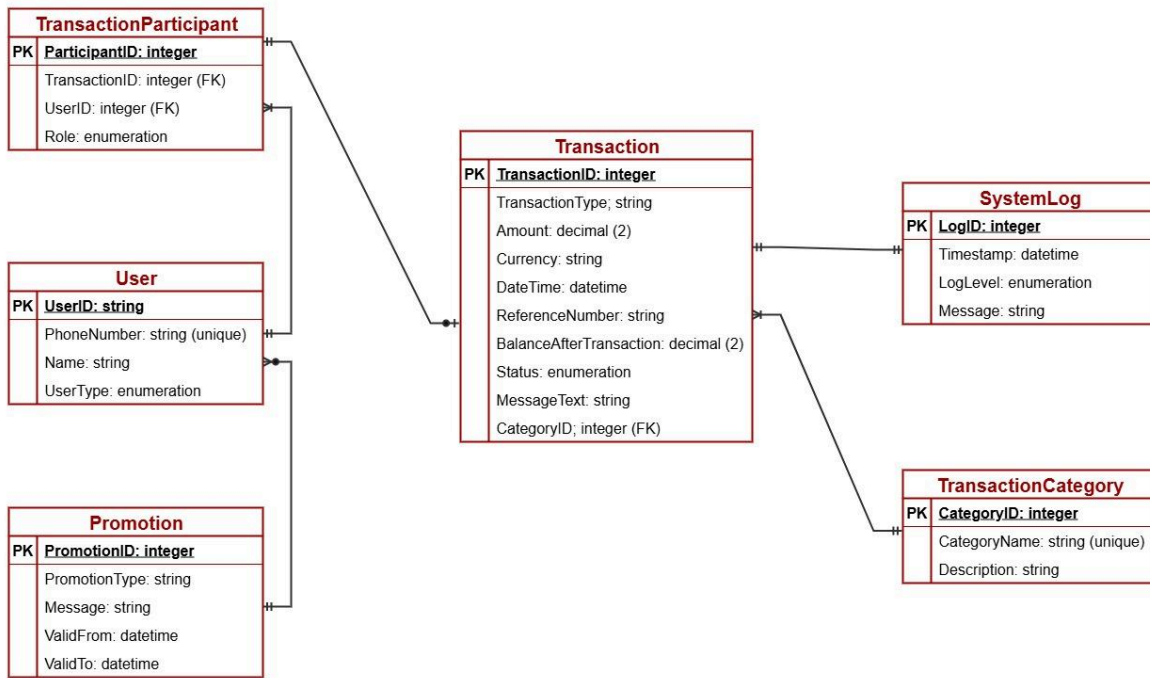


# MoMo (Mobile Money) Enterprise ERD



This ERD illustrates the intricate connections between key components necessary for a mobile money system's functionality:

- The 'Transaction' entity retains crucial attributes such as TransactionType, Amount, currency, and status for comprehensive tracking of financial operations.
- The 'TransactionParticipant' entity links each transaction to its users while specifying each participant's role in the transaction, enhancing accountability and enabling detailed transaction review.
- The 'User' entity differentiates and manages users effectively based on identification details and user type (sender, receiver, agent).
- The 'SystemLog' entity maintains system integrity, logging transactions for in-depth auditing, real-time monitoring, and troubleshooting.
- The 'TransactionCategory' entity facilitates categorization, enabling transactions to be organized into coherent groups for efficient reporting and analysis.
- The 'Promotion' entity handles promotions (e.g., airtime top-ups), fostering user engagement through targeted offers based on user-specific criteria.

The relationships between these entities form a robust structure that supports scalability, ensuring the enterprise can expand without sacrificing control or efficiency. These design

decisions ensure the system remains reliable and flexible, meeting both immediate and future needs of mobile money operations by providing a solid foundation for transaction management, user interaction, and system integrity.

