



PERSONAL FINANCE MANAGEMENT

CS F212 – DATABASE SYSTEMS
SECOND SEMESTER 2021-22



PROJECT NO. 17

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Thinking for the project

1. Multiple users can use our Personal Finance Management Portal at the same time.
2. Each user can have multiple bank accounts.
3. Each user can have only 1 wallet.
4. There are multiple categories inbuilt, which a user can select, while spending money from a wallet.
5. If the category is not mentioned in the Categories table, a user can either insert that category or select the categoryID corresponding to "others" in the Categories table.
6. One can spend money only from their wallet, and not directly from their bank account.
7. Their wallet can be recharged from any of their bank accounts, and money can also be sent back from the wallet to any of the user's bank accounts.
8. One can also directly deposit cash to its bank accounts.
9. Credit and debit has not been used separately, instead only Amount is used in several tables, in which a positive number indicates the amount has been credited to the account/wallet and a negative number indicates that the amount has been debited from the account/wallet.
10. BankID and Account Number will together distinguish between various Bank Accounts.
11. In weekly or monthly expenses, only expenses made from wallet are taken into account. Bank transactions and transactions between the bank accounts and wallet are not taken into consideration

Tables Required

1. Users - Contains details of all the user using this Personal Finance Management Application
 - a. userID
 - b. name
 - c. phoneNo
 - d. gender
 - e. birth_date
2. universalBankList - Contain the list of all the Bank Names
 - a. BankID
 - b. BankName
3. BankAccounts - Contains details of each individual's bank accounts details
 - a. userID (Foreign Key-users)
 - b. BankID (Foreign Key-universalBankList)
 - c. AccountNumber
 - d. Balance

4. BankTransactions - keep track of all transactions between Bank and Wallet, and also about depositing cash to bank account
 - a. userID (Foreign Key-BankAccounts)
 - b. BankID (Foreign Key-BankAccounts)
 - c. AccountNumber (Foreign Key-BankAccounts)
 - d. transactionID
 - e. amount
 - f. transactionTime
5. Categories - Contains a list of names of all category, where expenditure can be made from wallet
 - a. categoryID
 - b. name
6. Wallet - Keeps track of each individual's wallet and the transaction made to and from the wallet
 - a. userID (Foreign Key-users)
 - b. walletTransactionID
 - c. Amount
 - d. categoryID (Foreign Key-Categories)
 - e. walletTransactionTime
7. CategoryExpenditure - Keeps track of each individual's expenditure under each category mentioned in the Categories table
 - a. userID (Foreign Key-users)
 - b. categoryID (Foreign Key-Categories)
 - c. categoryExpenditureID
 - d. amount

Data Normalization

All the tables are in 1NF Form

Conversion from 1NF to 2NF, we need to remove the partial dependencies

And for conversion from 2NF to 3NF, we need to remove the transitive dependencies

There are no such dependencies in all the tables, present in the database FinanceManagement

Hence all the tables are in 3NF

Pre-stored Categories:

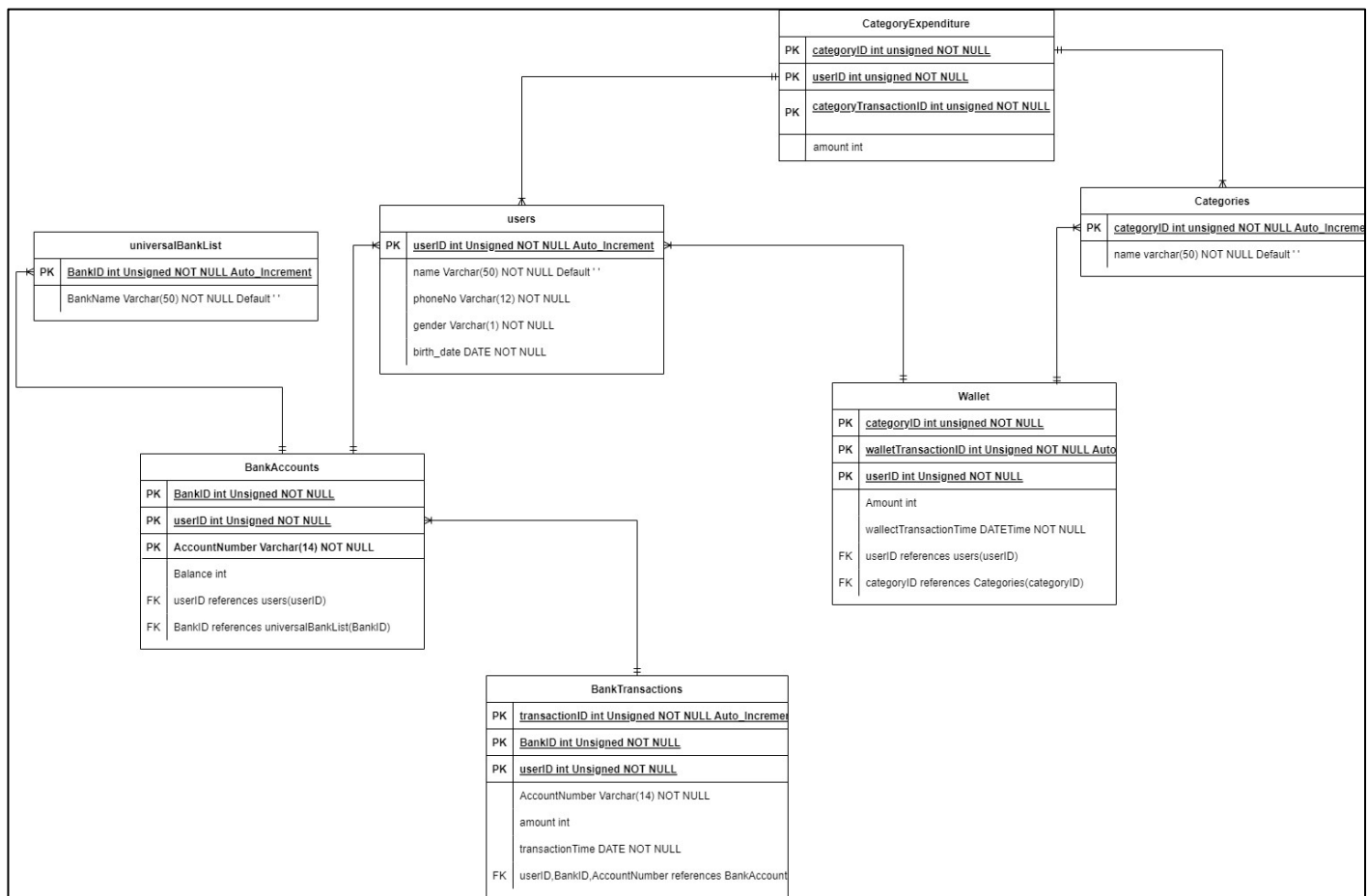
Category ID	Category Name
1	Eating Out
2	Shopping
3	Travel
4	Investment
5	Entertainment
6	Sports
7	Others
8	Wallet Recharge
9	Initial User Creation
10	Wallet to Bank

Pre-Stored Banks List:

Bank ID	Bank Name
1	Axis Bank
2	ICICI Bank
3	SBI
4	PNB
5	Allahabad Bank
6	Yes Bank
7	Kotak Mahindra Bank
8	IndusInd Bank



ER MODEL



SCHEMA DESIGN

Procedures created for smooth and easy functioning of the queries

1. walletRecharge(userID,BankID,AccountNumber,Amount,Transaction) - To add money to wallet from Bank Accounts.
2. addingMoney(userID,BankID,AccountNumber,Amount,TransactionTime) - To diposit money directly to one's account.
3. SpendMoney(userID,Amount,CategoryID,walletTransactionTime) - To spend money on any of the categories from the wallet.
4. BalanceCheck(userID,@Balance) - To check balance in an individual's wallet.
5. walletToBank(userID,Amount,TransactionTime,BankID,AccountNumber) - To send money back from wallet to any of the bank accounts of the same user.
6. BankTransfers(userID1,BankID1,AccountNumber1,Amount,TransactionTime,userID2,BankID2,AccountNumber2) - To facilitate transfer of many from one bank account to second bank account.
7. weeklyExpenditure(startDateTime,endDateTime,userID,@weekly_amount) - To calculate the weekly expenses of a user.

THANK YOU