MOMO SMS DATABASE DESIGN

Team members

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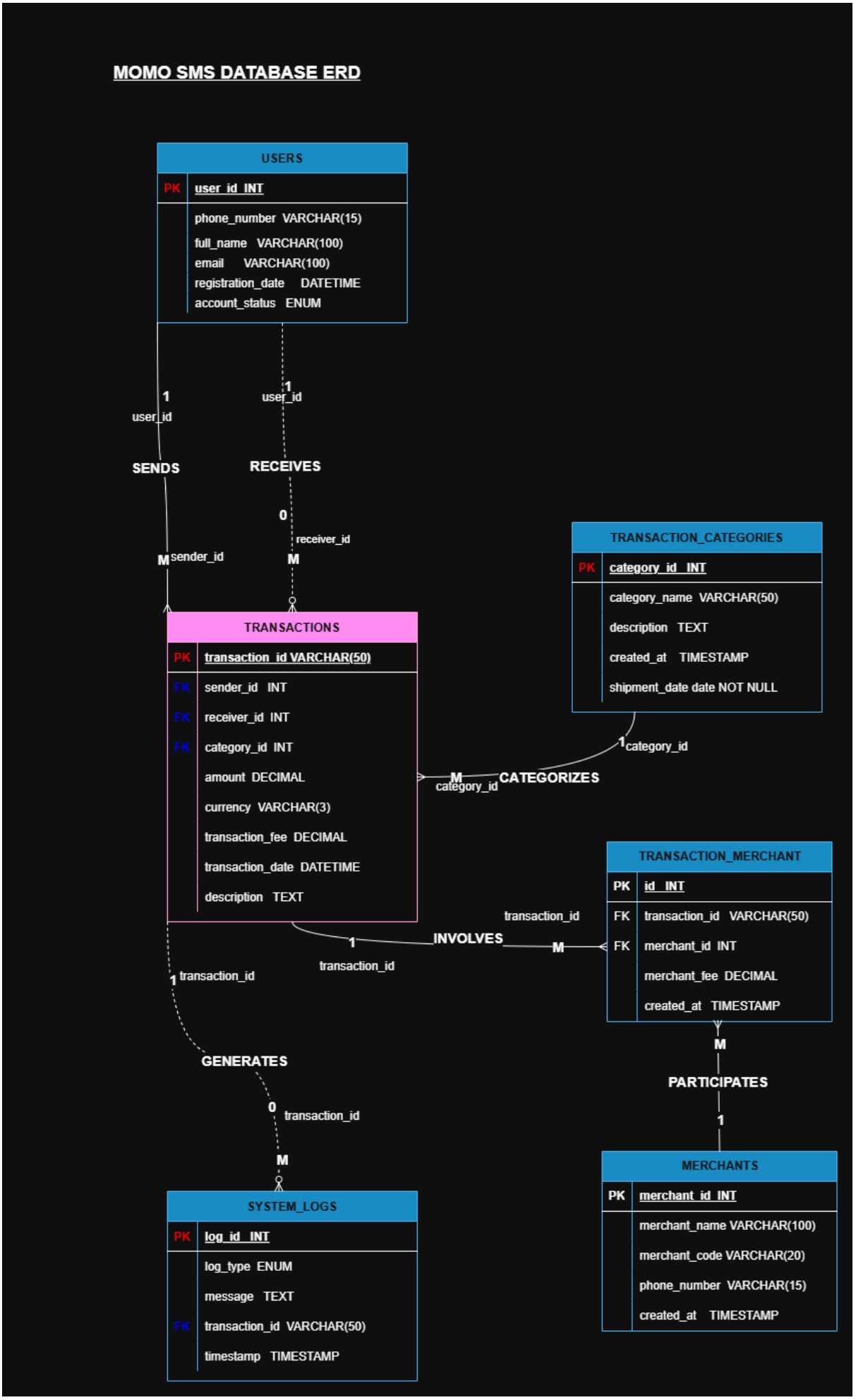
Overview

Our MoMo SMS data processing system has a six-entity relational database design that balances normalization, data integrity, and business requirements.

ERD DIAGRAM


MOMO SMS DATABASE ERD
USERS
PK user_id INT
phone_number VARCHAR(15)
full_name VARCHAR(100)
email VARCHAR(100)
registration_date DATETIME
account_status ENUM
1
user_id
SENDS
1
user_id
RECEIVES
0
receiver_id
M
sender_id
M
TRANSACTIONS
PK transaction_id VARCHAR(50)
FK sender_id INT
FK receiver_id INT
FK category_id INT
amount DECIMAL
currency VARCHAR(3)
transaction_fee DECIMAL
transaction_date DATETIME
description TEXT
TRANSACTION_CATEGORIES
PK category_id INT
category_name VARCHAR(50)
description TEXT
created_at TIMESTAMP
shipment_date date NOT NULL
1
category_id
M
category_id
CATEGORIZES
transaction_id
1
INVOLVES
M
transaction_id
TRANSACTION_MERCHANT
PK id INT
FK transaction_id VARCHAR(50)
FK merchant_id INT
merchant_fee DECIMAL
created_at TIMESTAMP
1
transaction_id
GENERATES
0
transaction_id
M
M
PARTICIPATES
1
SYSTEM_LOGS
PK log_id INT
log_type ENUM
message TEXT
FK transaction_id VARCHAR(50)
timestamp TIMESTAMP
MERCHANTS
PK merchant_id INT
merchant_name VARCHAR(100)
merchant_code VARCHAR(20)
phone_number VARCHAR(15)
created_at TIMESTAMP

Entity uses and functions

Users Table: Stores customer account information for all MoMo users.

Transaction_Categories: Defines and categorizes different types of mobile money transactions.

Merchants: Stores information about businesses and merchants accepting MoMo payments.

Transactions: Main table that records all mobile money transaction details.

Transaction_Merchant Junction Table: Resolves the many-to-many relationship between Transactions and Merchants.

System_Logs: Tracks ETL processing events and system activities for monitoring and debugging.

Next up is the queries and the screenshots of the outputs

QUERY 1: Viewing all transactions

RELATIONSHIP TABLES

ENTITIES	Columns		RELATIONSHIP	DESCRIPTION
Users	user_id	users.user_id	One to many	One user can have many transactions
Transactions	category_id	transaction_category.category_id	Many to one	Many transactions can be in one category
Transaction_category	category_id	trasactions.category_id	Many to one	One category can be assigned to many transaction
Merchants	merchant_id	merchants.merchant_id	Many to one	Many transactions can be associated with one merchant.
Transaction_merchants	transaction_id	transactions_transaction_id	Many to many	Through transaction_merchants junction/table
System_logs	transaction_id	transactions.transaction_id	Many to one	One transaction can generate multiple entries

The junction table which is the Transaction merchant signifies:

- A single user can make multiple transactions.
- A single transaction can come from different users.