Below are examples of the database implementation using CRUD operations:

## CLI VIEW

```
mysql> GRANT ALL PRIVILEGES ON momo_app.* TO 'mdhieu'@'localhost';
Query OK, 0 rows affected (0.10 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.06 sec)

mysql> USE momo_app;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_momo_app |
+-----+
| Promotion          |
| SystemLog          |
| Transaction         |
| TransactionCategory |
| TransactionParticipant |
| User               |
+-----+
6 rows in set (0.01 sec)
```

```
mysql> CREATE TABLE IF NOT EXISTS AirBnB (
  -> id VARCHAR(36) PRIMARY KEY,
  -> updated_at DATETIME,
  -> created_at DATE,
  -> name VARCHAR(255)
  -> );
Query OK, 0 rows affected (0.34 sec)

mysql> SHOW TABLES;
+-----+
| Tables_in_momo_app |
+-----+
| AirBnB              |
| Promotion           |
| SystemLog           |
| Transaction         |
| TransactionCategory |
| TransactionParticipant |
| User               |
+-----+
7 rows in set (0.04 sec)
```

```
mysql> DROP TABLE AirBnB;
Query OK, 0 rows affected (0.11 sec)

mysql> SHOW TABLES;
+-----+
| Tables_in_momo_app |
+-----+
| Promotion          |
| SystemLog          |
| Transaction         |
| TransactionCategory |
| TransactionParticipant |
| User               |
+-----+
6 rows in set (0.03 sec)
```

```
mysql> INSERT INTO User (PhoneNumber, Name, UserType) VALUES
-> ('+256785678901', 'David Green', 'sender');
Query OK, 1 row affected (0.07 sec)

mysql> SELECT * FROM User WHERE PhoneNumber = '+256785678901';
+-----+-----+-----+-----+
| UserID | PhoneNumber | Name       | UserType |
+-----+-----+-----+-----+
| 6      | +256785678901 | David Green | sender   |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

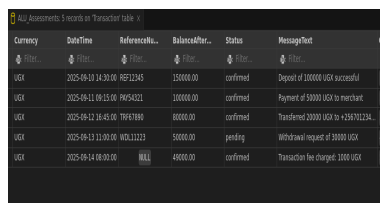
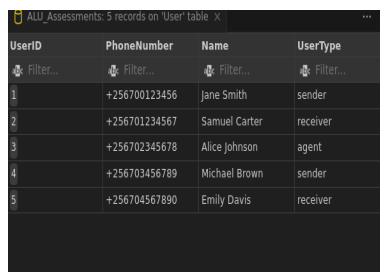
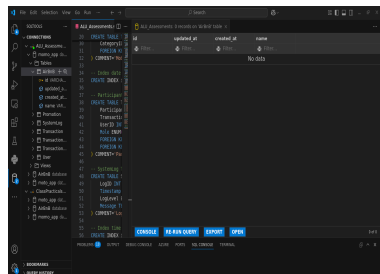
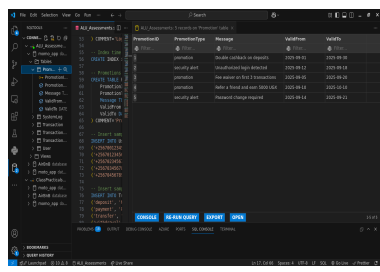
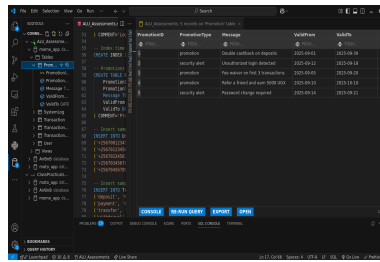
mysql> UPDATE User
-> SET Name = 'David G. Green'
-> WHERE PhoneNumber = '+256785678901';
Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> SELECT * FROM User WHERE PhoneNumber = '+256785678901';
+-----+-----+-----+-----+
| UserID | PhoneNumber | Name       | UserType |
+-----+-----+-----+-----+
| 6      | +256785678901 | David G. Green | sender   |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT TransactionID, TransactionType, Amount, DateTime, Status
-> FROM Transaction
-> WHERE Amount > 50000
-> ORDER BY DateTime DESC;
+-----+-----+-----+-----+-----+
| TransactionID | TransactionType | Amount | DateTime | Status |
+-----+-----+-----+-----+-----+
| 1             | deposit         | 100000.00 | 2025-09-10 14:30:00 | confirmed |
+-----+-----+-----+-----+-----+
1 row in set (0.01 sec)

mysql> UPDATE Transaction
-> SET Status = 'confirmed'
-> WHERE TransactionID = 4;
Query OK, 1 row affected (0.02 sec)
Rows matched: 1 Changed: 1 Warnings: 0
```

## GUI VIEW BEFORE CRUD



## GUI VIEW AFTER CRUD

