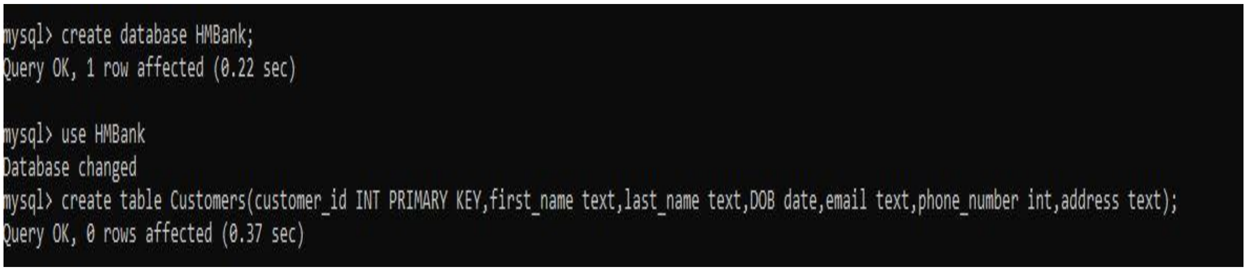
BANKING SYSTEM

TASK 1:

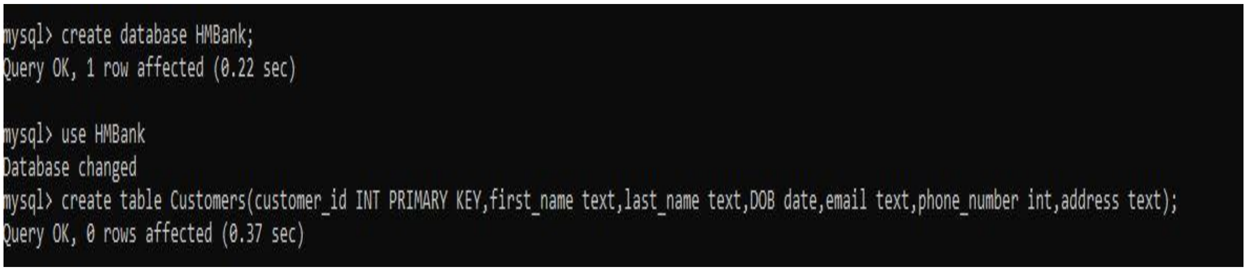
1.Create the database named "HMBank"

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



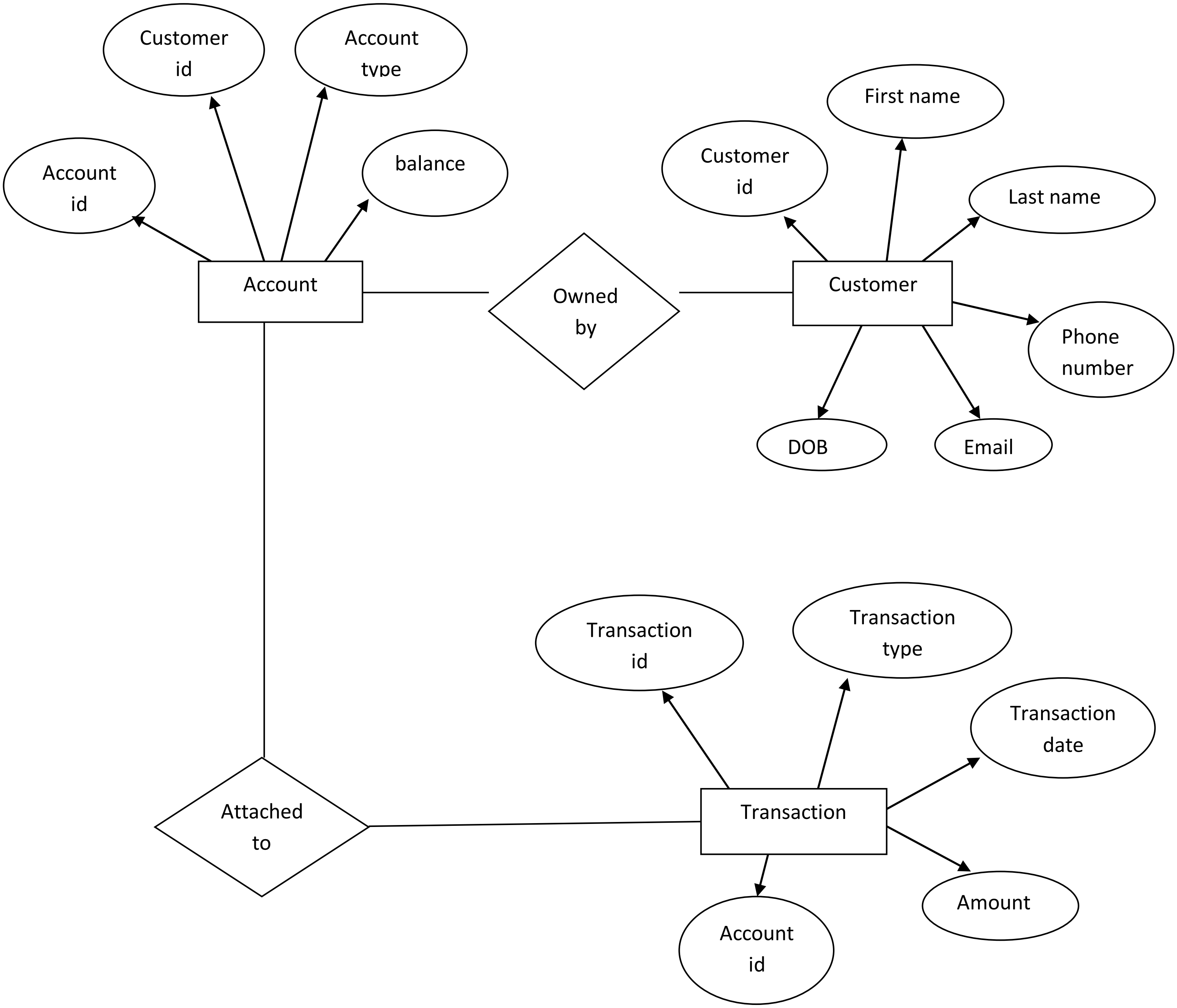
```
mysql> create database HMBank;
Query OK, 1 row affected (0.22 sec)

mysql> use HMBank
Database changed
mysql> create table Customers(customer_id INT PRIMARY KEY,first_name text,last_name text,DOB date,email text,phone_number int,address text);
Query OK, 0 rows affected (0.37 sec)
```

4.Create appropriate Primary Key and Foreign Key constraints for referential integrity.



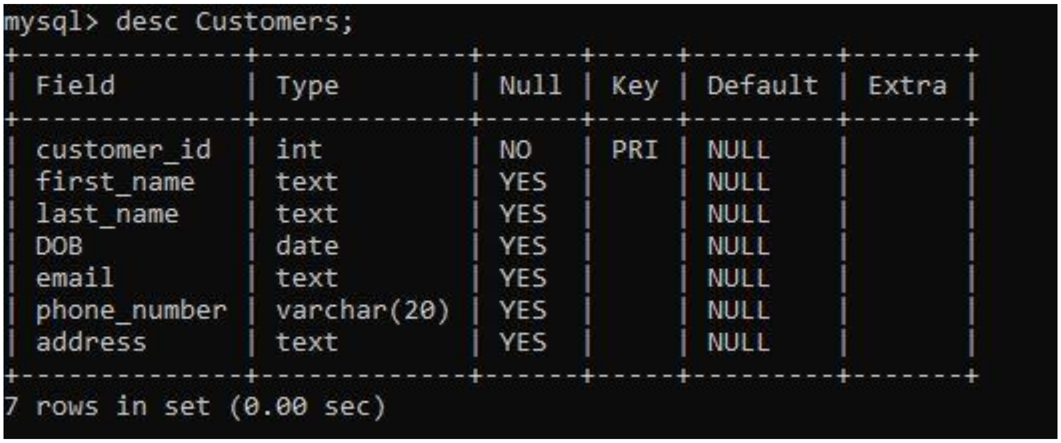
```
mysql> create database HMBank;
Query OK, 1 row affected (0.22 sec)

mysql> use HMBank
Database changed
mysql> create table Customers(customer_id INT PRIMARY KEY,first_name text,last_name text,DOB date,email text,phone_number int,address text);
Query OK, 0 rows affected (0.37 sec)
```

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



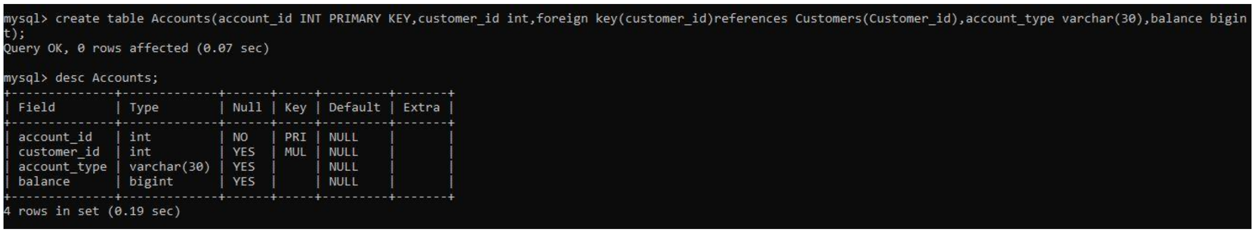
5.Write SQL scripts to create the mentioned tables with appropriate data types, constraints, and relationships.

- Customers



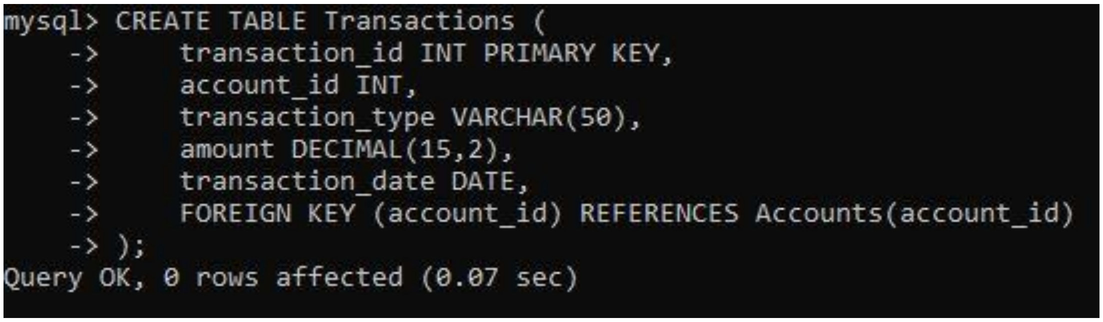
```
mysql> desc Customers;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| customer_id  | int         | NO   | PRI | NULL    |       |
| first_name   | text        | YES  |     | NULL    |       |
| last_name    | text        | YES  |     | NULL    |       |
| DOB          | date        | YES  |     | NULL    |       |
| email        | text        | YES  |     | NULL    |       |
| phone_number | varchar(20) | YES  |     | NULL    |       |
| address      | text        | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
7 rows in set (0.00 sec)
```

- Accounts



```
mysql> create table Accounts(account_id INT PRIMARY KEY,customer_id int,foreign key(customer_id)references Customers(Customer_id),account_type varchar(30),balance bigin
t);
Query OK, 0 rows affected (0.07 sec)

mysql> desc Accounts;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| account_id   | int         | NO   | PRI | NULL    |       |
| customer_id  | int         | YES  | MUL | NULL    |       |
| account_type | varchar(30) | YES  |     | NULL    |       |
| balance      | bigint      | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
4 rows in set (0.19 sec)
```

