



# NOVA BANK

GROUP NUMBER 32

**MEMBERS:**

JAIDEEP DAHIYA  
SATVIK ARYA  
SWARIT KUMAR  
VIKASH BHATI

# DEADLINE 1

- **Project Objective**

- We designed a Bank Management System named NovaBank to enable smooth account handling, secure financial transactions, and efficient administrative control for clients, staff, and admins.

- **ER Model**

- The ER diagram is created using Lucidchart.
- It structurally represents the relationships between entities like clients, staff, admins, accounts, transactions, and loans.

- **Scope & Features**

- Client: Registration, login, account management, fund transfer, transaction history, loan requests, feedback, and a personalized dashboard.
- Staff: Manage client data, assist with transactions, handle loans, generate reports, and update availability.
- Admin: System oversight, user management, financial monitoring, account type management, and comprehensive reporting.

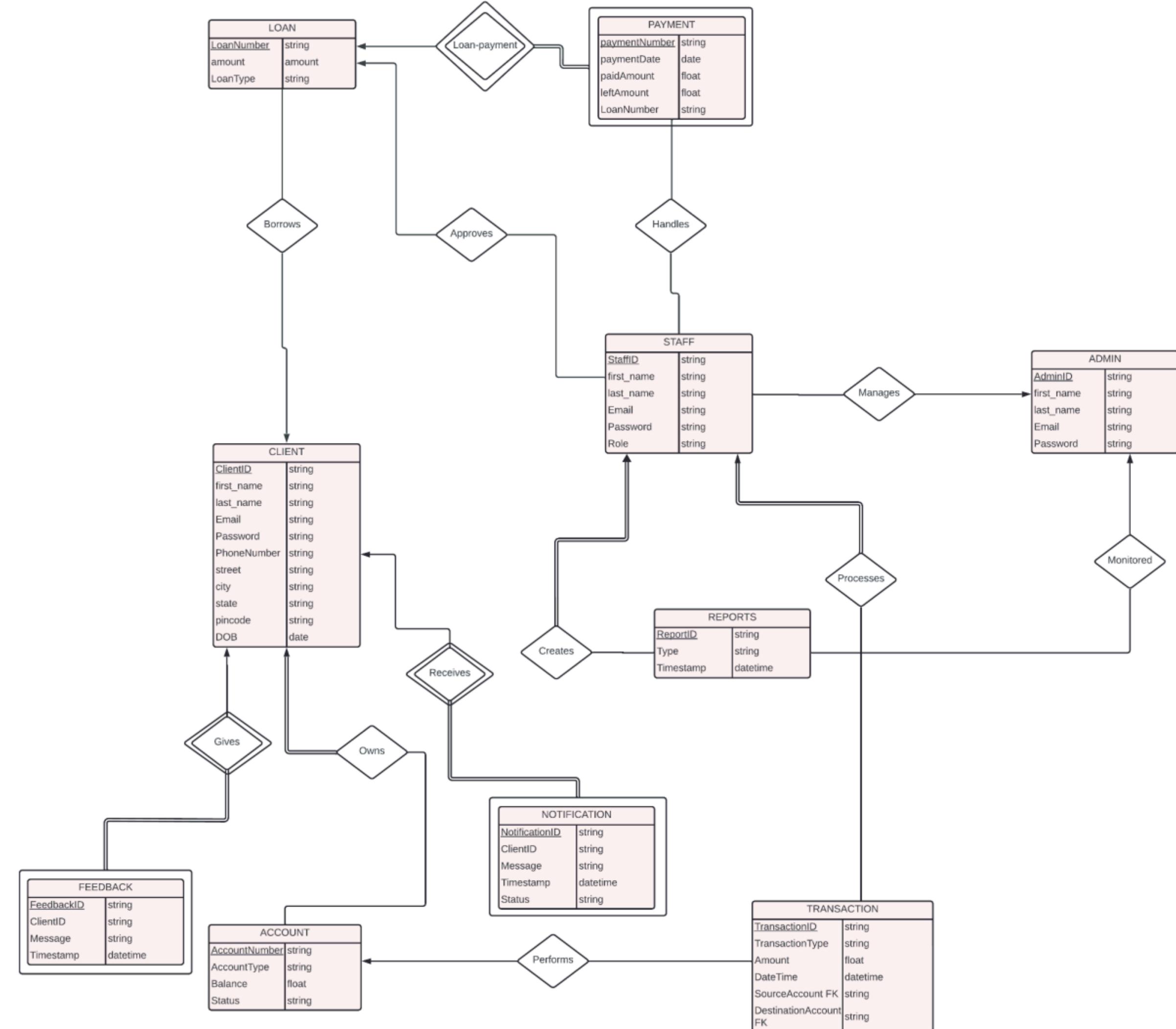
- **Comments & Contributions**

- Used ChatGPT for initial feature brainstorming.
- Used Lucidchart for the ER diagram.
- The entire team contributed equally to both the requirements and ER model design.



