Banking Management System

Project Report

Project Title: Banking Management System
Prepared By: Devashish Srivastava, Bhavya Bisht
Course: Database Management System
Institute: IILM University
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1 . Introduction

The Banking Management System is a database-driven application designed to manage core banking operations such as customer accounts, login authentication, credit facilities, transactions, payments, staff management. The system ensures secure handling of user information and supports efficient processing of financial activities.

This project focuses on designing a well-structured **Entity-Relationship (ER) Diagram** and converting it into a logical database model.

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2 . Objectives of the Project

- To design a structured banking database using ER modeling
- To manage customer, account, transaction, payment, and staff details
- To understand relationships such as one-to-one, one-to-many, and many-to-many
- To ensure data integrity and security in banking operations
- To implement a scalable and efficient database design

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3 . System Description

The system consists of the following major components: - Customer Management - Account Management Login and Credit Operations - Transaction Processing - Payment and Billing System - Staff Management

Each component is connected using defined relationships to ensure smooth banking operations.

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4 . ER Diagram Overview

The ER diagram represents the structure of the Banking Management System. It includes attributes, and relationships with proper cardinalities.

Main Entities:

1 . Customer (Process)
2 . Account
3 . Transaction
4 . Payment
5 . Staff (Process)

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5 . Entity Description and Attributes

5 . 1 Customer (Process)

Represents bank customers who hold accounts.

Attributes: - Custom_ID (Primary Key) - Name - Address - Mobile_No - Gender

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5 . 2 Account

Stores customer account details.

Attributes: - Account_ID (Primary Key) - Account_No - User_Name - Password - Trans_Limit

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5 . 3 Transaction

Records all financial transactions made by customers.

Attributes: - Transaction_ID (Primary Key) - Amount - Receiver_Amount - Transaction_Type - Date

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5 . 4 Payment

Handles bill payments and service payments.

Attributes: - Payment_ID (Primary Key) - Payment_Type - Payment_Amount - Biller_Name - Biller_Amount

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5.5 Staff (Process)

Manages bank employees responsible for handling customer processes.

Attributes: - Staff_ID (Primary Key) - Staff_No - Staff_Name - Email - DOB

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6. Relationship Description

6.1 Customer – Account

• Relationship: Credit / Login
• Cardinality: 1   :   1
• Each customer has one account and each account belongs to one customer

6.2 Account – Transaction

• Relationship: Make
• Cardinality: 1   : M
• One account can make multiple transactions

6.3 Account – Payment

• Relationship: Make
• Cardinality: 1   : M
• One account can make multiple payments

6.4 Staff – Customer

• Relationship: Manage By
• Cardinality: M : N
• Multiple staff members can manage multiple customers

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7. Cardinality Summary

Relationship	Cardinality
Customer – Account	1 : 1
Account – Transaction	1 : M
Account – Payment	1 : M
Staff – Customer	M : N

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8 . Assumptions

- Each customer owns only one account
- Each transaction is linked to exactly one account
- Staff members can manage multiple customers
- Login credentials are unique for each account

9 . Advantages of the System

- Structured and normalized database design
- Easy tracking of transactions and payments
- Secure login system
- Reduced redundancy and improved consistency
- Scalable for future banking features

1 0 . Conclusion

The Banking Management System provides an efficient and organized way to manage banking op using ER modeling. The project demonstrates a clear understanding of database concepts, relationships, and real-world banking requirements. This system can be further extended with banking, loan management, and audit modules.

1 1 . Future Enhancements

- Online and mobile banking integration
- Loan and interest management
- Two-factor authentication for login
- Real-time transaction monitoring
- Admin dashboard for analytics

Submitted By:
Devashish Srivastava
Bhavya Bisht