Software Engineering

Topic :- E-Banking System

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1.Introduction:

In the ever-evolving digital landscape, the conventional banking sector faces the pressing challenge of seamlessly integrating with modern technologies to satisfy the surging demands for an agile, secure, and feature-rich online banking experience. This project's core challenge lies in the creation and implementation of a comprehensive e-banking system built on the MERN stack. The objective is to craft a digital banking solution that not only encompasses a wide array of financial services but also ensures top-tier security protocols, intuitive user interfaces, and effortless integration with emerging fintech solutions.

This game-changing e-banking platform aims to reinvent customer interactions with financial institutions by providing a unified digital platform for account management, transactions, and financial insights while overcoming key challenges like security, scalability, and regulatory compliance.This paper outlines the system's major needs.

1.1 Purpose

This Software Requirements Specification (SRS) document's goal is to establish the functional and nonfunctional requirements for developing an E-Banking System.It aspires to reinvent consumer interactions with financial institutions by delivering seamless account management, transactions, and financial insights while maintaining top-tier security, scalability, and regulatory compliance.

1.2 Scope

The E-Banking System will be a complete web-based programme that will cater to the needs of both financial institution managers and clients. It will provide account administration, secure transactions and reporting tools to help banks run more efficiently while conforming to all necessary rules and legal norms.

2.System Description:

2.1System Overview:

- **Account Registration and Access:** Customers may quickly sign up for online banking and access their accounts safely with correct authentication.

- **Account Information:** Customers can view real-time account balances and access a detailed transaction history.

- **Profile Management:** Customers may update personal information, communicate preferences, and control transaction beneficiaries.

- **Transactions:** Customers can use this function to move funds between accounts, both within and outside of the bank. It also enables for easy bill paying.

- **Notifications and Alerts:** Customers receive automatic reminders for account activity, transaction confirmations, and crucial updates.

3.Functional Requirement:

- **User Registration:** Customers should be able to open new accounts online by entering basic personal information such as their name, contact information, and identity information.

- **Admin Registration:** The system must offer a secure login mechanism for administrators, featuring role-based access control. Administrators should have the ability to manage user accounts, allowing them to remove accounts, update user account statuses (active, inactive, suspended), accept or reject user account requests, and add new administrators when necessary.

- **Real-Time Balance Inquiry:** Customers should have the ability to check the real-time balances of their various accounts, including savings, checking, and investment accounts.

- **User Profile Update:** Within their online banking profiles, users should be able to change their personal information, such as contact information, address, and communication preferences.

- **Fund Transfer:** Users should be able to transfer funds between accounts within the same bank as well as to external accounts at other financial institutions, with one-time and recurring transfers supported.

- **Transaction Alerts:** Users should be able to set up transaction alerts to get notifications for certain account activity such as significant withdrawals, deposits, or specified transaction categories, which would improve account security and awareness.

4.Non Functional Requirement

4.1 Security

- All sensitive client data, including transactions and personal information, must be protected using industry-standard encryption algorithms both in transit and at rest.
- The system should support multi-factor authentication (MFA) for user login, enhancing security.
- Role-based access to critical functions and data, as well as tight access control methods, are required.

4.2 Performance

- The system should deliver responsive user interfaces, with page load and transaction processing speeds that satisfy set standards.
- The system must be able to manage at least 100 concurrent users without degrading performance.

4.3 Usability

- The User interfaces should be intuitive, user-friendly, and accessible to people with impairments, according to usability best practices.

- Ensure that the system is responsive and accessible on various devices, including smartphones and tablets.

4.4 Scalability

- The system's architecture and resources must be easily scalable to meet a rising user base and greater transaction volumes.
- This scalability is critical to the E-Banking System's long-term growth and survival.

