

ASSIGNMENT 3

AKILESH K

1)

```
mysql> create database hmbank;  
Query OK, 1 row affected (0.03 sec)
```

```
mysql> use hmbank;  
Database changed
```

2)

```
mysql> CREATE TABLE customers(  
->  customerid INT,  
->  firstname varchar(25),  
->  lastname varchar(25),  
->  date date,  
->  email text,  
->  phone text,  
->  PRIMARY KEY (customerid)  
-> ) ;  
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> CREATE TABLE accounts (  
-> accountid INT,  
e  -> customerid INT,  
-> accounttype VARCHAR(30),  
-> balance DOUBLE,  
(  -> PRIMARY KEY (accountid),  
2  -> FOREIGN KEY (customerid) REFERENCES customers(customerid)  
->  
-> );
```

```
mysql> CREATE TABLE transactions (
  -> transactionid INT,
  -> accountid INT,
  -> transactiontype INT,
  -> amount DOUBLE,
  -> transactiondate DATE,
  -> PRIMARY KEY (transactionid),
  -> FOREIGN KEY (accountid) REFERENCES accounts(accountid)
  ->
  -> );
Query OK, 0 rows affected (0.07 sec)
```

3)

```
mysql> INSERT INTO customers(customerid,firstname,lastname,date,email,phone)
  -> VALUES
  -> ("8","Slade","Boone","1999-03-28","slade@aol.couk","1-377-644-1576"),
  -> ("3","Macy","Travis","1990-01-29","macy@outlook.com","(157) 375-9678"),
  -> ("1","Gretchen","Bird","1995-04-22","bird@icloud.com","(552) 253-2923"),
  -> ("7","Jamal","Walls","1989-11-16","jamal@yahoo.ca","1-344-653-4977"),
  -> ("5","Jael","Mcfarland","1987-06-08","jael@aol.couk","(403) 558-6094");
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO accounts (accountid, customerid, accounttype, balance)
  -> VALUES
  -> ("42", "8", "savings", "7000"),
  -> ("63", "3", "current", "20000"),
  -> ("97", "1", "savings", "72000"),
  -> ("72", "7", "zero balance", "30000"),
  -> ("21", "5", "savings", "40000");
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO transactions (transactionid, accountid, transactiontype, amount, transactiondate)
  -> VALUES ("4412", "42", "deposit", "1000", "2023-05-22"),
  -> ("5242", "63", "deposit", "500", "2023-05-22"),
  -> ("7731", "97", "withdrawal", "2500", "2023-05-22"),
  -> ("8471", "72", "transfer", "750", "2023-05-22"),
  -> ("6931", "21", "deposit", "3000", "2023-05-22");
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

4)

Customers		Accounts		Transactions
customerid	1----	accountid	1----	transactionid
firstname		customerid		accountid
lastname		accounttype		transactiontype
date		balance		amount
email				transactiondate
phone				

5)

```
mysql> show tables;
+-----+
| Tables_in_hmbank |
+-----+
| accounts          |
| customers         |
| transactions      |
+-----+
3 rows in set (0.02 sec)
```

```
mysql> desc customers;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| customerid | int           | NO   | PRI | NULL    |       |
| firstname  | varchar(25)   | YES  |     | NULL    |       |
| lastname   | varchar(25)   | YES  |     | NULL    |       |
| date       | date          | YES  |     | NULL    |       |
| email      | text          | YES  |     | NULL    |       |
| phone      | text          | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.01 sec)
```

```
mysql> desc accounts;
```

Field	Type	Null	Key	Default	Extra
accountid	int	NO	PRI	NULL	
customerid	int	YES	MUL	NULL	
accounttype	varchar(30)	YES		NULL	
balance	double	YES		NULL	

```
4 rows in set (0.01 sec)
```

```
mysql> desc transactions;
```

Field	Type	Null	Key	Default	Extra
transactionid	int	NO	PRI	NULL	
accountid	int	YES	MUL	NULL	
transactiontype	text	YES		NULL	
amount	double	YES		NULL	
transactiondate	date	YES		NULL	

```
5 rows in set (0.01 sec)
```

Task 2

1)

```
mysql> select customers.firstname,accounts.accounttype,customers.email from customers,accounts where customers.customerid=accounts.customerid;
```

firstname	accounttype	email
Gretchen	savings	bird@icloud.com
Macy	current	macy@outlook.com
Jael	savings	jael@aol.couk
Jamal	zero balance	jamal@yahoo.ca
Slade	savings	slade@aol.couk

```
5 rows in set (0.00 sec)
```

2)

```
mysql> select transactions.transactionid,transactions.amount,transactions.transactiondate,customers.firstname from transactions,customers,accounts where customers.customerid=accounts.customerid and accounts.accountid=transactions.accountid;
```

transactionid	amount	transactiondate	firstname
4412	1000	2023-05-22	Slade
5242	500	2023-05-22	Macy
6931	3000	2023-05-22	Jael
7731	2500	2023-05-22	Gretchen
8471	750	2023-05-22	Jamal

```
5 rows in set (0.00 sec)
```

3)

```
mysql> update accounts set balance=balance+100 where customerid=5;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
mysql> select * from accounts
-> ;
```

accountid	customerid	accounttype	balance
21	5	savings	40100
42	8	savings	7000
63	3	current	20000
72	7	zero balance	30000
97	1	savings	72000

5 rows in set (0.00 sec)

4)

```
mysql> select concat(firstname,lastname) from customers;
```

concat(firstname,lastname)
GretchenBird
MacyTravis
JaelMcfarland
JamalWalls
SladeBoone

5 rows in set (0.00 sec)

5)

```
mysql> delete from accounts where balance=0 and accounttype="savings";
Query OK, 0 rows affected (0.01 sec)
```

```
mysql>
```

6)

```
mysql> select firstname ,lastname from customers where phone="1-377-644-1576";
```

firstname	lastname
Slade	Boone

1 row in set (0.00 sec)

7)

```
mysql> select * from accounts where accounttype="current" and balance>1000;
+-----+-----+-----+-----+
| accountid | customerid | accounttype | balance |
+-----+-----+-----+-----+
|          63 |          3 | current    |   20000 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

8)

```
mysql> select * from transactions where accountid=97;
+-----+-----+-----+-----+-----+
| transactionid | accountid | transactiontype | amount | transactiondate |
+-----+-----+-----+-----+-----+
|          7731 |          97 | withdrawal      |   2500 | 2023-05-22      |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

```
mysql>
```

9)

```
mysql> SELECT t.transactionid,t.accountid,t.amount,t.transactiondate FROM transactions t WHERE t.
accountid = '63';
+-----+-----+-----+-----+
| transactionid | accountid | amount | transactiondate |
+-----+-----+-----+-----+
|          5242 |          63 |    500 | 2023-05-22      |
+-----+-----+-----+-----+
1 row in set (0.03 sec)
```

10)

11)

```
mysql> SELECT accountid,accounttype,balance FROM accounts WHERE balance < 10000;
+-----+-----+-----+
| accountid | accounttype | balance |
+-----+-----+-----+
|          42 | savings     |    7000 |
+-----+-----+-----+
1 row in set (0.00 sec)
```

```
mysql>
```

12)

```
mysql> SELECT customerid,firstname,lastname FROM customers WHERE phone != "1-377-644-1576";
```

customerid	firstname	lastname
1	Gretchen	Bird
3	Macy	Travis
5	Jael	Mcfarland
7	Jamal	Walls

```
4 rows in set (0.02 sec)

mysql>
```

Task 3

1)

```
mysql> SELECT customerid,AVG(balance) AS average_balance FROM accounts GROUP BY customerid;
```

customerid	average_balance
1	72000
3	20000
5	40100
7	30000
8	7000

```
5 rows in set (0.01 sec)

mysql>
```

2)

```
mysql> SELECT accountid,customerid,balance FROM accounts ORDER BY balance DESC LIMIT 5;
```

accountid	customerid	balance
97	1	72000
21	5	40100
72	7	30000
63	3	20000
42	8	7000

```
5 rows in set (0.01 sec)

mysql>
```

3)

```
mysql> SELECT c.customerid,c.firstname,c.lastname,SUM(t.amount) FROM customers c
-> JOIN accounts a ON c.customerid = a.customerid JOIN transactions t ON a.accountid = t.accountid
-> WHERE t.transactiontype = 'Deposit' AND t.transactiondate = '2023-05-22' GROUP BY c.customerid;
```

customerid	firstname	lastname	SUM(t.amount)
8	Slade	Boone	1000
3	Macy	Travis	500
5	Jael	Mcfarland	3000

