Practical 1
Introduction of Bank Management System

Introduction:

In the dynamic landscape of banking, the need for an advanced and adaptive management system has become paramount through this document, we aim to establish a clear understanding of the project scope, objective and constraints, facilitating the development of a robust and efficient bank management solution it intricates details of the system's functionality, performance and constraints.

The bank management system comprises various modules, each dedicated to specific banking functions. From user requirements to system architecture, from security consideration to performance metrics, each facet has been meticulously documented to guide the development team in creating a robust, user-friendly, and technologically advanced solution that aligns with the intricate demands of modern banking.

Product features:

The users are typically categorized into different role based on their responsibilities and interactions with the system.

There are four different users who will be using this product:

- Administrator
- Bank staff
- Customers
- Auditor

The features that are required for the administrator are:

- Responsible for system configuration and maintenance.
- Manages user accounts and permission.
- Monitors overall system functionality.

The features that are required for the bank staff are:

- Bank employees with various roles such as tellers, managers and clerks.
- Perform day-to-day banking system operation.
- Access and update customer information.

The features that are required for the customers are:

- Individuals or businesses holding accounts with the bank.
- Perform transactions, check balances, and manage accounts.

The features that are required for the auditors are:

- Conducts audits to ensure compilation and security.
- Access to transaction logs and relevant financial data.

Functional Requirement:

Admin:

A Bank Management System's admin functionality is crucial for managing and overseeing various aspects of the system. Here are some key functionalities that an admin might have in a Bank Management System:

1. **Account services:**
   - **add users:** The admin should be able to add new users to the system, such as bank employees or other administrators.
   - **Delete user:** The ability to remove user accounts from the system.
   - **Modify user detail:** Update user information as needed.

2. **Account management:**
   - **Create accounts:** The admin should be able to create different types of accounts (e.g., savings, checking) for customers.
   - **Close accounts:** Close inactive or unwanted accounts.
   - **View account details:** Access and view information related to customer accounts.
3. **Transaction monitoring:**
   - **View transaction:** Monitor and view transaction history for all accounts.
   - **Flag suspicious transaction:** Identify and flag transactions that may be suspicious or require further investigation.
4. **Authorization and permission:**
   - **Role management:** Assign roles and permissions to different users within the system (e.g., teller, manager, administrator).
   - **Access control:** Set access levels for different functionalities based on user roles.
5. **customer support:**
   - **assist customer:** Provide support to customers in case of issues or inquiries.
   - **Reset password:** Help users reset their passwords or recover their accounts.
6. **security:**
   - **security audits:** Conduct regular security audits to ensure the integrity and safety of customer data.
   - **user authentication:** Manage user authentication methods and ensure secure access to the system.
7. **Reporting and analytics:**
   - **Generate reports:** Create and access various reports, such as financial reports, user activity reports, etc.
   - **Data analysis:** Utilize data analytics tools to gain insights into customer behaviour and system performance.
8. **communication:**
   - **notification:** Send notifications to users for important updates, announcements, or system changes.
   - **Messaging system:** Implement a messaging system for internal communication among bank staff.

The admin functionalities play a crucial role in ensuring the smooth operation, security, and compliance of a Bank Management System. The specific features may vary based on the requirements and complexity of the system.

Customer:

In a Bank Management System, customer functionalities are designed to provide customers with convenient and secure access to banking services. Here are some key customer functionalities:

1. **Transaction services:**
   - **Fund transfer:** Initiate transfers between own accounts or to other accounts.
   - **Bill payments:** Pay bills online, such as utilities, credit cards, etc.
   - **Wire transfer:** Initiate domestic or international wire transfers.
   - **Transaction history**: View a detailed history of transactions.
2. **Account management:**
   - **Account registration:** Customers should be able to create new accounts online.
   - **Account access:** Log in securely to access account information.
   - **view account balance:** Check account balance in real-time.
3. **Deposit and withdrawal:**
   - **Deposit funds:** Deposit money into accounts through various channels (e.g., in-branch, ATMs, mobile deposit).
   - **Withdrawal funds**: Withdraw money from ATMs or branch locations.
4. **Loan services:**
   - **Apply for loans:** Submit loan applications online.
   - **Loan status**: Track the status of loan applications
   - **Loan repayment**: Make loan payments and view repayment schedules.
5. **account services:**
   - **account statements**: Access and download account statements.
   - **Account alerts:** Set up alerts for account activities (e.g., low balance, large transactions).
   - **Account closure**: Initiate the closure of an account if needed.
6. **Card management:**
   - **Credit/debit card activation:** Activate new cards online.
   - **Card transaction:** View card transactions and statements.
   - **Card blocking:** Block or report lost/stolen cards.
7. **Security features:**
   - **Two factor authentication:** Enable additional security through two-factor authentication.
   - **Transaction verification**: Verify high-risk transactions through additional authentication.

Banking staff:

Certainly, the functionalities for bank staff in a Bank Management System are diverse and crucial for the smooth operation of the bank. Here's a more detailed breakdown of the various functionalities specific to bank staff:

1. **Customer management:**
   - **Customer information retrieval:** Access and update customer details.

- **Know your customer (KYC):** Verify and update customer identification information.
- **Customer relationship management (CRM):** Track and manage interactions with customers.

2. **Account management:**
   - **Account management:** Assist customers in opening new accounts, ensuring all required documentation is collected.
   - **Account maintenance:** Handle account modifications, such as change of address or account type.
   - **Account closures:** Process account closure requests.
3. **Transaction processing:**
   - **Deposit processing:** Accept and process customer deposits.
   - **With– drawl processing:** Facilitate customer withdrawals.
   - **Transfer processing:** Manage fund transfers between accounts.
4. **Loan management:**
   - **Loan application processing:** Review, process, and track loan applications.
   - **Loan approval:** Assess and approve loan requests based on established criteria.
   - **Loan disbursement:** Facilitate the disbursement of approved loans.
5. **Customer service:**
   - **Inquire handling:** Address customer inquiries and provide assistance.
   - **Issue resolution:** Resolve customer issues related to accounts or transactions.
   - **Customer education:** Educate customers on various banking products and services.
6. **cash handling:**
   - **cash deposit and withdrawal:** Oversee cash transactions, ensuring accuracy and security.
   - **Cash balancing:** Balance cash drawers at the end of each shift.