5.Constraints

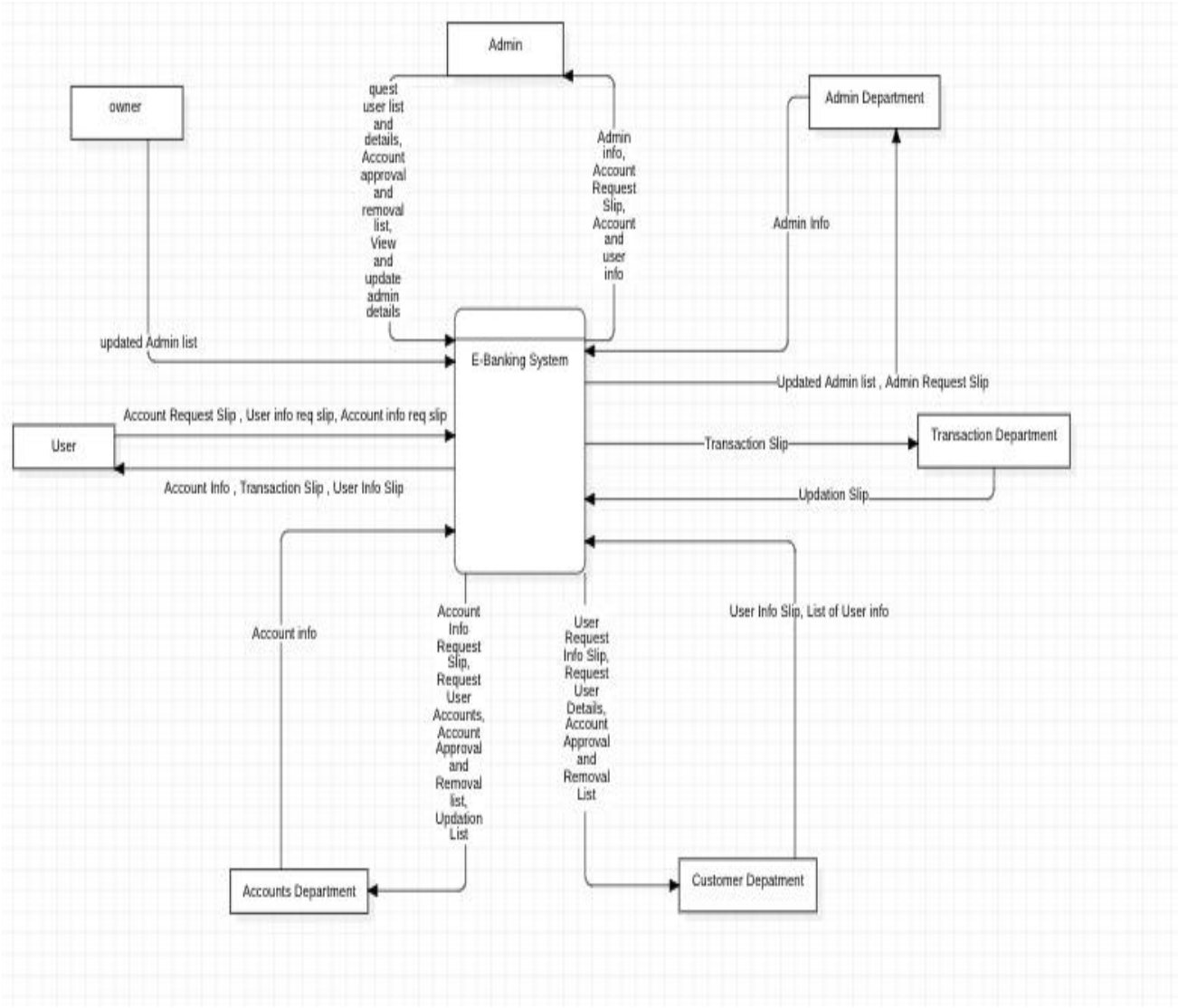
Strict security procedures and standards, such as encryption, secure access restrictions, and frequent security audits, should be followed by the system.
All client data should be managed with the highest secrecy and privacy, with stringent access restrictions in place to prevent unauthorized access.

6.Conclusions:

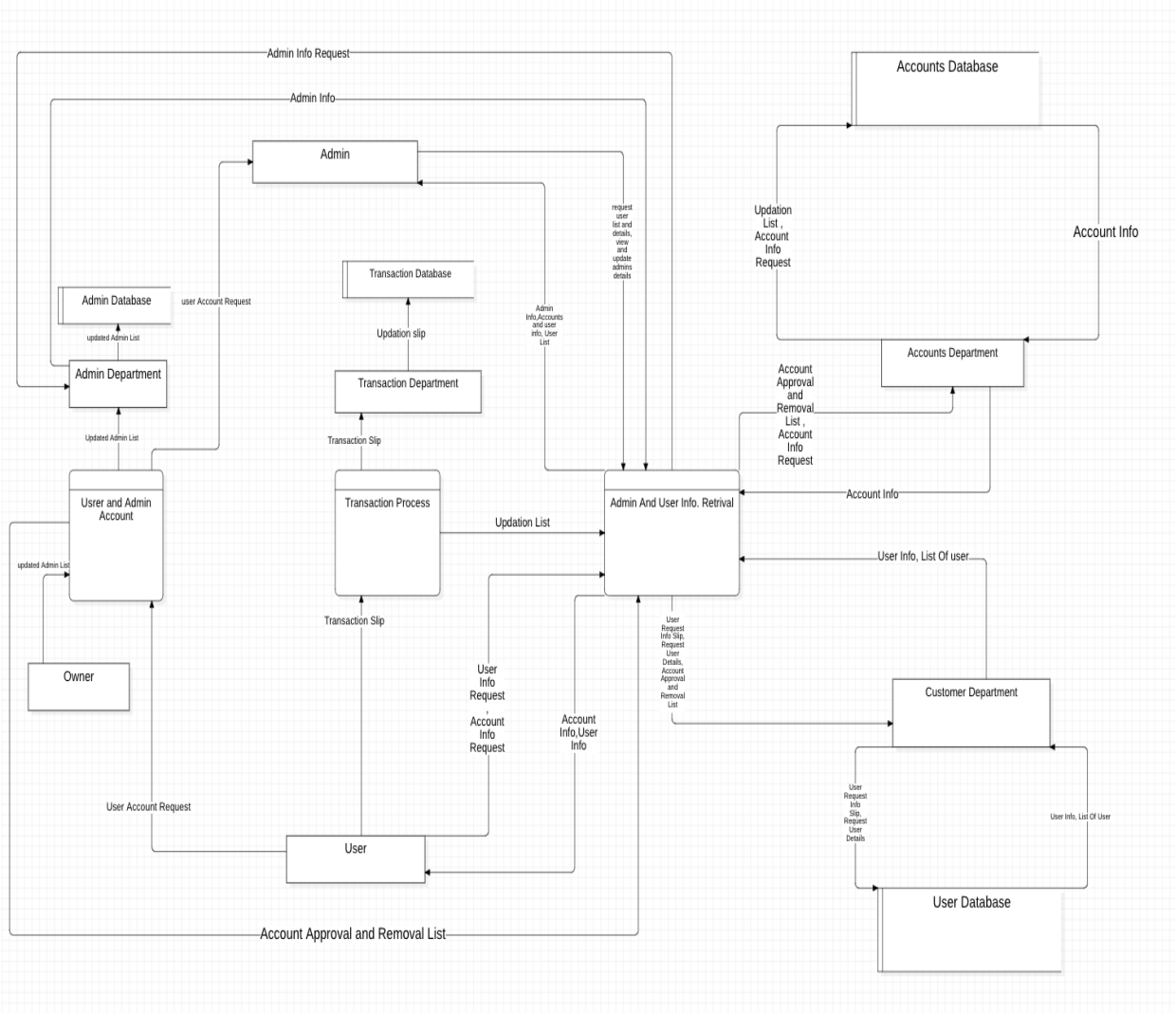
The e-banking system described in this SRS intends to provide a safe, comprehensive, and user-friendly online banking experience in the evolving digital context. It is based on the MERN stack and focuses on user registration, account administration, financial transactions, and notifications. The system distinguishes between administrator and user roles and uses database schemas to enable optimal data management. Its user-friendly frontend design improves the user experience, revolutionizing consumer interactions with financial institutions in the current digital era. In essence, the goal of this e-banking system is to deliver a safe, frictionless, and efficient online banking experience that is in step with changing digital expectations.

DFD (DATA FLOW DIAGRAMS):

