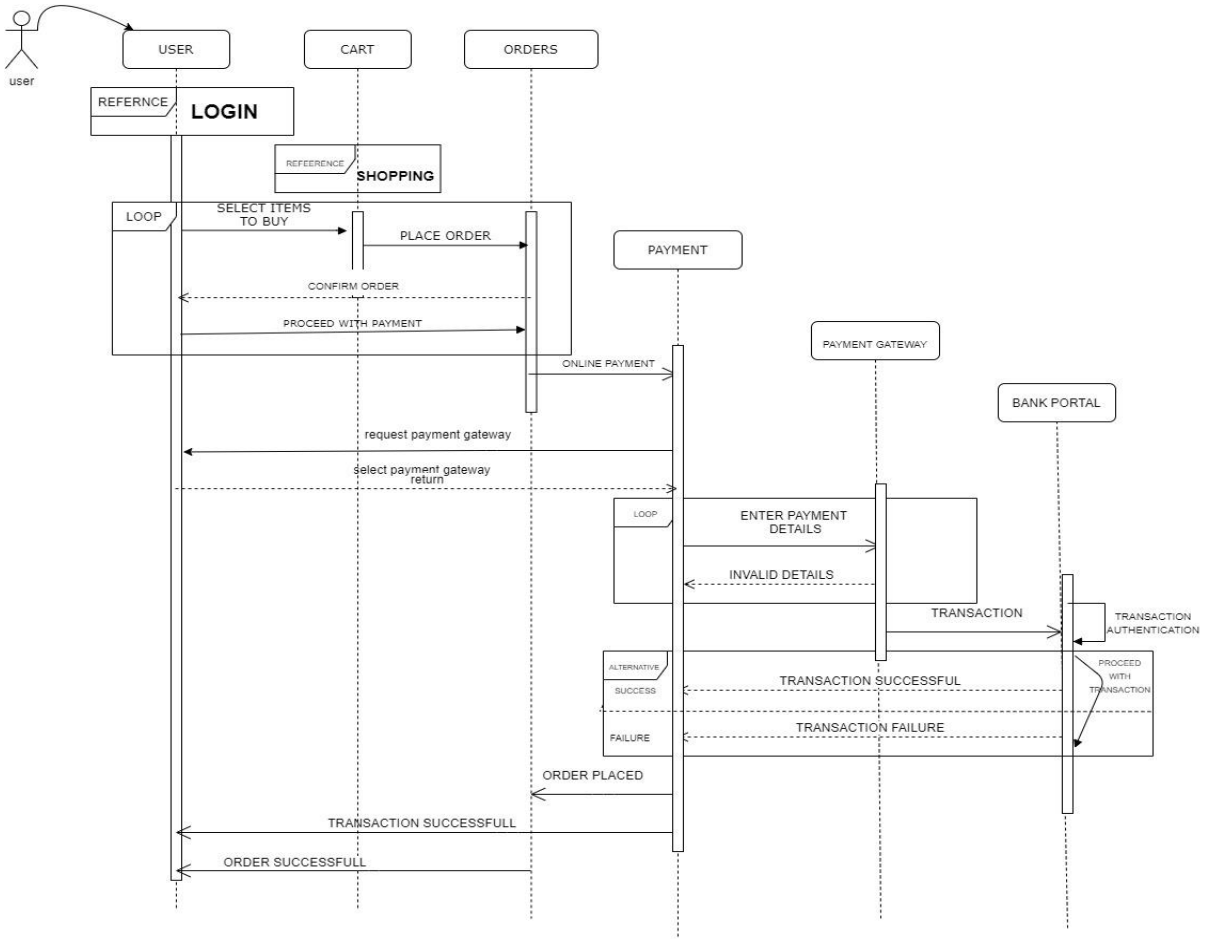
SCENARIOS:

- ✓ Customers search the items to buy.
- ✓ Customers select items, add them to the cart and proceed to buy.
- ✓ They make payment and request for delivery.

BRIEF DESCRIPTION:

Customers log in to the software and start searching the items to buy. They select items and add them to the cart. And then they proceed to buy, make payment (ref frame) and request for delivery. The stock level is updated and delivery process is started. The customers can continue shopping or click logout.

PAYMENT:



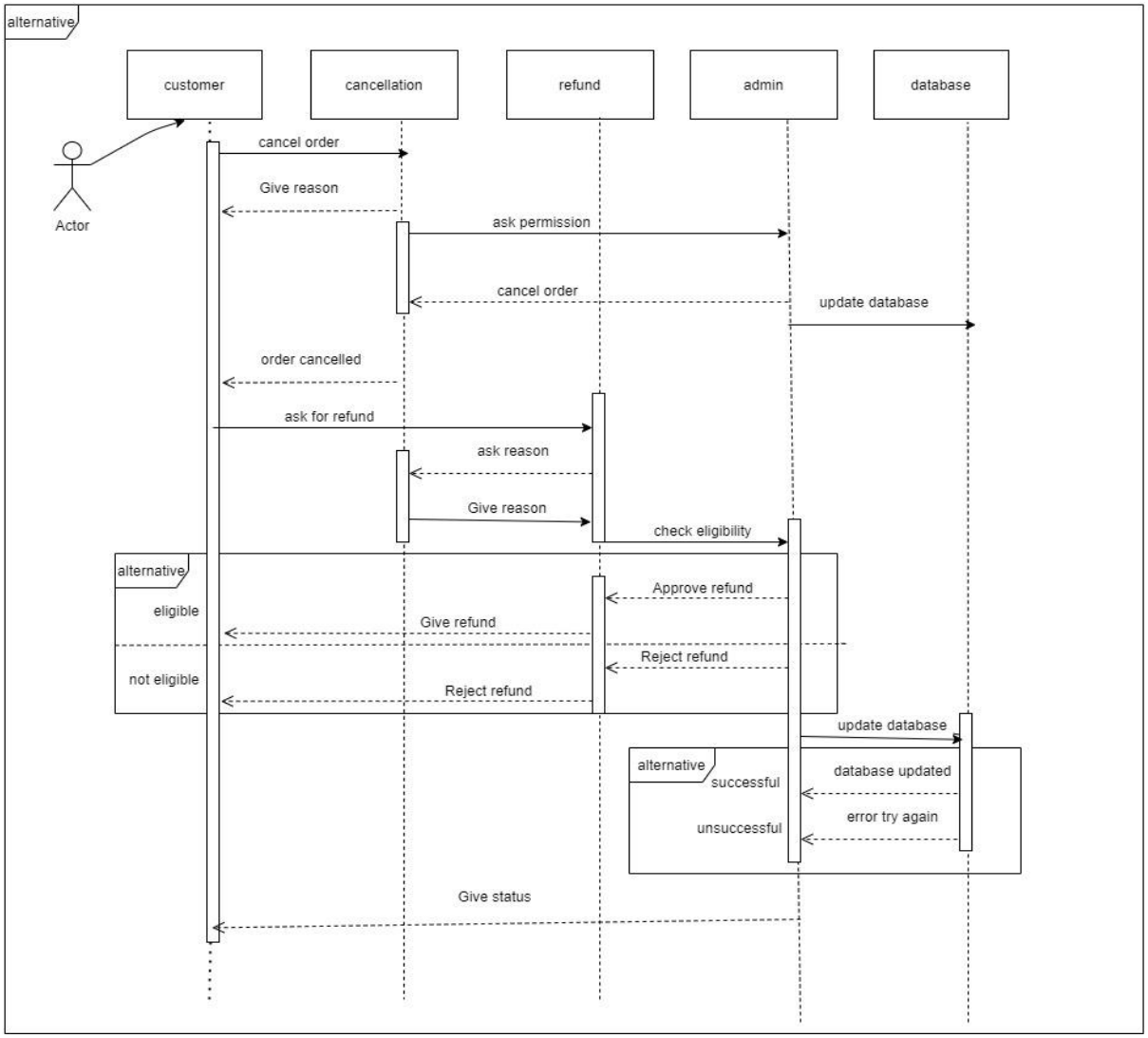
SCENARIO:

- ✓ Customers can make payment after placing an order.

BRIEF DESCRIPTION:

After logging in and placing an order, the customer makes payment by selecting one of the payment gateways first and then selecting one of the payment modes. The customer enters the payment details and transaction happens if the given details are valid. If the given details are invalid, a loop frame is used until the customer enters the valid details. After the transaction gets over, the order is confirmed and the transaction status is sent to the customer.

REFUND:



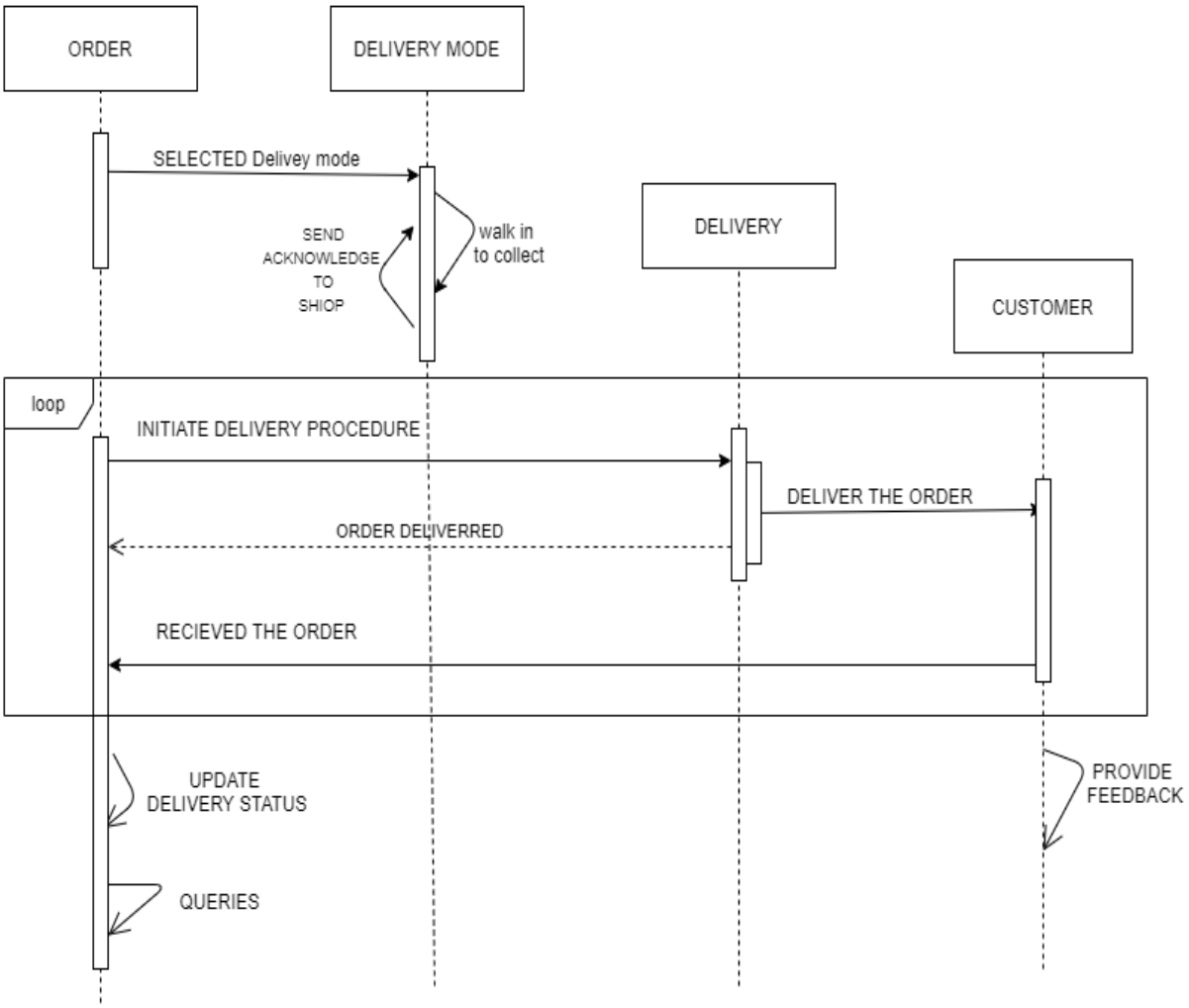
SCENARIO:

- ✓ Customers can cancel the order and request for refund.

BRIEF DESCRIPTION:

The customer can cancel the order by giving a reason. The admin permits the cancellation by checking eligibility which is, the time of cancellation must be within one hour from the time of payment. The customer requests for a refund and the admin approves the refund, if the reason is eligible.

DELIVERY:



SCENARIO:

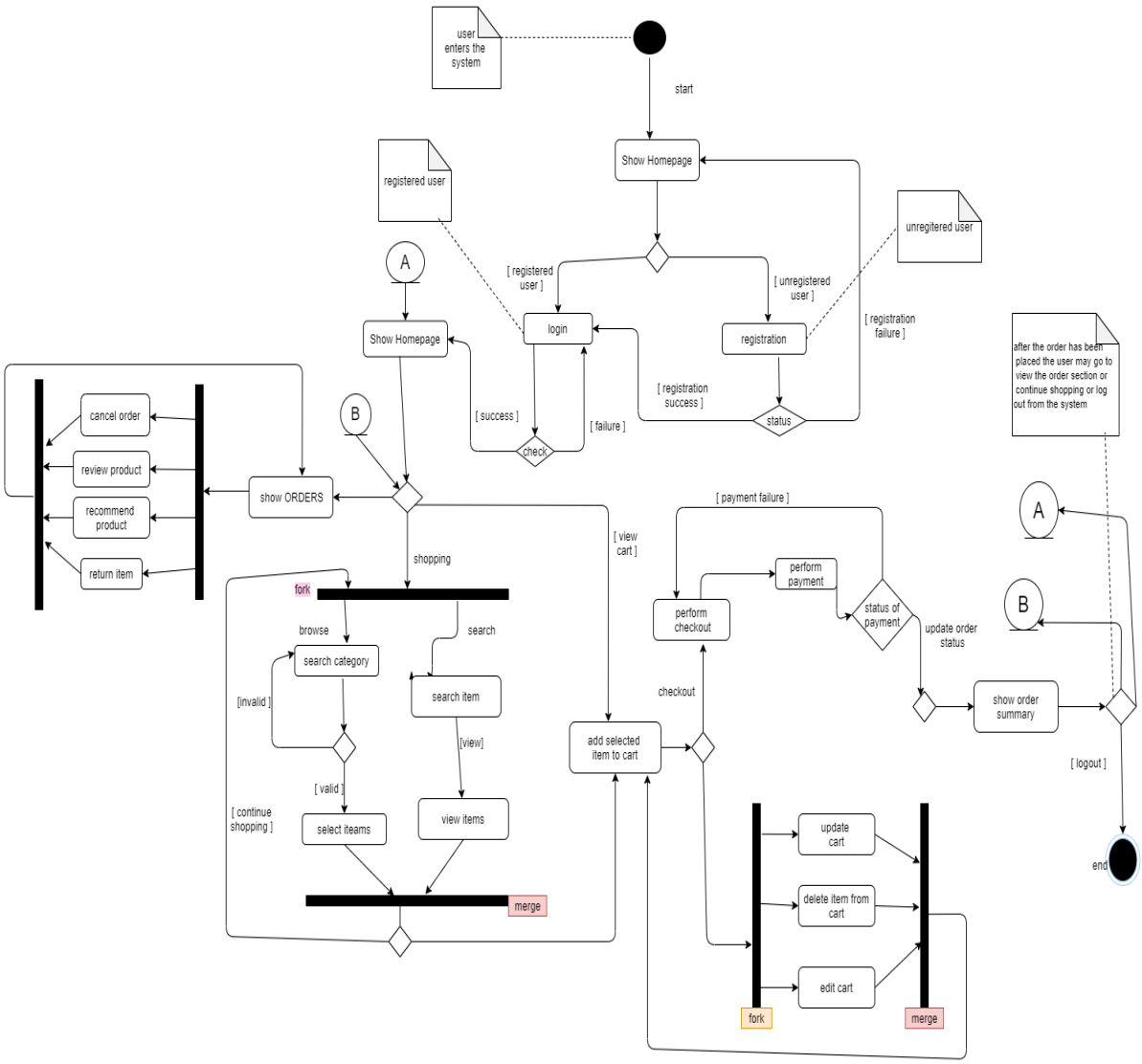
- ✓ Orders placed by the customers are delivered to their addresses.