```
3 rows in set (0.01 sec)

mysql>
```

4)

```
mysql> SELECT customerid,firstname,lastname, date FROM customers ORDER BY date ASC LIMIT 1;
+-----+-----+-----+-----+
| customerid | firstname | lastname | date      |
+-----+-----+-----+-----+
|          5 | Jael      | Mcfarland | 1987-06-08 |
+-----+-----+-----+-----+
1 row in set (0.01 sec)

mysql>
```

```
mysql> SELECT customerid,firstname,lastname, date FROM customers ORDER BY date DESC LIMIT 1;
+-----+-----+-----+-----+
| customerid | firstname | lastname | date      |
+-----+-----+-----+-----+
|          8 | Slade     | Boone    | 1999-03-28 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

5)

```
mysql> SELECT t.transactionid,t.accountid,t.transactiontype,t.amount,t.transactiondate,a.accounttype FROM transactions t JOIN accounts a ON t.accountid = a.accountid;
+-----+-----+-----+-----+-----+-----+
| transactionid | accountid | transactiontype | amount | transactiondate | accounttype |
+-----+-----+-----+-----+-----+-----+
|          4412 |         42 | deposit        |    1000 | 2023-05-22      | savings     |
|          5242 |         63 | deposit        |     500 | 2023-05-22      | current     |
|          6931 |         21 | deposit        |    3000 | 2023-05-22      | savings     |
|          7731 |         97 | withdrawal     |    2500 | 2023-05-22      | savings     |
|          8471 |         72 | transfer       |     750 | 2023-05-22      | zero balance |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

6)

```
mysql> SELECT c.customerid,c.firstname,c.lastname,a.accountid,a.accounttype,a.balance FROM customers c LEFT JOIN accounts a ON c.customerid = a.customerid;
+-----+-----+-----+-----+-----+-----+
| customerid | firstname | lastname | accountid | accounttype | balance |
+-----+-----+-----+-----+-----+-----+
|          1 | Gretchen | Bird     |         97 | savings     | 72000 |
|          3 | Macy     | Travis   |         63 | current     | 20000 |
|          5 | Jael     | Mcfarland |        21 | savings     | 40100 |
|          7 | Jamal    | Walls    |         72 | zero balance | 30000 |
|          8 | Slade    | Boone    |         42 | savings     | 7000 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

7)


```
mysql> SELECT c.customerid,c.firstname,c.lastname,t.transactionid,t.transactiontype,t.amount,t.transactiondate
FROM customers c JOIN accounts a ON c.customerid = a.customerid JOIN transactions t ON a.accountid = t.accountid
WHERE a.accountid = '97';
```

customerid	firstname	lastname	transactionid	transactiontype	amount	transactiondate
1	Gretchen	Bird	7731	withdrawal	2500	2023-05-22

```
1 row in set (0.00 sec)

mysql>
```

8)

```
mysql> SELECT c.customerid, c.firstname, c.lastname, COUNT(a.accountid) AS account_count FROM
customers c JOIN accounts a ON c.customerid = a.customerid GROUP BY c.customerid, c.firstname, c.lastname
HAVING COUNT(a.accountid) > 1;
Empty set (0.01 sec)

mysql>
```

9)

10)

11)

```
mysql> SELECT accounttype, SUM(balance) AS total_balance FROM accounts GROUP BY accounttype;
```

accounttype	total_balance
savings	119100
current	20000
zero balance	30000

```
3 rows in set (0.00 sec)

mysql>
```

12)

```
mysql> SELECT accountid, COUNT(transactionid) AS transaction_count FROM transactions GROUP BY
accountid ORDER BY transaction_count DESC;
```

accountid	transaction_count
21	1
42	1
63	1
72	1
97	1

```
5 rows in set (0.00 sec)
```

13)

```
mysql> SELECT c.customerid, c.firstname, c.lastname, COUNT(a.accountid) AS account_count FROM
customers c JOIN accounts a ON c.customerid = a.customerid GROUP BY c.customerid, c.firstname, c
.lastname HAVING COUNT(a.accountid) > 1;
Empty set (0.00 sec)

mysql>
```