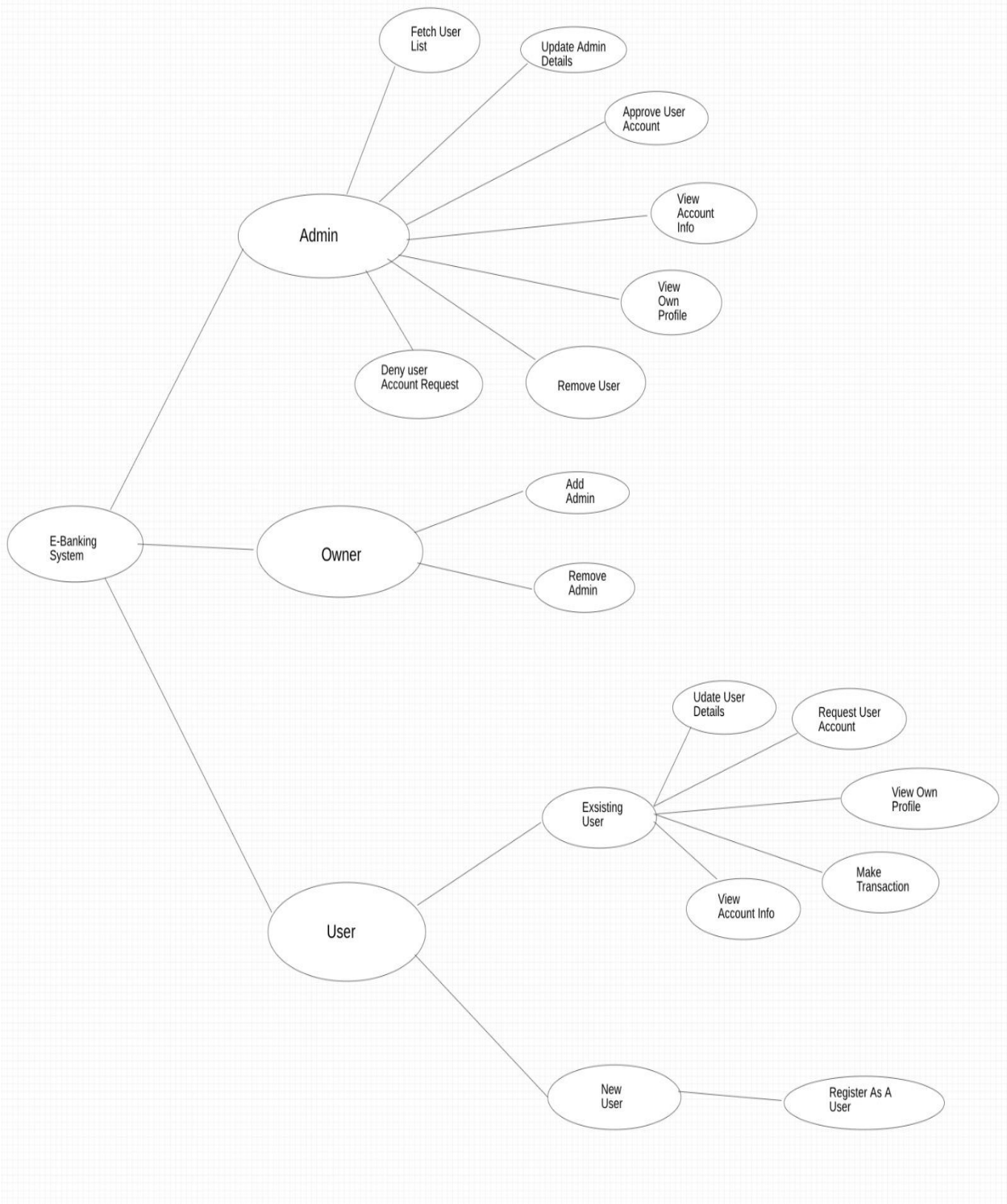
Level 0:



Level 1:


Admin Info Request
Admin Info
Admin
Accounts Database
request user list and details, view and update admins details
Updation List , Account Info Request
Account Info
Admin Database
user Account Request
updated Admin List
Transaction Database
Updation slip
Admin Info,Accounts and user info, User List
Accounts Department
Admin Department
Transaction Department
Account Approval and Removal List , Account Info Request
Updated Admin List
Transaction Slip
Usrer and Admin Account
Transaction Process
Admin And User Info. Retrival
Account Info
Updation List
User Info, List Of user
updated Admin List
Transaction Slip
User Request Info Slip, Request User Details, Account Approval and Removal List
Owner
User Info Request
Account Info Request
Account Info,User Info
Customer Department
User Request Info Slip, Request User Details
User Info, List Of User
User Account Request
User
User Database
Account Approval and Removal List

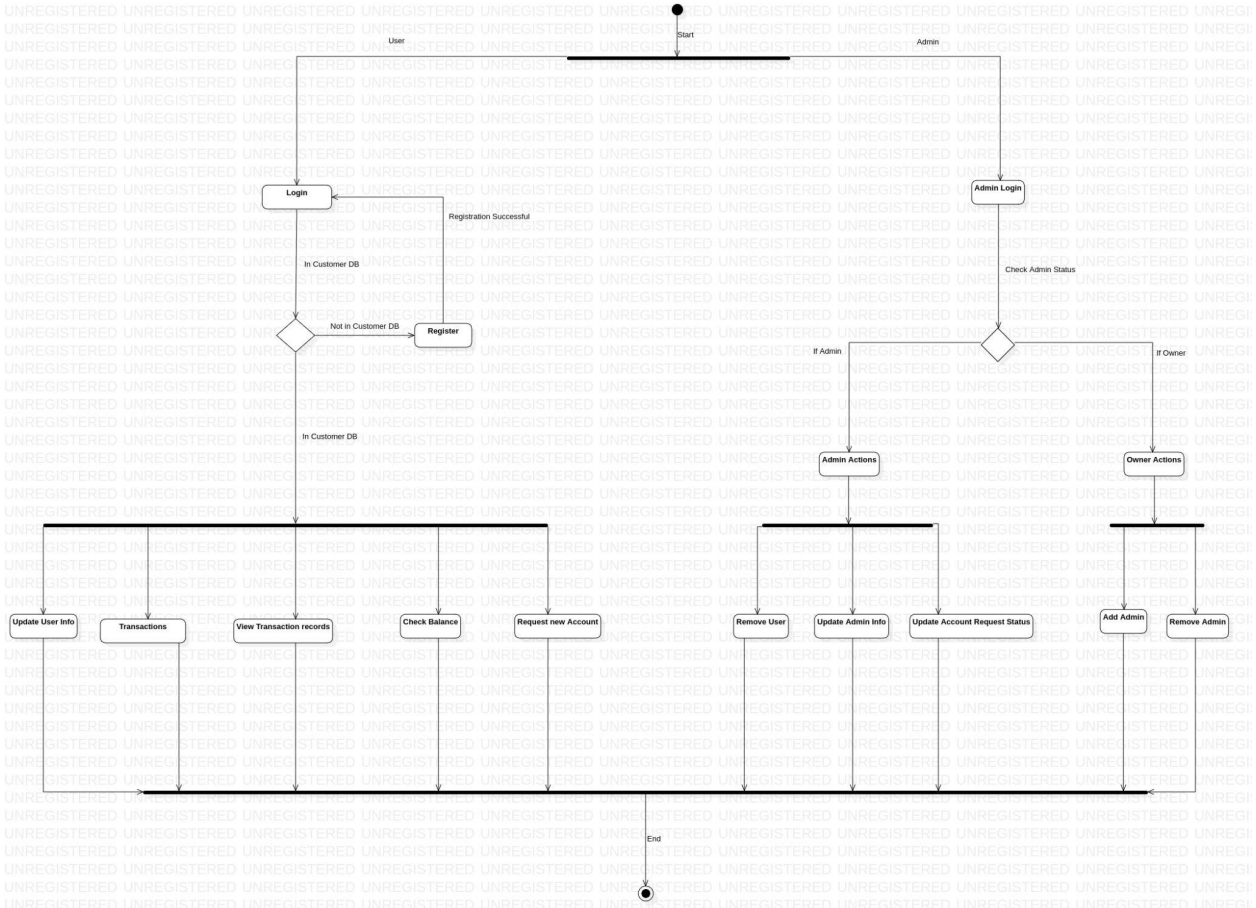
DECISION TREE:



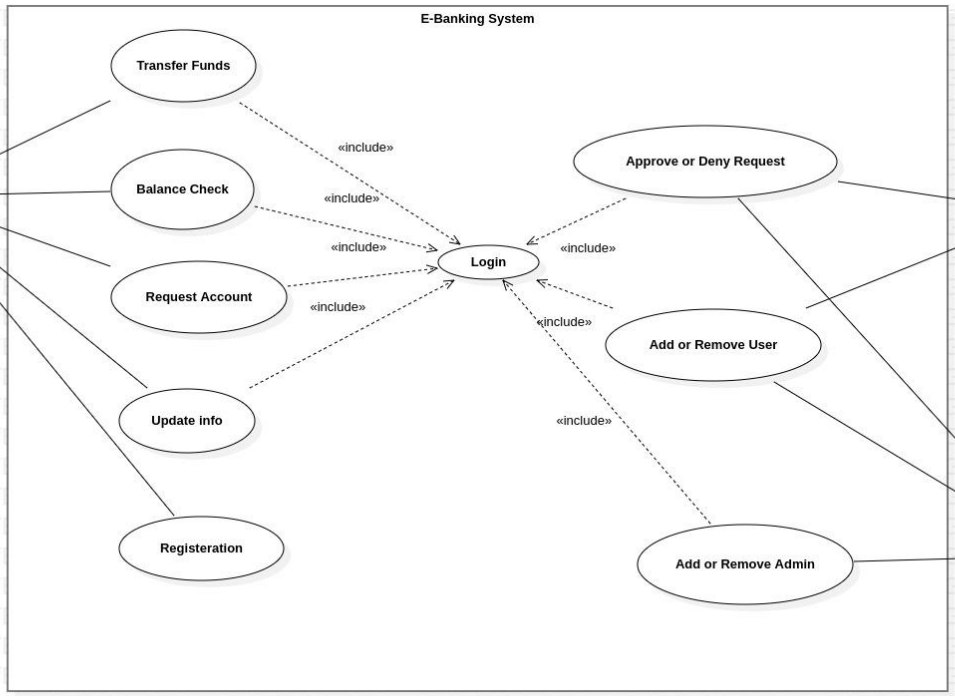
DECISION TABLE:

Decesion		Decesion Enteries			
Exsisting user		Y	N	N	N
New user		N	Y	N	N
Owner		N	N	Y	N
Admin		N	N	N	Y
Actions		Action Entries			
Add new Admin				Y	
Remove an Admin				Y	
Fetch user list					Y
Update user details		Y			
Update admin details					Y
Request user account		Y			
Approve user account					Y
Make Transaction		Y			
View Account Info		Y			Y
View own profile		Y			Y
Deny user account request					Y
Remove User					Y
Register as a user			Y		

