Group 8 Enterprise web development:

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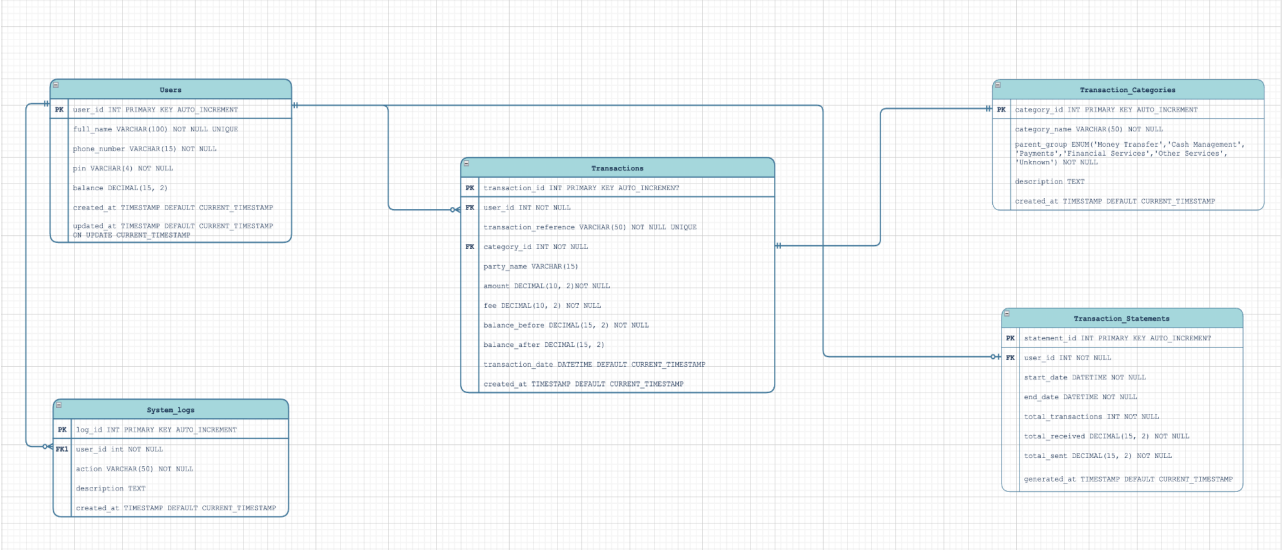
MOMO ERD



Brief Explanation :

The Momo SMS application is a third party application that processes MOMO transaction messages and displays this in the front end for users to view their expenditure.

Design rationale:

1.User table - Here we store the users account information , we included the pin for authentication.
2.Transaction_Categories -Here we store the various types of transactions(a python script was used to identify them).
3.Transactions - All financial transactions are recorded here
4.Transaction statements - Statement summaries

5.Systems_Logs – Audit trail of all activities

The design uses normalization to ensure data integrity and avoid redundancy
(Data is broken down into smaller tables appropriately related to each other).We also used constraints , foreign keys and indexes optimized for the needs of the platform.

Data Dictionaries

As mentioned, we indemnified 5 core entities and were able to illustrate the relationships in the ERD diagram.

1.User table

Column	Data Type	Constrains	Description	Examples
User_ID	INT	PK,AUTO_INC	Unique user identifier	01
Full_name	VARCHAR(100)	NOT NULL	User full name	Eelaf Adam
email	VARCHAR(100)	UNIQUE , NOT NULL	Email for Login	Eelaf@gmail.com
pin	INT	NOT NULL	4-digit login PIN	1234
phone_number	VARCHAR(15)	UNIQUE, NOT NULL REGEXP	Momo account number	078945672
balance	DECIMAL	DEFAULT 0.00	Current account balance	1,000,000 RWF
created_at	TIMESTAMP	DEFAULT NOW	Account creation date	12.45.10 pm January 12th 2012 Monday
updated_at	TIMESTAMP	AUTO UPDATE	Last Update Time stamp	3.45.23pm February 10th Tuesday 2026

2.Transaction Categories

Column	Data Type	Constraints	Description	Example
Category_ID	INT	PK,AUTO_INC	Unique category ID	04
category_name	VARCHAR(50)	UNIQUE,NOT NULL	Category name	Withdrawal
parent_group	ENUM	NOT NULL	Major group category	Money Transfer
description	TEXT	NULL	Description of category	Cash management
created_at	TIMESTAMP	DEFAULT TIME	Creation date	6.08.25pm 12th February 2025

3.Transcations

Column	Data Type	Constraints	Description	Examples
transaction_id	INT	PK , AUTO_INC	Unique transaction ID	01
user_id	INT	FK,NOT NULL	Links to users table	01
category_id	INT	FK, NOT NULL	Links to transactions type	01
Transaction_ref	VARCHAR(50)	NOT NULL	External ref from momo	RWG67
party_name	VARCHAR(100)	NOT NULL	Other party involved	Peniel
amount	DECIMAL(15,2	NOT NULL > 0	Transaction	20,000 RWF