14)

```
mysql> SELECT transactionid, amount, transactiondate, accountid, COUNT(*) AS duplicate_co
unt FROM transactions GROUP BY transactionid HAVING COUNT(*) > 1;
Empty set (0.01 sec)

mysql>
```

Task 4

1)

```
mysql> SELECT c.customerid,c.firstname,c.lastname,a.balance AS highest_balance FROM customers c JOIN accounts
a ON c.customerid = a.customerid WHERE a.balance = (SELECT MAX(balance) FROM accounts);
+-----+-----+-----+-----+
| customerid | firstname | lastname | highest_balance |
+-----+-----+-----+-----+
| 1 | Gretchen | Bird | 72000 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

2)

```
mysql> SELECT c.customerid,c.firstname,c.lastname,AVG(a.balance) AS average_balance FROM customers c JOIN acc
ounts a ON c.customerid = a.customerid WHERE c.customerid IN (SELECT customerid FROM accounts GROUP BY cust
omerid HAVING COUNT(accountid) > 1 ) GROUP BY c.customerid, c.firstname, c.lastname;
Empty set (0.01 sec)

mysql>
```

3)

```
mysql> SELECT a.accountid, a.customerid, t.transactionid, t.amount, subquery.avg_transact
ion_amount FROM accounts a JOIN transactions t ON a.accountid = t.accountid JOIN ( SELECT
accountid,
AVG(amount) AS avg_transaction_amount FROM transactions GROUP BY
accountid ) AS subquery ON a.accountid = subquery.accountid WHERE t.amount > subquery.avg_transaction_amo
unt;
Empty set (0.00 sec)

mysql>
```

4)

```
mysql> SELECT customerid, firstname, lastname FROM customers WHERE customerid NOT IN ( SELECT DI
STINCT c.customerid FROM customers c JOIN accounts a ON c.customerid = a.customerid JOIN transact
ions t ON a.accountid = t.accountid);
Empty set (0.01 sec)

mysql>
```

5)

```
mysql> SELECT SUM(balance) AS total_balance_no_transactions FROM accounts WHERE accountid NOT IN (SELECT DISTINCT a.accountid FROM accounts a JOIN transactions t ON a.accountid = t.accountid);
```

total_balance_no_transactions
NULL

```
1 row in set (0.00 sec)
```

6)

```
mysql> SELECT transactionid, accountid, amount, transactiondate FROM transactions WHERE accountid = (SELECT accountid FROM accounts ORDER BY balance LIMIT 1);
```

transactionid	accountid	amount	transactiondate
4412	42	1000	2023-05-22

```
1 row in set (0.01 sec)
```

7)

```
mysql> SELECT customerid, firstname, lastname FROM customers WHERE customerid IN (SELECT DISTINCT c.customerid FROM customers c JOIN accounts a ON c.customerid = a.customerid GROUP BY c.customerid HAVING COUNT(DISTINCT a.accounttype) > 1);
```

```
Empty set (0.01 sec)
```

```
mysql>
```

8)

```
mysql> SELECT accounttype, COUNT(*) AS account_count, (COUNT(*) * 100.0 / (SELECT COUNT(*) FROM accounts)) AS percentage
```

```
-> FROM accounts GROUP BY accounttype;
```

accounttype	account_count	percentage
savings	3	60.00000
current	1	20.00000
zero balance	1	20.00000

```
3 rows in set (0.01 sec)
```

```
mysql>
```

9)

```
mysql> SELECT transactionid, accountid, amount, transactiondate FROM transactions
```

```
-> WHERE accountid IN (SELECT accountid FROM accounts WHERE customerid = 7);
```

transactionid	accountid	amount	transactiondate
8471	72	750	2023-05-22

```
1 row in set (0.00 sec)
```

```
mysql>
```

10)

```
mysql> SELECT accounttype,(SELECT SUM(balance) FROM accounts a2 WHERE a2.accounttype = a1.accounttype) AS total_balance FROM accounts a1 GROUP BY accounttype;
```

accounttype	total_balance
savings	119100
current	20000
zero balance	30000

```
3 rows in set (0.00 sec)

mysql>
```