Auditors:

In a Bank Management System, auditors play a crucial role in ensuring compliance, accuracy, and security. Their functionalities focus on auditing various aspects of the system to identify potential risks and areas for improvement. Here are some key functionalities specific to auditors in a bank management system:

1.access control:

- **user access review:** Periodically review and audit user access rights to ensure proper authorization.
- **Access logs:** Monitor and analysis access logs to detect any unauthorized or suspicious activities.

2. risk management:

- **Risk identification:** identify and assess potential risks and associated with the bank management.
- **Risk mitigation:** recommend strategies to mitigate identified risks.

3. fraud detections:

- **Anomaly detection:** employ techniques to identify anomalies or patterns indicative of fraud.
- **Investigation support:** provide support for fraud investigation.

These functional requirements ensure that the bank management system performs the essential operation required for effective banking system service, meets security standards and provides a positive user experience for both staff and customers.

Non-Functional Requirement

1.performance:

- The system should handle a specified number of concurrent users without significant performance.
- Response time for transactions should be written in an acceptable range.

2.scalability:

- The system should be scalable to accommodate future growth in terms of data volume and user base.

3.reliability:

- The system must have availability minimizing downtime for maintenance or unexpected issues.

4.availability:

- The system should be available for use during specified business hours with minimal scheduled downtime.

5.security:

- Implemented encryption for data transmission and storage to ensure the confidentiality and integrity of sensitive information.

6.maintainability:

- The system should be easily maintainable with minimal disruption to on going operations during updates or patches.

7.usability:

- The user interface should be intuitive and user friendly to reduce the learning curve for staff and customers.

8.data backup and recovery:

- Define procedures for regular data backups and establish a robust data recovery plan.

9.documentation:

- Provide comprehensive documentation for system users, administrators and developers.

10.error handling:

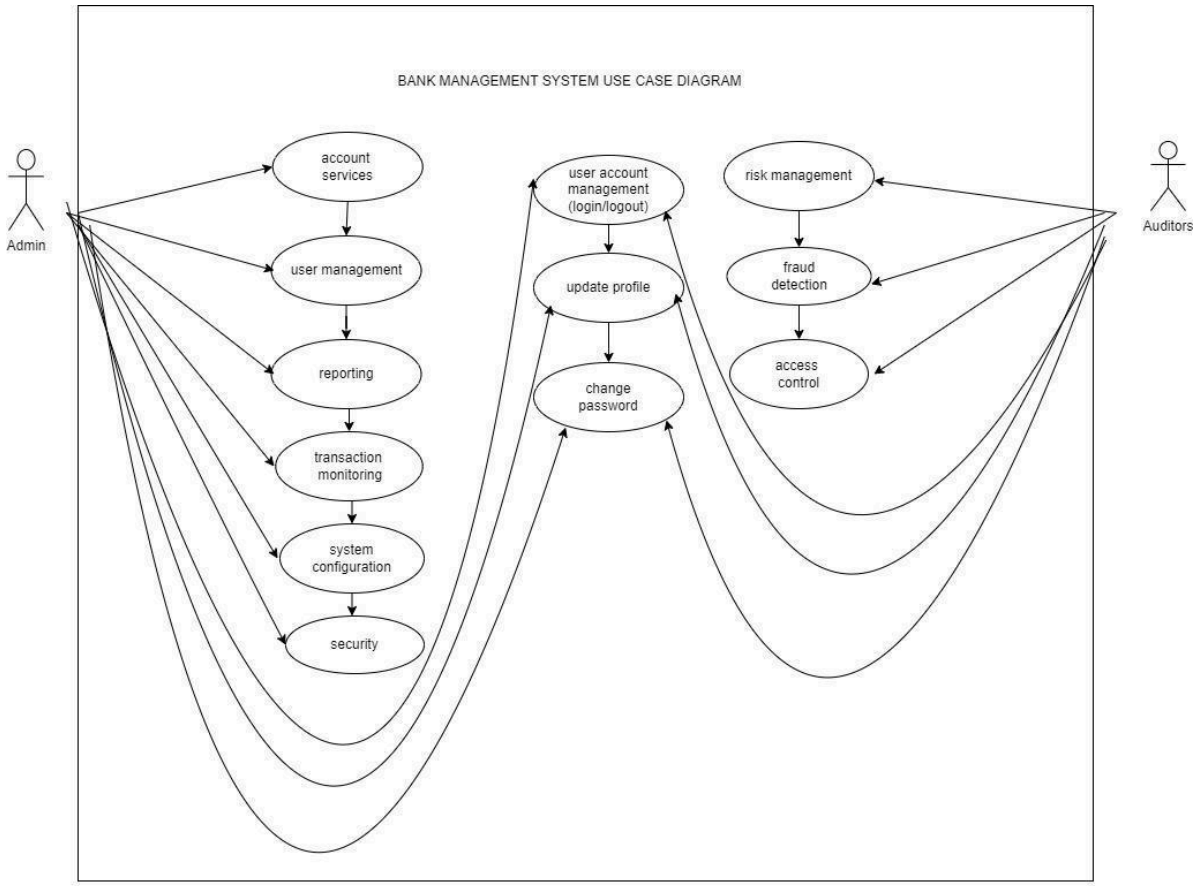
- implement effective error handling mechanisms to provide meaningful error messages and facilitate issue resolutions.