Activity Diagram

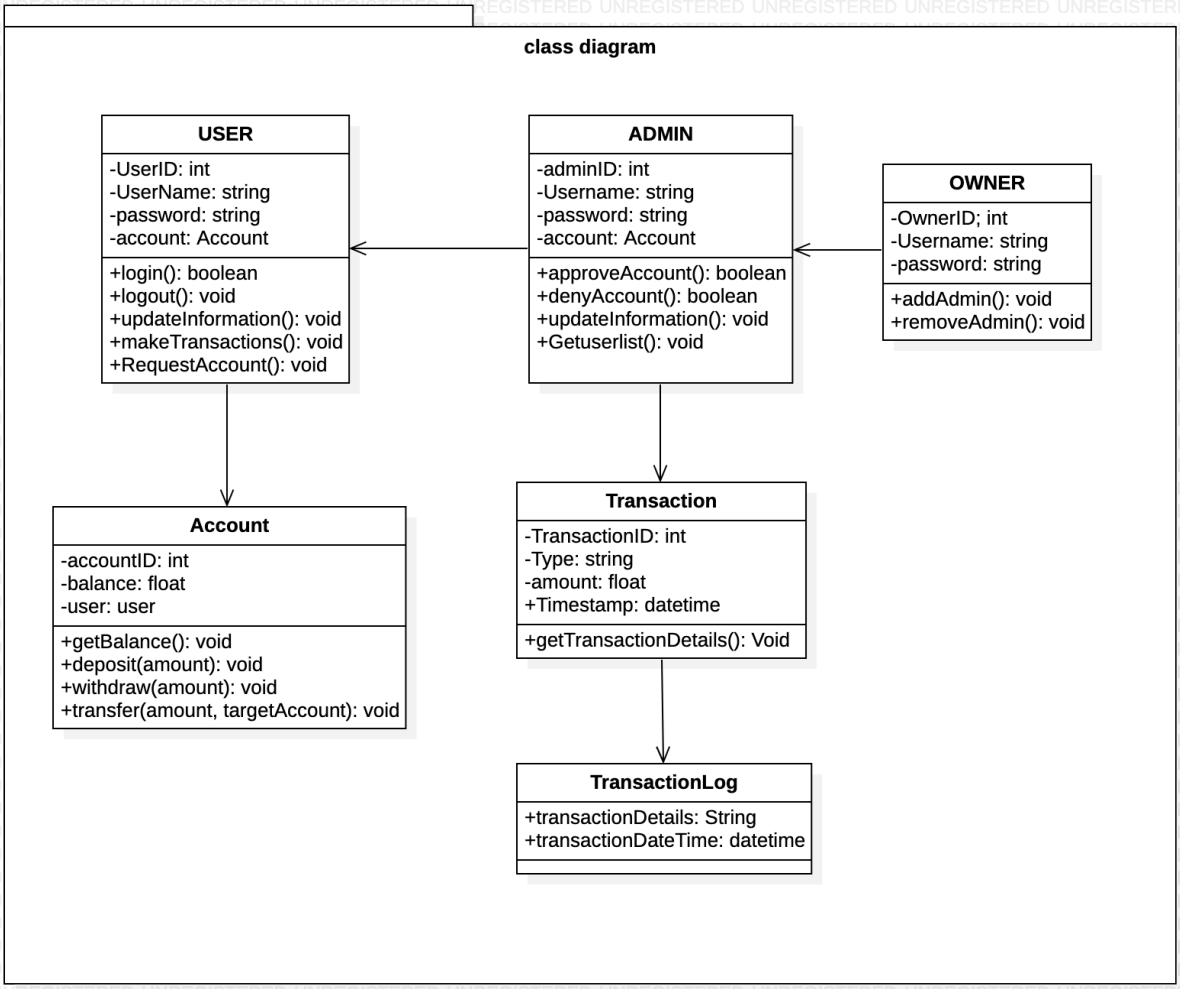


Use Case Diagram

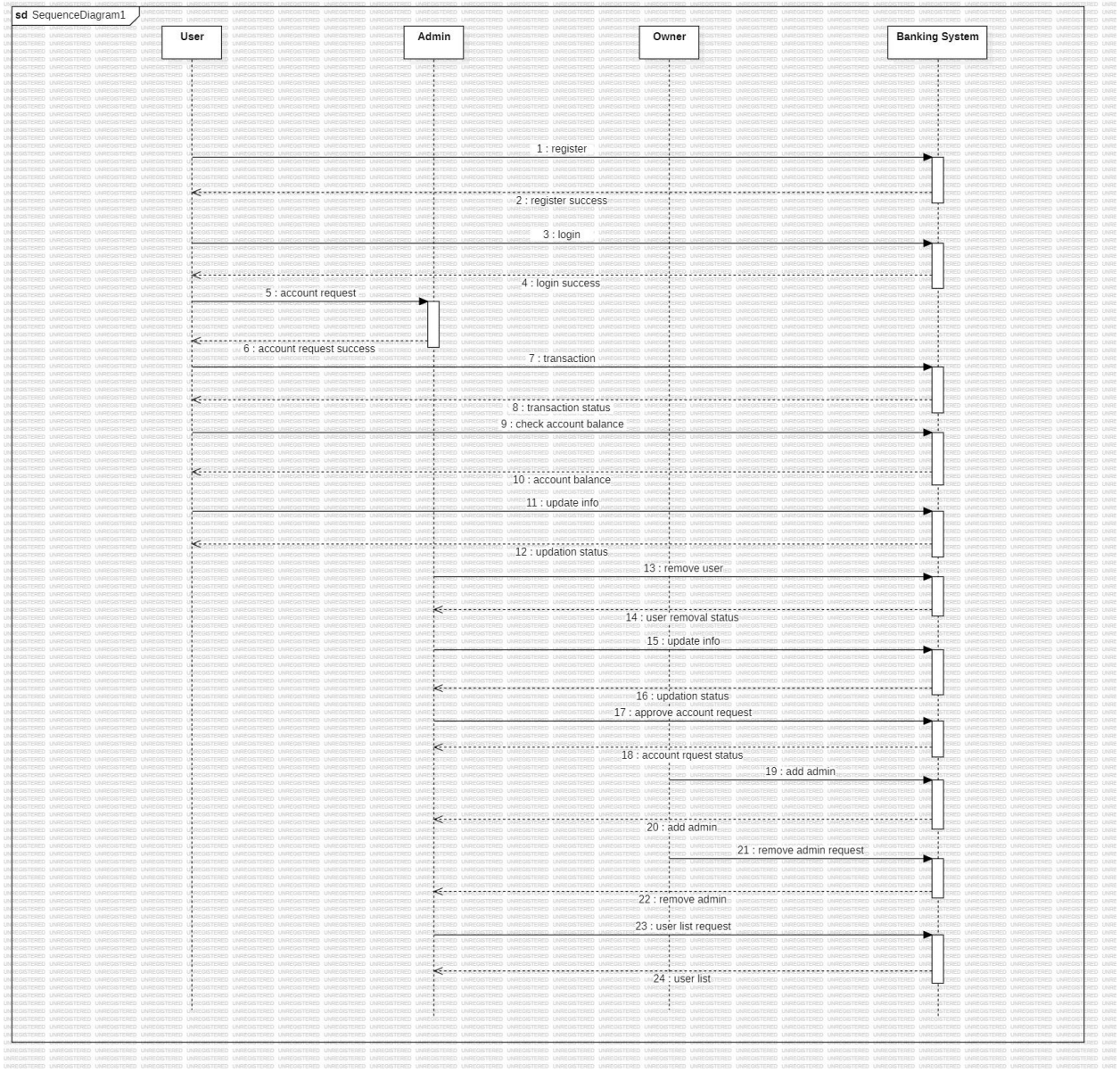


UNREGISTERED UNREGISTERED UNREGISTERED UNREGISTERED UNREGISTERED UNREGISTERED

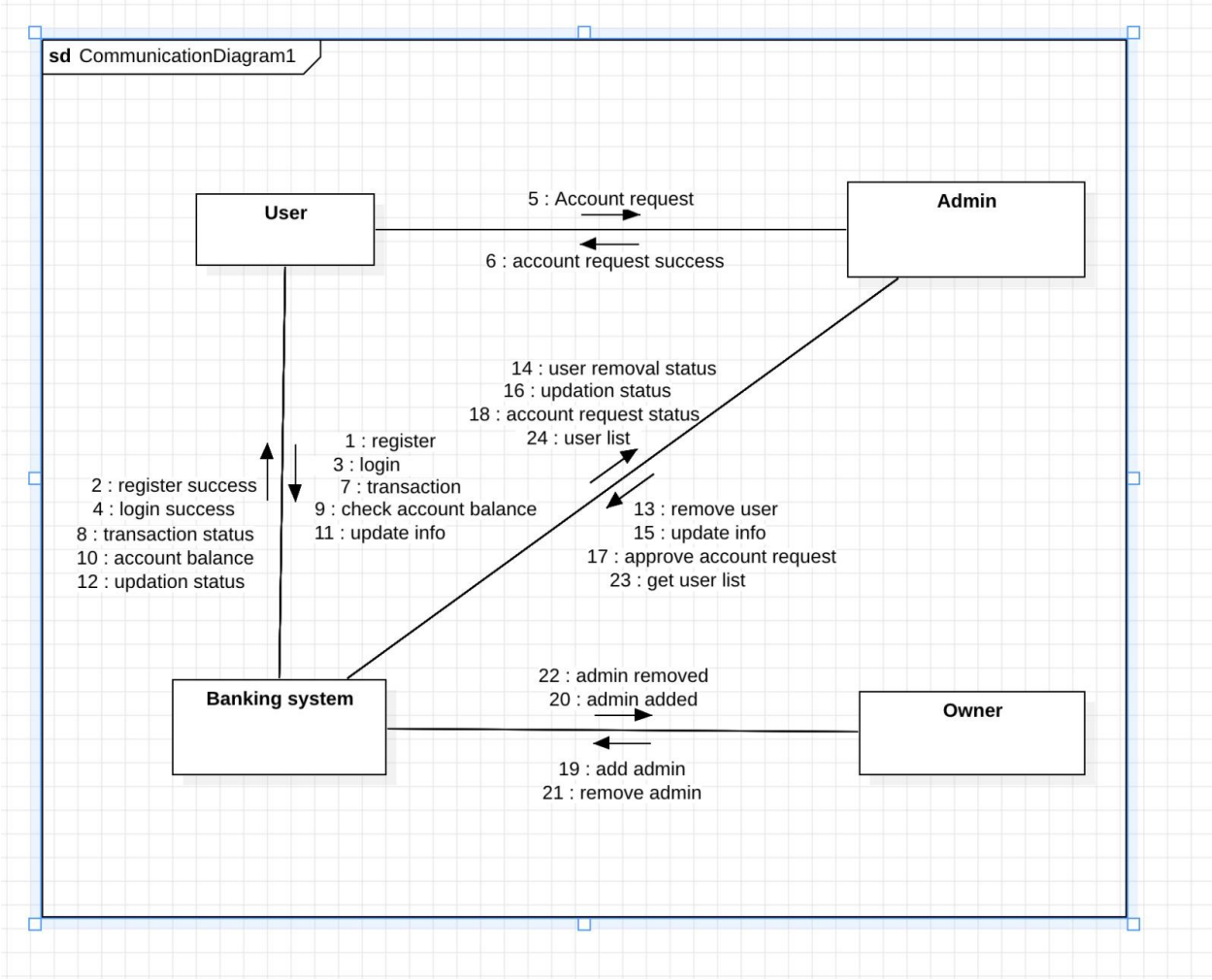