# DEADLINE 1

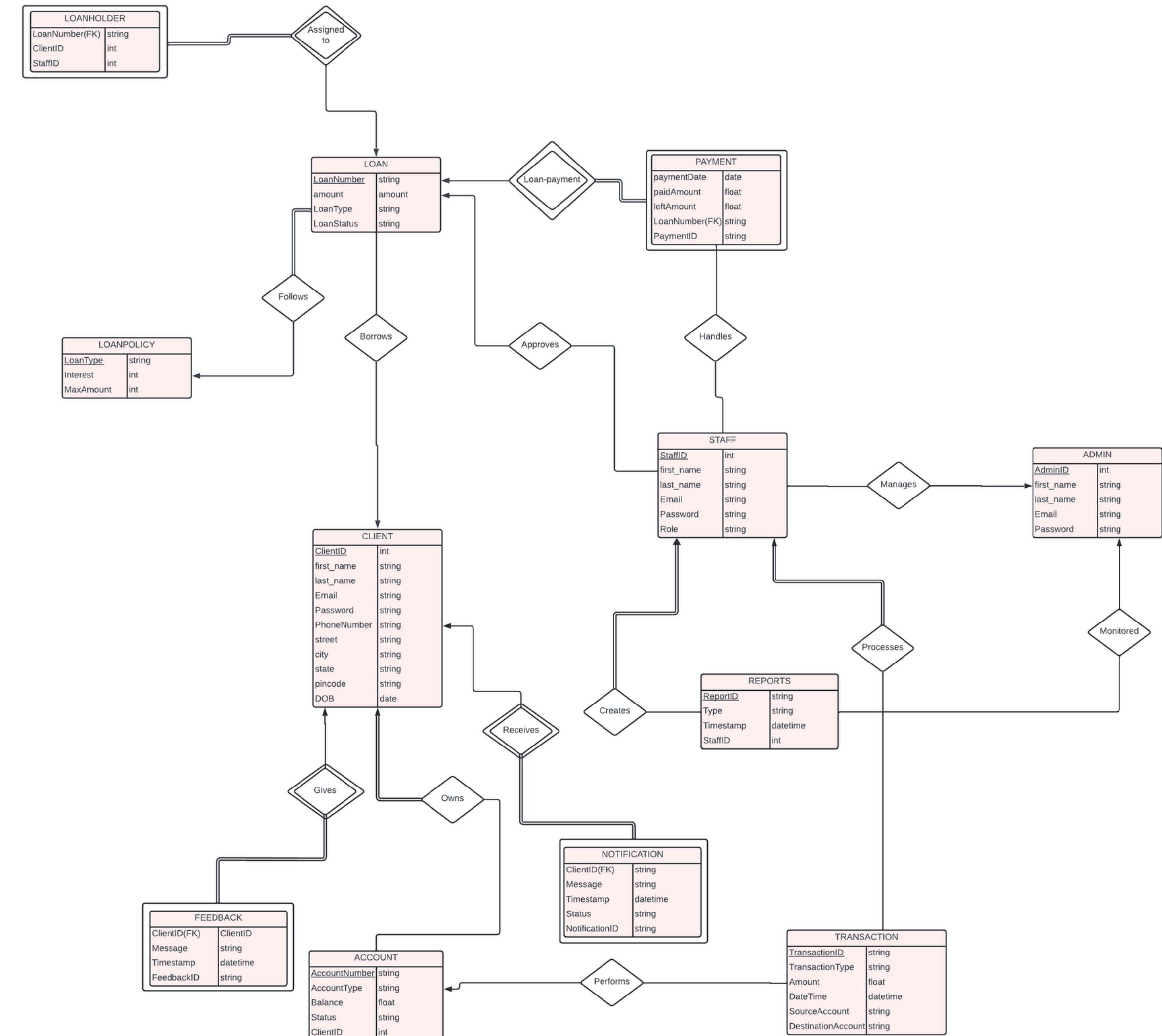
## ER DIAGRAM



# DEADLINE 1

## UPDATED

## ER DIAGRAM



# DEADLINE 2

## Relational Model Conversion

- A document showing the conversion of our ER diagram to a relational model.
- **It clearly specifies:**
- Primary keys (PK) for all tables.
- Foreign keys (FK) representing relationships between tables.
- The attributes and constraints for each relation derived from the ER model submitted earlier.

## Data Population

- Contains SQL INSERT statements to populate each table.
- A good number of sample records have been inserted in all tables to demonstrate functionality.