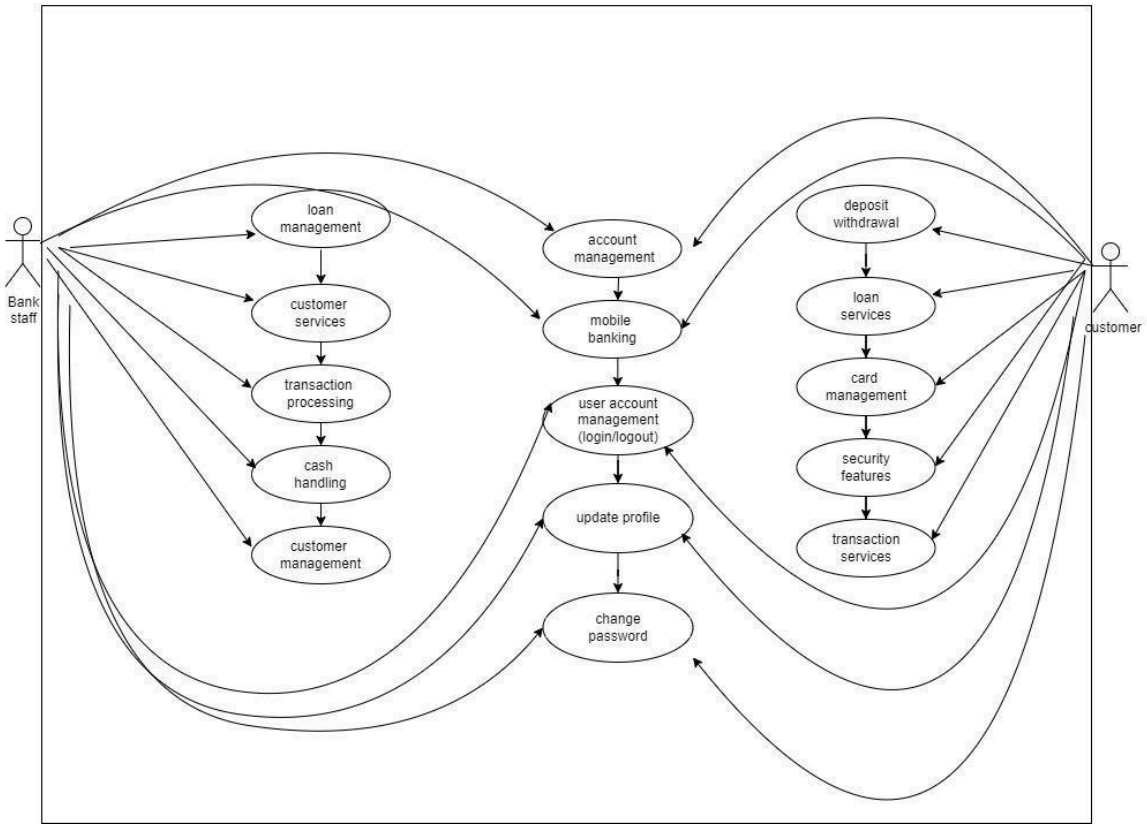
These non-functional requirements contribute to the overall success and reliability of the bank management system by addressing aspects beyond specific features and functionality.

