**Lahore Garrison University**



**DATABASE MANAGEMENT SYSTEM**

**Project Report Review**

**ATM Database management system**

**Team Members:**

Shehryar Talat (Fa-21/BS DFCS/005)

Muneeb Shahid (Fa-21/BS DFCS/027)

**Under the Guidance of: Imran Khalid & Saud Farooq**

**Department of Digital Forensics and Cyber Security, LGU**

**ABSTRACT:**

This project is basically creating a database management system for the transaction that are being taken place in the ATM of any bank. Aim of the project is to creating a backend program of the processes taking place using SQL. This model deals with the relationship between the customer, ATM machine & Bank. The other entities play a supportive weak role. So basically this helps the banks to debit or credit the amount of the customer from his respective account and also keep the record of his/her transaction made.

**ER Diagram:**

**TABLES:**

**ATM Machine**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| ATM\_Id | Int | Primary Key |
| ATM\_Name | Varchar (20) | None |
| ATM\_Add | Varchar (80) | None |
| ATM\_Bankname | Varchar (20) | None |
| ATM\_Branch | Varchar (10) | None |

**Bank**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Bank\_Id | Int | Primary Key |
| PFSC\_Code | Varchar (15) | None |
| Bank\_Add | Varchar (80) | None |
| Bank\_name | Varchar (20) | None |
| B\_ATM\_Id | Int | Foreign Key |

**Card**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Card\_No | Int | Primary Key |
| Card\_Bankname | Varchar (20) | None |
| Card\_Cvv | Varchar (3) | None |
| Card\_ExpiryDate | Date | None |
| Card\_Balance | Varchar (16) | None |
| Card\_Type | Varchar (20) | None |

**Transection**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Transaction\_Id | Int | Primary Key |
| Transaction\_Name | Varchar (20) | None |
| Transaction\_Status | Varchar (10) | None |
| Transaction\_Type | Varchar (10) | None |

**Customer**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| C\_Id | Int | Primary Key |
| C\_Add | Varchar (80) | None |
| F\_Name | Varchar (20) | None |
| L\_name | Varchar (20) | None |
| C\_Card\_No | Varchar (16) | Foreign Key |

**Branch**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Branch\_Id | Int | Primary Key |
| Branch\_name | Varchar (20) | None |
| Branch\_loc | Varchar (30) | None |
| B\_Bank\_Id | Int | Foreign Key |

**Account**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Acc\_No | Varchar (16) | Primary Key |
| Acc\_Type | Varchar (10) | None |
| Acc\_Id | Int | Foreign Key |

**Current**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Acc\_No | Varchar (16) | Primary Key  &  Foreign Key |

**Savings**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Acc\_No | Varchar (16) | Primary Key  &  Foreign Key |

**Deposit**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Transaction\_Id | Int | Primary Key  &  Foreign Key |

**Withdraw**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Transaction\_Id | Int | Primary Key  &  Foreign Key |

**Transfer**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Transaction\_Id | Int | Primary Key  &  Foreign Key |

**Inquiry**

|  |  |  |
| --- | --- | --- |
| Attribute | Data type | Constraint |
| Transaction\_Id | Int | Primary Key  &  Foreign Key |

**Code:**

create database Atm

use Atm

create table transection

(

Transaction\_Id int primary key,

Transaction\_Name varchar(20),

Transaction\_status varchar(10),

Transaction\_type varchar(10)

)

insert into transection

values(001,'Umar Ali','completed','debit')

insert into transection

values(002,'Ali Raza','completed','credit')

insert into transection

values(003,'Ahmad Nazir','completed','debit')

insert into transection

values(004,'M Ahmad','completed','debit')

insert into transection

values(005,'Sheraz Akhtar','completed','debit')

insert into transection

values(006,'John Justin','completed','credit')

insert into transection

values(007,'M Arbab','completed','credit')

create table Card

(

Card\_No varchar(16) primary key,

Card\_Bankname varchar(20),

Card\_CVV varchar(3),

Card\_ExpiryDate date,

Card\_Balance varchar(16),

Card\_Type varchar(20)

