**Syed Khalid**

**CS431**

**Project 1**

create table BankCustomers(

customerID int NOT NULL AUTO\_INCREMENT,

first varchar(50),

last varchar(50),

mobile int,

landline int,

PRIMARY KEY (customerID)

);

create table BankAccounts(

accountID int NOT NULL AUTO\_INCREMENT,

customerID int,

accountType varchar(50),

balance double,

PRIMARY KEY (accountID)

);

create table BankTransactions(

transactionID int NOT NULL AUTO\_INCREMENT,

accountID int,

transactionType varchar(50),

amount double,

PRIMARY KEY (transactionID)

);

insert into BankCustomers(first, last, mobile, landline) values

(‘Shelly’,’Mody’,’9085811211’,’’),

(‘Jake’,’Jones’,’’,’9735811233’),

(first, last, mobile, landline),

(‘Aparna’,’Lee’,’9178872314’,’9145453567’)

insert into BankAccounts(customerID, accountType, balance) values

(‘1’,’Checking’,’2000.00’),(‘1’,’Savings’,’12000.00’),

(‘2’,’Savings’,’150.00’),

(‘3’,’Savings’,’360.00’);

insert into BankTransactions(accountID, transactionType, amount) values

(‘3’,’Withdraw’,’20.00’),

(‘3’,’Withdraw’,’20.00’),

(‘3’,’Deposit’,’100.00’),

(‘1’,’ATM Withdraw’,’100.00’),

(‘4’,’Deposit’,’85.00’),

(‘4’,’Deposit’,’95.00’);

1. **1st Normal Form:** Each column contains atomic values, and there are not groups of columns.

**2nd Normal Form**: A table that is in **1NF** also while all columns not part of candidate key are dependent upon the whole key

**3rd Normal Form**: A table is in **2NF** and no non-key value in a row depends on another non-key value in that row.

1. Table **BankCustomers** is in 1NF.
2. A **Universal** **Table** is when you store all the data in one table. Some advantages include simplicity and the elimination of joins which are expensive. Some disadvantages include data redundancy and lots of columns with wasted space.

**List customers along with their mobile numbers:**

*SELECT BankCustomers.First, BankCustomers.Last, BankCustomers.Mobile FROM BankCustomers;*

| **First** | **Last** | **Mobile** |
| --- | --- | --- |
| Shelly | Mody | 908811211 |
| Jake | Jones |  |
| Aparna | Lee | 2147483647 |

**List all the account from which money has been withdrawn:**

*SELECT BankTransactions.AccountID FROM BankTransactions BankTransactions.TransactionType = ‘Withdraw’;*

| **AccountID** |
| --- |
| 3 |
| 3 |

**List customer names along with their account types and balances:**

*SELECT BankCustomers.First, BankCustomers.Last, BankAccounts.AccountType, BankAccounts.Balance FROM BankCustomers, BankAccounts WHERE BankCustomers.CustomerID = BankAccounts.CustomerID*

| **First** | **Last** | **AccountType** | **Balance** |
| --- | --- | --- | --- |
| Shelly | Mody | Checking | 200 |
| Shelly | Mody | Savings | 12000 |
| Jake | Jones | Savings | 150 |
| Aparna | Lee | Savings | 360 |

**List names of customer with $1000.00 or more in one account SELECT BankCustomers.**First, *BankCustomers.Last FROM BankCustomers, BankAccounts WHERE BankCustomers.CustomerID = BankAccounts.CustomerID AND BankAccounts.Balance > 1000.00*

| **First** | **Last** |
| --- | --- |
| Shelly | Mody |