Practical 2

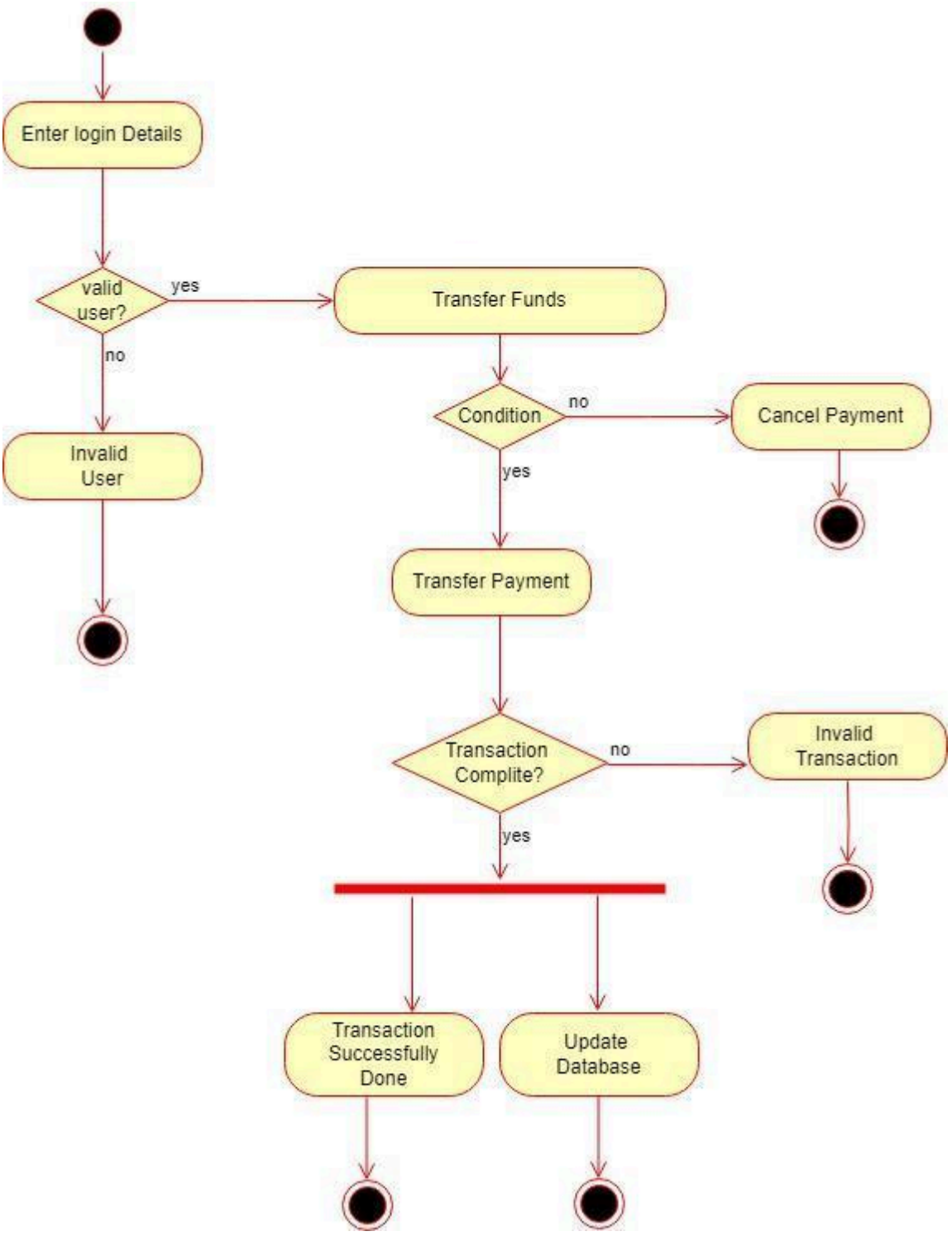
UML Diagram for Bank Management System

Use-Case Diagram


BANK MANAGEMENT SYSTEM USE CASE DIAGRAM
Admin
account services
user management
reporting
transaction monitoring
system configuration
security
user account management (login/logout)
update profile
change password
risk management
fraud detection
access control
Auditors

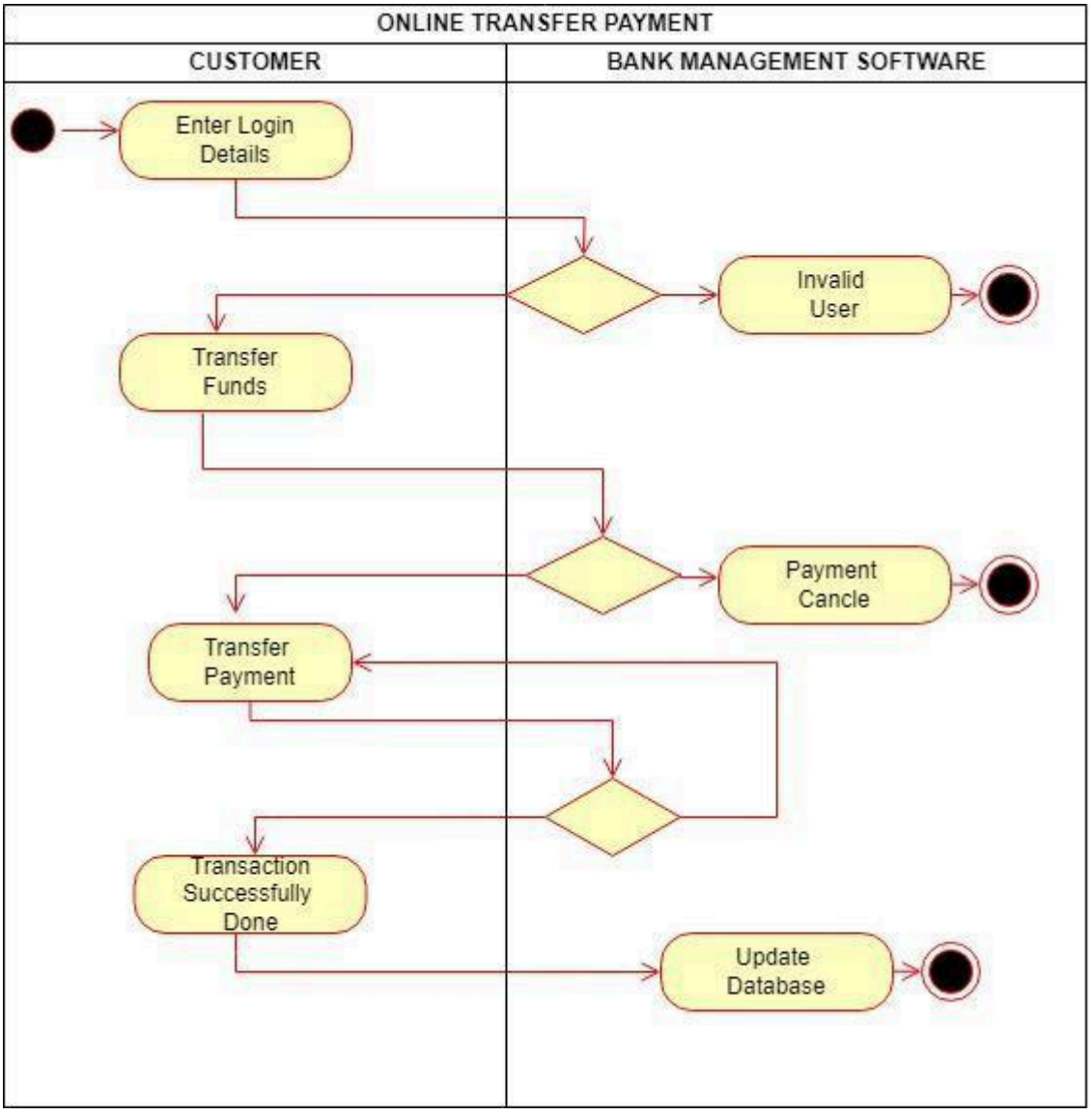

Bank staff
loan management
customer services
transaction processing
cash handling
customer management
account management
mobile banking
user account management (login/logout)
update profile
change password
deposit withdrawal
loan services
card management
security features
transaction services
customer