)

insert into Card

values(5425233430109903,'Allied',172,'10-12-2026',500,'Visa')

insert into Card

values(2222420000001113,'Meezan',656,'01-06-2029',900,'Master card')

insert into Card

values(4263982640269299,'UBL',392,'10-09-2024',1500,'Visa')

insert into Card

values(4917484589897107,'HBL',932,'01-04-2026',1200,'Master card')

insert into Card

values(4001919257537193,'Faysal',129,'01-12-2023',2000,'Visa')

insert into Card

values(4007702835532454,'Standard chartered',172,'10-03-2026',700,'Paypak')

insert into Card

values(5011054488597827,'Askari',172,'10-12-2022',1500,'Pioneer')

create table ATM\_Machine

(

ATM\_Id int primary key,

ATM\_Name varchar(20),

ATM\_Add varchar(80),

ATM\_Bankname varchar(20),

ATM\_Branch varchar(10)

foreign key (ATM\_Id) references transection(transaction\_Id)

)

insert into ATM\_Machine

values(001,'Allied','Model town C block','Allied Bank','Lahore')

insert into ATM\_Machine

values(002,'Meezan','Gulberg 3 M block','Meezan Bank','Lahore')

insert into ATM\_Machine

values(003,'UBL','Susan Road','UBL Bank','Faisalabad')

insert into ATM\_Machine

values(004,'HBL','Block 5 Liaquatabad','Habib Bank','Karachi')

insert into ATM\_Machine

values(005,'Faysal','Model town A block','Faysal Bank','Lahore')

insert into ATM\_Machine

values(006,'Standard Chartered','DHA Phase 6','Standard Chartered','Lahore')

insert into ATM\_Machine

values(007,'Askari','Bhatta Chowk','Askari Bank','Lahore')

create table Bank

(

Bank\_Id int primary key,

PFSC\_Code varchar(15),

Bank\_Add varchar(80),

Bank\_Name varchar(20),

foreign key (Bank\_Id) references ATM\_Machine(ATM\_Id)

)

insert into Bank

values(001,0979,'Model town C block','Allied Bank')

insert into Bank

values(002,0275,'Gulberg 3 M block','Meezan Bank')

insert into Bank

values(003,1365,'Susan road','UBL Bank')

insert into Bank

values(004,0297,'Block 5 Liaquatabad','Habib bank')

insert into Bank

values(005,0297,'Model town A block','Faysal Bank')

insert into Bank

values(006,5382,'DHA Phase 6','Standard Chartered')

insert into Bank

values(007,3728,'Bhatta Chowk','Askari Bank')

create table Customer

(

C\_Id int primary key,

C\_add varchar(80),

F\_name varchar(20),

L\_name varchar(20),

C\_Card\_No varchar(16)

foreign key (C\_Card\_No) references Card(Card\_No)

)

insert into Customer

values(001,'Model Town Lahore','Umar','Ali',5425233430109903)

insert into Customer

values(002,'Gulberg 3 Lahore','Ali','Raza',2222420000001113)

insert into Customer

values(003,'Faisalabad','Ahmad','Nazir',4263982640269299)

insert into Customer

values(004,'Liaquatabad Karachi','M','Ahmad',4917484589897107)

insert into Customer

values(005,'Model Town A Block','Sheraz','Akhtar',4001919257537193)

insert into Customer

values(006,'DHA Phase 6','John','Justin',4007702835532454)

insert into Customer

values(007,'Bhatta Chowk','M','Arbab',5011054488597827)

create table Branch

(

Branch\_Id int primary key,

Branch\_Name varchar(20),

Branch\_loc varchar(30),

foreign key (Branch\_Id) references Bank(Bank\_Id)

)

insert into Branch

values(001,'Model Town','Model Town C block')

insert into Branch

values(002,'Gulberg 3','Gulberg 3 M Block')

insert into Branch

values(003,'Faisalabad','Susan Road')

insert into Branch

values(004,'Karachi','Liaquatabad')

insert into Branch

values(005,'Model Town','Model Town A Block')

insert into Branch

values(006,'Lahore','DHA Phase 6')

insert into Branch

values(007,'Lahore','Bhatta Chowk')

create table Account

(

Acc\_no varchar(16) primary key,

Acc\_type varchar(10),

A\_C\_Id int

foreign key (A\_C\_Id) references customer(C\_Id)

Unique (Acc\_no)