BRIEF DESCRIPTION:

The customers select the delivery mode while placing the order. If they are willing to get it themselves, they inform the shop. If not, the delivery procedure is begun and the order is delivered and the status is updated. The customers can provide their overall feedback and they can also raise issues if they had any.

ACTIVITY DIAGRAM

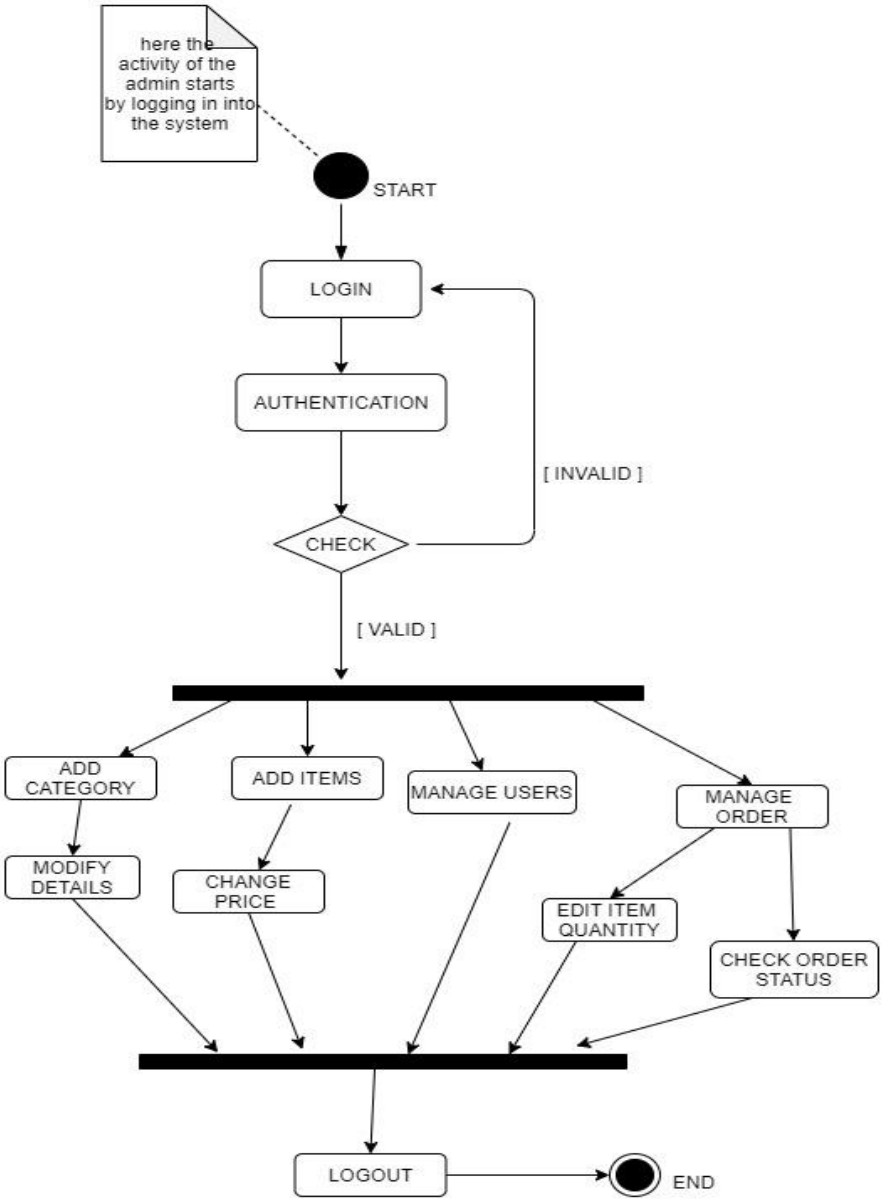
This activity diagram describes all the activities which could be done by a **User** in this system.



BRIEF DESCRIPTION:

The activities which a user can perform in this system includes: sign up or registration, login, search items, add selected items to cart, edit cart, place order, cancel order, make payment, logout.