Activity Diagram



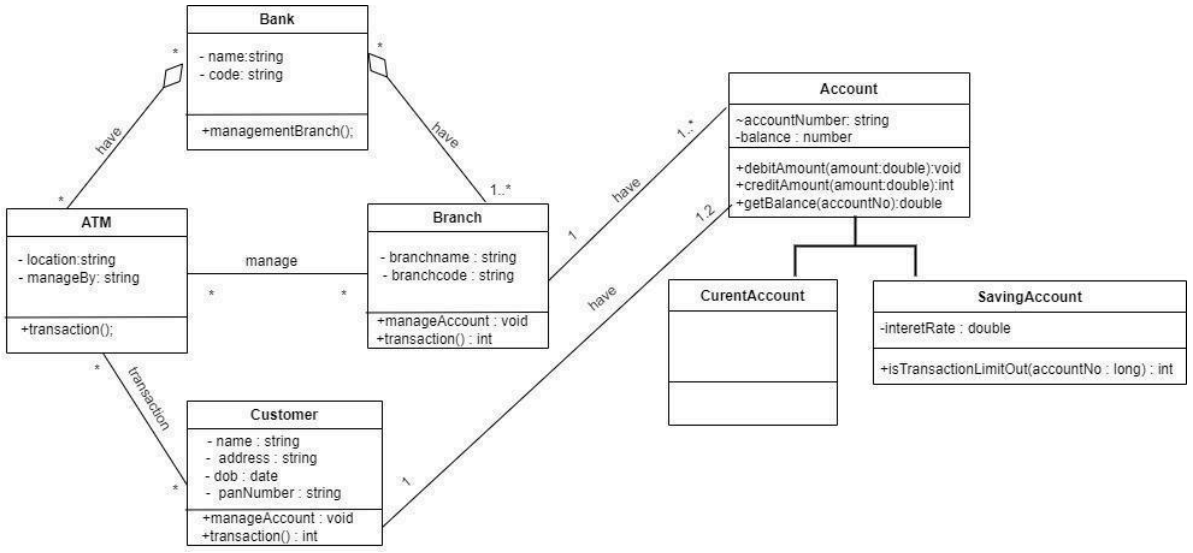
(f.g.: activity diagram for Payment transfer)

Swimlane Diagram



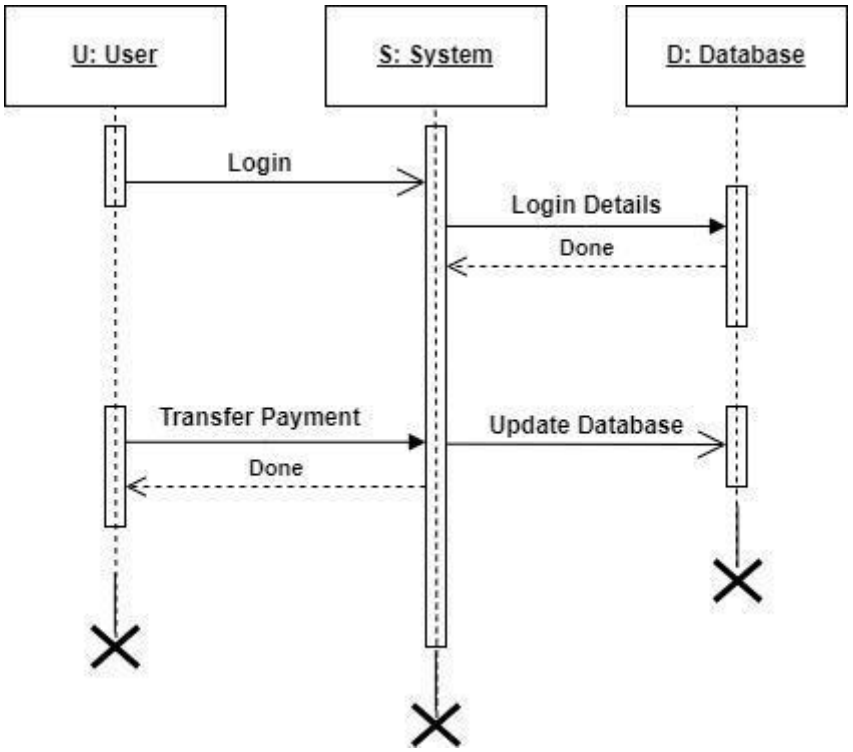
(f.g.: Swimlane diagram for Payment Transfer)