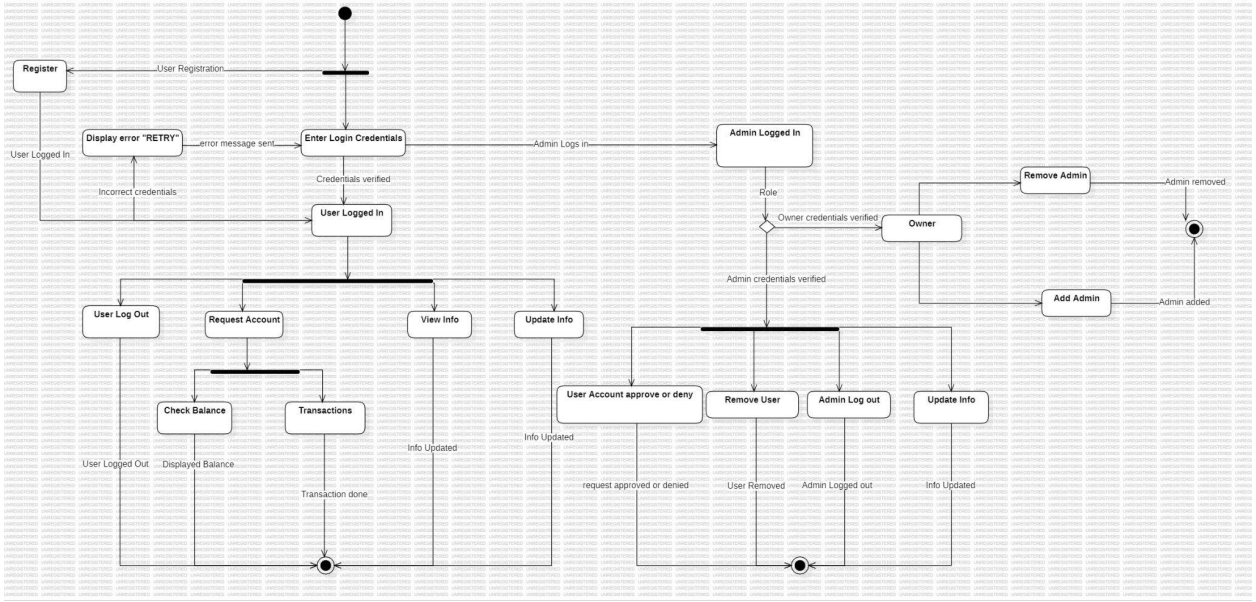
Class Diagram



Sequence Diagram



Collaboration Diagram



State Chart Diagram