This activity diagram describes all the activities which could be done by an **Admin** in this system.

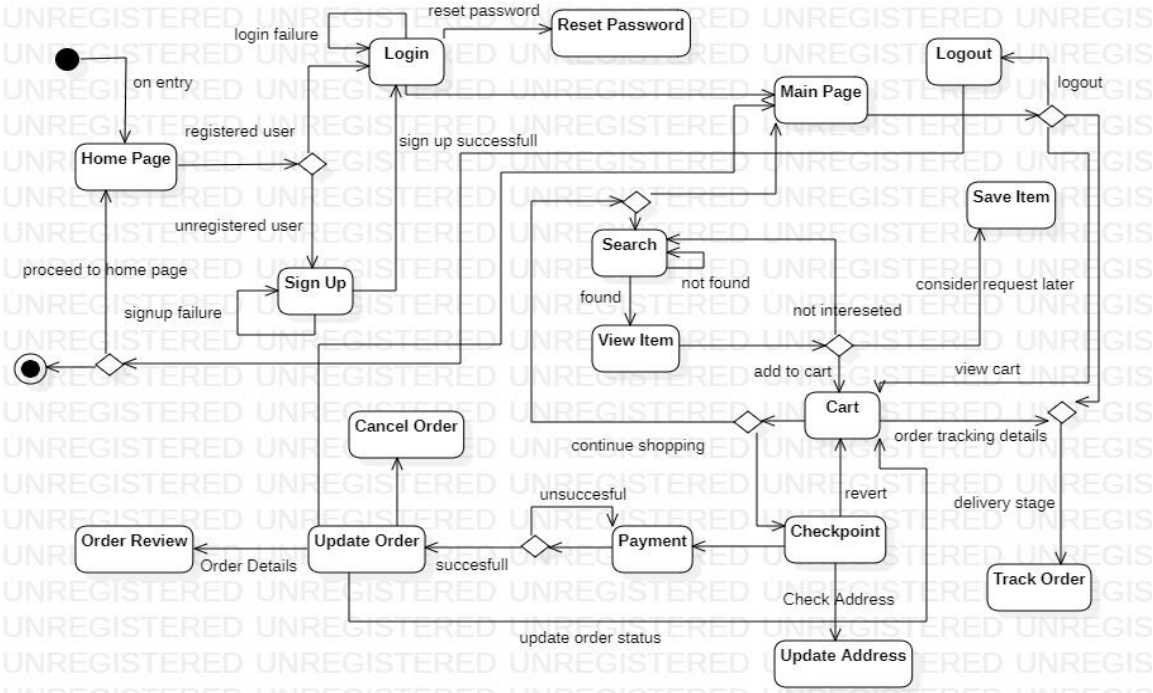


BRIEF DESCRIPTION:

The activities which an admin can perform in this system includes: sign up or registration, login, add categories, add items, change price for items, manage users, manage order, check order status, logout.

STATE MACHINE DIAGRAM

OVERALL STATE MACHINE DIAGRAM:

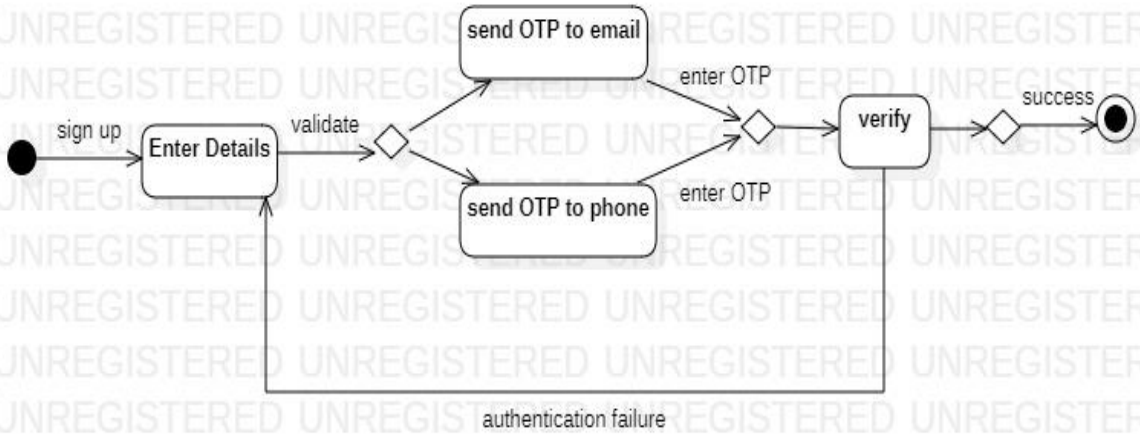


BRIEF DESCRIPTION:

Customers enter the home page and login if they are registered users, if not they are asked to sign up. If they have forgotten the password during login, they can reset the password. After entering the main page, they search the required items and add them to cart. And then they place the order and make payment. They can track the order. They can also cancel the placed order. And finally, they can give their reviews on the items or orders. And then, they can continue shopping or click logout.

The process flow of few states is explained separately for better understandability.