Class Diagram



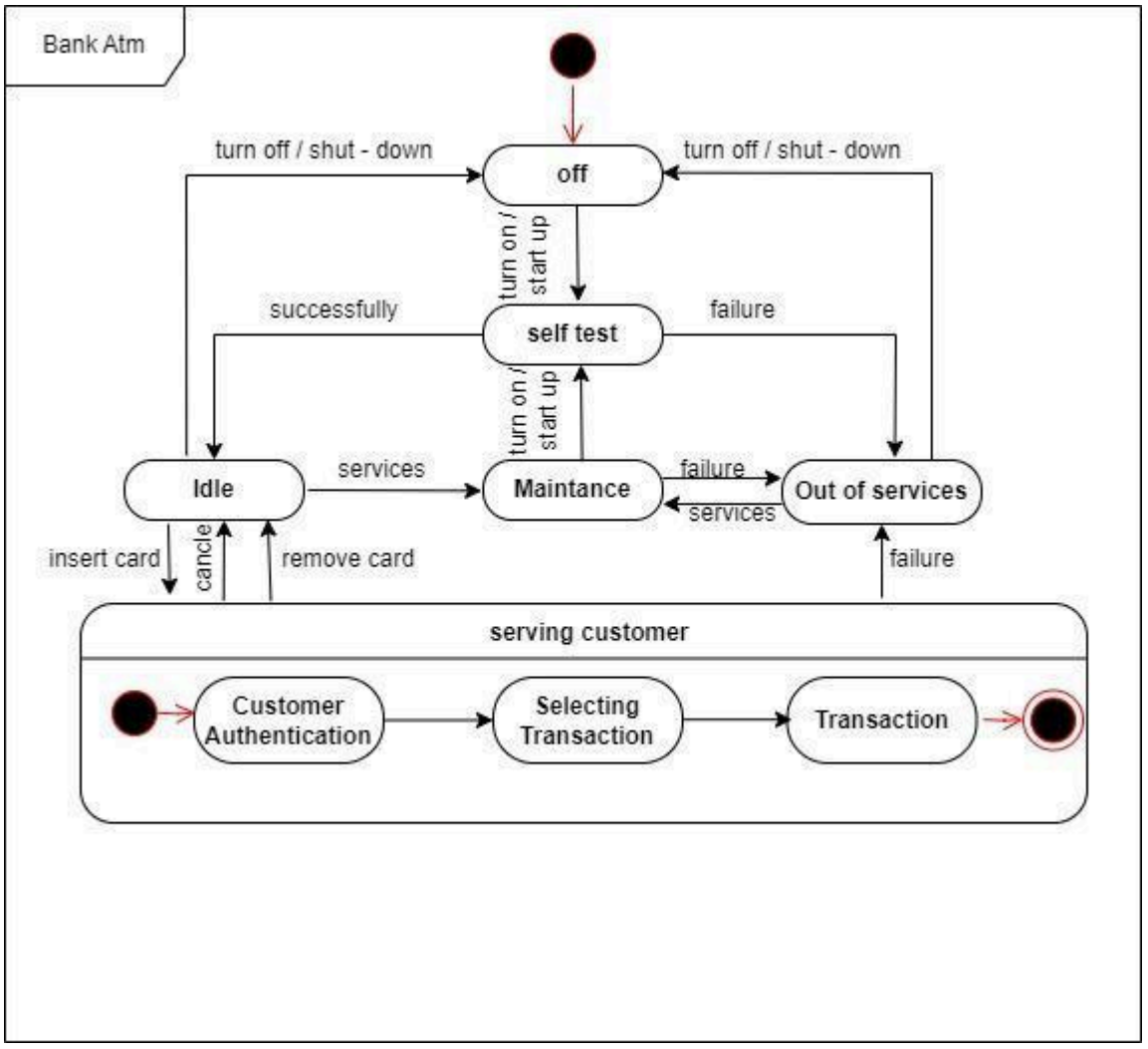
(f.g.: Class diagram for Bank Management system)

SequenceDiagram



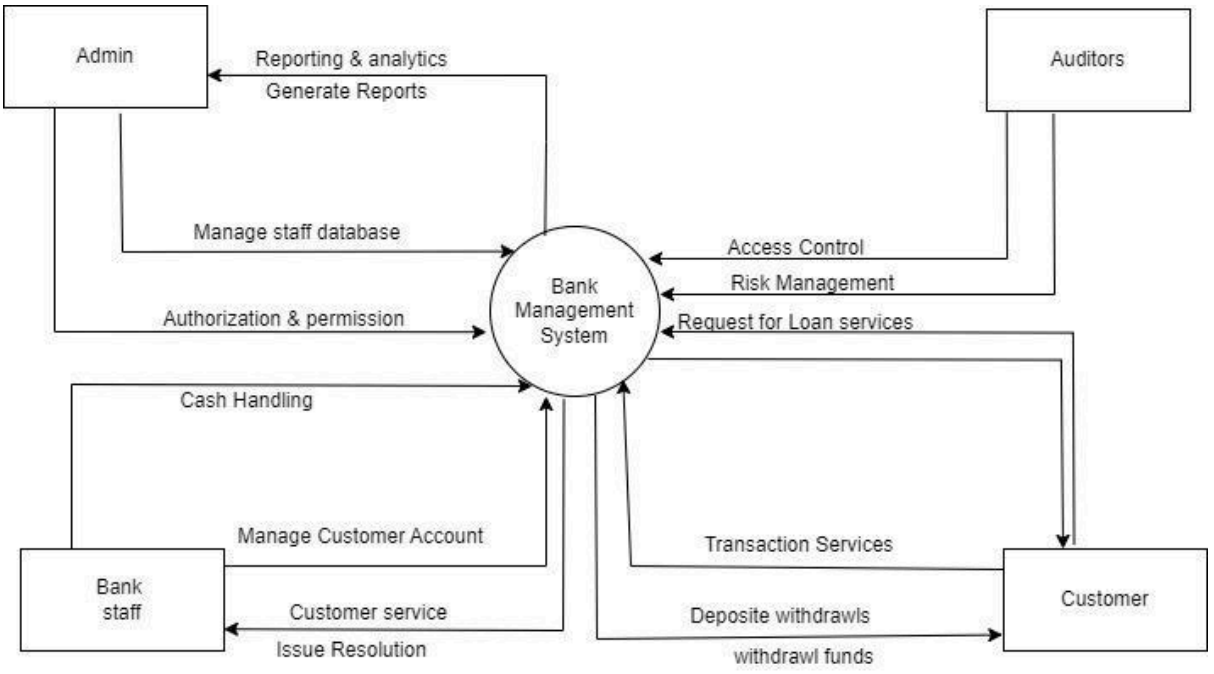
(f.g.: Sequence diagram for Payment Transfer)

