DBMS – Assignment A2

Name:
PRN:
Roll no.:
Class:

Setting up the database

```
mysql> CREATE DATABASE Database_A2;
Query OK, 1 row affected (0.01 sec)

mysql> USE Database_A2;
Database changed
mysql> CREATE TABLE Account(accountNum INT, branchName
VARCHAR(50), balance INT, PRIMARY KEY (accountNum));
Query OK, 0 rows affected (0.04 sec)

mysql> CREATE TABLE Branch(branchName VARCHAR(50), branchCity
VARCHAR(50), assets INT, PRIMARY KEY (branchName));
Query OK, 0 rows affected (0.02 sec)

mysql> CREATE TABLE Customer (customerName VARCHAR(50),
customerStreet VARCHAR(50), customerCity VARCHAR(50), PRIMARY KEY
(customerName));
Query OK, 0 rows affected (0.03 sec)

mysql> CREATE TABLE Depositor (customerName VARCHAR(50),
accountNum INT);
Query OK, 0 rows affected (0.02 sec)

mysql> CREATE TABLE Loan (loanNum INT, branchName VARCHAR(50),
amount INT, PRIMARY KEY (loanNum));
Query OK, 0 rows affected (0.02 sec)

mysql> CREATE TABLE Borrower (customerName VARCHAR(50), loanNum
INT);
Query OK, 0 rows affected (0.01 sec)

mysql> ALTER TABLE Account ADD FOREIGN KEY (branchName) REFERENCES
Branch(branchName);
Query OK, 0 rows affected (0.08 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> ALTER TABLE Depositor ADD FOREIGN KEY (customerName)
REFERENCES Customer (customerName);
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE Depositor ADD FOREIGN KEY (accountNum)
REFERENCES Account (accountNum);
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE Loan ADD FOREIGN KEY (branchName) REFERENCES
Branch (branchName);
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE Borrower ADD FOREIGN KEY (customerName)
REFERENCES Customer (customerName);
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE Borrower ADD FOREIGN KEY (loanNum) REFERENCES
Loan (loanNum);
Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

Inserting data

```
mysql> INSERT INTO Branch (branchName, branchCity, assets) VALUES
    -> ("Dhole Patil", "Kharadi", 50000),
    -> ("Nagarwala", "Akurdi", 20000),
    -> ("Peachtree", "Wakad", 35000),
    -> ("Bishops", "Nigdi", 10000),
    -> ("Amanora", "Hadapsar", 60000);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Customer (customerName, customerStreet,
customerCity) VALUES
    -> ("Kalas", "Airport Road", "Pune"),
    -> ("Mehul", "Shahdha", "Nandurbar"),
    -> ("Tanmay", "Porwal Road", "Pune"),
    -> ("Kshitij", "Hadapasar", "Pune"),
    -> ("Aditya", "Mira RD", "Mumbai"),
    -> ("Himanshu", "Smart City", "Nandurbar");
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

```
mysql> INSERT INTO Account (accountNum, branchName, balance)
VALUES
    -> (2501, "Dhole Patil", 5000),
    -> (2511, "Nagarwala", 1500),
    -> (2521, "Peachtree", 2000),
    -> (2512, "Bishops", 5000),
    -> (2531, "Amanora", 1000);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Loan (loanNum, branchName, amount) VALUES
    -> (155, "Dhole Patil", 500),
    -> (156, "Nagarwala", 250),
    -> (157, "Peachtree", 600),
    -> (158, "Bishops", 1400),
    -> (159, "Amanora", 25000);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Borrower VALUES
    -> ("Kalas", 156),
    -> ("Mehul", 158),
    -> ("Tanmay", 155),
    -> ("Kshitij", 157),
    -> ("Aditya", 159),
    -> ("Himanshu", 158);
Query OK, 6 rows affected (0.00 sec)
Records: 6  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Depositor VALUES
    -> ("Kalas", 2511),
    -> ("Mehul", 2512),
    -> ("Tanmay", 2501),
    -> ("Kshitij", 2521),
    -> ("Aditya", 2531),
    -> ("Himanshu", 2512);
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

Questions

1. Find the names of all branches in loan relation.