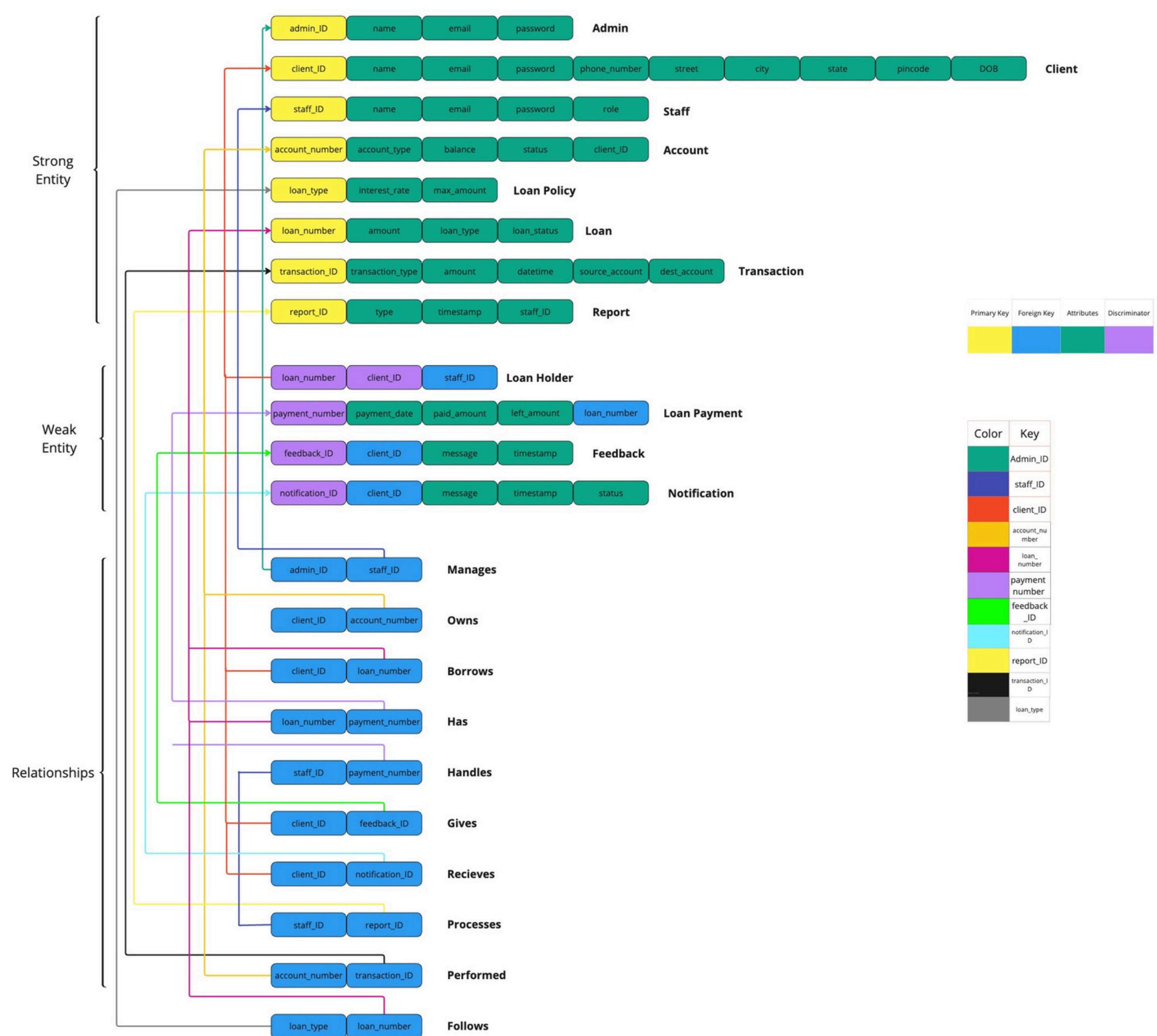
## Table Creation

- Contains SQL CREATE TABLE commands for the entire schema.
- All integrity constraints (e.g., PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL) and domain constraints (e.g., data types, value restrictions) are implemented.
- Reflects accurate and complete modeling of NovaBank's structure.



# DEADLINE 2

## RELATIONAL MODEL



# DEADLINE 3

## Queries

- **The queries are diverse and cover:**
- Joins (simple and multi-table)
- Aggregate functions with GROUP BY
- Subqueries, including nested and NOT IN/IN conditions
- Filters and conditions based on banking operations
- **Examples include:**
- Clients without loans
- Loan and transaction summaries
- Staff performance analytics

Retrieve all clients who have made transactions above amount  
10000

```
sql
SELECT DISTINCT C.ClientID, C.first_name, C.last_name
FROM CLIENT C
JOIN ACCOUNT A ON C.ClientID = A.ClientID
JOIN TRANSACTION T ON A.AccountNumber = T.SourceAccount
WHERE T.Amount >= 10000;
```

Retrieve clients who have both a savings account and a loan

```
sql
SELECT DISTINCT C.ClientID, C.first_name, C.last_name
FROM CLIENT C
JOIN ACCOUNT A ON C.ClientID = A.ClientID
JOIN LOAN HOLDER LH ON C.ClientID = LH.ClientID