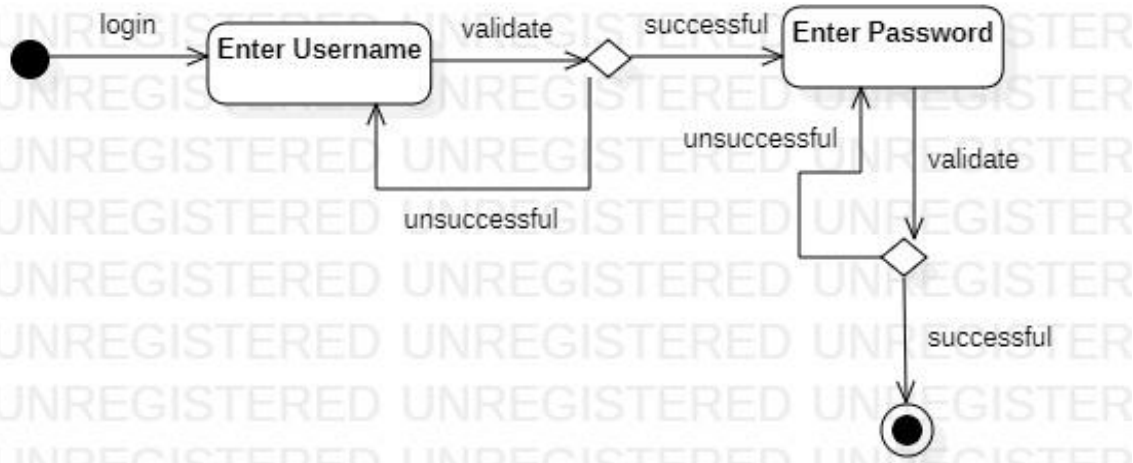
SIGN UP:



BRIEF DESCRIPTION:

To complete the sign up process, the user's details are entered and then they are validated by sending OTP to the provided email id or phone number. The user has to enter the OTP and it is verified, after which the sign up process is completed successfully.

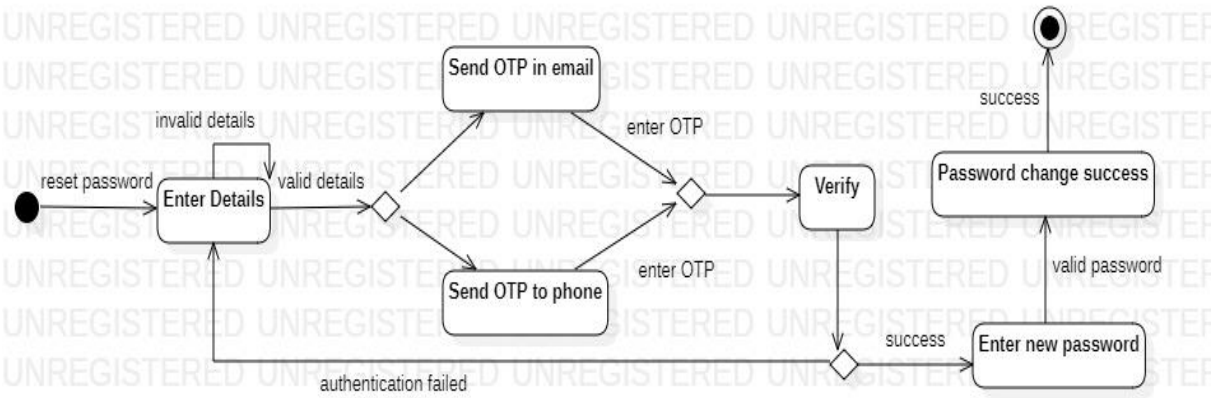
LOGIN:



BRIEF DESCRIPTION:

To login, the user should enter the username first. If valid, then the password is entered. If valid then the user is logged in successfully.

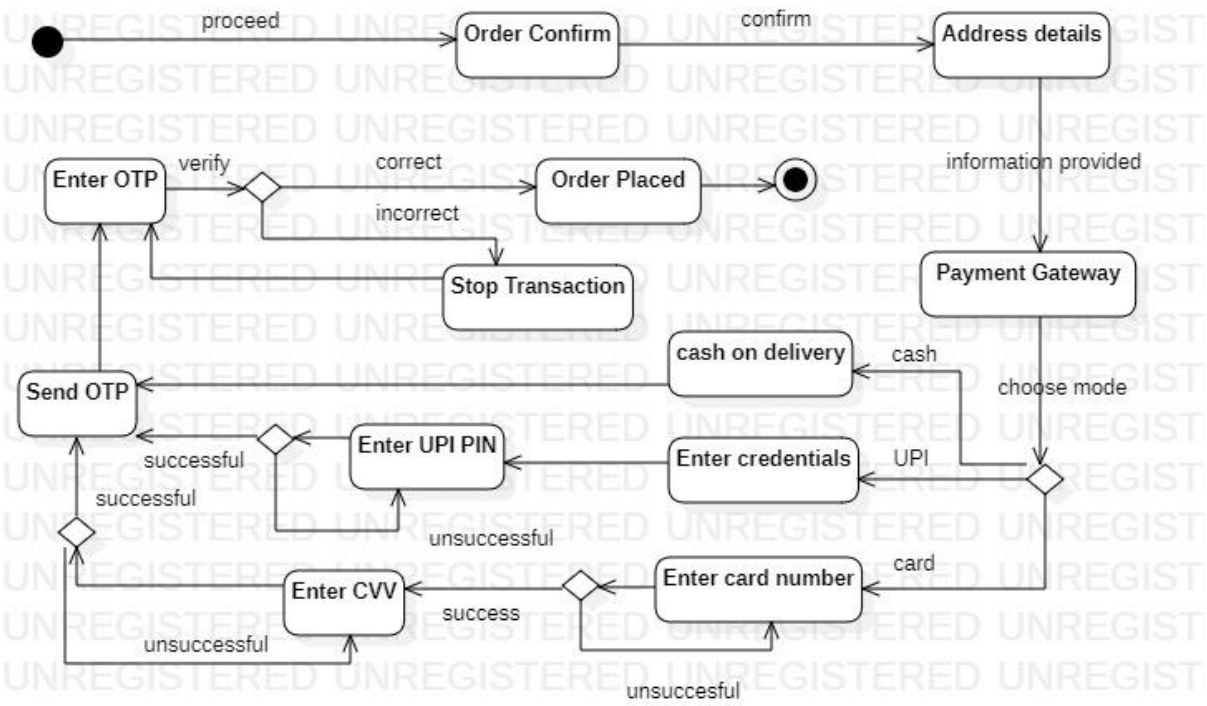
RESET PASSWORD:



BRIEF DESCRIPTION:

To reset any user's password, known details like username is asked to enter. If valid, then OTP is sent to registered email id or phone number. The user has to enter the OTP which is verified. If valid, the user is allowed to reset the password.

PAYMENT:

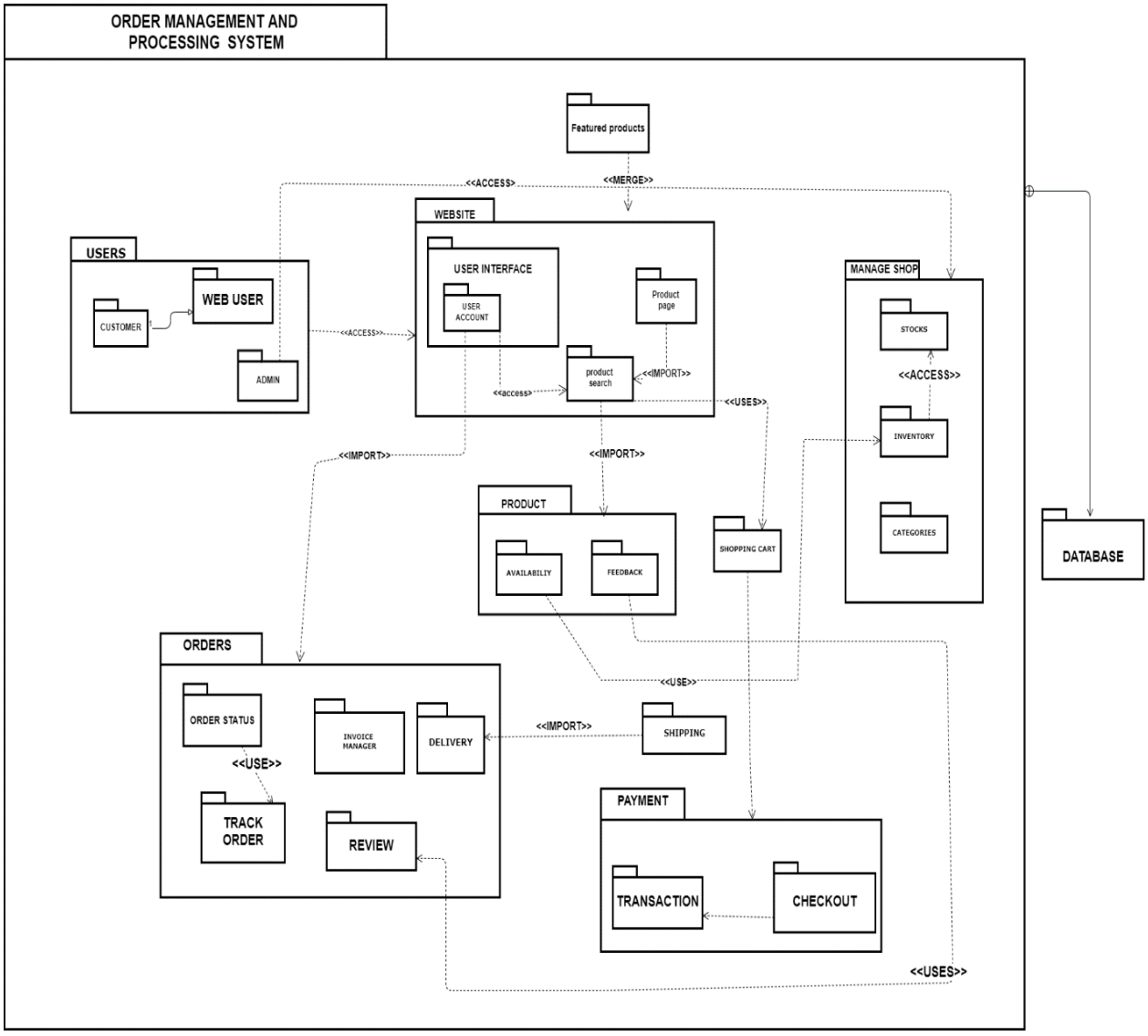


BRIEF DESCRIPTION:

Customer makes payment for the placed order. The payment can be made using different payment modes like cash, card, UPI etc. The necessary details are entered and OTP is sent and verified. If correct OTP is entered by the customer, the order is placed. If not, the transaction is stopped.