)

insert into Account

values(5425233430109903,'Current',001)

insert into Account

values(2222420000001113,'Saving',002)

insert into Account

values(4263982640269299,'Current',003)

insert into Account

values(4917484589897107,'Saving',004)

insert into Account

values(4001919257537193,'Current',005)

insert into Account

values(4007702835532454,'Current',006)

insert into Account

values(5011054488597827,'Saving',007)

create table CurrentA

(

Acc\_no varchar(16) primary key

)

insert into CurrentA

values(5425233430109903)

insert into CurrentA

values(4263982640269299)

insert into CurrentA

values(4001919257537193)

insert into CurrentA

values(4007702835532454)

create table Savings

(

Acc\_no varchar(16) primary key

)

insert into Savings

values(2222420000001113)

insert into Savings

values(4917484589897107)

insert into Savings

values(5011054488597827)

alter table CurrentA

add foreign key (Acc\_no) references Account(Acc\_no)

alter table Savings

add foreign key (Acc\_no) references Account(Acc\_no)

select \* from transection

select \* from Card

select \* from ATM\_Machine

select \* from Bank

select \* from Customer

select \* from Branch

select \* from Account

select \* from CurrentA

select \* from Savings

**Normalization**

**ATM machine table**

Attributes: ATM\_Id, ATM\_Name, ATM\_Add, ATM\_BankName, ATM\_Branch

Functional dependencies:

ATM\_Id 🡪 ATM\_Name

ATM\_Id 🡪 ATM\_Bankname

ATM\_Id 🡪 ATM\_Branch ATM\_Bankname,

ATM\_Branch 🡪 ATM\_Add

**Primary key:** ATM\_Id

**2NF:**

The table is already in 2NF form because there are no partial dependencies.

**3NF:**

Step 1:

The table is not in 3NF because on checking the functional dependencies, we find we find transitive dependencies where RHS has non-key attributes, so splitting it into two more tables:

Table I: (ATM\_BankName,ATM\_Branch,ATM\_Add)

Table II: (ATM\_Id,ATM\_Name,ATM\_BankName,ATM\_Branch)

Step II: Checking the new tables for 3NF form.

Now Table I and II are in 3NF form.

**BCNF:**

Table I and II are in BCNF form too.

**Bank Table**

Attributes: Bank\_Id, IFSC\_Code, Bank\_Add, Bank\_Name

Functional dependencies:

Bank\_Id 🡪 PFSC\_Code

PFSC\_Code 🡪 Bank\_Name

PFSC\_Code 🡪 Bank\_Add

**Primary key:** Bank\_Id

**2NF:**

The table is already in 2NF form because there are no partial dependencies.

**3NF:**

Step 1:

The table is not in 3NF because on checking the functional dependencies, we find we find transitive dependencies where RHS has non-key attributes, so splitting it into two more tables:

Table I: (IFSC\_Code,Bank\_Name,Bank\_Add)

Table II: (Bank\_Id,IFSC\_Code)

Step II: Checking the new tables for 3NF form

Now Table I and II are in 3NF form.

**BCNF:**

Table I and II are in BCNF form too.

**Card table:**

Attributes: Card\_No, Card\_BankName, Card\_CVV, Card\_ExpiryDate, Card\_Balance, Card\_Type

Functional dependencies:

Card\_No 🡪 Card\_BankName

Card\_No 🡪 Card\_CVV

Card\_No 🡪 Card\_ExpiryDate

Card\_No 🡪 Card\_Balance

Card\_No 🡪 Card\_Type

**Primary key:** Card\_No

**2NF:** The table is already in 2NF form because there are no partial dependencies.

**3NF:** The table is already in 3NF form because there are no transitive dependencies among the attributes.

**BCNF:** The table is in BCNF form too.

**Customer table:**

Attributes: C\_Id, C\_add, F\_name, L\_name

Functional dependencies:

C\_Id 🡪 F\_name

C\_Id 🡪 L\_Name

C\_Id 🡪 C\_Add

C\_Id 🡪 C\_Card\_No

add Primary key: C\_Id

**2NF:** The table is already in 2NF form because there are no partial dependencies.

**3NF:** The table is already in 3NF form because there are no transitive dependencies among the attributes.

**BCNF:** The table is in BCNF form too.

**Branch table:**

Attributes: Branch\_Id, Branch\_Name, Branch\_loc

Functional dependencies:

Branch\_Id 🡪 Branch\_Name

Branch\_Id 🡪 Branch\_loc

Primary key: Branch\_Id

**2NF:** The table is already in 2NF form because there are no partial dependencies.

**3NF:** The table is already in 3NF form because there are no transitive dependencies among the attributes.

**BCNF:** The table is in BCNF form too.

**Account table:**

Attributes: Acc\_no, Acc\_type

Functional dependencies:

Acc\_No 🡪 Acc\_type

Primary key: Acc\_no

**2NF:** The table is already in 2NF form because there are no partial dependencies.

**3NF:** The table is already in 3NF form because there are no transitive dependencies among the attributes.

**BCNF:** The table is in BCNF form too.