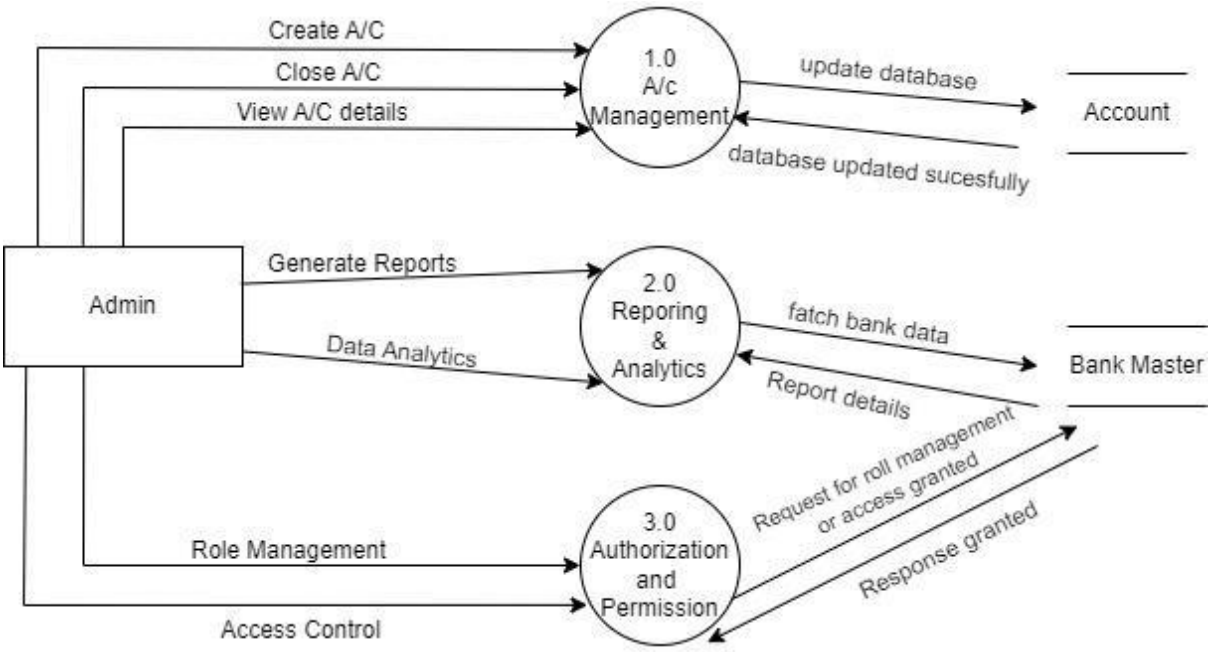
State Diagram



(f.g.: State diagram of Bank Automated Teller Machine(ATM))

Data flow diagram:

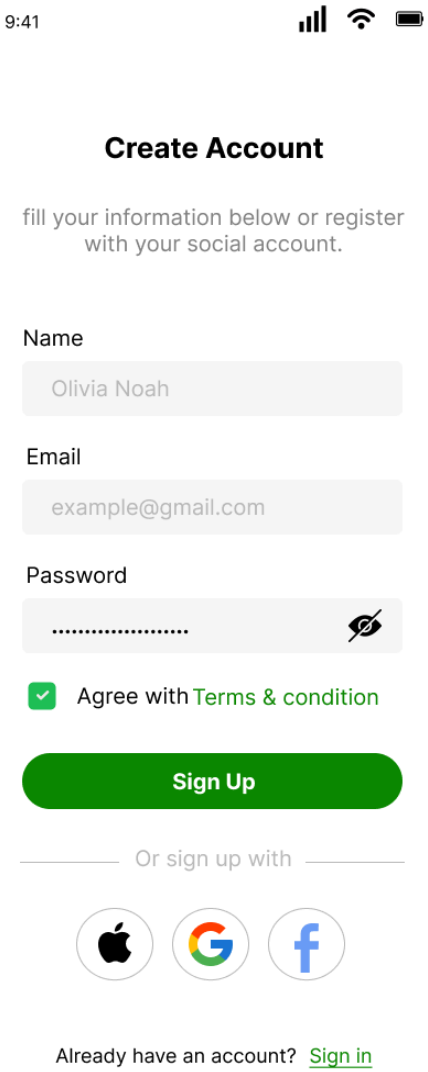




Practical 3

Project Design for job finder System

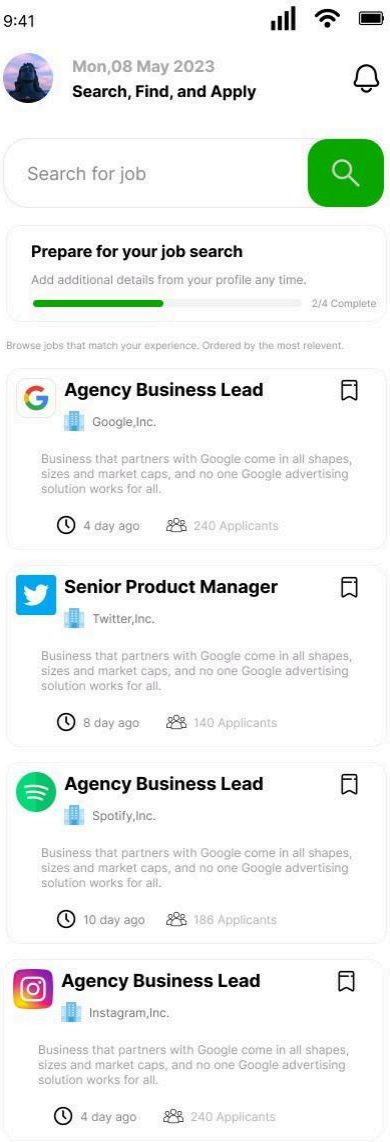
Screen: Create Account:



Purpose: This form will allow the target end-users to Create an Account in the system Account , the following information will be encoded in the system.

Sr.	Field Name	Description
1	name	Username field should be editable and accept the Username.
2	Email	Email field should be editable and accept the email with proper format.
3	Password	Password field should be editable and accept the password and display as star or dot.
4	Agree with the terms and Condition	Checkbox for accepting terms and conditions.
5	Sign Up	Sign Up is a button for store the entered data into the database.

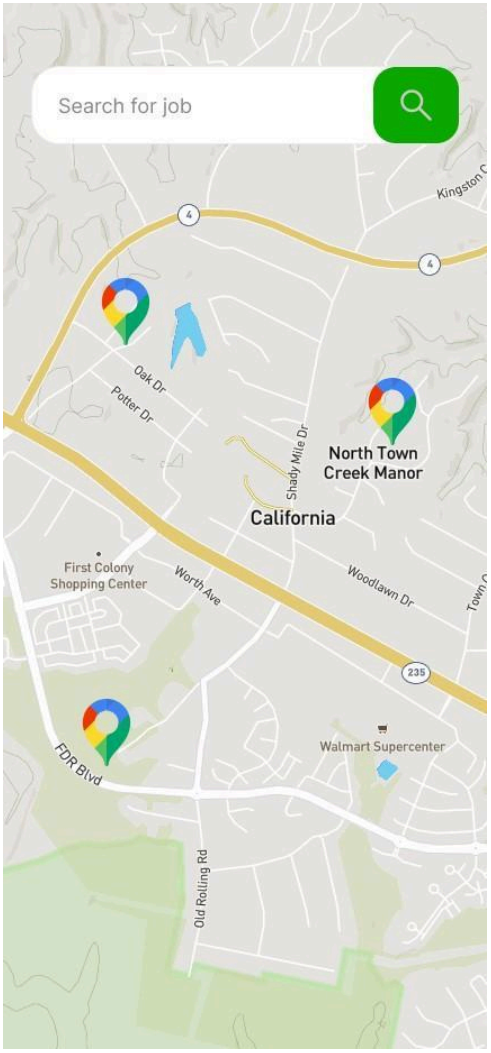
Provide information to find the job in required company:



Purpose: This Screen will allow the target end-users to Search the company in which they want to apply for job. It will provide the company information.

Sr.	Field Name	Description
1	Profile icon	This button will be linked to the profile page. so that the end user can access the profile in the whole system.
2	Notification	This icon refers to the notification so that the end user can notify on the time.
3	Search job button	This button will search the job as per the user requirement.
4	Provide a company information	This will provide the company information.
5	Book Mark	To save the company information.

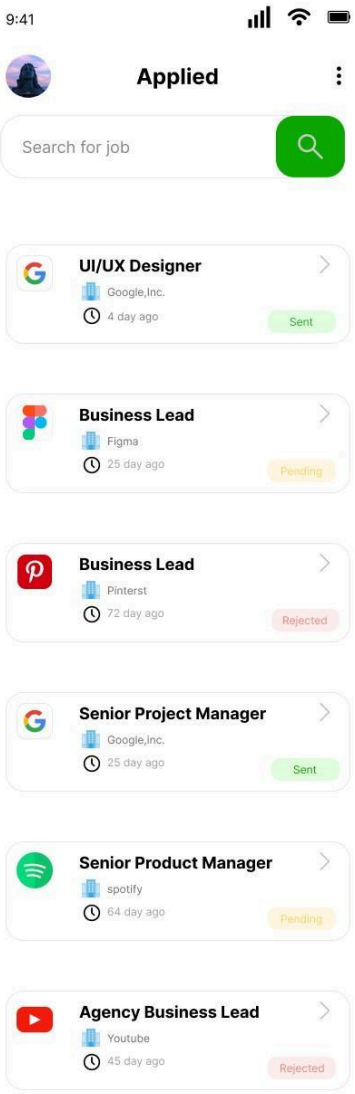
Provide information to find the job in required place:



Purpose: This Screen will allow the target end-users to Search the company in which they want to apply for job in that particular place. It will provide the company information to find the job in that desire area.

Sr.	Field Name	Description
1	Search job button	This button will search the job as per the user requirement.
2	Provide a company information	This will provide the company information on the click of that particular desired location.

Provide information to find the company response:



Purpose: This Screen will allow the target end-users to Search the company in which they want to apply for job to check the response to send their resume.

Sr.	Field Name	Description
1	Profile icon	This button will be linked to the profile page. so that the end user can access the profile in the whole system.
2	Notification	This icon refers to the notification so that the end user can notify on the time.
3	Search job button	This button will be search the job as per the user requirement.
4	Provide a company information	This will provide the company information.
5	Button	This will provide information to whether the company response wil be sent , pending or rejected.

Practical 4

Data base design and API Documentation

- User
- Payment
- Loan
- Transaction
- Employee

Table Name : User

Field Name	Datatype	Null	Constraint	Description
USerID	int	Not Null	Primary Key	Auto Increment
Name	Varchar(255)	Not Null	-	-
emile	Varchar(50)	Not Null	-	-
Password	Varchar(100)	allow Null	-	-
PhoneNo.	Varchar(12)	Not null	-	-
Admin ID	int	Allow null	Foreign key	Reference of Admin table

Table Name : Payment

Field Name	Datatype	Null	Constraint	Description
PaymentID	Varchar(10)	Not Null	Primary Key	Auto Increment
Amount	Float(10,2)	Not Null	-	-
PaymentType	Varchar(20)	Not Null	-	-
Payment Method	Varchar(100)	Allow Null	-	-
PaymentDate	Date	Not Null	-	-

Table Name : Loan

Field Name	Datatype	Null	Constraint	Description
LoanID	int	Not Null	Primary Key	Auto Increment
LoanType	Varchar(20)	Not Null	-	-
LoanAmount	DECIMAL(10,2)	Not Null	-	-
InterestRate	DECIMAL(10, 2)	Not Null	-	-

Table Name : Transaction

Field Name	Datatype	Null	Constraint	Description
TransactionID	int	Not Null	Primary Key	Auto Increment
TransactionType	Varchar(20)	Not Null	-	-
Amount	DECIMAL(10,2)	Not Null	-	-
TransactionDate	DATETIME	Not Null	-	-

Table Name : Employee

Field Name	Datatype	Null	Constraint	Description
EmployeeID	int	Not Null	Primary Key	Auto Increment
Position	Varchar(20)	Not Null	-	-