WHERE A.AccountType = 'Savings' OR LH.LoanNumber IS NOT NULL;
```

## Interaction with LLM

- A separate PDF documenting interaction with ChatGPT to test its ability to generate SQL.
- We gave it natural language queries based on our database schema.
- Identified at least two cases where ChatGPT gave wrong queries:
  1. Transaction above 10k: ChatGPT only considered SourceAccount and ignored DestinationAccount.
  2. Clients with savings account and loan: ChatGPT used OR instead of AND, returning partial matches.

# DEADLINE 4

**Nova Bank**

**Transactions for Clients Managed by Aarav Sharma**

Client ID	Client Name	Total Transactions	Last Transaction
1	Rohan Verma	42	2023-10-01 (Transfer ₹3,000)

[Back](#)

[← Back](#)

**Average Loan Amounts Approved by Aarav Sharma**

Loan Type	Average Amount (₹)
Home Loan	₹4,500,000
Car Loan	₹1,200,000

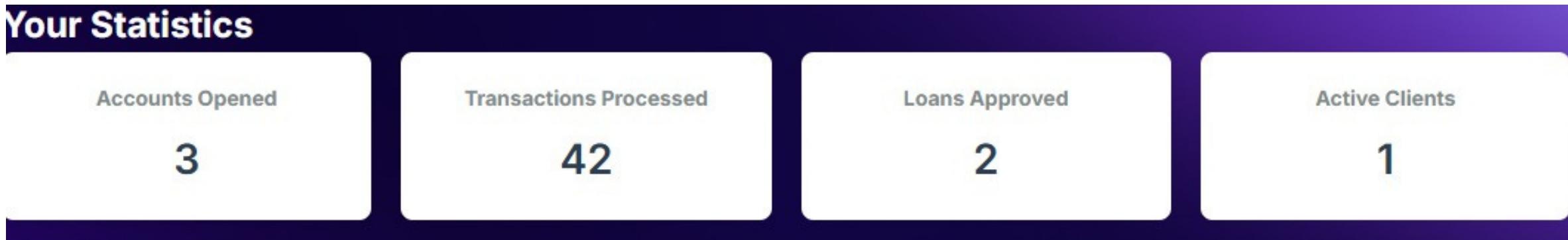
**Nova Bank**

**Client Loans and Loan Details**

Client ID	Client Name	Loan Type	Loan Amount (₹)	Interest Rate (%)	Start Date	End Date	Status
C101	Riya Singh	Home Loan	25,00,000	7.2	2023-06-15	2033-06-15	Active
C102	Arjun Verma	Personal Loan	5,00,000	10.5	2024-01-10	2027-01-10	Active
C103	Neha Kapoor	Car Loan	8,00,000	8.5	2022-09-05	2027-09-05	Closed