```
mysql> SELECT branchName FROM Loan;
+-------------+
| branchName  |
+-------------+
| Amanora     |
| Bishops     |
| Dhole Patil |
| Nagarwala   |
| Peachtree   |
+-------------+
```

2. Find all loan numbers for loans made at Akurdi Branch with loan amount > 12000.

```
mysql> SELECT loanNum FROM Loan WHERE amount>12000;
+---------+
| loanNum |
+---------+
|     159 |
+---------+
```

3. Find all customers who have a loan from bank. Find their names,loan_no and loan amount.

```
mysql> SELECT Borrower.loanNum FROM Borrower INNER JOIN Loan ON
Borrower.loanNum = Loan.loanNum;
+---------+
| loanNum |
+---------+
|     159 |
|     158 |
|     158 |
|     155 |
|     156 |
|     157 |
+---------+
```

4. List all customers in alphabetical order who have loan from Akurdi branch.

```
mysql> SELECT customerName FROM Borrower INNER JOIN Loan ON
Borrower.loanNum = Loan.loanNum WHERE branchName = "Akurdi" ORDER
BY customerName;
Empty set (0.00 sec)
```

5. Find all customers who have an account or loan or both at bank.

```
mysql> SELECT customerName FROM Depositor UNION SELECT
customerName FROM Borrower;
+--------------+
| customerName |
+--------------+
| Aditya       |
| Himanshu     |
| Kalas        |
| Kshitij      |
| Mehul        |
| Tanmay       |
+--------------+
```

6. Find all customers who have both account and loan at bank.

```
mysql> SELECT customerName FROM Depositor INTERSECT SELECT
customerName FROM Borrower;
+--------------+
| customerName |
+--------------+
| Aditya       |
| Himanshu     |
| Kalas        |
| Kshitij      |
| Mehul        |
| Tanmay       |
+--------------+
```

7. Find all customers who have account but no loan at the bank.

```
mysql> SELECT customerName FROM Depositor WHERE customerName NOT
IN (SELECT customerName FROM Borrower);
Empty set (0.00 sec)
```

8. Find the average account balance at each branch

```
mysql> SELECT AVG(amount) FROM Loan;
+-------------+
| AVG(amount) |
+-------------+
|   5550.0000 |
+-------------+
```

9. Find no. of depositors at each branch.

```
mysql> SELECT branchName, COUNT(*) AS noOfDepositors FROM Account
JOIN Depositor ON Account.accountNum = Depositor.accountNum GROUP
BY branchName;
+-------------+----------------+
| branchName  | noOfDepositors |
+-------------+----------------+
| Amanora     |              1 |
| Bishops     |              2 |
| Dhole Patil |              1 |
| Nagarwala   |              1 |
| Peachtree   |              1 |
+-------------+----------------+
```

10. Find name of Customer and city where customer name starts with Letter K.

```
mysql> SELECT DISTINCT branchName, branchCity FROM Branch;
+-------------+------------+
| branchName  | branchCity |
+-------------+------------+
| Amanora     | Hadapsar   |
| Bishops     | Nigdi      |
| Dhole Patil | Kharadi    |
| Nagarwala   | Akurdi     |
| Peachtree   | Wakad      |
+-------------+------------+
```

11. Display distinct cities of branch.

```
mysql> SELECT DISTINCT branchName, branchCity FROM Branch;
+-------------+------------+
| branchName  | branchCity |
+-------------+------------+
| Amanora     | Hadapsar   |
| Bishops     | Nigdi      |
| Dhole Patil | Kharadi    |
| Nagarwala   | Akurdi     |
| Peachtree   | Wakad      |
+-------------+------------+
```

12. Find the branches where average account balance > 1200

```
mysql> SELECT branchName FROM Account GROUP BY branchName HAVING
AVG(balance) > 1200;
+-------------+
| branchName  |
+-------------+
| Bishops     |
| Dhole Patil |
| Nagarwala   |
| Peachtree   |
+-------------+
```

13. Find number of tuples in customer relation.