	)		amount	
fee	DECIMAL(10,2)	DEFAULT 0 , >=0	Service fee charged	200 RWF
balance_before	DECIMLA(15,2)	NOT NULL	Balance before tx	9000,000RWF
balance_after	DECIMAL(15,2)	NULL	Balance after tx	880,000 RWF
transaction_date	DATETIME	NOT NULL	DEFAULT NOW	14TH February 2025
created_at	TIMESTAMP	DEFAULT NOW	Record creation time	11.09.55 am Monday 14th February 2025

4.Transaction_statement

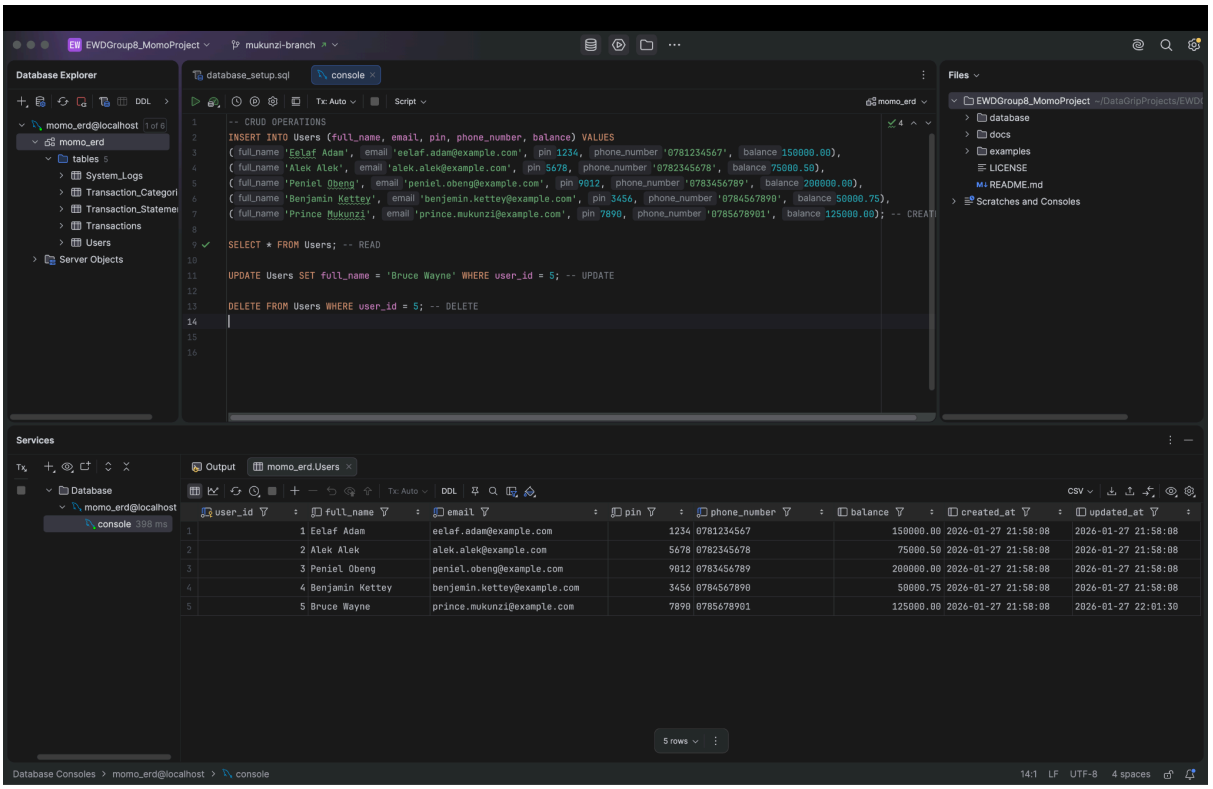
Column	Data Type	Constraints	Description	Example
Statement_id	INT	PK,AUTO_INC	Unique statement ID	01
user_id	INT	FK,NOT NULL	User who requested	01
start_date	DATE	NOT NULL	Period start	Wednesday 12th June 2023
end_date	DATE	NOT NULL >= start	Period end	Friday 15th July 2023
total_trans	INT	NOT NULL	Number of transactions	30
total_received	DECIMAL(15,2)	DEFAULT 0	Total money received	234,000RWF
tota_sent	DECIMAL(15,2)	DEFAULT 0	Total money sent	600,500 RWF
generated_at	TIMESTAMP	DEFAULT NOW	Generation	10.45.00 am Friday 15th

				July 2023

5.System logs

Column	Data Type	Constraints	Description	Examples
log_id	INT	PK,AUTO_INC	Unique log ID	01
user_id	INT	FK,NULL OK	User who performed action	01
action	VARCHAR(50)	NOT NULL , len > 0	Action type	error
description	TEXT	NULL	Action details	Failed to process transaction 22
created_at	TIMESTAMP	DEFAULT NOW	When it happened	9.33.59 am Friday 10th March 2025

CRUD Screenshots:



AI Usage:

We used Claude code for generating dummy data to use with the **CREATE** part of the **CRUD** operations.