[Back](#)

## Your Statistics



## GUI SCREENSHOTS

**NovaBank**

**Client Dashboard**

Welcome, Rohan Verma

- Dashboard
- Accounts
- Transactions
- Logout

**Total Balance** ₹65,000.50

**Income (Last 30 days)** ₹15,000.00

**Expenses (Last 30 days)** ₹8,500.00

**Active Loans** 1

**Recent Transactions**

Date	Description	Amount	Status
2023-10-01 09:00	Deposit	+₹5,000.00	Completed
2023-10-01 10:15	Withdrawal	-₹2,000.00	Completed
2023-10-01 11:30	Transfer to ACC1002	-₹3,000.00	Completed
2023-09-28 14:00	Salary Deposit	+₹15,000.00	Completed
2023-09-25 16:30	Utility Bill Payment	-₹2,500.00	Completed

**Nova Bank**

**Loan Payments for Clients Managed by Aarav Sharma**

Loan ID	Client Name	Loan Type	Total Paid (₹)	Outstanding (₹)	Status
LN001	Rohan Verma	Home Loan	4,500,000	0	Cleared
LN002	Rohan Verma	Car Loan	1,200,000	0	Cleared

[Back](#)

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**Manage Clients**

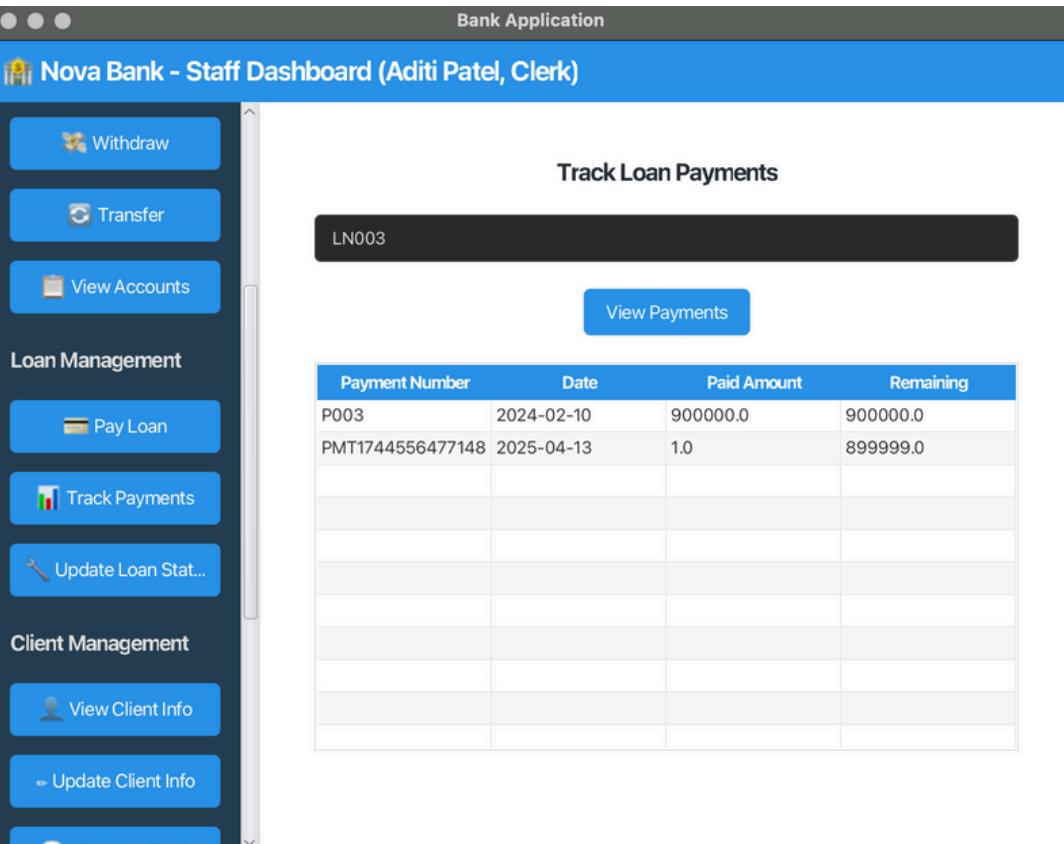
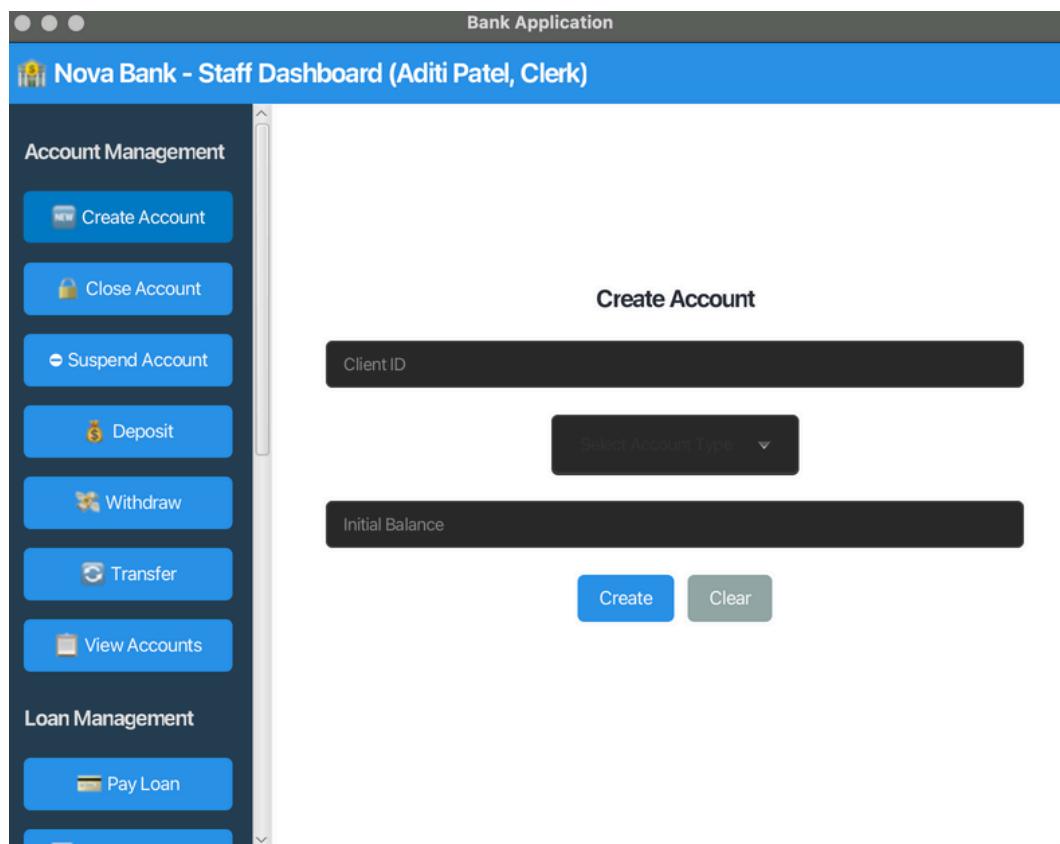
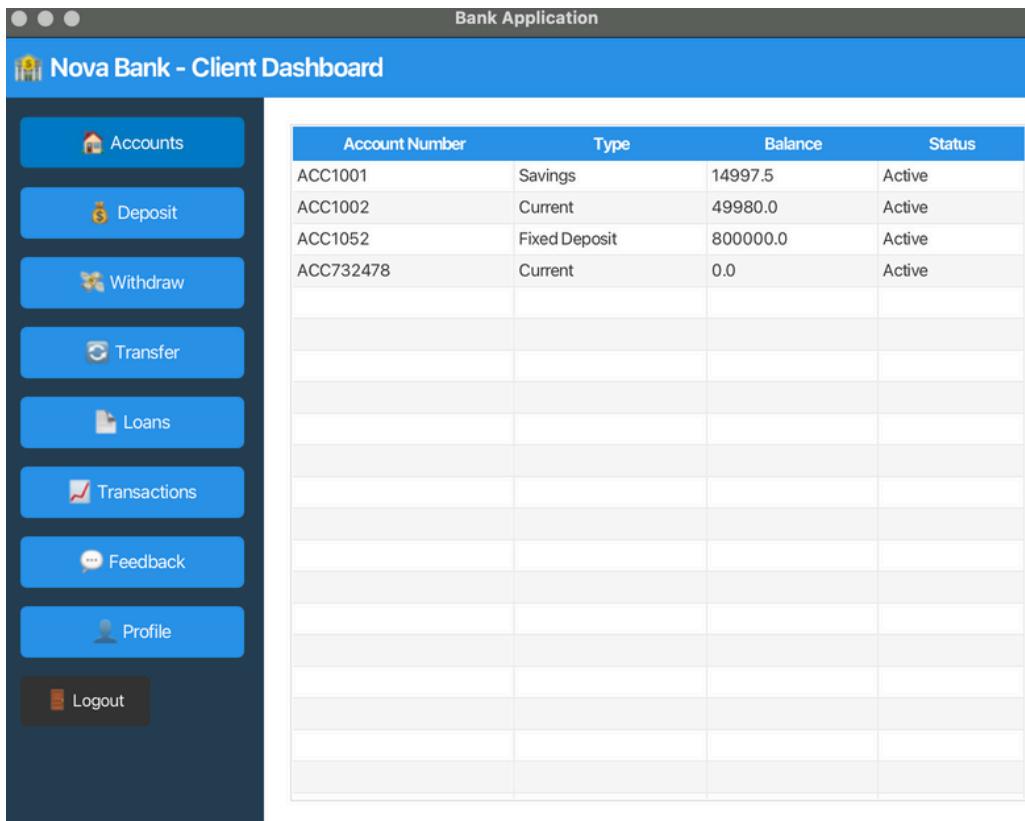
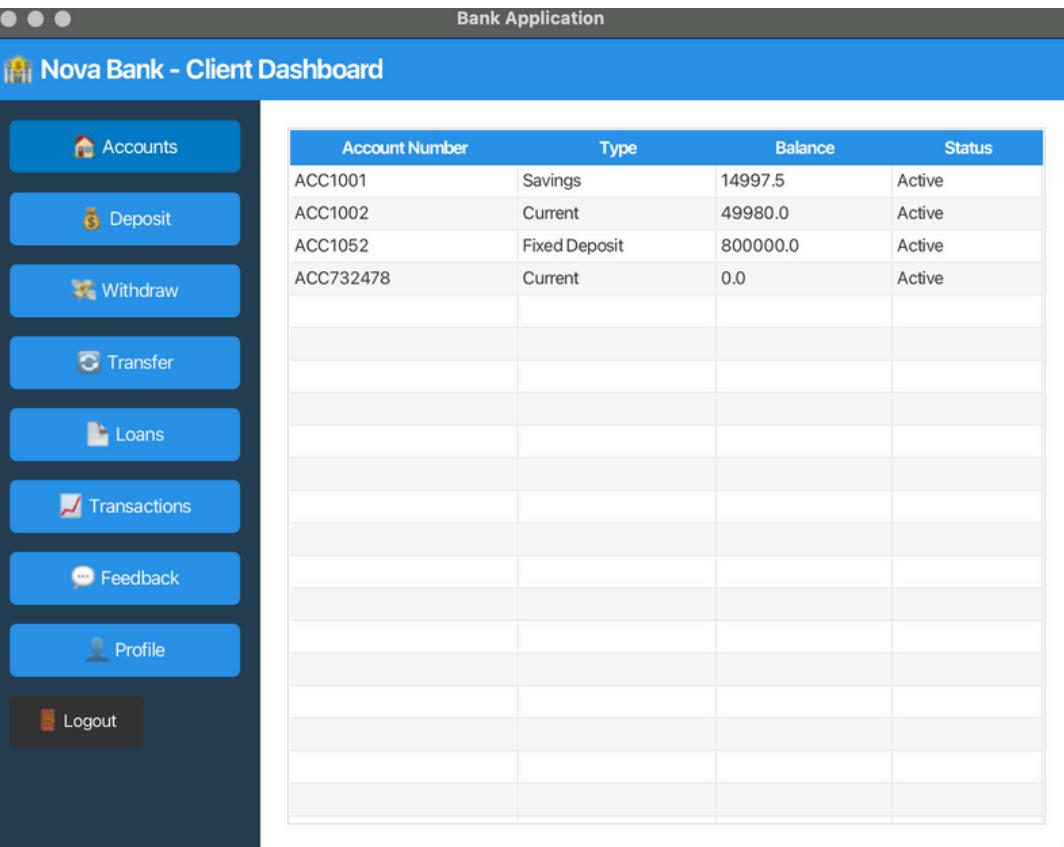
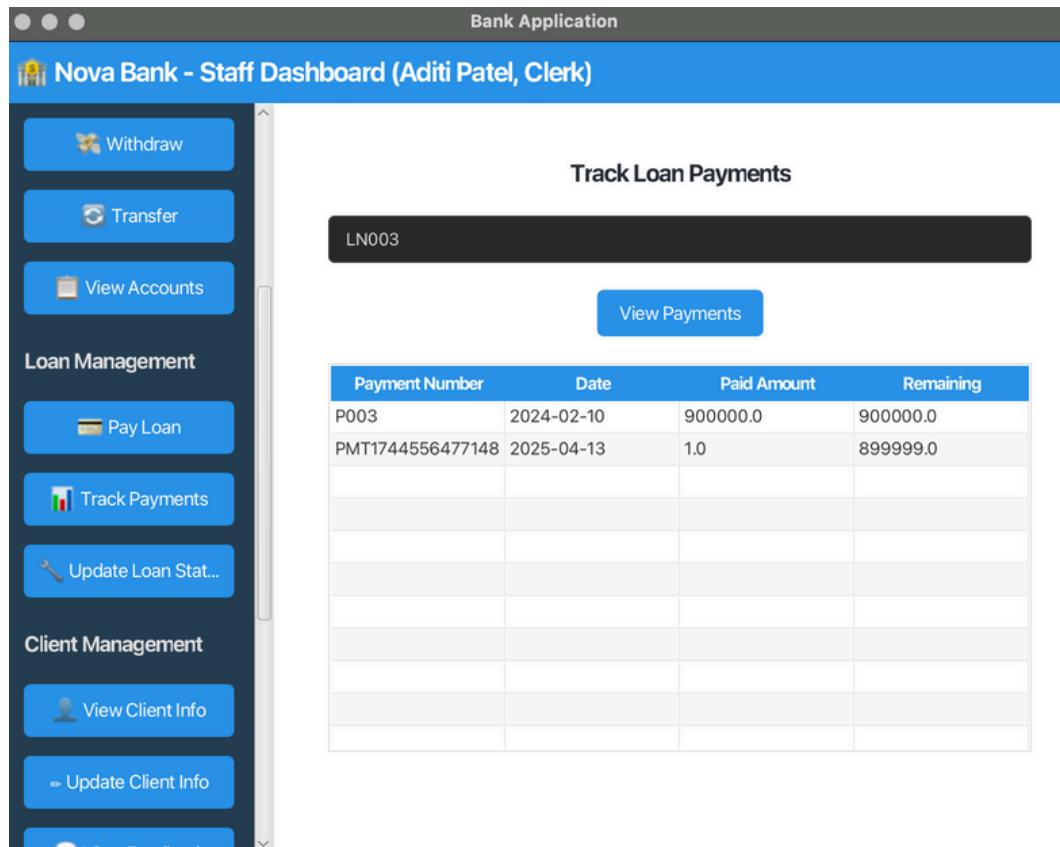
Welcome, Aarav Sharma (Manager)

- Dashboard
- Manage Clients
- Open Account
- Process Transactions
- Approve Loans
- Logout

**Client List**

Client ID	Name	Email	Phone	Accounts	Loans	Actions
1	Rohan Verma	rohan.verma@example.com	919876543216	3 (ACC1001, ACC1002, ACC1052)	2 (LN001, LN002)	<a href="#">View Details</a>

# DEADLINE 4



## UPDATED GUI SCREENSHOTS

**THANK YOU**  
ALL GROUP MEMBERS ACTIVELY PARTICIPATED  
AND CONTRIBUTED EQUALLY TO THE COMPLETION  
OF THIS PROJECT .