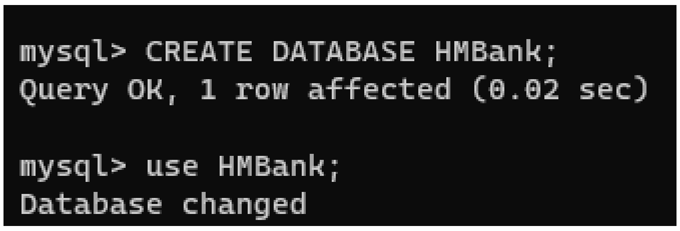
Banking System

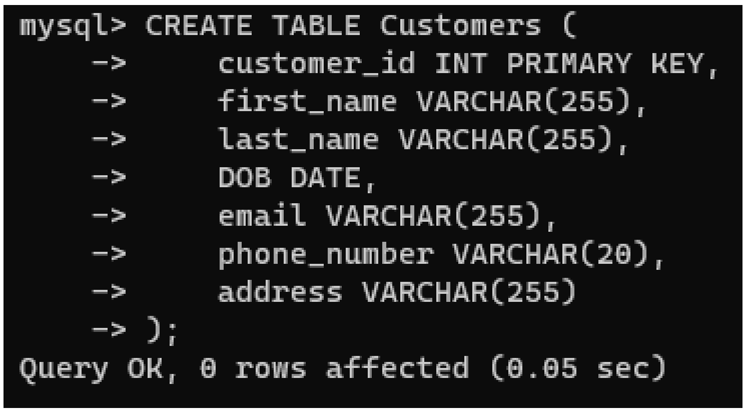
Tasks 1: Database Design:

1. Create the database named "HMBank"

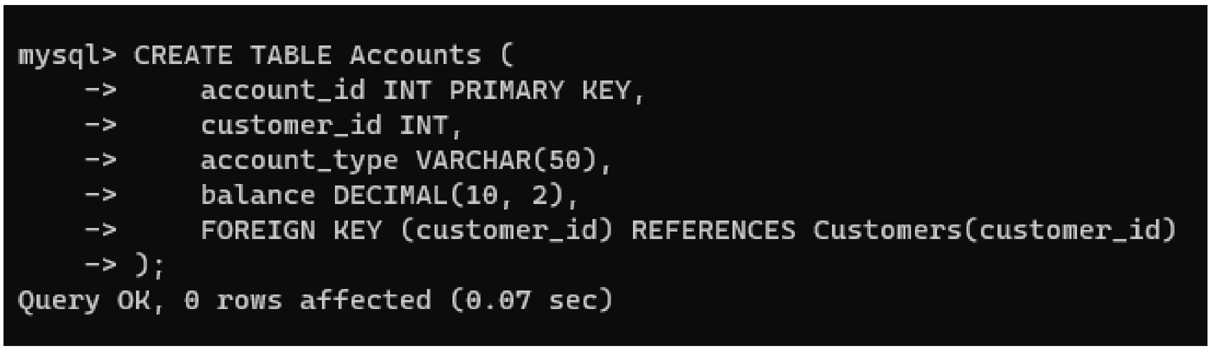


```
mysql> CREATE DATABASE HMBank;
Query OK, 1 row affected (0.02 sec)

mysql> use HMBank;
Database changed
```

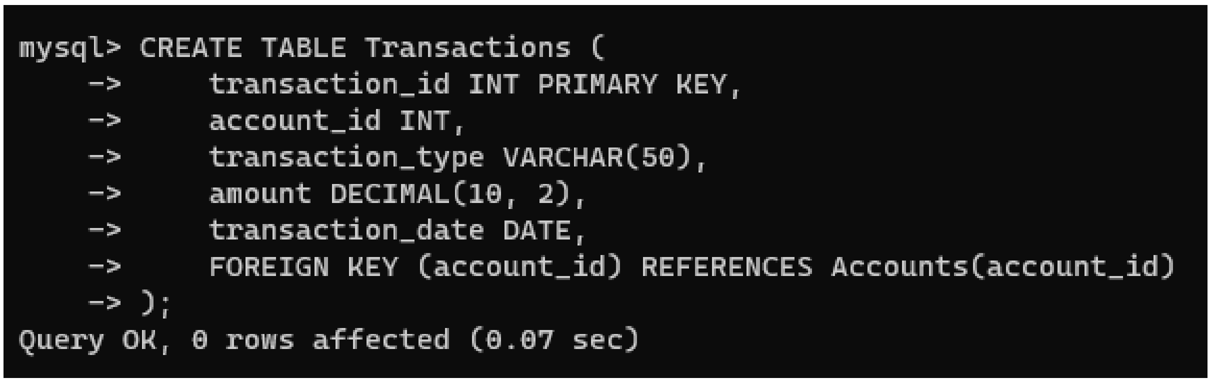
2. Define the schema for the Customers, Accounts, and Transactions tables based on the provided schema.



```
mysql> CREATE TABLE Customers (
    ->     customer_id INT PRIMARY KEY,
    ->     first_name VARCHAR(255),
    ->     last_name VARCHAR(255),
    ->     DOB DATE,
    ->     email VARCHAR(255),
    ->     phone_number VARCHAR(20),
    ->     address VARCHAR(255)
    -> );
Query OK, 0 rows affected (0.05 sec)
```



```
mysql> CREATE TABLE Accounts (
    ->     account_id INT PRIMARY KEY,
    ->     customer_id INT,
    ->     account_type VARCHAR(50),
    ->     balance DECIMAL(10, 2),
    ->     FOREIGN KEY (customer_id) REFERENCES Customers(customer_id)
    -> );
Query OK, 0 rows affected (0.07 sec)
```



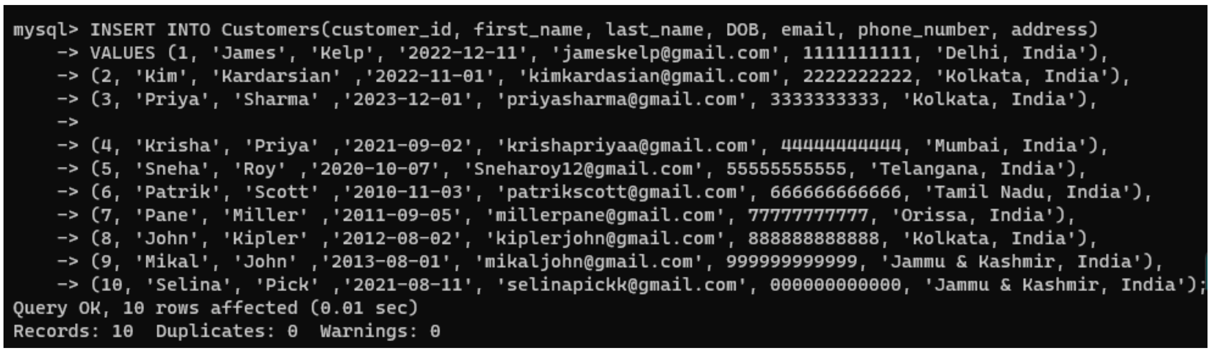
```
mysql> CREATE TABLE Transactions (
    ->     transaction_id INT PRIMARY KEY,
    ->     account_id INT,
    ->     transaction_type VARCHAR(50),
    ->     amount DECIMAL(10, 2),
    ->     transaction_date DATE,
    ->     FOREIGN KEY (account_id) REFERENCES Accounts(account_id)
    -> );
Query OK, 0 rows affected (0.07 sec)
```

4. Create an ERD (Entity Relationship Diagram) for the database.

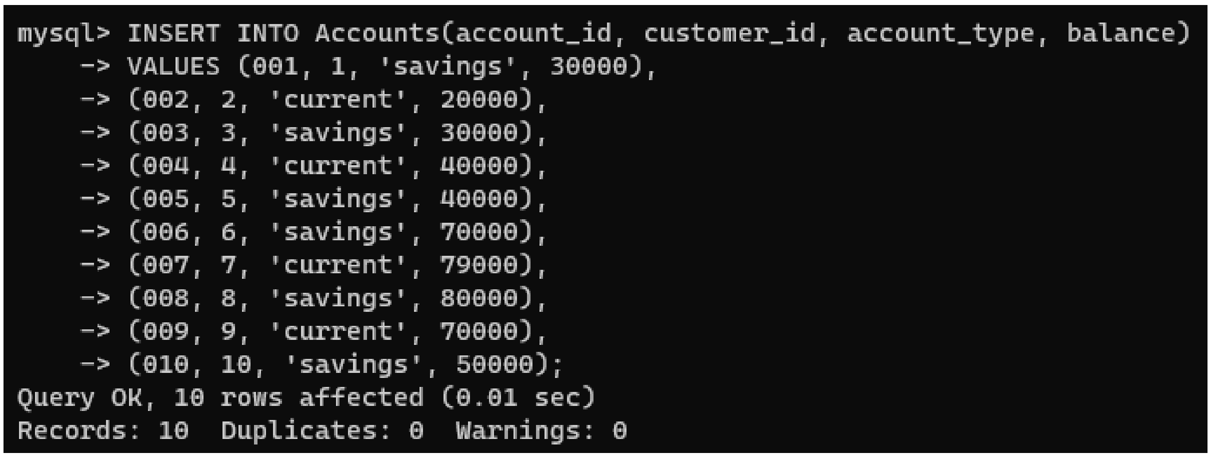
6. Write SQL scripts to create the mentioned tables with appropriate data types, constraints, and relationships.
• Customers
• Accounts
• Transactions

Tasks 2: Select, Where, Between, AND, LIKE:

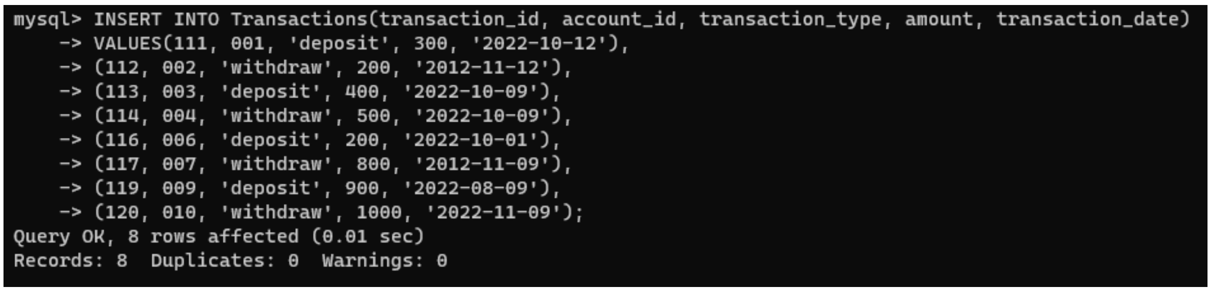
1. Insert at least 10 sample records into each of the following tables.
• Customers
• Accounts
• Transactions



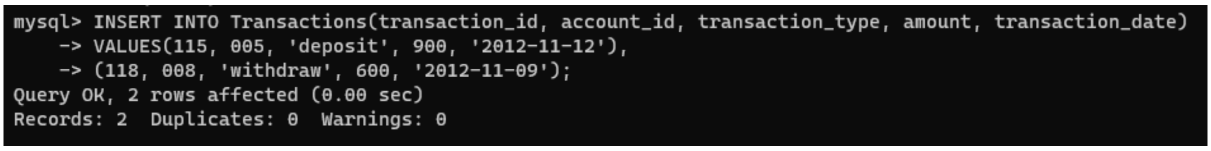
```
mysql> INSERT INTO Customers(customer_id, first_name, last_name, DOB, email, phone_number, address)
    -> VALUES (1, 'James', 'Kelp', '2022-12-11', 'jameskelp@gmail.com', 1111111111, 'Delhi, India'),
    -> (2, 'Kim', 'Kardarsian' ,'2022-11-01', 'kimkardasian@gmail.com', 2222222222, 'Kolkata, India'),
    -> (3, 'Priya', 'Sharma' ,'2023-12-01', 'priyasharma@gmail.com', 3333333333, 'Kolkata, India'),
    ->
    -> (4, 'Krisha', 'Priya' ,'2021-09-02', 'krishapriyaa@gmail.com', 44444444444, 'Mumbai, India'),
    -> (5, 'Sneha', 'Roy' ,'2020-10-07', 'Sneharoy12@gmail.com', 55555555555, 'Telangana, India'),
    -> (6, 'Patrik', 'Scott' ,'2010-11-03', 'patrikscott@gmail.com', 666666666666, 'Tamil Nadu, India'),
    -> (7, 'Pane', 'Miller' ,'2011-09-05', 'millerpane@gmail.com', 77777777777, 'Orissa, India'),
    -> (8, 'John', 'Kipler' ,'2012-08-02', 'kiplerjohn@gmail.com', 888888888888, 'Kolkata, India'),
    -> (9, 'Mikal', 'John' ,'2013-08-01', 'mikaljohn@gmail.com', 999999999999, 'Jammu & Kashmir, India'),
    -> (10, 'Selina', 'Pick' ,'2021-08-11', 'selinapickk@gmail.com', 000000000000, 'Jammu & Kashmir, India');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0
```



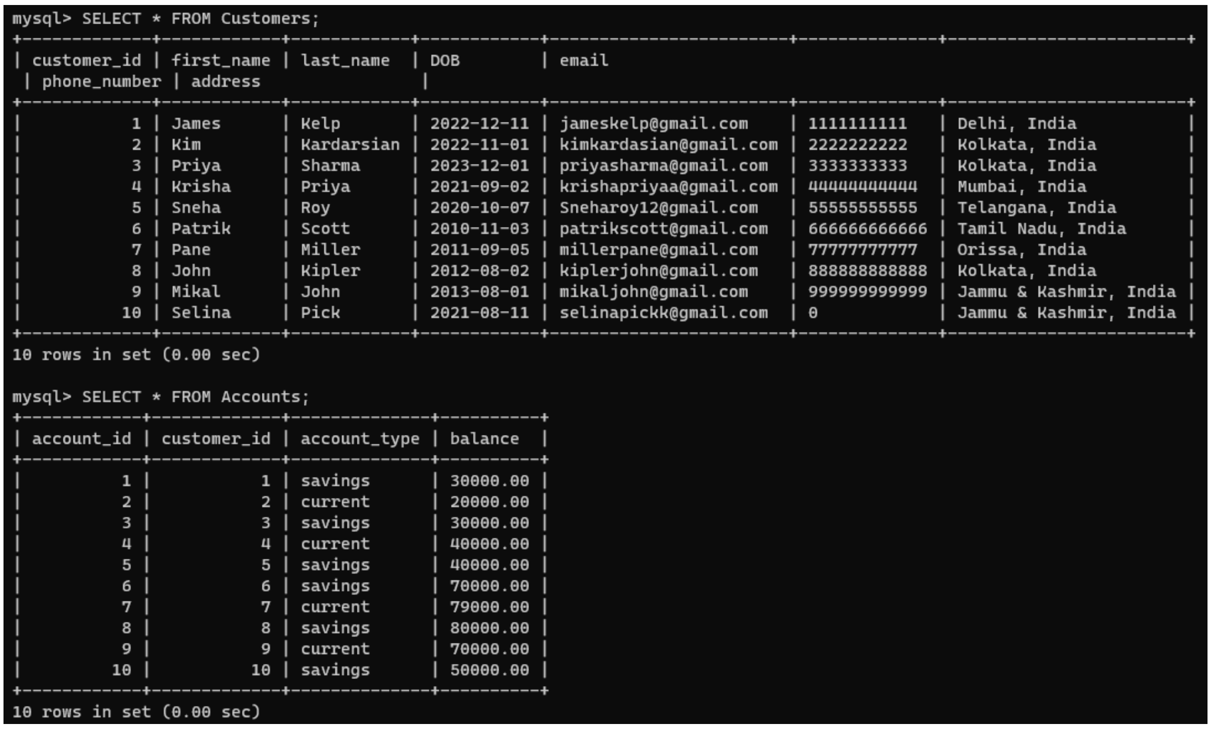
```
mysql> INSERT INTO Accounts(account_id, customer_id, account_type, balance)
    -> VALUES (001, 1, 'savings', 30000),
    -> (002, 2, 'current', 20000),
    -> (003, 3, 'savings', 30000),
    -> (004, 4, 'current', 40000),
    -> (005, 5, 'savings', 40000),
    -> (006, 6, 'savings', 70000),
    -> (007, 7, 'current', 79000),
    -> (008, 8, 'savings', 80000),
    -> (009, 9, 'current', 70000),
    -> (010, 10, 'savings', 50000);
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0
```



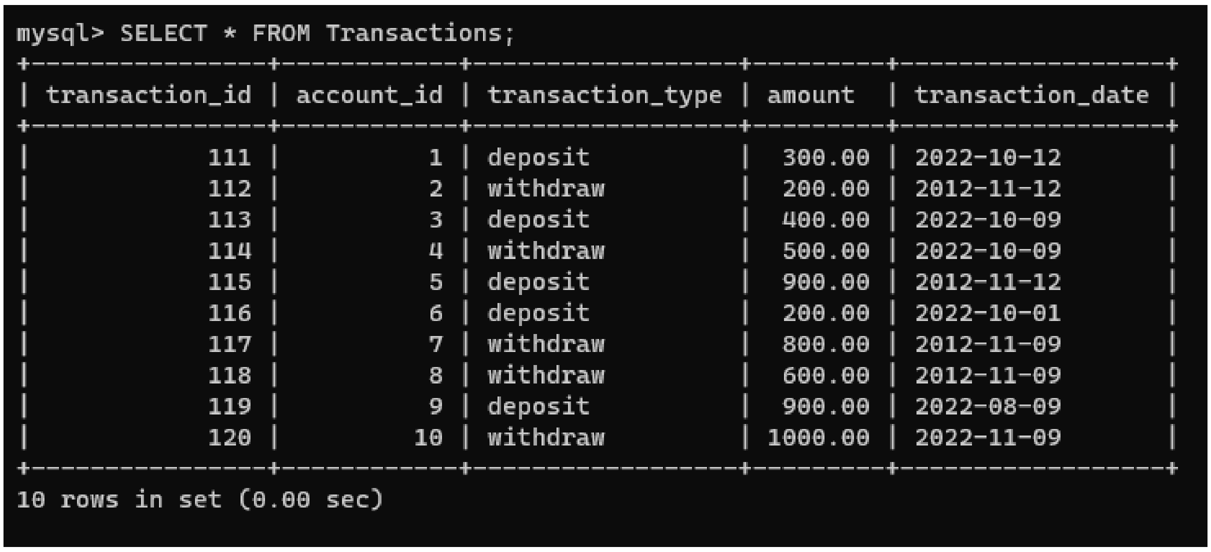
```
mysql> INSERT INTO Transactions(transaction_id, account_id, transaction_type, amount, transaction_date)
    -> VALUES(111, 001, 'deposit', 300, '2022-10-12'),
    -> (112, 002, 'withdraw', 200, '2012-11-12'),
    -> (113, 003, 'deposit', 400, '2022-10-09'),
    -> (114, 004, 'withdraw', 500, '2022-10-09'),
    -> (116, 006, 'deposit', 200, '2022-10-01'),
    -> (117, 007, 'withdraw', 800, '2012-11-09'),
    -> (119, 009, 'deposit', 900, '2022-08-09'),
    -> (120, 010, 'withdraw', 1000, '2022-11-09');
Query OK, 8 rows affected (0.01 sec)
Records: 8  Duplicates: 0  Warnings: 0
```



```
mysql> INSERT INTO Transactions(transaction_id, account_id, transaction_type, amount, transaction_date)
    -> VALUES(115, 005, 'deposit', 900, '2012-11-12'),
    -> (118, 008, 'withdraw', 600, '2012-11-09');
Query OK, 2 rows affected (0.00 sec)
Records: 2  Duplicates: 0  Warnings: 0
```



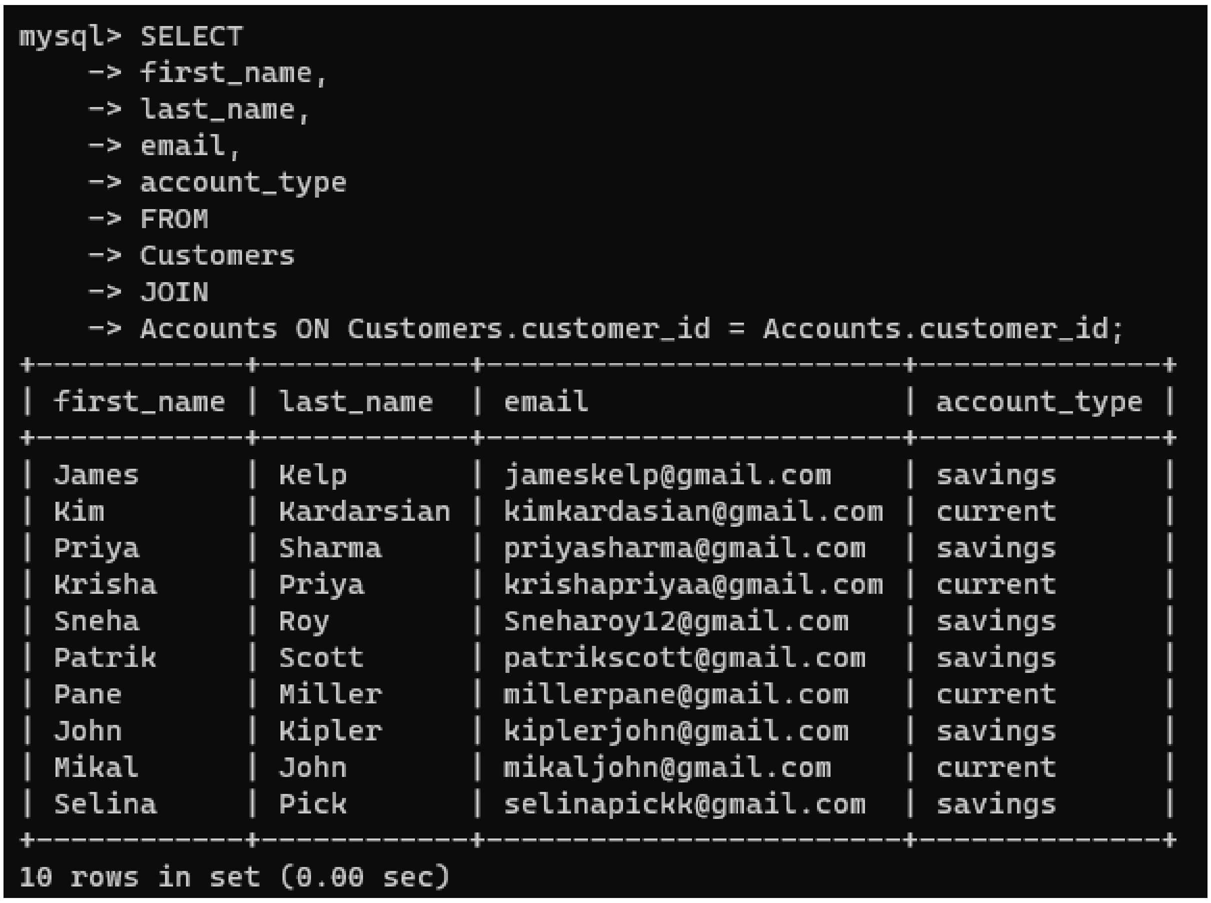
```
mysql> SELECT * FROM Customers;
+-------------+------------+------------+------------+-------------------------+--------------+------------------------+
| customer_id | first_name | last_name  | DOB        | email
 | phone_number | address                |
+-------------+------------+------------+------------+-------------------------+--------------+------------------------+
|           1 | James      | Kelp       | 2022-12-11 | jameskelp@gmail.com     | 1111111111   | Delhi, India           |
|           2 | Kim        | Kardarsian | 2022-11-01 | kimkardasian@gmail.com  | 2222222222   | Kolkata, India         |
|           3 | Priya      | Sharma     | 2023-12-01 | priyasharma@gmail.com   | 3333333333   | Kolkata, India         |
|           4 | Krisha     | Priya      | 2021-09-02 | krishapriyaa@gmail.com  | 44444444444  | Mumbai, India          |
|           5 | Sneha      | Roy        | 2020-10-07 | Sneharoy12@gmail.com    | 55555555555  | Telangana, India       |
|           6 | Patrik     | Scott      | 2010-11-03 | patrikscott@gmail.com   | 666666666666 | Tamil Nadu, India      |
|           7 | Pane       | Miller     | 2011-09-05 | millerpane@gmail.com    | 77777777777  | Orissa, India          |
|           8 | John       | Kipler     | 2012-08-02 | kiplerjohn@gmail.com    | 888888888888 | Kolkata, India         |
|           9 | Mikal      | John       | 2013-08-01 | mikaljohn@gmail.com     | 999999999999 | Jammu & Kashmir, India |
|          10 | Selina     | Pick       | 2021-08-11 | selinapickk@gmail.com   | 0            | Jammu & Kashmir, India |
+-------------+------------+------------+------------+-------------------------+--------------+------------------------+
10 rows in set (0.00 sec)

mysql> SELECT * FROM Accounts;
+------------+-------------+--------------+----------+
| account_id | customer_id | account_type | balance  |
+------------+-------------+--------------+----------+
|          1 |           1 | savings      | 30000.00 |
|          2 |           2 | current      | 20000.00 |
|          3 |           3 | savings      | 30000.00 |
|          4 |           4 | current      | 40000.00 |
|          5 |           5 | savings      | 40000.00 |
|          6 |           6 | savings      | 70000.00 |
|          7 |           7 | current      | 79000.00 |
|          8 |           8 | savings      | 80000.00 |
|          9 |           9 | current      | 70000.00 |
|         10 |          10 | savings      | 50000.00 |
+------------+-------------+--------------+----------+
10 rows in set (0.00 sec)
```



```
mysql> SELECT * FROM Transactions;
+----------------+------------+------------------+---------+------------------+
| transaction_id | account_id | transaction_type | amount  | transaction_date |
+----------------+------------+------------------+---------+------------------+
|            111 |          1 | deposit          |  300.00 | 2022-10-12       |
|            112 |          2 | withdraw         |  200.00 | 2012-11-12       |
|            113 |          3 | deposit          |  400.00 | 2022-10-09       |
|            114 |          4 | withdraw         |  500.00 | 2022-10-09       |
|            115 |          5 | deposit          |  900.00 | 2012-11-12       |
|            116 |          6 | deposit          |  200.00 | 2022-10-01       |
|            117 |          7 | withdraw         |  800.00 | 2012-11-09       |
|            118 |          8 | withdraw         |  600.00 | 2012-11-09       |
|            119 |          9 | deposit          |  900.00 | 2022-08-09       |
|            120 |         10 | withdraw         | 1000.00 | 2022-11-09       |
+----------------+------------+------------------+---------+------------------+
10 rows in set (0.00 sec)
```

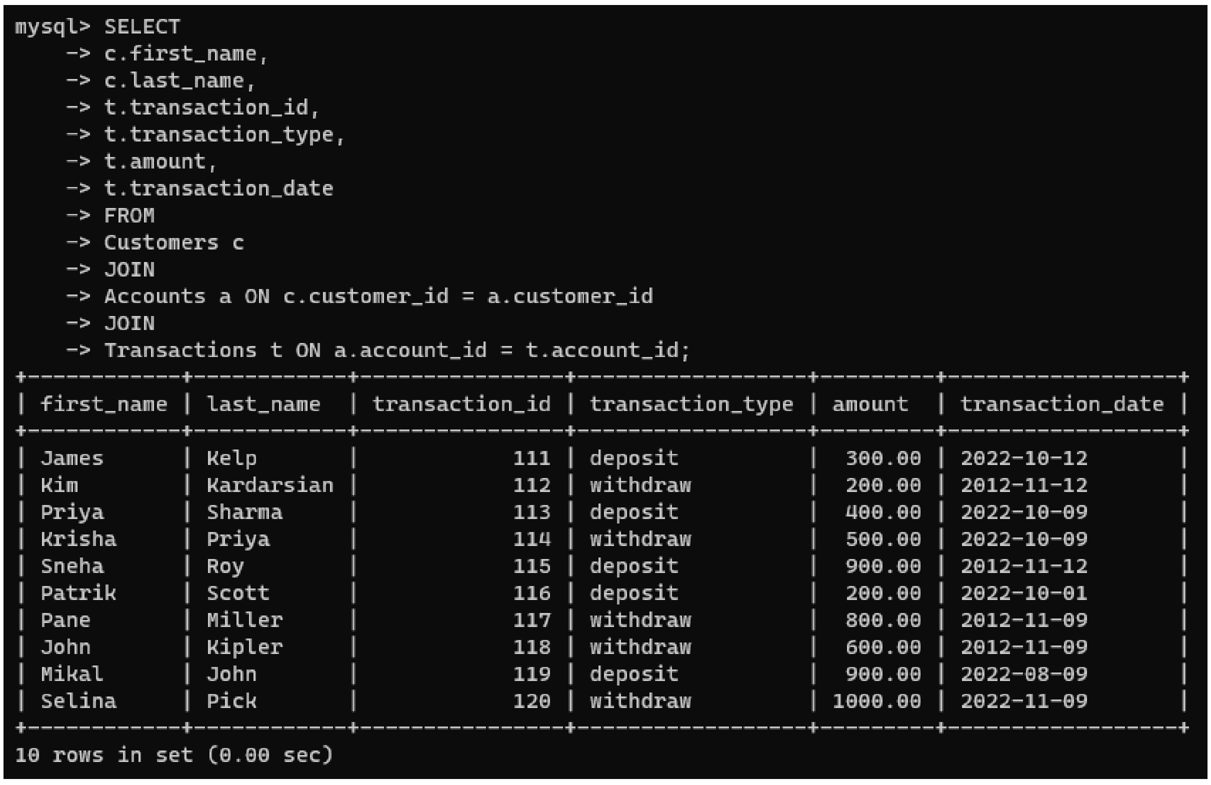
2. Write SQL queries for the following tasks:

1. Write a SQL query to retrieve the name, account type and email of all customers.



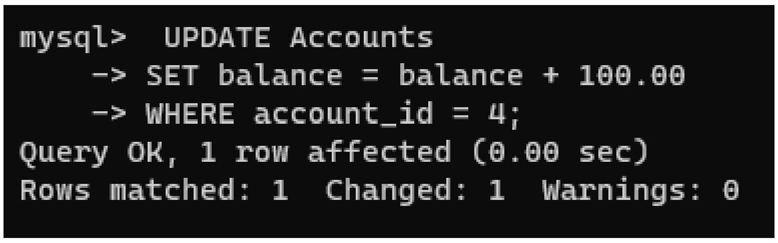
```
mysql> SELECT
    -> first_name,
    -> last_name,
    -> email,
    -> account_type
    -> FROM
    -> Customers
    -> JOIN
    -> Accounts ON Customers.customer_id = Accounts.customer_id;
+------------+------------+------------------------+--------------+
| first_name | last_name  | email                  | account_type |
+------------+------------+------------------------+--------------+
| James      | Kelp       | jameskelp@gmail.com    | savings      |
| Kim        | Kardarsian | kimkardasian@gmail.com | current      |
| Priya      | Sharma     | priyasharma@gmail.com  | savings      |
| Krisha     | Priya      | krishapriyaa@gmail.com | current      |
| Sneha      | Roy        | Sneharoy12@gmail.com   | savings      |
| Patrik     | Scott      | patrikscott@gmail.com  | savings      |
| Pane       | Miller     | millerpane@gmail.com   | current      |
| John       | Kipler     | kiplerjohn@gmail.com   | savings      |
| Mikal      | John       | mikaljohn@gmail.com    | current      |
| Selina     | Pick       | selinapickk@gmail.com  | savings      |
+------------+------------+------------------------+--------------+
10 rows in set (0.00 sec)
```

2. Write a SQL query to list all transaction corresponding customer.



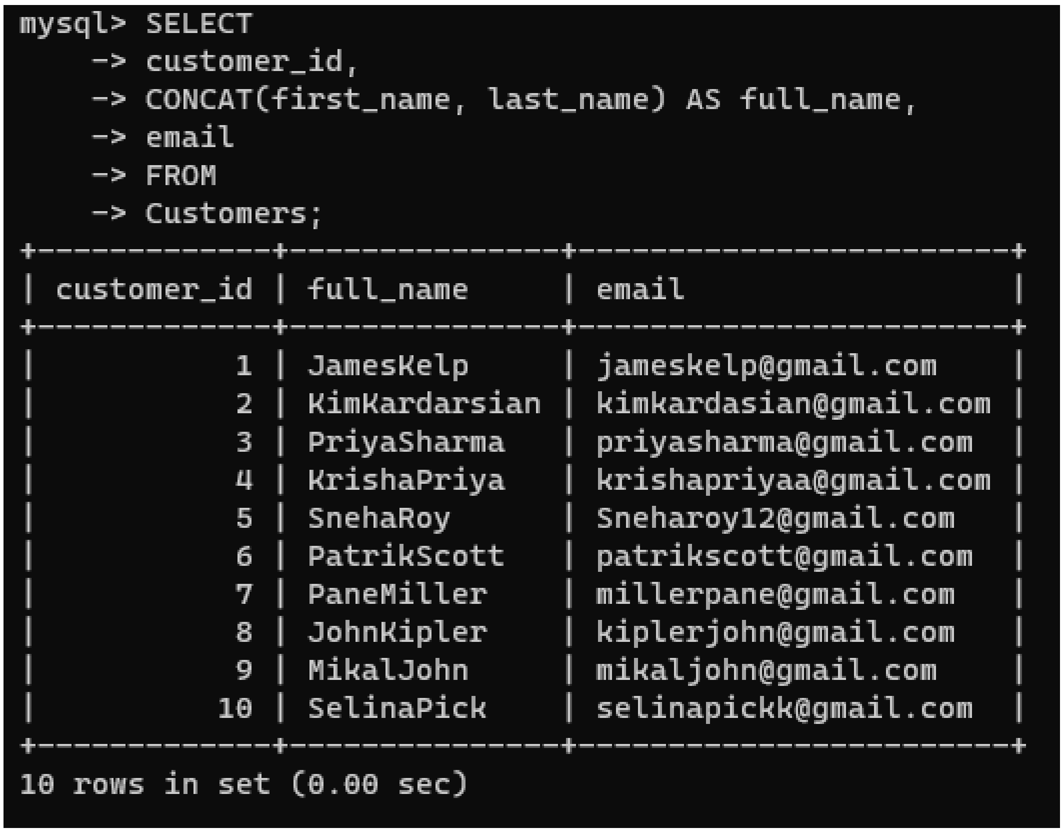
```
mysql> SELECT
    -> c.first_name,
    -> c.last_name,
    -> t.transaction_id,
    -> t.transaction_type,
    -> t.amount,
    -> t.transaction_date
    -> FROM
    -> Customers c
    -> JOIN
    -> Accounts a ON c.customer_id = a.customer_id
    -> JOIN
    -> Transactions t ON a.account_id = t.account_id;
+------------+------------+----------------+------------------+---------+------------------+
| first_name | last_name  | transaction_id | transaction_type | amount  | transaction_date |
+------------+------------+----------------+------------------+---------+------------------+
| James      | Kelp       |            111 | deposit          |  300.00 | 2022-10-12       |
| Kim        | Kardarsian |            112 | withdraw         |  200.00 | 2012-11-12       |
| Priya      | Sharma     |            113 | deposit          |  400.00 | 2022-10-09       |
| Krisha     | Priya      |            114 | withdraw         |  500.00 | 2022-10-09       |
| Sneha      | Roy        |            115 | deposit          |  900.00 | 2012-11-12       |
| Patrik     | Scott      |            116 | deposit          |  200.00 | 2022-10-01       |
| Pane       | Miller     |            117 | withdraw         |  800.00 | 2012-11-09       |
| John       | Kipler     |            118 | withdraw         |  600.00 | 2012-11-09       |
| Mikal      | John       |            119 | deposit          |  900.00 | 2022-08-09       |
| Selina     | Pick       |            120 | withdraw         | 1000.00 | 2022-11-09       |
+------------+------------+----------------+------------------+---------+------------------+
10 rows in set (0.00 sec)
```

3. Write a SQL query to increase the balance of a specific account by a certain amount



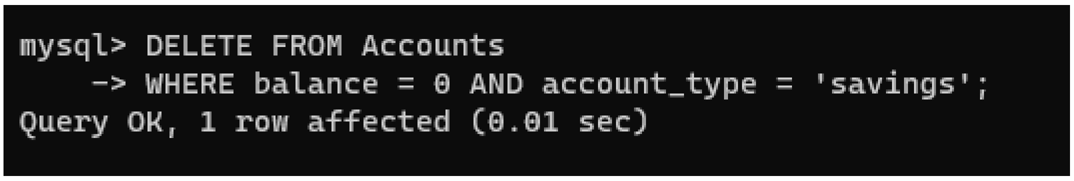
```
mysql>  UPDATE Accounts
    -> SET balance = balance + 100.00
    -> WHERE account_id = 4;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

4 Write a SQL query to increase the balance of a specific account by a certain amount



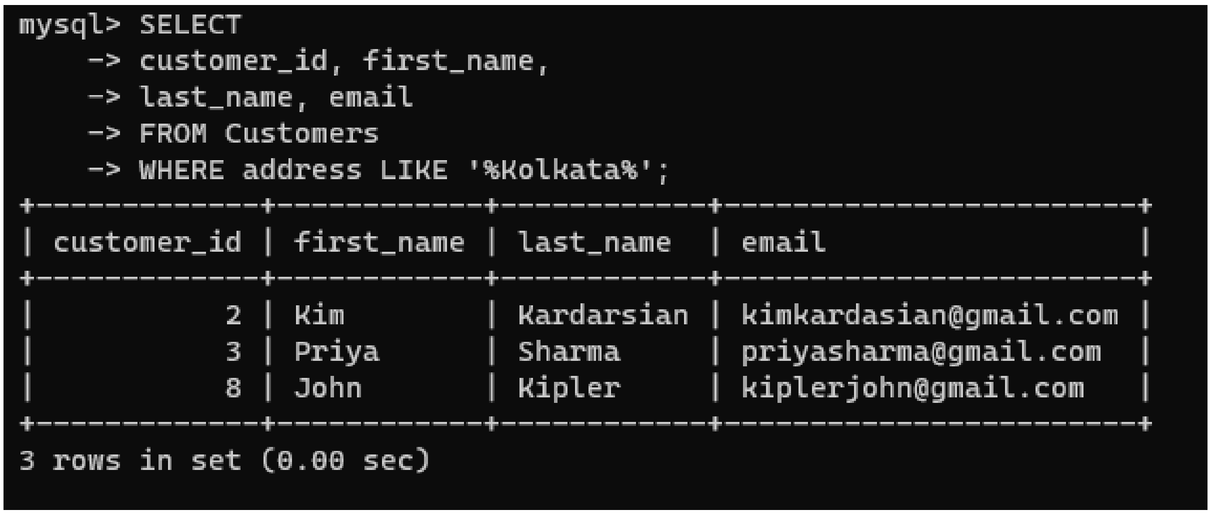
```
mysql> SELECT
    -> customer_id,
    -> CONCAT(first_name, last_name) AS full_name,
    -> email
    -> FROM
    -> Customers;
+-------------+---------------+------------------------+
| customer_id | full_name     | email                  |
+-------------+---------------+------------------------+
|           1 | JamesKelp     | jameskelp@gmail.com    |
|           2 | KimKardarsian | kimkardasian@gmail.com |
|           3 | PriyaSharma   | priyasharma@gmail.com  |
|           4 | KrishaPriya   | krishapriyaa@gmail.com |
|           5 | SnehaRoy      | Sneharoy12@gmail.com   |
|           6 | PatrikScott   | patrikscott@gmail.com  |
|           7 | PaneMiller    | millerpane@gmail.com   |
|           8 | JohnKipler    | kiplerjohn@gmail.com   |
|           9 | MikalJohn     | mikaljohn@gmail.com    |
|          10 | SelinaPick    | selinapickk@gmail.com  |
+-------------+---------------+------------------------+
10 rows in set (0.00 sec)
```

5 Write a SQL query to remove accounts with a balance of zero where the account type is savings.



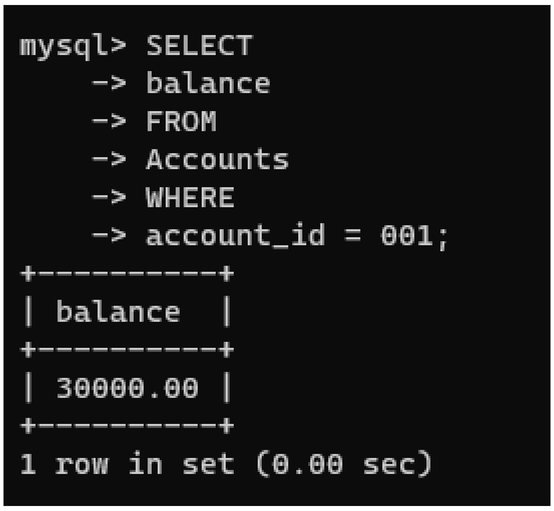
```
mysql> DELETE FROM Accounts
    -> WHERE balance = 0 AND account_type = 'savings';
Query OK, 1 row affected (0.01 sec)
```

6 Write a SQL query to Find customers living in a specific city.



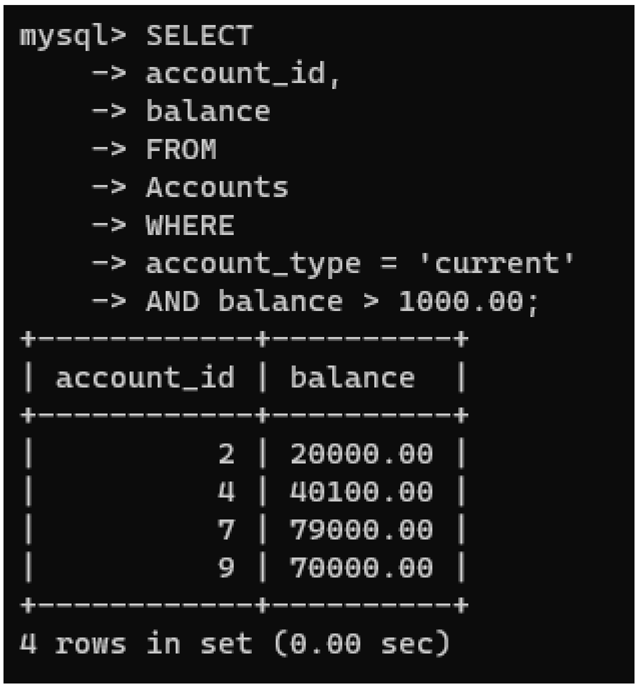
```
mysql> SELECT
    -> customer_id, first_name,
    -> last_name, email
    -> FROM Customers
    -> WHERE address LIKE '%Kolkata%';
+-------------+------------+------------+------------------------+
| customer_id | first_name | last_name  | email                  |
+-------------+------------+------------+------------------------+
|           2 | Kim        | Kardarsian | kimkardasian@gmail.com |
|           3 | Priya      | Sharma     | priyasharma@gmail.com  |
|           8 | John       | Kipler     | kiplerjohn@gmail.com   |
+-------------+------------+------------+------------------------+
3 rows in set (0.00 sec)
```

7 Write a SQL query to Get the account balance for a specific account



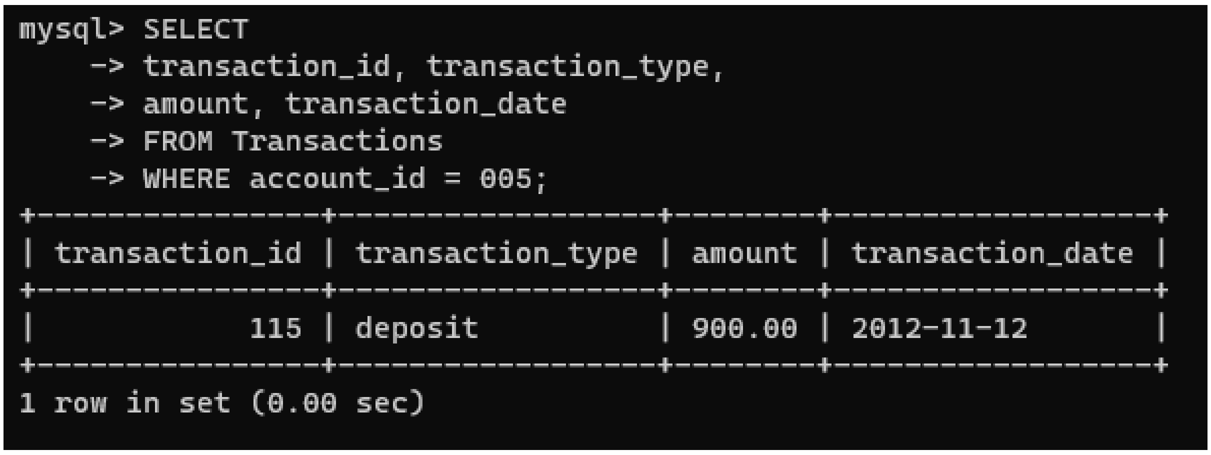
```
mysql> SELECT
    -> balance
    -> FROM
    -> Accounts
    -> WHERE
    -> account_id = 001;
+----------+
| balance  |
+----------+
| 30000.00 |
+----------+
1 row in set (0.00 sec)
```

8 Write a SQL query to List all current accounts with a balance greater than $1,000.



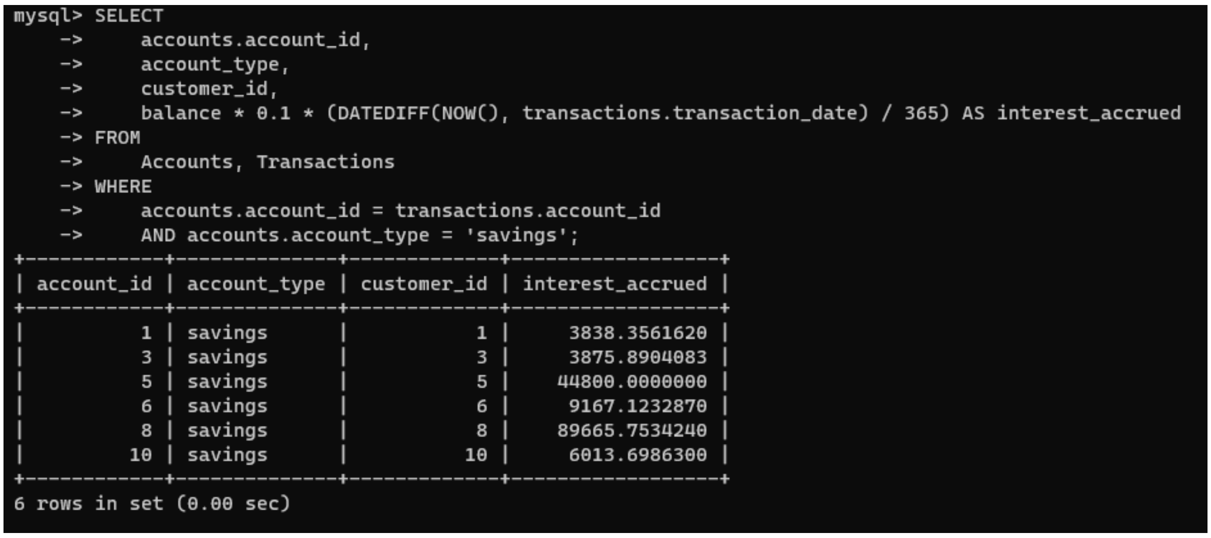
```
mysql> SELECT
    -> account_id,
    -> balance
    -> FROM
    -> Accounts
    -> WHERE
    -> account_type = 'current'
    -> AND balance > 1000.00;
+------------+----------+
| account_id | balance  |
+------------+----------+
|          2 | 20000.00 |
|          4 | 40100.00 |
|          7 | 79000.00 |
|          9 | 70000.00 |
+------------+----------+
4 rows in set (0.00 sec)
```

9 Write a SQL query to Retrieve all transactions for a specific account.



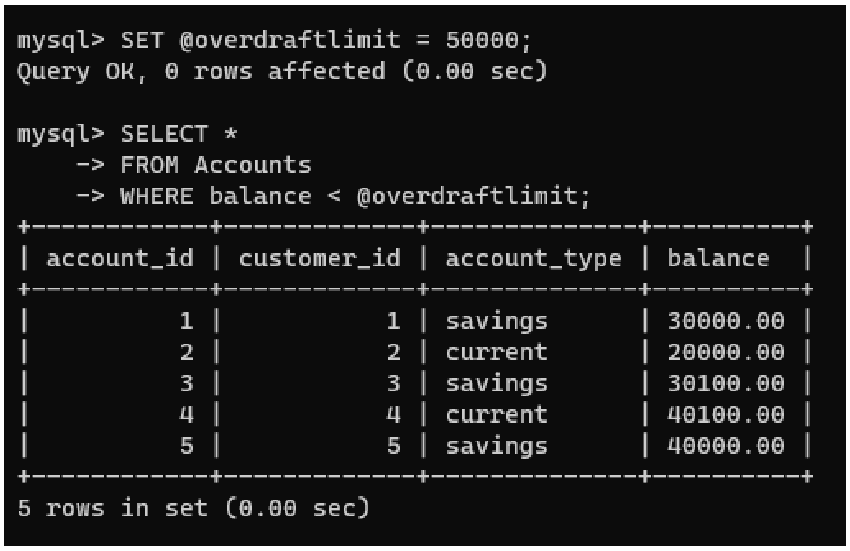
```
mysql> SELECT
    -> transaction_id, transaction_type,
    -> amount, transaction_date
    -> FROM Transactions
    -> WHERE account_id = 005;
+----------------+------------------+--------+------------------+
| transaction_id | transaction_type | amount | transaction_date |
+----------------+------------------+--------+------------------+
|            115 | deposit          | 900.00 | 2012-11-12       |
+----------------+------------------+--------+------------------+
1 row in set (0.00 sec)
```

10 Write a SQL query to Calculate the interest accrued on savings accounts based on a
given interest rate.



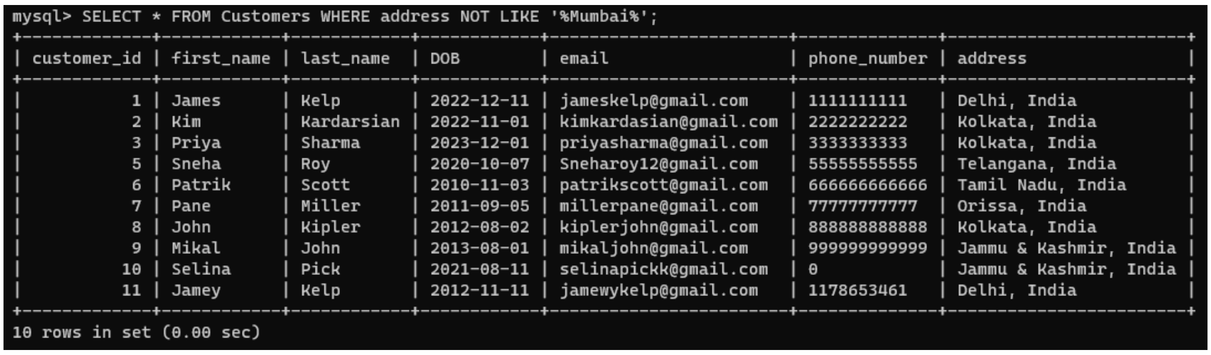
```
mysql> SELECT
    ->     accounts.account_id,
    ->     account_type,
    ->     customer_id,
    ->     balance * 0.1 * (DATEDIFF(NOW(), transactions.transaction_date) / 365) AS interest_accrued
    -> FROM
    ->     Accounts, Transactions
    -> WHERE
    ->     accounts.account_id = transactions.account_id
    ->     AND accounts.account_type = 'savings';
+------------+--------------+-------------+------------------+
| account_id | account_type | customer_id | interest_accrued |
+------------+--------------+-------------+------------------+
|          1 | savings      |           1 |     3838.3561620 |
|          3 | savings      |           3 |     3875.8904083 |
|          5 | savings      |           5 |    44800.0000000 |
|          6 | savings      |           6 |     9167.1232870 |
|          8 | savings      |           8 |    89665.7534240 |
|         10 | savings      |          10 |     6013.6986300 |
+------------+--------------+-------------+------------------+
6 rows in set (0.00 sec)
```

11 Write a SQL query to Identify accounts where the balance is less than a specified
overdraft limit.



```
mysql> SET @overdraftlimit = 50000;
Query OK, 0 rows affected (0.00 sec)

mysql> SELECT *
    -> FROM Accounts
    -> WHERE balance < @overdraftlimit;
+------------+-------------+--------------+----------+
| account_id | customer_id | account_type | balance  |
+------------+-------------+--------------+----------+
|          1 |           1 | savings      | 30000.00 |
|          2 |           2 | current      | 20000.00 |
|          3 |           3 | savings      | 30100.00 |
|          4 |           4 | current      | 40100.00 |
|          5 |           5 | savings      | 40000.00 |
+------------+-------------+--------------+----------+
5 rows in set (0.00 sec)
```

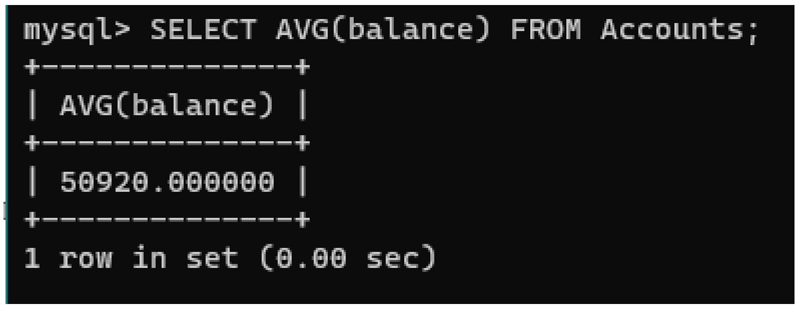
12 Write a SQL query to Find customers not living in a specific city.



```
mysql> SELECT * FROM Customers WHERE address NOT LIKE '%Mumbai%';
+-------------+------------+------------+------------+-------------------------+--------------+------------------------+
| customer_id | first_name | last_name  | DOB        | email                   | phone_number | address                |
+-------------+------------+------------+------------+-------------------------+--------------+------------------------+
|           1 | James      | Kelp       | 2022-12-11 | jameskelp@gmail.com     | 1111111111   | Delhi, India           |
|           2 | Kim        | Kardarsian | 2022-11-01 | kimkardasian@gmail.com  | 2222222222   | Kolkata, India         |
|           3 | Priya      | Sharma     | 2023-12-01 | priyasharma@gmail.com   | 3333333333   | Kolkata, India         |
|           5 | Sneha      | Roy        | 2020-10-07 | Sneharoy12@gmail.com    | 55555555555  | Telangana, India       |
|           6 | Patrik     | Scott      | 2010-11-03 | patrikscott@gmail.com   | 666666666666 | Tamil Nadu, India      |
|           7 | Pane       | Miller     | 2011-09-05 | millerpane@gmail.com    | 77777777777  | Orissa, India          |
|           8 | John       | Kipler     | 2012-08-02 | kiplerjohn@gmail.com    | 888888888888 | Kolkata, India         |
|           9 | Mikal      | John       | 2013-08-01 | mikaljohn@gmail.com     | 999999999999 | Jammu & Kashmir, India |
|          10 | Selina     | Pick       | 2021-08-11 | selinapickk@gmail.com   | 0            | Jammu & Kashmir, India |
|          11 | Jamey      | Kelp       | 2012-11-11 | jamewykelp@gmail.com    | 1178653461   | Delhi, India           |
+-------------+------------+------------+------------+-------------------------+--------------+------------------------+
10 rows in set (0.00 sec)
```

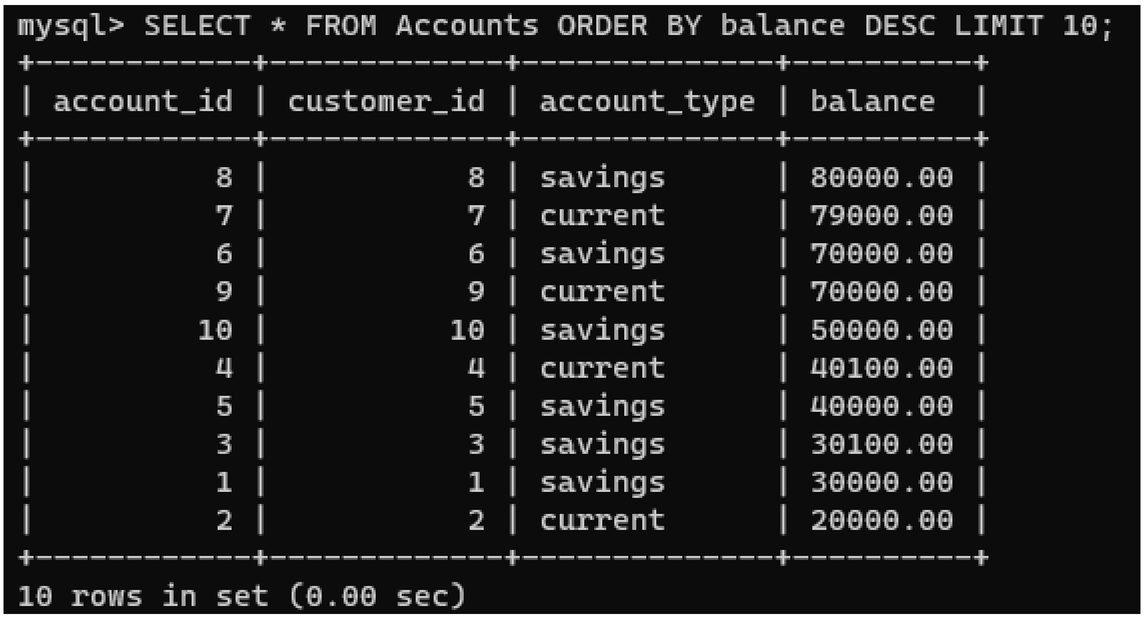
Tasks 3: Aggregate functions, Having, Order By, GroupBy and Joins:

1. Write a SQL query to Find the average account balance for all customers



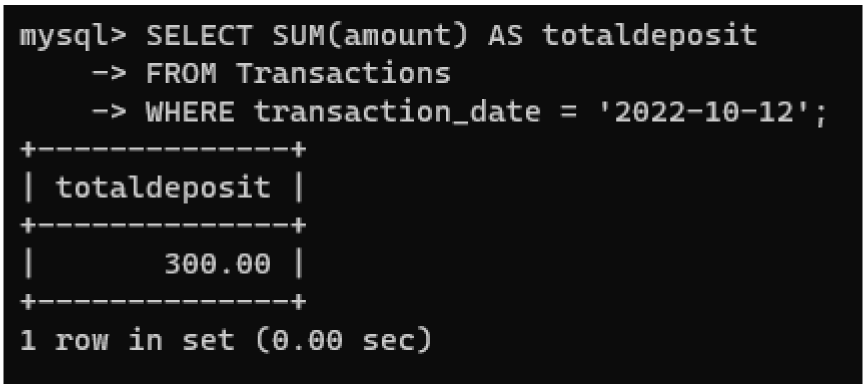
```
mysql> SELECT AVG(balance) FROM Accounts;
+--------------+
| AVG(balance) |
+--------------+
| 50920.000000 |
+--------------+
1 row in set (0.00 sec)
```

2 Write a SQL query to Retrieve the top 10 highest account balances.



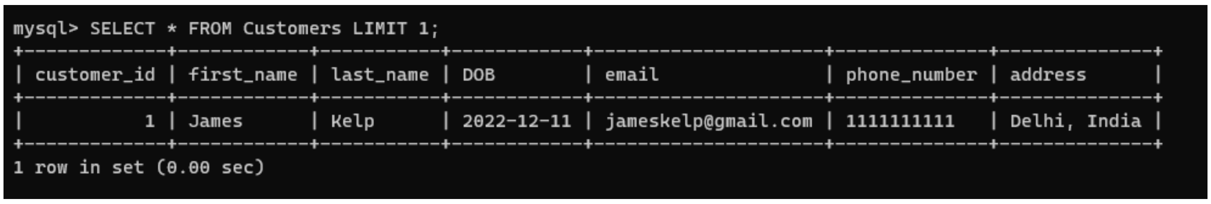
```
mysql> SELECT * FROM Accounts ORDER BY balance DESC LIMIT 10;
+------------+-------------+--------------+----------+
| account_id | customer_id | account_type | balance  |
+------------+-------------+--------------+----------+
|          8 |           8 | savings      | 80000.00 |
|          7 |           7 | current      | 79000.00 |
|          6 |           6 | savings      | 70000.00 |
|          9 |           9 | current      | 70000.00 |
|         10 |          10 | savings      | 50000.00 |
|          4 |           4 | current      | 40100.00 |
|          5 |           5 | savings      | 40000.00 |
|          3 |           3 | savings      | 30100.00 |
|          1 |           1 | savings      | 30000.00 |
|          2 |           2 | current      | 20000.00 |
+------------+-------------+--------------+----------+
10 rows in set (0.00 sec)
```

3 Write a SQL query to Calculate Total Deposits for All Customers in specific date.

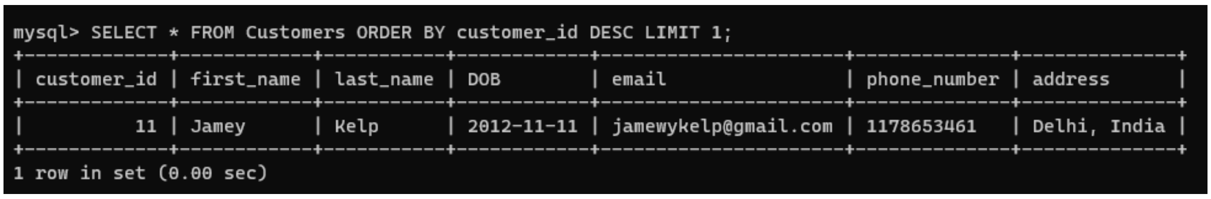


```
mysql> SELECT SUM(amount) AS totaldeposit
    -> FROM Transactions
    -> WHERE transaction_date = '2022-10-12';
+--------------+
| totaldeposit |
+--------------+
|       300.00 |
+--------------+
1 row in set (0.00 sec)
```

4 Write a SQL query to Find the Oldest and Newest Customers.

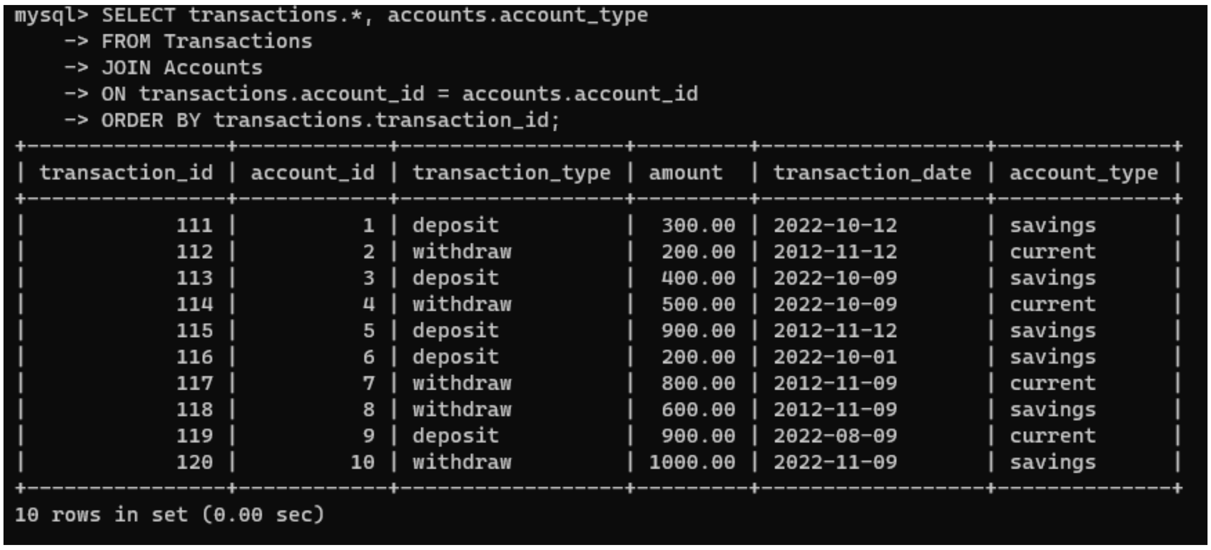


```
mysql> SELECT * FROM Customers LIMIT 1;
+-------------+------------+-----------+------------+---------------------+--------------+--------------+
| customer_id | first_name | last_name | DOB        | email               | phone_number | address      |
+-------------+------------+-----------+------------+---------------------+--------------+--------------+
|           1 | James      | Kelp      | 2022-12-11 | jameskelp@gmail.com | 1111111111   | Delhi, India |
+-------------+------------+-----------+------------+---------------------+--------------+--------------+
1 row in set (0.00 sec)
```



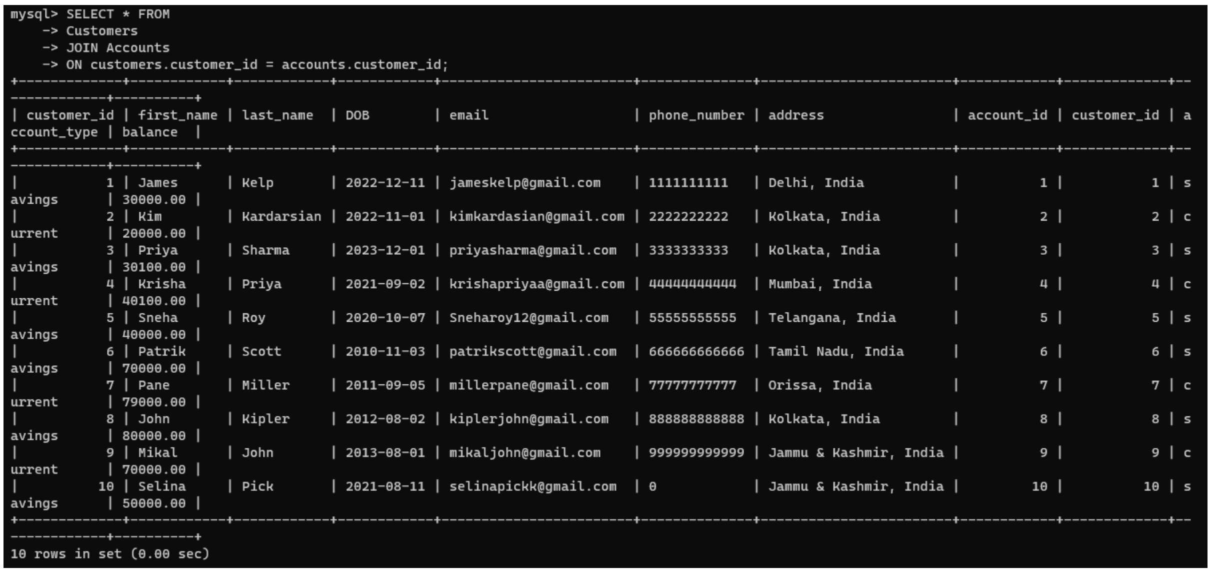
```
mysql> SELECT * FROM Customers ORDER BY customer_id DESC LIMIT 1;
+-------------+------------+-----------+------------+----------------------+--------------+--------------+
| customer_id | first_name | last_name | DOB        | email                | phone_number | address      |
+-------------+------------+-----------+------------+----------------------+--------------+--------------+
|          11 | Jamey      | Kelp      | 2012-11-11 | jamewykelp@gmail.com | 1178653461   | Delhi, India |
+-------------+------------+-----------+------------+----------------------+--------------+--------------+
1 row in set (0.00 sec)
```

5 Write a SQL query to Retrieve transaction details along with the account type.



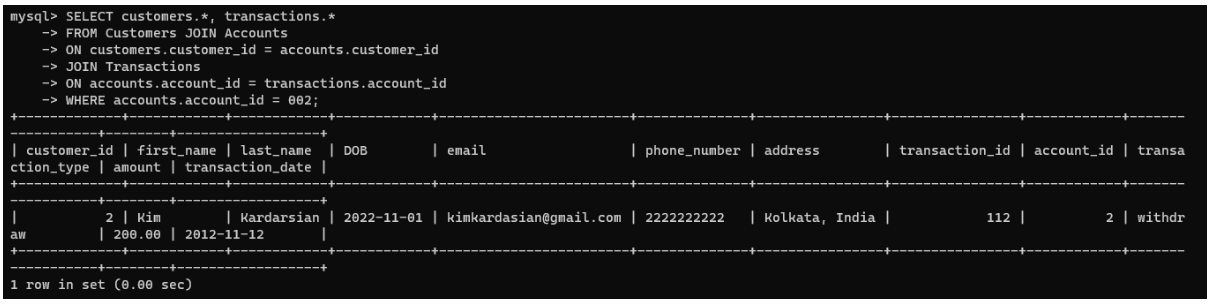
```
mysql> SELECT transactions.*, accounts.account_type
    -> FROM Transactions
    -> JOIN Accounts
    -> ON transactions.account_id = accounts.account_id
    -> ORDER BY transactions.transaction_id;
+----------------+------------+------------------+---------+------------------+--------------+
| transaction_id | account_id | transaction_type | amount  | transaction_date | account_type |
+----------------+------------+------------------+---------+------------------+--------------+
|            111 |          1 | deposit          |  300.00 | 2022-10-12       | savings      |
|            112 |          2 | withdraw         |  200.00 | 2012-11-12       | current      |
|            113 |          3 | deposit          |  400.00 | 2022-10-09       | savings      |
|            114 |          4 | withdraw         |  500.00 | 2022-10-09       | current      |
|            115 |          5 | deposit          |  900.00 | 2012-11-12       | savings      |
|            116 |          6 | deposit          |  200.00 | 2022-10-01       | savings      |
|            117 |          7 | withdraw         |  800.00 | 2012-11-09       | current      |
|            118 |          8 | withdraw         |  600.00 | 2012-11-09       | savings      |
|            119 |          9 | deposit          |  900.00 | 2022-08-09       | current      |
|            120 |         10 | withdraw         | 1000.00 | 2022-11-09       | savings      |
+----------------+------------+------------------+---------+------------------+--------------+
10 rows in set (0.00 sec)
```

6 Write a SQL query to Get a list of customers along with their account details.



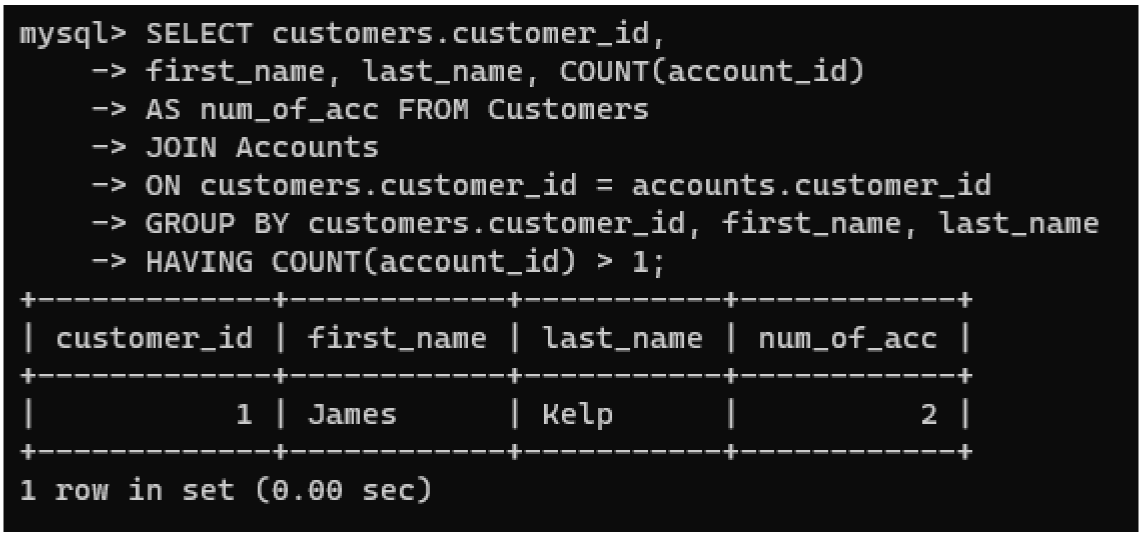
```
mysql> SELECT * FROM
    -> Customers
    -> JOIN Accounts
    -> ON customers.customer_id = accounts.customer_id;
+-------------+------------+------------+------------+------------------------+--------------+------------------------+------------+-------------+--
------------+----------+
| customer_id | first_name | last_name  | DOB        | email                  | phone_number | address                | account_id | customer_id | a
ccount_type | balance  |
+-------------+------------+------------+------------+------------------------+--------------+------------------------+------------+-------------+--
------------+----------+
|           1 | James      | Kelp       | 2022-12-11 | jameskelp@gmail.com    | 1111111111   | Delhi, India           |          1 |           1 | s
avings      | 30000.00 |
|           2 | Kim        | Kardarsian | 2022-11-01 | kimkardasian@gmail.com | 2222222222   | Kolkata, India         |          2 |           2 | c
urrent      | 20000.00 |
|           3 | Priya      | Sharma     | 2023-12-01 | priyasharma@gmail.com  | 3333333333   | Kolkata, India         |          3 |           3 | s
avings      | 30100.00 |
|           4 | Krisha     | Priya      | 2021-09-02 | krishapriyaa@gmail.com | 44444444444  | Mumbai, India          |          4 |           4 | c
urrent      | 40100.00 |
|           5 | Sneha      | Roy        | 2020-10-07 | Sneharoy12@gmail.com   | 55555555555  | Telangana, India       |          5 |           5 | s
avings      | 40000.00 |
|           6 | Patrik     | Scott      | 2010-11-03 | patrikscott@gmail.com  | 666666666666 | Tamil Nadu, India      |          6 |           6 | s
avings      | 70000.00 |
|           7 | Pane       | Miller     | 2011-09-05 | millerpane@gmail.com   | 77777777777  | Orissa, India          |          7 |           7 | c
urrent      | 79000.00 |
|           8 | John       | Kipler     | 2012-08-02 | kiplerjohn@gmail.com   | 888888888888 | Kolkata, India         |          8 |           8 | s
avings      | 80000.00 |
|           9 | Mikal      | John       | 2013-08-01 | mikaljohn@gmail.com    | 999999999999 | Jammu & Kashmir, India |          9 |           9 | c
urrent      | 70000.00 |
|          10 | Selina     | Pick       | 2021-08-11 | selinapickk@gmail.com  | 0            | Jammu & Kashmir, India |         10 |          10 | s
avings      | 50000.00 |
+-------------+------------+------------+------------+------------------------+--------------+------------------------+------------+-------------+--
------------+----------+
10 rows in set (0.00 sec)
```

7 Write a SQL query to Retrieve transaction details along with customer information for a specific account.



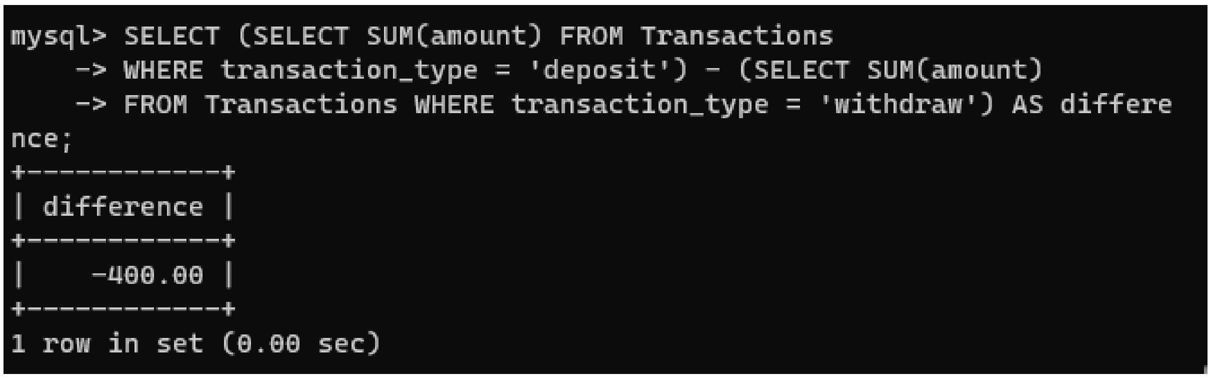
```
mysql> SELECT customers.*, transactions.*
    -> FROM Customers JOIN Accounts
    -> ON customers.customer_id = accounts.customer_id
    -> JOIN Transactions
    -> ON accounts.account_id = transactions.account_id
    -> WHERE accounts.account_id = 002;
+-------------+------------+------------+------------+------------------------+--------------+----------------+----------------+------------+-------
-----------+--------+------------------+
| customer_id | first_name | last_name  | DOB        | email                  | phone_number | address        | transaction_id | account_id | transa
ction_type | amount | transaction_date |
+-------------+------------+------------+------------+------------------------+--------------+----------------+----------------+------------+-------
-----------+--------+------------------+
|           2 | Kim        | Kardarsian | 2022-11-01 | kimkardasian@gmail.com | 2222222222   | Kolkata, India |            112 |          2 | withdr
aw         | 200.00 | 2012-11-12       |
+-------------+------------+------------+------------+------------------------+--------------+----------------+----------------+------------+-------
-----------+--------+------------------+
1 row in set (0.00 sec)
```

8 Write a SQL query to Identify customers who have more than one account.



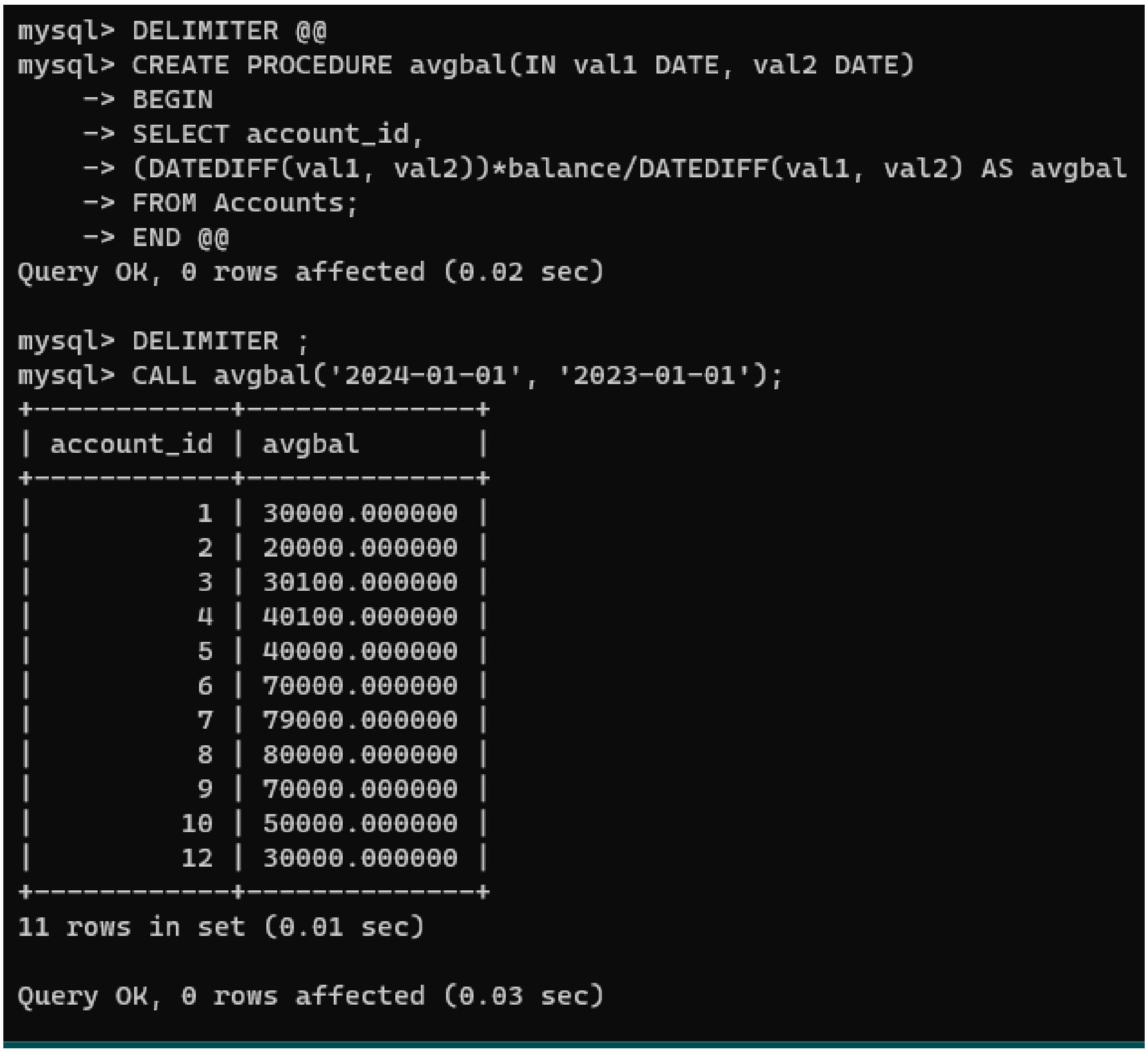
```
mysql> SELECT customers.customer_id,
    -> first_name, last_name, COUNT(account_id)
    -> AS num_of_acc FROM Customers
    -> JOIN Accounts
    -> ON customers.customer_id = accounts.customer_id
    -> GROUP BY customers.customer_id, first_name, last_name
    -> HAVING COUNT(account_id) > 1;
+-------------+------------+-----------+------------+
| customer_id | first_name | last_name | num_of_acc |
+-------------+------------+-----------+------------+
|           1 | James      | Kelp      |          2 |
+-------------+------------+-----------+------------+
1 row in set (0.00 sec)
```

9 Write a SQL query to Calculate the difference in transaction amounts between deposits and withdrawals



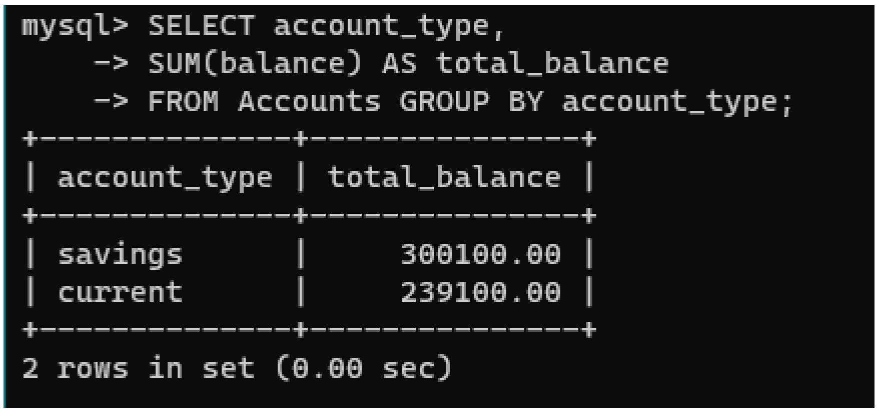
```
mysql> SELECT (SELECT SUM(amount) FROM Transactions
    -> WHERE transaction_type = 'deposit') - (SELECT SUM(amount)
    -> FROM Transactions WHERE transaction_type = 'withdraw') AS differe
nce;
+------------+
| difference |
+------------+
|    -400.00 |
+------------+
1 row in set (0.00 sec)
```

10 Write a SQL query to Calculate the average daily balance for each account over a specified period



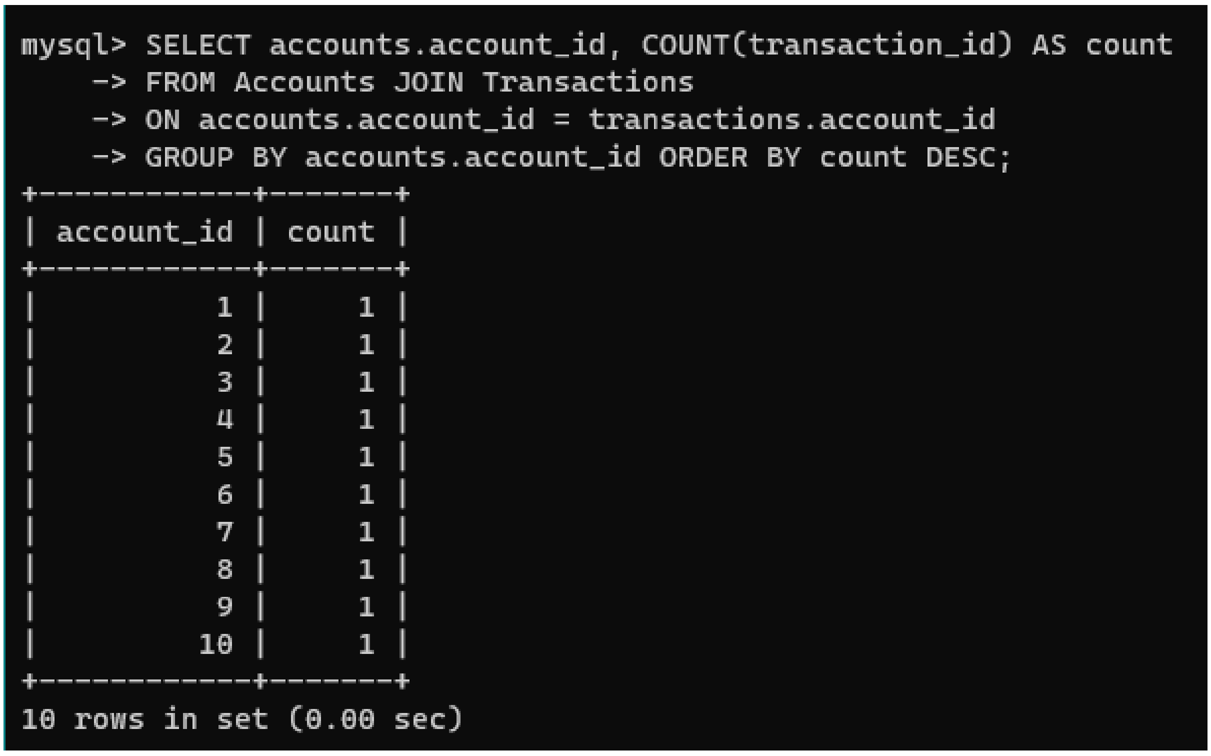
```
mysql> DELIMITER @@
mysql> CREATE PROCEDURE avgbal(IN val1 DATE, val2 DATE)
    -> BEGIN
    -> SELECT account_id,
    -> (DATEDIFF(val1, val2))*balance/DATEDIFF(val1, val2) AS avgbal
    -> FROM Accounts;
    -> END @@
Query OK, 0 rows affected (0.02 sec)

mysql> DELIMITER ;
mysql> CALL avgbal('2024-01-01', '2023-01-01');
+------------+--------------+
| account_id | avgbal       |
+------------+--------------+
|          1 | 30000.000000 |
|          2 | 20000.000000 |
|          3 | 30100.000000 |
|          4 | 40100.000000 |
|          5 | 40000.000000 |
|          6 | 70000.000000 |
|          7 | 79000.000000 |
|          8 | 80000.000000 |
|          9 | 70000.000000 |
|         10 | 50000.000000 |
|         12 | 30000.000000 |
+------------+--------------+
11 rows in set (0.01 sec)

Query OK, 0 rows affected (0.03 sec)
```

11 Calculate the total balance for each account type.



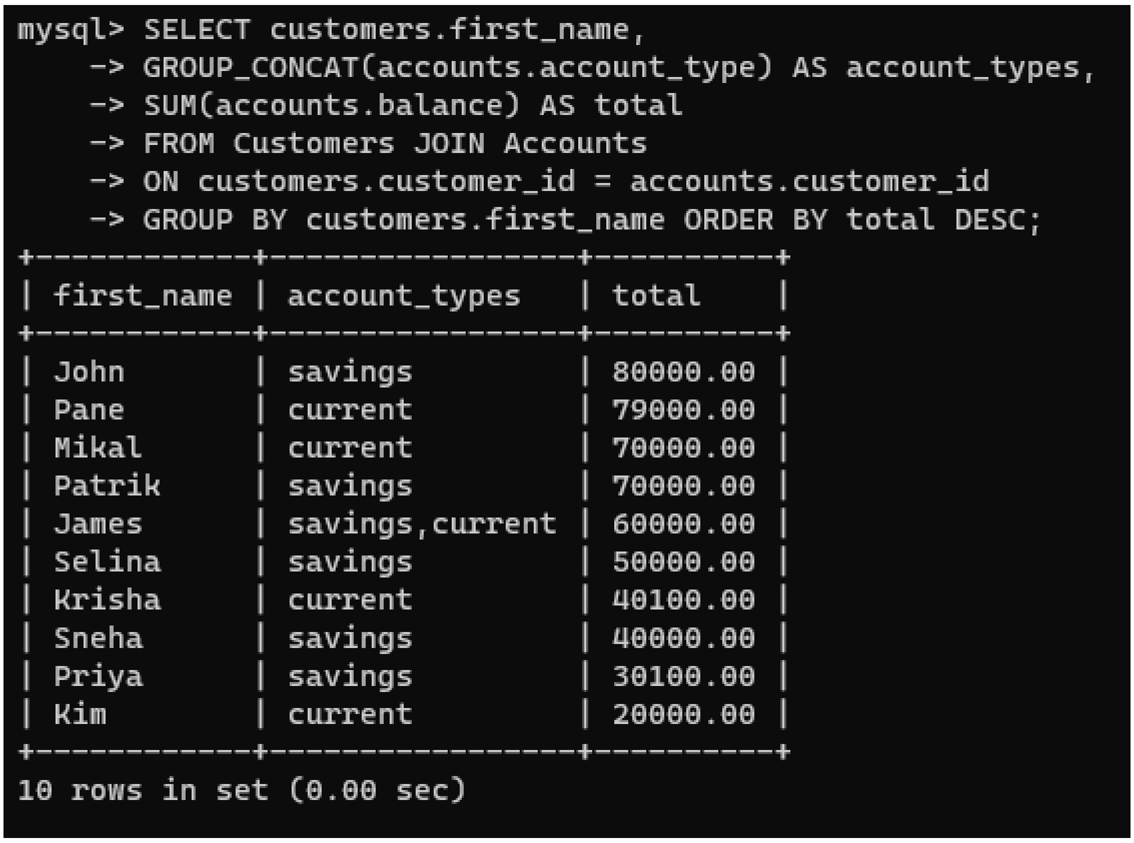
```
mysql> SELECT account_type,
    -> SUM(balance) AS total_balance
    -> FROM Accounts GROUP BY account_type;
+--------------+---------------+
| account_type | total_balance |
+--------------+---------------+
| savings      |     300100.00 |
| current      |     239100.00 |
+--------------+---------------+
2 rows in set (0.00 sec)
```

12 Identify accounts with the highest number of transactions order by descending order



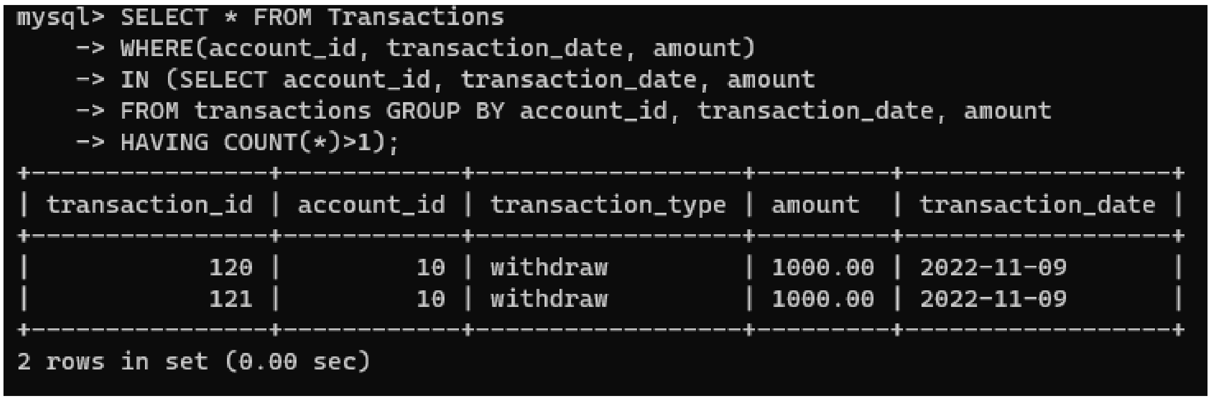
```
mysql> SELECT accounts.account_id, COUNT(transaction_id) AS count
    -> FROM Accounts JOIN Transactions
    -> ON accounts.account_id = transactions.account_id
    -> GROUP BY accounts.account_id ORDER BY count DESC;
+------------+-------+
| account_id | count |
+------------+-------+
|          1 |     1 |
|          2 |     1 |
|          3 |     1 |
|          4 |     1 |
|          5 |     1 |
|          6 |     1 |
|          7 |     1 |
|          8 |     1 |
|          9 |     1 |
|         10 |     1 |
+------------+-------+
10 rows in set (0.00 sec)
```

13 List customers with high aggregate account balances, along with their account types.



```
mysql> SELECT customers.first_name,
    -> GROUP_CONCAT(accounts.account_type) AS account_types,
    -> SUM(accounts.balance) AS total
    -> FROM Customers JOIN Accounts
    -> ON customers.customer_id = accounts.customer_id
    -> GROUP BY customers.first_name ORDER BY total DESC;
+------------+-----------------+----------+
| first_name | account_types   | total    |
+------------+-----------------+----------+
| John       | savings         | 80000.00 |
| Pane       | current         | 79000.00 |
| Mikal      | current         | 70000.00 |
| Patrik     | savings         | 70000.00 |
| James      | savings,current | 60000.00 |
| Selina     | savings         | 50000.00 |
| Krisha     | current         | 40100.00 |
| Sneha      | savings         | 40000.00 |
| Priya      | savings         | 30100.00 |
| Kim        | current         | 20000.00 |
+------------+-----------------+----------+
10 rows in set (0.00 sec)
```

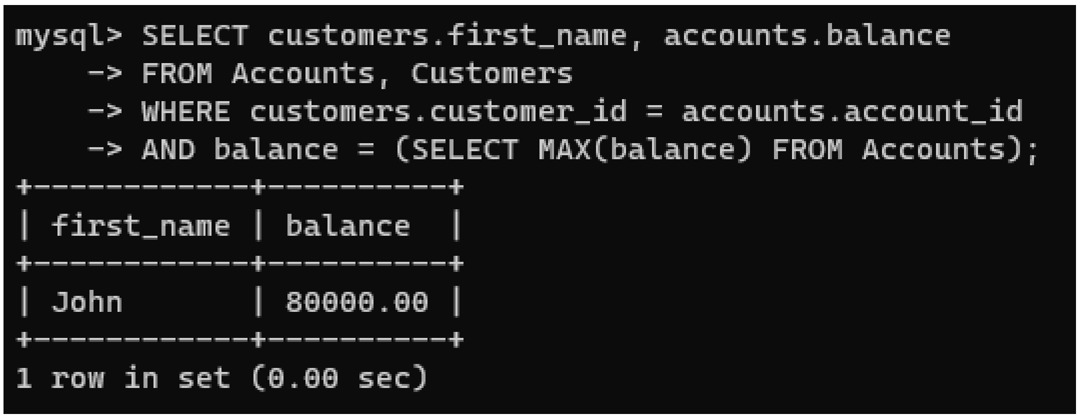
14 Identify and list duplicate transactions based on transaction amount, date, and account.