```
mysql> SELECT COUNT(*) FROM Customer;
+----------+
| COUNT(*) |
+----------+
|        6 |
+----------+
```

14. Calculate total loan amount given by bank.

```
mysql> SELECT SUM(amount) AS amount FROM Loan;
+--------+
| amount |
+--------+
|  27750 |
+--------+
```

15. Delete all loans with loan amount between 1300 and 1500.

```
mysql> DELETE FROM Borrower WHERE loanNum IN (SELECT loanNum FROM
Loan WHERE amount > 1300 AND amount < 1500);
```

```
Query OK, 2 rows affected (0.00 sec)

mysql> DELETE FROM Loan WHERE amount > 1300 AND amount < 1500;
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM Borrower;
+--------------+---------+
| customerName | loanNum |
+--------------+---------+
| Kalas        |     156 |
| Tanmay       |     155 |
| Kshitij      |     157 |
| Aditya       |     159 |
+--------------+---------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM Loan;
+---------+-------------+--------+
| loanNum | branchName  | amount |
+---------+-------------+--------+
|     155 | Dhole Patil |    500 |
|     156 | Nagarwala   |    250 |
|     157 | Peachtree   |    600 |
|     159 | Amanora     |  25000 |
+---------+-------------+--------+
4 rows in set (0.00 sec)
```

16. Delete all tuples at every branch located in Nigdi.

```
mysql> DELETE FROM Borrower WHERE loanNum IN (SELECT loanNum FROM
Loan WHERE branchName IN (SELECT branchName FROM Branch WHERE
branchCity = "Nigdi"));
Query OK, 0 rows affected (0.00 sec)

mysql> DELETE FROM Loan WHERE branchName = (SELECT branchName FROM
Branch WHERE branchCity = "Nigdi");
Query OK, 0 rows affected (0.00 sec)

mysql> DELETE FROM Depositor WHERE accountNum IN (SELECT
accountNum FROM Account WHERE branchName IN (SELECT branchName
FROM Branch WHERE branchCity = "Nigdi"));
Query OK, 2 rows affected (0.01 sec)

mysql> DELETE FROM Account WHERE branchName = (SELECT branchName
FROM Branch WHERE branchCity = "Nigdi");
Query OK, 1 row affected (0.00 sec)

mysql> DELETE FROM Branch WHERE branchName = Nigdi;
ERROR 1054 (42S22): Unknown column 'Nigdi' in 'where clause'
```

```
mysql> SELECT * FROM Borrower;
+--------------+---------+
| customerName | loanNum |
+--------------+---------+
| Kalas        |     156 |
| Tanmay       |     155 |
| Kshitij      |     157 |
| Aditya       |     159 |
+--------------+---------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM Loan;
+---------+-------------+--------+
| loanNum | branchName  | amount |
+---------+-------------+--------+
|     155 | Dhole Patil |    500 |
|     156 | Nagarwala   |    250 |
|     157 | Peachtree   |    600 |
|     159 | Amanora     |  25000 |
+---------+-------------+--------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM Depositor;
+--------------+------------+
| customerName | accountNum |
+--------------+------------+
| Kalas        |       2511 |
| Tanmay       |       2501 |
| Kshitij      |       2521 |
| Aditya       |       2531 |
+--------------+------------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM Account;
+------------+-------------+---------+
| accountNum | branchName  | balance |
+------------+-------------+---------+
|       2501 | Dhole Patil |    5000 |
|       2511 | Nagarwala   |    1500 |
|       2521 | Peachtree   |    2000 |
|       2531 | Amanora     |    1000 |
+------------+-------------+---------+
4 rows in set (0.00 sec)
```

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