CS631 DATA MANAGEMENT SYSTEM DESIGN

The WALLET Payment Network

Project Deliverable 1

GROUP MEMBERS

Nehali Parulekar	**np67**
Harshal Bhole	**hb32**
Joul Ammous	**ja723**

➢ **Requirements**

1. Outline the goals of this phase of the project.

- The goal of this project is to draw the Entity Relationship diagram of The WALLET Payment Network and also analyze
- We have to list out all the operations performed in the payment app like Zelle and Venmo that enables individuals to electronically transfer money to others.

2. Notation for ER model constructs and additional notation for specialization / generalization hierarchies.

- **Entity types:**
  - Regular entity Types: CUSTOMER, LOGIN, BANK_ACCOUNT, BANK, TRANSACTION.
  - Weak Entity Types:
  - Superclass/Subclasses: SENDER, RECEIVER, REQUEST/SPLIT.

- **Relationship types:**

  1. Customer has Login.
  2. Customer has Bank_Account.
  3. Bank_Account verifies with Bank.
  4. Customer does Transaction.

- **Attributes:** represented as oval

Simple Attributes:

CUSTOMER [CustId/SSN, Contact, DOB, Gender]
LOGIN [LoginId, UserName, Password]
BANK_ACCOUNT [AccountNumber, BankId, AccType, RoutingNumber, Email]
BANK [Email, BankId, Contact, AccountNumber, CustId/SSN]

Composite Attributes: represented by an oval comprising of ovals.

Name → In the Customer entity, the Name attribute is a composite attribute as it can be categorized into Fname, Mname, LName.

Multivalued: represented by double oval
Email-> Since a customer can have multiple email ids associated with an account it will be a multivalued attribute.

Stored and Derived Attributes: Derived attributes represented as dashed oval.
Age → In the Customer Entity Type, Age acts as Derived attribute where it is calculated by DOB.
NoOfAccounts → In the Customer Entity Type, NoOfAccounts acts as

Derived attribute where it is calculated by CustId/SSN.

Key Attributes: represented by oval with underlying lines
CustId/SSN → Customer
LogInId → Login
AccountNumber → Bank_Account
BankId → Bank
TransactionId→ Transaction

3. List of constraints:
   - ❖ Users can sign up with WALLET (that is, create an account with WALLET) by providing their name, SSN, an email address, and a phone number. Only one phone can be recorded for each WALLET account, but a WALLET account can be associated with multiple email addresses.
   - ❖ Email or phone number should be verified before they can be used by entering correctly the code that is sent via email or SMS respectively
   - ❖ Users can link multiple bank accounts with their account but they should define one of them as the primary funding source.
   - ❖ Bank accounts have to be verified before they can be used to transfer money to and from the bank accounts to the user's WALLET account.
   - ❖ The recipient can accept the money within 15 days by signing up to WALLET or by adding the additional email address to an existing WALLET account. After 15 days the payment is cancelled and the funds are returned to the sender.

4. Difficulties we faced:
   - Making Assumptions based on the information Given was difficult.
   - Deciding the cardinality Relationship between the entities was a bit challenging.

5. ER Diagram: