3. Credit Card Management System
a. SRS Document:

Credit card processing system

1) Introduction

1.1 Purpose of this document

This SRS defines the functional and non functional requirements. It specifies necessary details, stepwise working needed to create a efficient & robust system

1.2 Scope of the document

System must be able to perform
→ Seamless payments
~~Ex Proper account management~~
→ Easy to use system
→ Monthly account statement generation

1.3 Overview

This system will be an embedded system that provides retailers with option to accept payment through credit card

2) General description

User must provide card to cashier if card has been enabled with tap functionality it can be tapped on Pos machine otherwise insert into slot/swipe & pin must be entered after checking amount. If money is debited receipt is generated else error

3) Functional requirements

Seamless payments
Payment process is simple and doesn't require much technical knowledge

Easy to use system.

Payments must be easy, just a tap is enough to do payments.

Monthly account statement generation

Track of all payments is kept and is accessed to generate card bill and send it to user.

4) Interface requirements

It should provide list of options, it must be clearly displayed on the screen and navigation must be easy.

5) Performance requirements

The response for query must have time limit, if exceeded must timeout and return failure. Minimum 2GB RAM to ensure smooth experience.

6) Design constraint

User friendly UI which is responsive, international credit cards cannot be processed.

7) Non functional Requirements

User pin must not be stored, strong hash function must be used to compare pins as it involves real money. Payment clashes must not be there.

8) Preliminary schedule and Budget

The project must be completed within

10 months and budget to be allocated is $500000. If any changes made reserve budget must be used.

Budget split.

Software development	$175000
Hardware	$100000
Security	$75000
Licences	$50000
Testing	$50000
Project management	$25000
Documentation	$15000
Maintenance	$10000
Total.	$500000

b. Advanced Class Diagram:
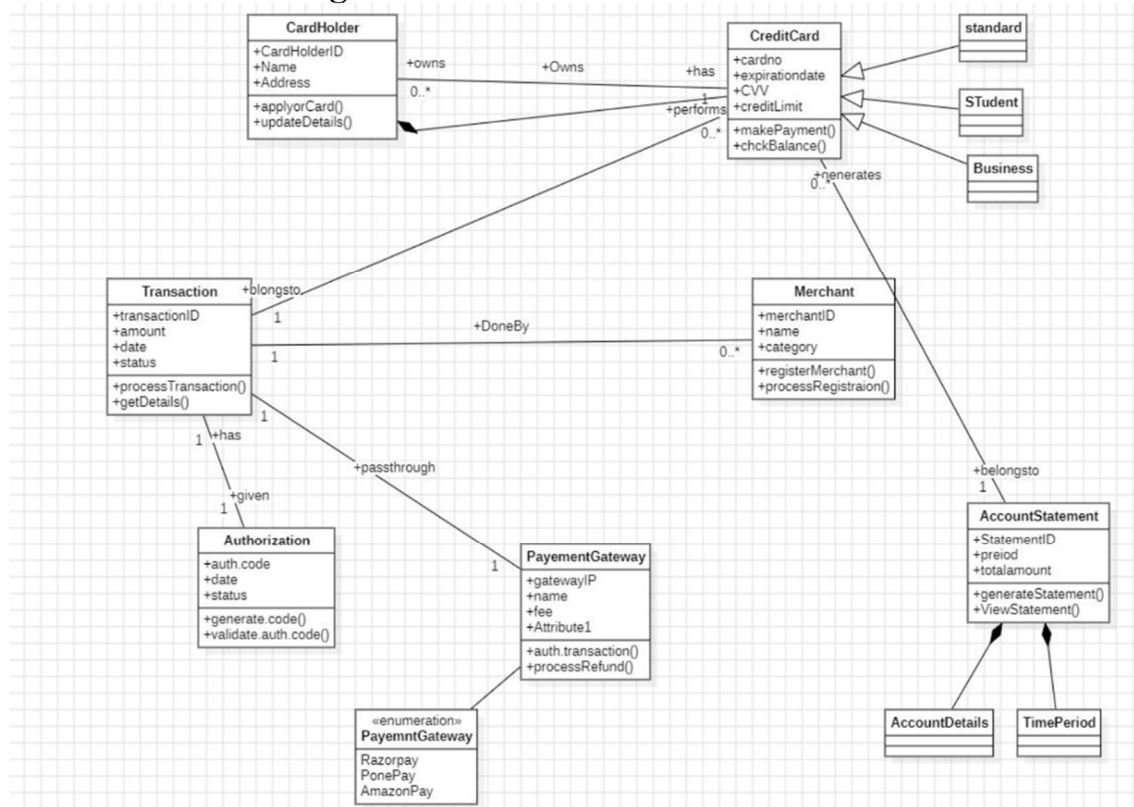
Fig 3.1:

The main entities include:

- Card Holder, who owns a Credit Card used for transactions. The credit card has details like card number, CVV, and credit limit, with operations for payments and balance checks.
- Transaction, which records details like amount, date, and status, is linked to both Authorization (for validation) and Payment Gateway (for processing or refunding payments).
- Merchant, which registers businesses accepting payments and processes transactions from customers.
- Account Statement, which tracks transaction history, generates statements, and is linked to periods and account details.

The diagram also shows inheritance, with specialized credit cards (e.g., Student or Business), and enumerates multiple payment gateways (e.g., RazorPay, PhonePay). It maps how users, cards, merchants, and gateways interact in the system to process payments seamlessly.

a) ~~Hotel management system~~
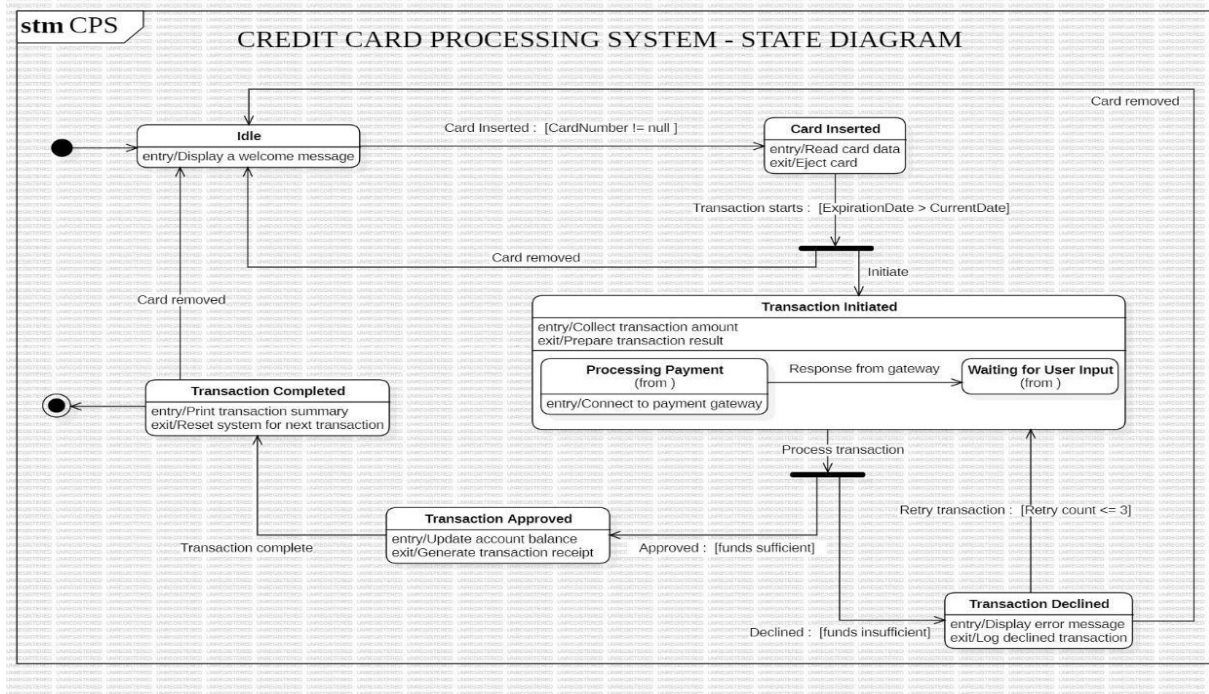Credit card Processing system
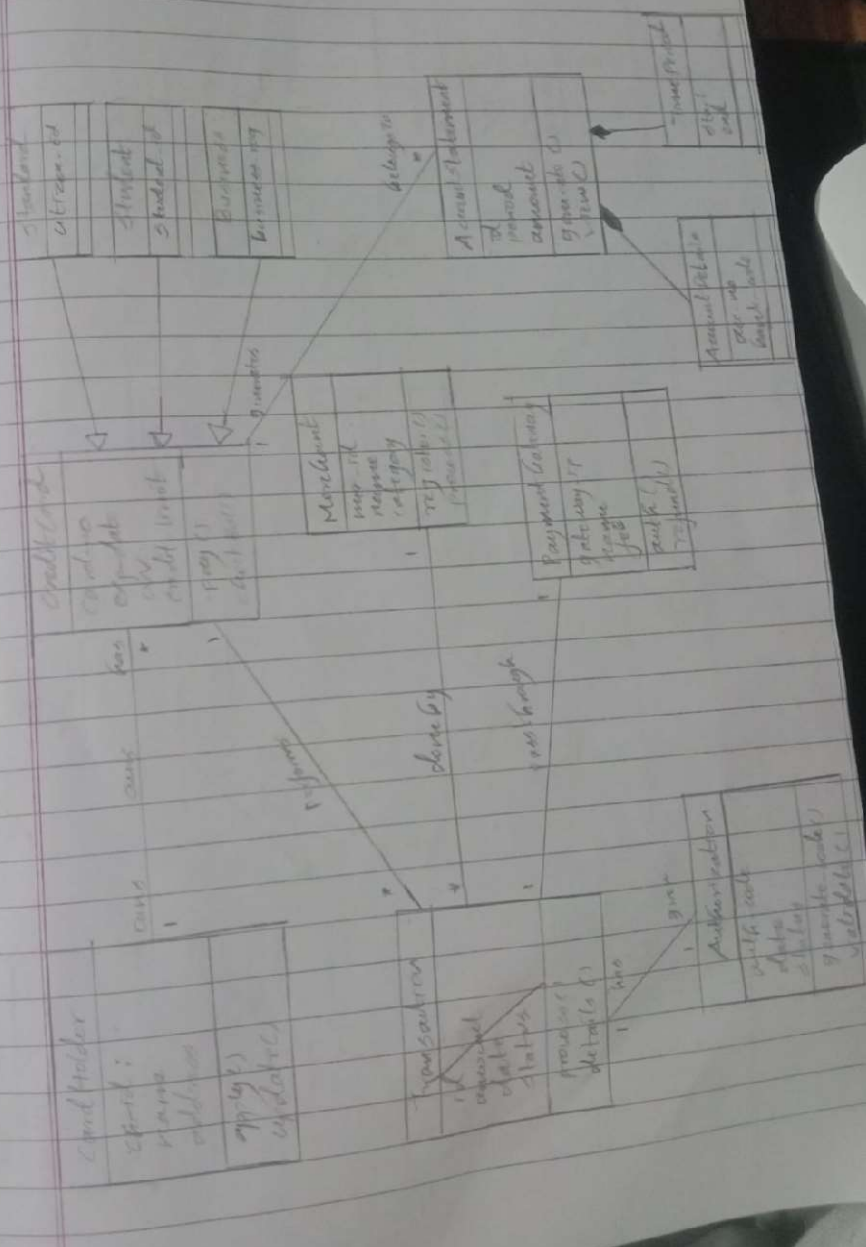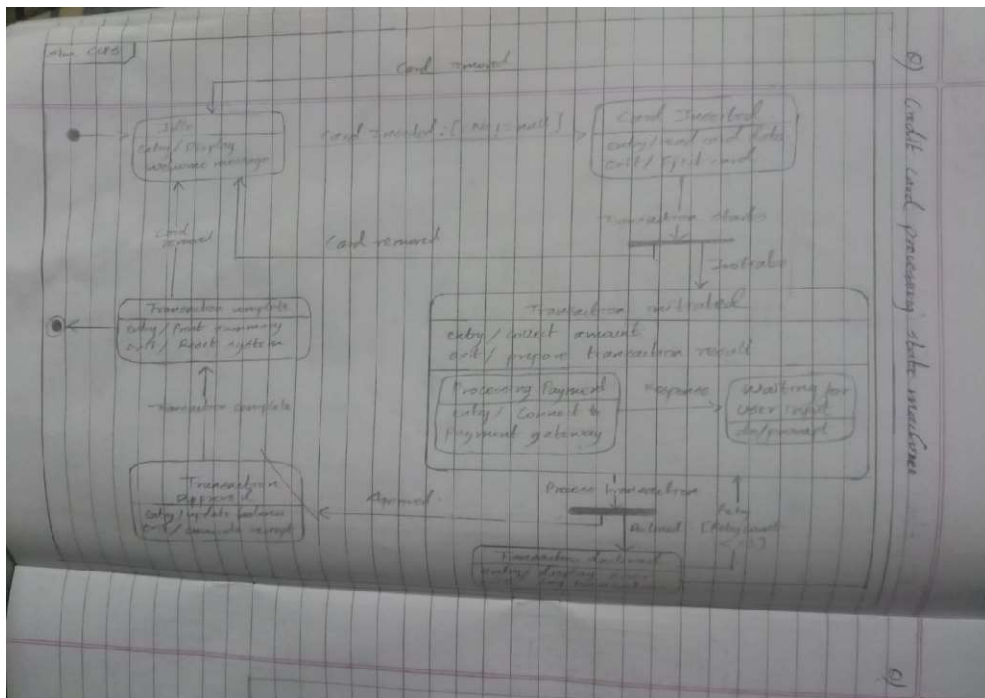
c. Advanced State Diagram:

CREDIT CARD PROCESSING SYSTEM - STATE DIAGRAM

stm CPS

- **Idle** — entry/Display a welcome message
- Card Inserted : [CardNumber != null]
- **Card Inserted** — entry/Read card data, exit/Eject card
- Card removed
- Transaction starts : [ExpirationDate > CurrentDate]
- Initiate
- **Transaction Initiated** — entry/Collect transaction amount, exit/Prepare transaction result
  - **Processing Payment** (from) — entry/Connect to payment gateway
  - Response from gateway
  - **Waiting for User Input** (from)
- Process transaction
- Retry transaction : [Retry count <= 3]
- **Transaction Approved** — entry/Update account balance, exit/Generate transaction receipt
- Approved : [funds sufficient]
- **Transaction Completed** — entry/Print transaction summary, exit/Reset system for next transaction
- Transaction complete
- **Transaction Declined** — entry/Display error message, exit/Log declined transaction
- Declined : [funds insufficient]

Fig 3.2:

31

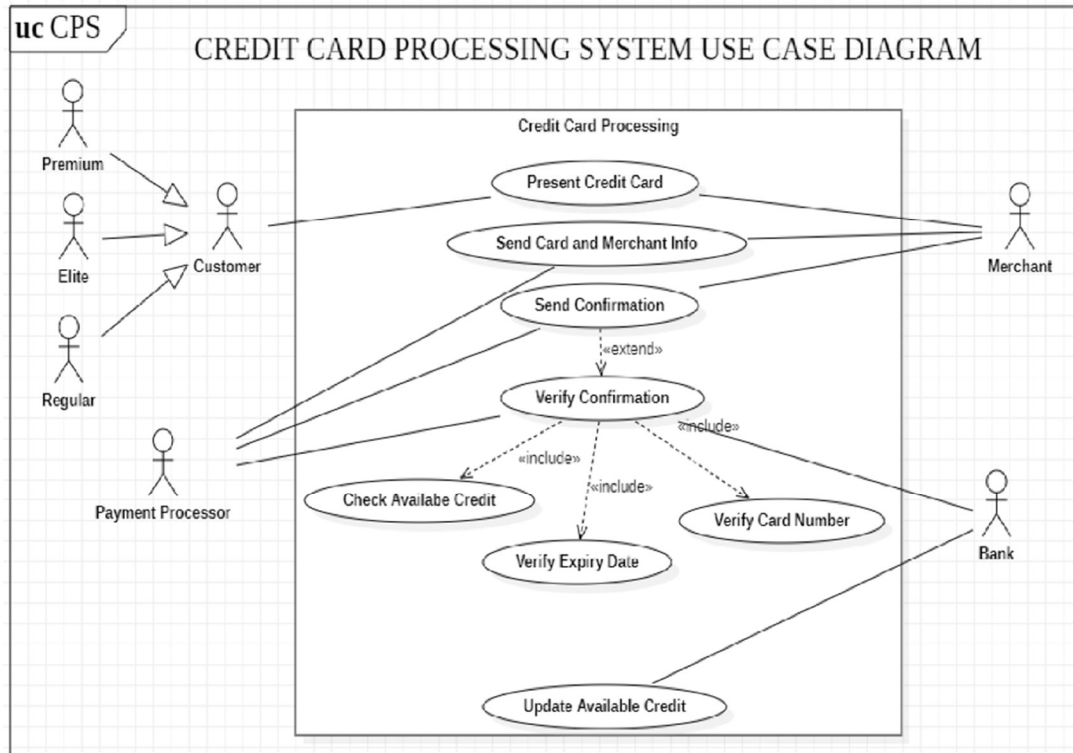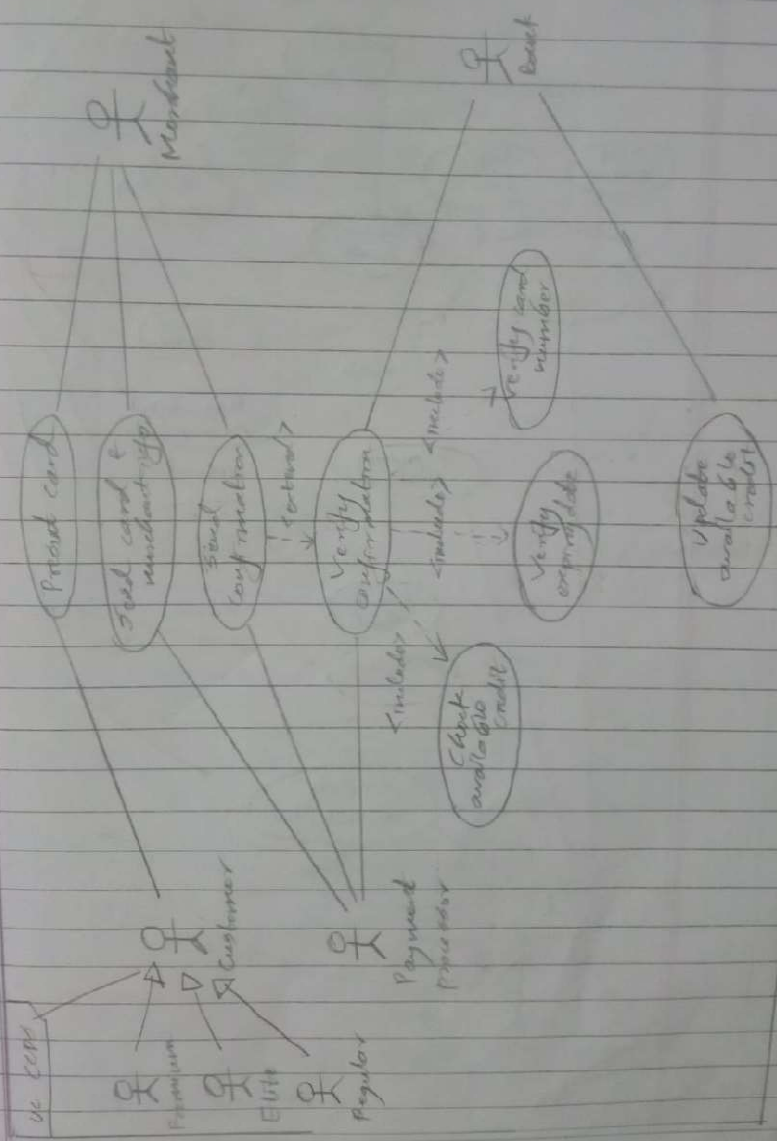## d. Use Case Diagram:

Credit Processing System

Fig 3.3:

2) credit card processing system

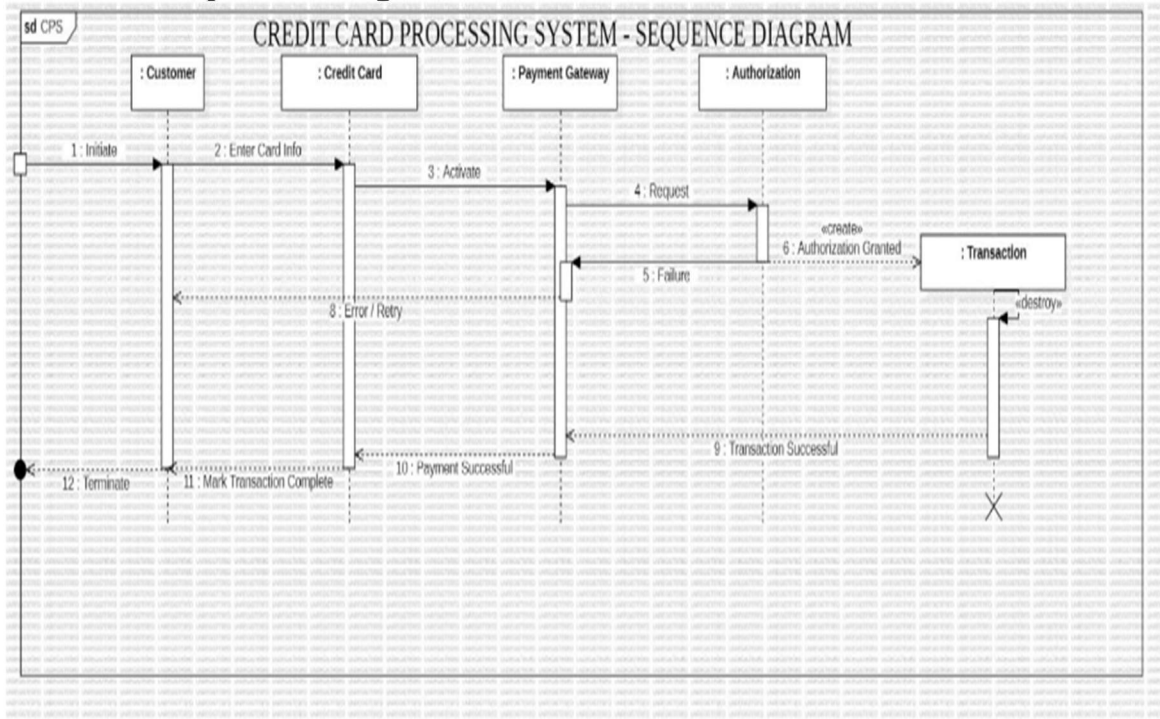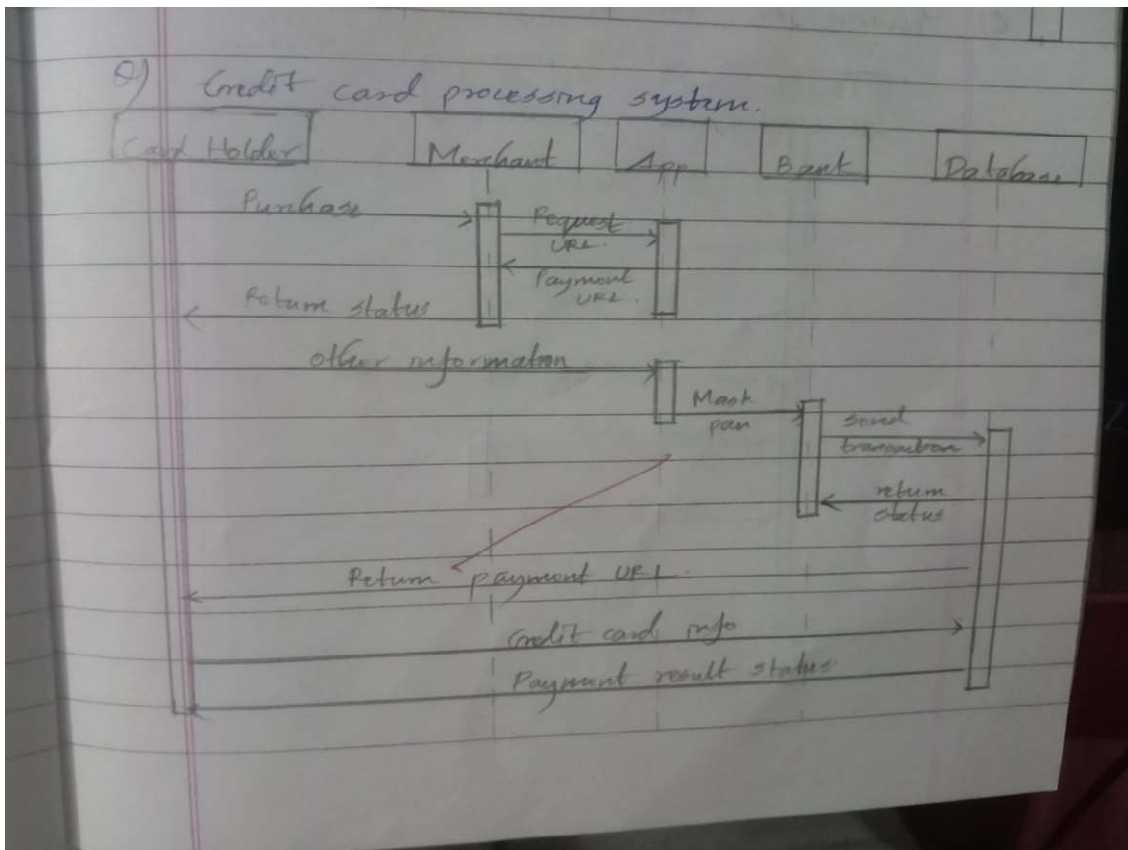### e. Sequence Diagram:
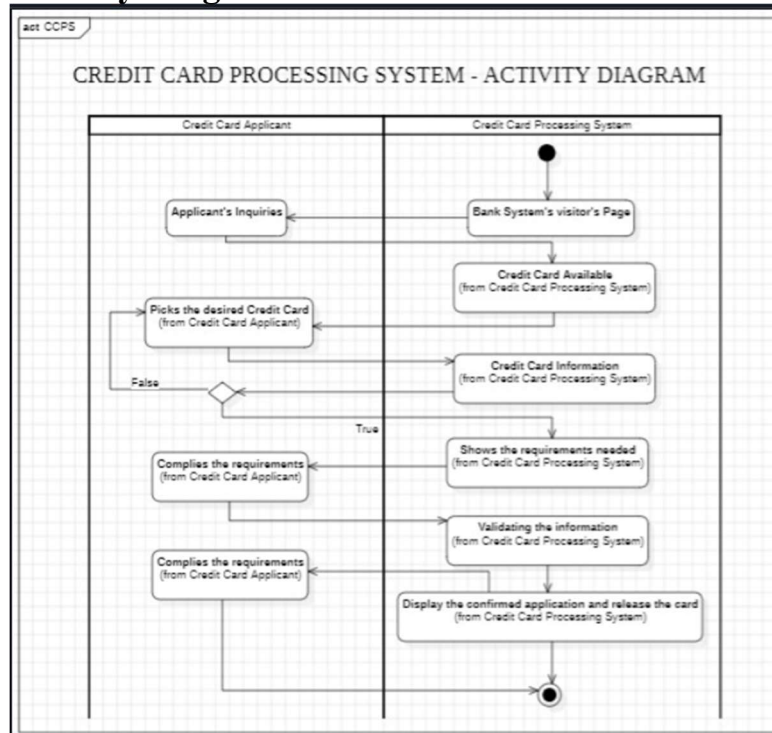

Fig 3.4:

f. Activity Diagram:

Fig 3.5:

Applicant's Journey:

- The process starts with the applicant making inquiries and selecting a desired credit card.
- If the chosen card is available, the applicant compiles and submits the required documents.

Processing System's Role:

- The system displays the bank's visitor page and shows the available cards and their details.
- It provides the list of requirements needed and validates the submitted information.
- Upon successful validation, the system confirms the application and releases the card.

Decision Point:

- If the card is unavailable, the applicant must re-select or terminate the process.

e) Credit card processing

Credit card applicant	Credit card processing system