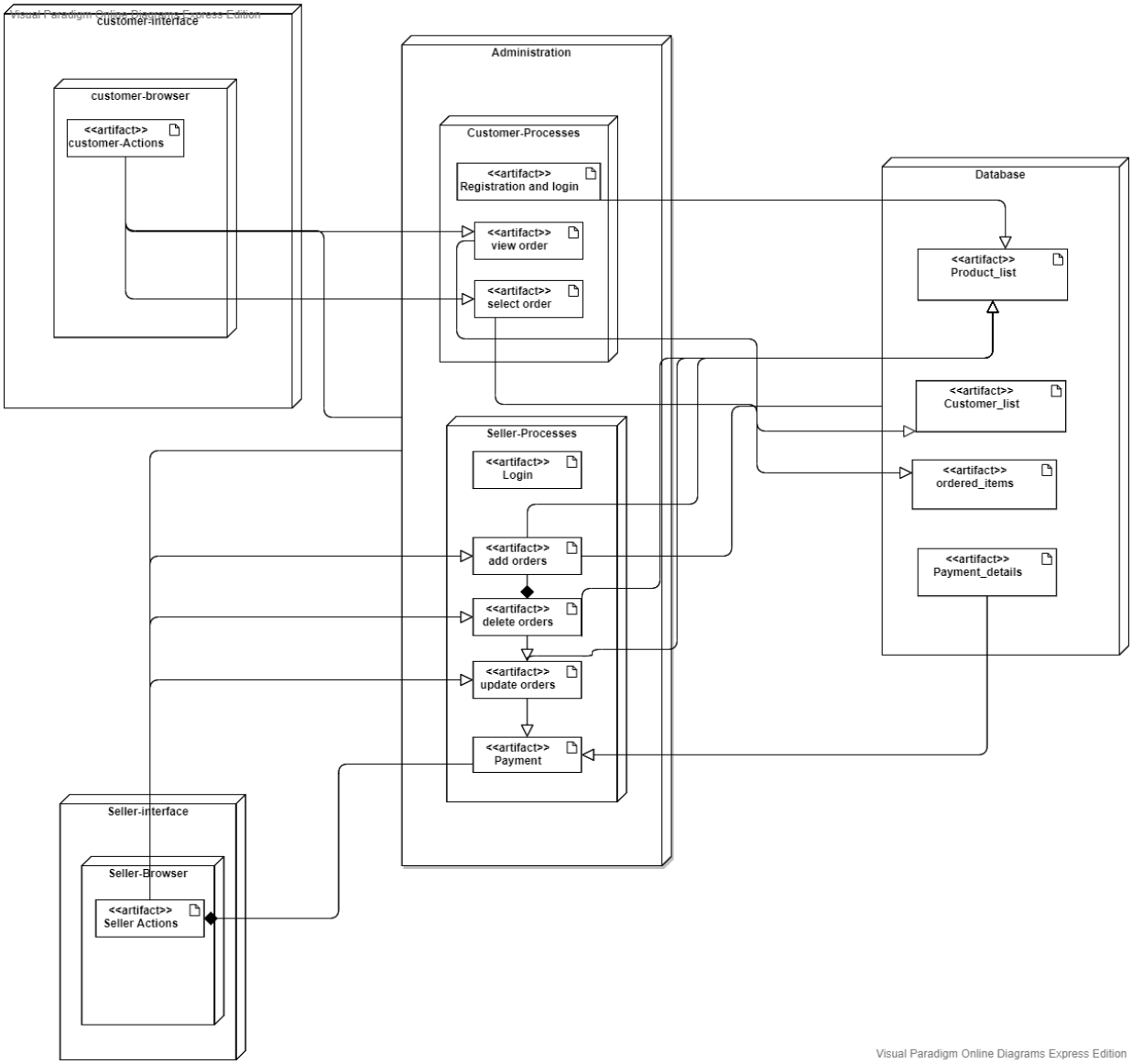
PACKAGE DIAGRAM

Package diagram, a kind of structural diagram, shows the organization and arrangement of various model elements in the form of packages. Package diagrams can show both structure and dependencies between sub-systems or modules, showing different views of a system.



DEPLOYMENT DIAGRAM

A deployment diagram is a structural diagram that shows the configuration of run time processing nodes and the components that live on them. Deployment diagrams are used in modelling the physical aspects of an object-oriented system. They are often used to model the static deployment view of a system.



COMPONENT DIAGRAM

Component diagrams (also a kind of structural diagram) are used in modelling the physical aspects of object-oriented systems that are used for visualizing, specifying, and documenting component-based systems and also for constructing executable systems through forward and reverse engineering. Component diagrams are essentially class diagrams that focus on a system's components that are often used to model the static implementation view of a system.