```
mysql> SELECT * FROM Transactions
    -> WHERE(account_id, transaction_date, amount)
    -> IN (SELECT account_id, transaction_date, amount
    -> FROM transactions GROUP BY account_id, transaction_date, amount
    -> HAVING COUNT(*)>1);
+----------------+------------+------------------+---------+------------------+
| transaction_id | account_id | transaction_type | amount  | transaction_date |
+----------------+------------+------------------+---------+------------------+
|            120 |         10 | withdraw         | 1000.00 | 2022-11-09       |
|            121 |         10 | withdraw         | 1000.00 | 2022-11-09       |
+----------------+------------+------------------+---------+------------------+
2 rows in set (0.00 sec)
```

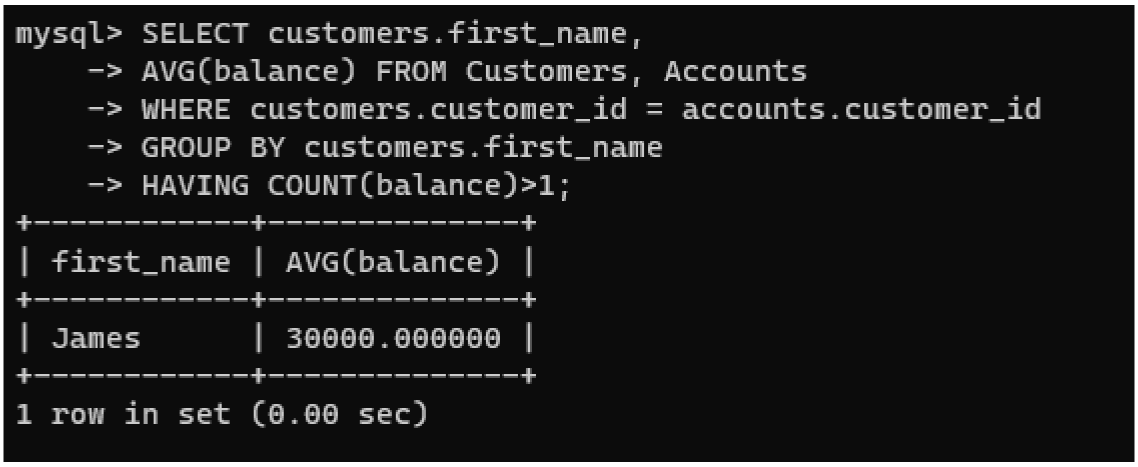
Tasks 4: Subquery and its type:

1. Retrieve the customer(s) with the highest account balance



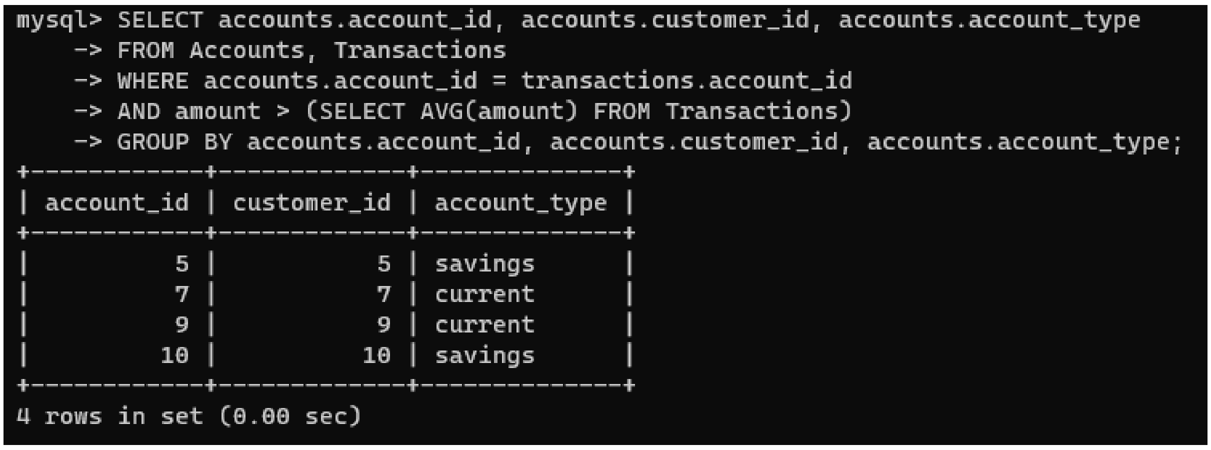
```
mysql> SELECT customers.first_name, accounts.balance
    -> FROM Accounts, Customers
    -> WHERE customers.customer_id = accounts.account_id
    -> AND balance = (SELECT MAX(balance) FROM Accounts);
+------------+----------+
| first_name | balance  |
+------------+----------+
| John       | 80000.00 |
+------------+----------+
1 row in set (0.00 sec)
```

2 Calculate the average account balance for customers who have more than one account



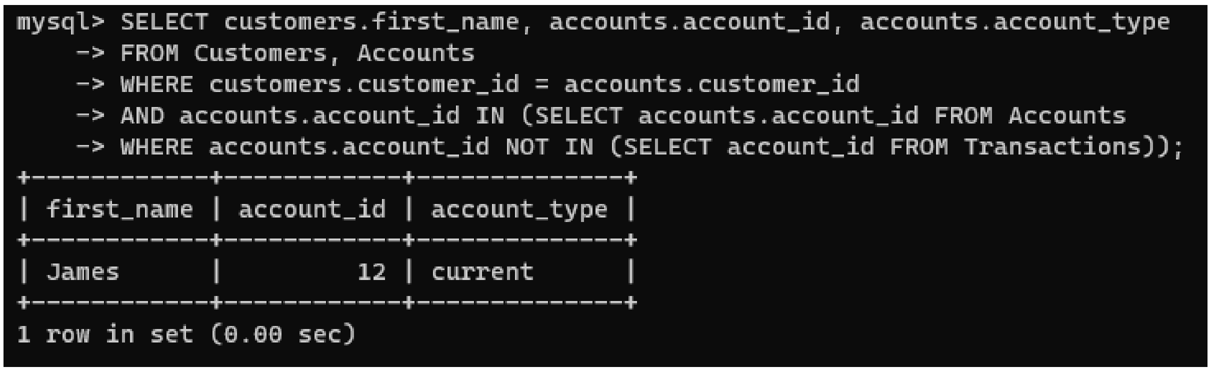
```
mysql> SELECT customers.first_name,
    -> AVG(balance) FROM Customers, Accounts
    -> WHERE customers.customer_id = accounts.customer_id
    -> GROUP BY customers.first_name
    -> HAVING COUNT(balance)>1;
+------------+--------------+
| first_name | AVG(balance) |
+------------+--------------+
| James      | 30000.000000 |
+------------+--------------+
1 row in set (0.00 sec)
```

3 Retrieve accounts with transactions whose amounts exceed the average transaction amount.



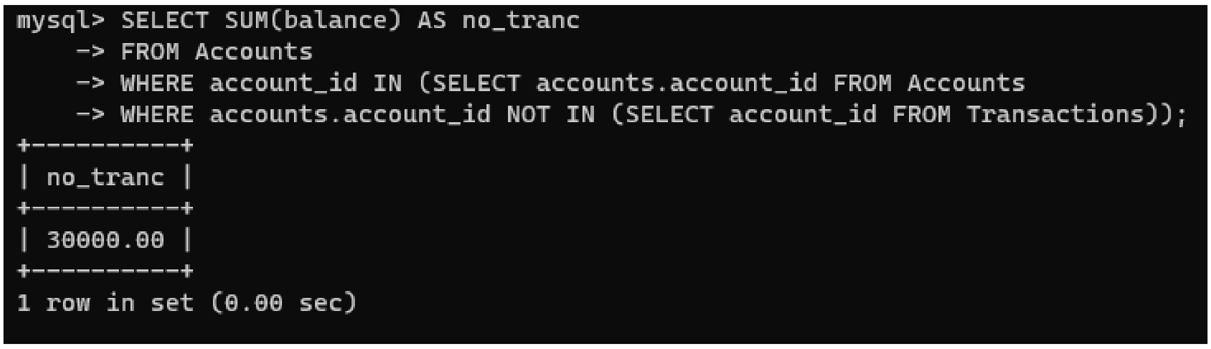
```
mysql> SELECT accounts.account_id, accounts.customer_id, accounts.account_type
    -> FROM Accounts, Transactions
    -> WHERE accounts.account_id = transactions.account_id
    -> AND amount > (SELECT AVG(amount) FROM Transactions)
    -> GROUP BY accounts.account_id, accounts.customer_id, accounts.account_type;
+------------+-------------+--------------+
| account_id | customer_id | account_type |
+------------+-------------+--------------+
|          5 |           5 | savings      |
|          7 |           7 | current      |
|          9 |           9 | current      |
|         10 |          10 | savings      |
+------------+-------------+--------------+
4 rows in set (0.00 sec)
```

4 Identify customers who have no recorded transactions.



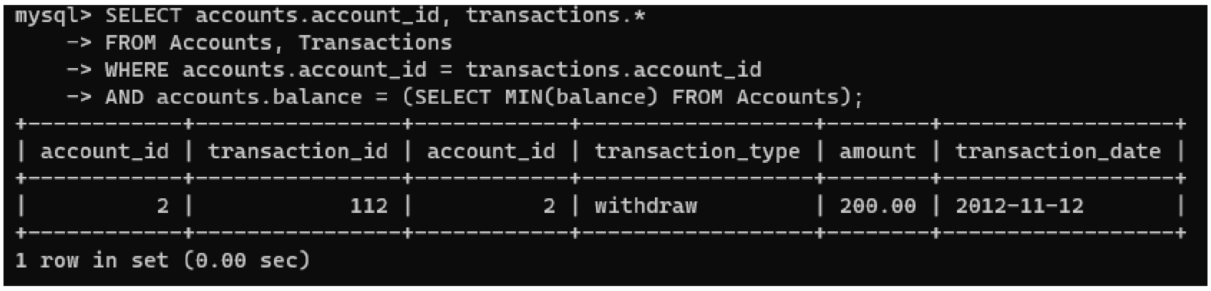
```
mysql> SELECT customers.first_name, accounts.account_id, accounts.account_type
    -> FROM Customers, Accounts
    -> WHERE customers.customer_id = accounts.customer_id
    -> AND accounts.account_id IN (SELECT accounts.account_id FROM Accounts
    -> WHERE accounts.account_id NOT IN (SELECT account_id FROM Transactions));
+------------+------------+--------------+
| first_name | account_id | account_type |
+------------+------------+--------------+
| James      |         12 | current      |
+------------+------------+--------------+
1 row in set (0.00 sec)
```

5 Calculate the total balance of accounts with no recorded transactions.



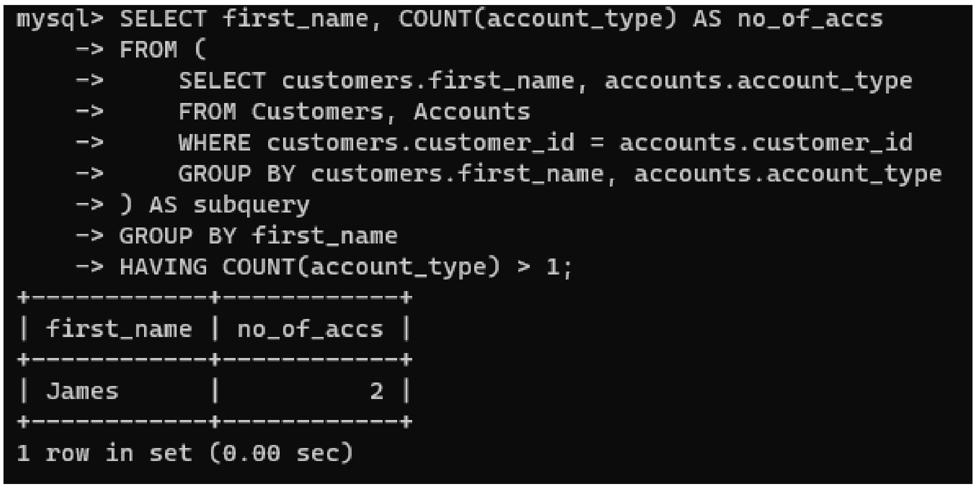
```
mysql> SELECT SUM(balance) AS no_tranc
    -> FROM Accounts
    -> WHERE account_id IN (SELECT accounts.account_id FROM Accounts
    -> WHERE accounts.account_id NOT IN (SELECT account_id FROM Transactions));
+----------+
| no_tranc |
+----------+
| 30000.00 |
+----------+
1 row in set (0.00 sec)
```

6 Retrieve transactions for accounts with the lowest balance



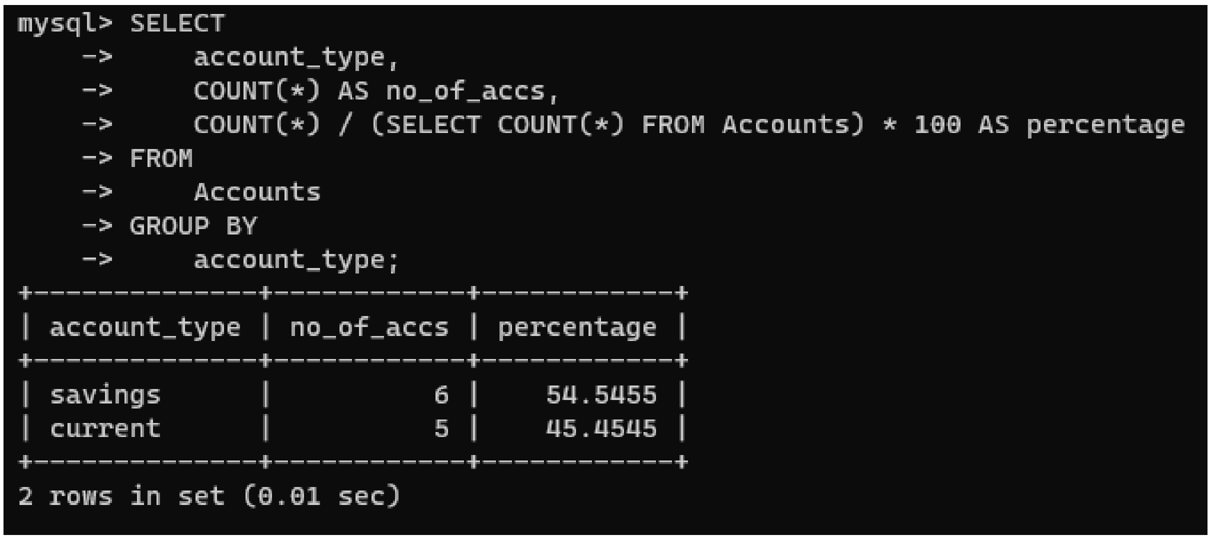
```
mysql> SELECT accounts.account_id, transactions.*
    -> FROM Accounts, Transactions
    -> WHERE accounts.account_id = transactions.account_id
    -> AND accounts.balance = (SELECT MIN(balance) FROM Accounts);
+------------+----------------+------------+------------------+--------+------------------+
| account_id | transaction_id | account_id | transaction_type | amount | transaction_date |
+------------+----------------+------------+------------------+--------+------------------+
|          2 |            112 |          2 | withdraw         | 200.00 | 2012-11-12       |
+------------+----------------+------------+------------------+--------+------------------+
1 row in set (0.00 sec)
```

7 Identify customers who have accounts of multiple types.



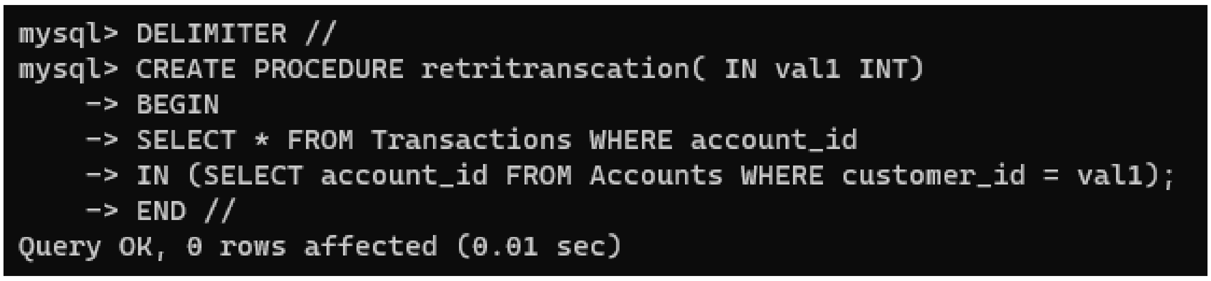
```
mysql> SELECT first_name, COUNT(account_type) AS no_of_accs
    -> FROM (
    ->     SELECT customers.first_name, accounts.account_type
    ->     FROM Customers, Accounts
    ->     WHERE customers.customer_id = accounts.customer_id
    ->     GROUP BY customers.first_name, accounts.account_type
    -> ) AS subquery
    -> GROUP BY first_name
    -> HAVING COUNT(account_type) > 1;
+------------+------------+
| first_name | no_of_accs |
+------------+------------+
| James      |          2 |
+------------+------------+
1 row in set (0.00 sec)
```

8 Calculate the percentage of each account type out of the total number of accounts

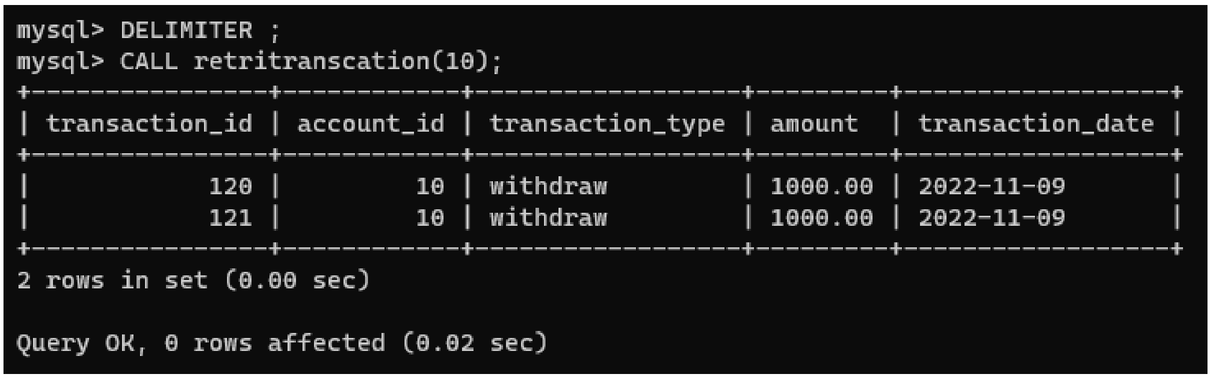


```
mysql> SELECT
    ->     account_type,
    ->     COUNT(*) AS no_of_accs,
    ->     COUNT(*) / (SELECT COUNT(*) FROM Accounts) * 100 AS percentage
    -> FROM
    ->     Accounts
    -> GROUP BY
    ->     account_type;
+--------------+------------+------------+
| account_type | no_of_accs | percentage |
+--------------+------------+------------+
| savings      |          6 |    54.5455 |
| current      |          5 |    45.4545 |
+--------------+------------+------------+
2 rows in set (0.01 sec)
```

9 Retrieve all transactions for a customer with a given customer_id.

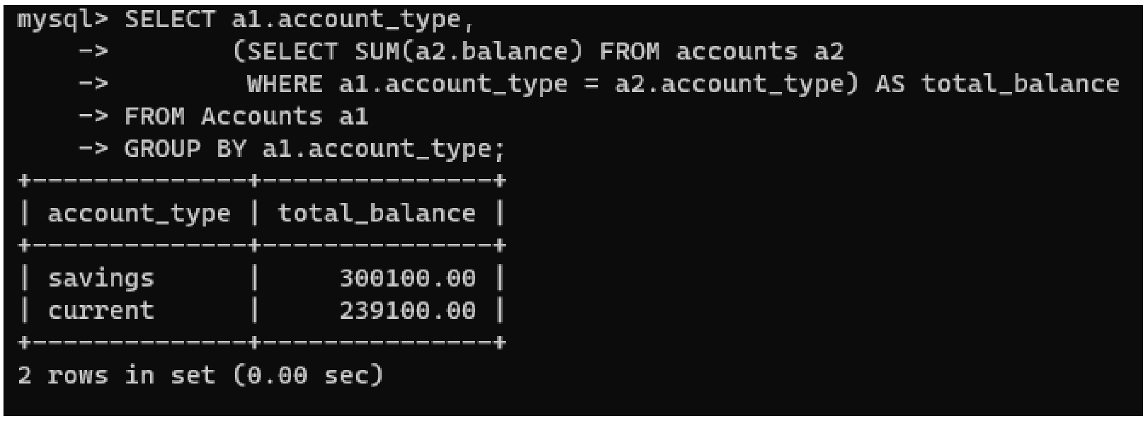


```
mysql> DELIMITER //
mysql> CREATE PROCEDURE retritranscation( IN val1 INT)
    -> BEGIN
    -> SELECT * FROM Transactions WHERE account_id
    -> IN (SELECT account_id FROM Accounts WHERE customer_id = val1);
    -> END //
Query OK, 0 rows affected (0.01 sec)
```



```
mysql> DELIMITER ;
mysql> CALL retritranscation(10);
+----------------+------------+------------------+---------+------------------+
| transaction_id | account_id | transaction_type | amount  | transaction_date |
+----------------+------------+------------------+---------+------------------+
|            120 |         10 | withdraw         | 1000.00 | 2022-11-09       |
|            121 |         10 | withdraw         | 1000.00 | 2022-11-09       |
+----------------+------------+------------------+---------+------------------+
2 rows in set (0.00 sec)

Query OK, 0 rows affected (0.02 sec)
```

10 . Calculate the total balance for each account type, including a subquery within the SELECT clause



```
mysql> SELECT a1.account_type,
    ->        (SELECT SUM(a2.balance) FROM accounts a2
    ->         WHERE a1.account_type = a2.account_type) AS total_balance
    -> FROM Accounts a1
    -> GROUP BY a1.account_type;
+--------------+---------------+
| account_type | total_balance |
+--------------+---------------+
| savings      |     300100.00 |
| current      |     239100.00 |
+--------------+---------------+
2 rows in set (0.00 sec)
```