- Transactions

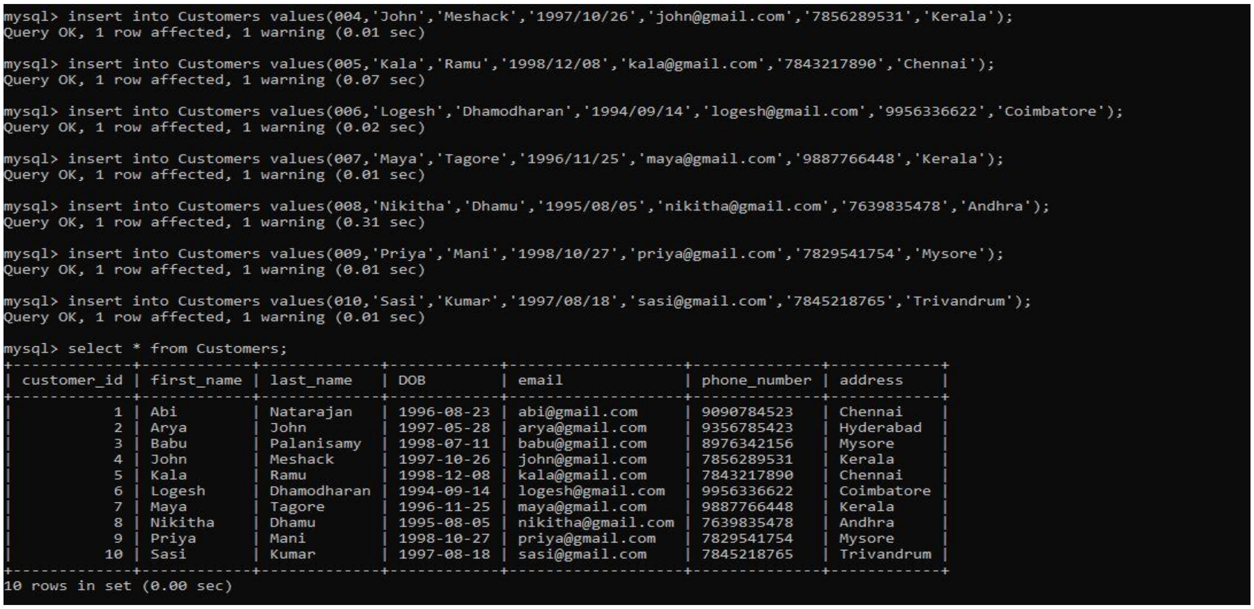


```
mysql> CREATE TABLE Transactions (
    ->     transaction_id INT PRIMARY KEY,
    ->     account_id INT,
    ->     transaction_type VARCHAR(50),
    ->     amount DECIMAL(15,2),
    ->     transaction_date DATE,
    ->     FOREIGN KEY (account_id) REFERENCES Accounts(account_id)
    -> );
Query OK, 0 rows affected (0.07 sec)
```

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

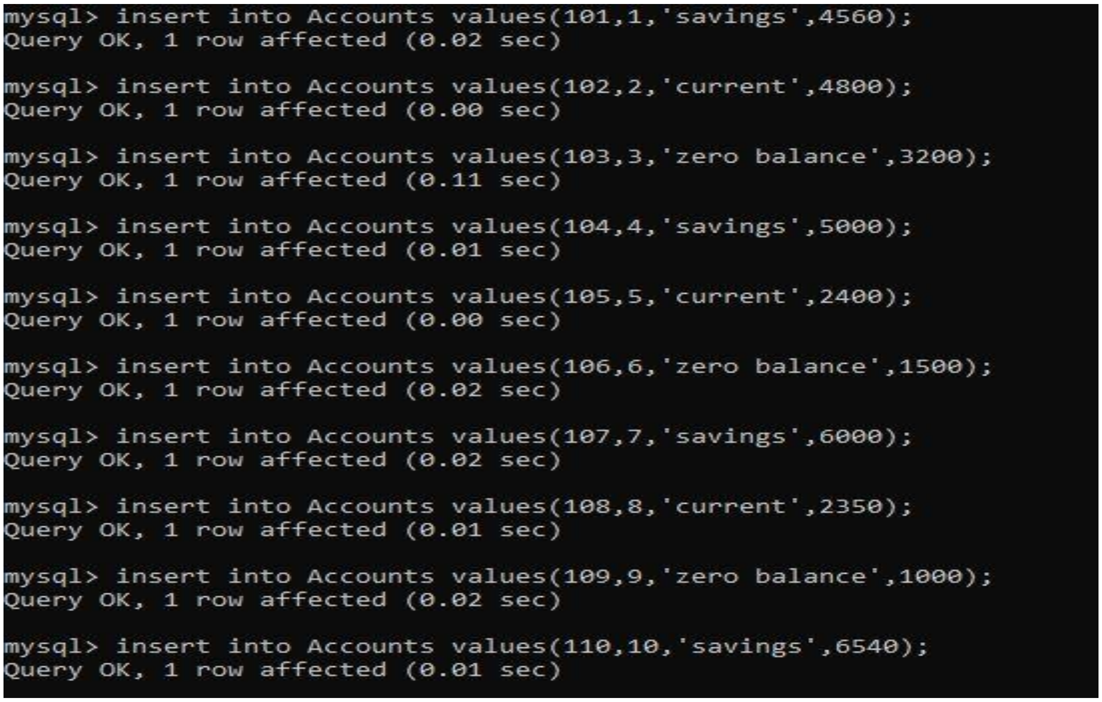
1.Insert at least 10 sample records into each of the following tables.

- Customers

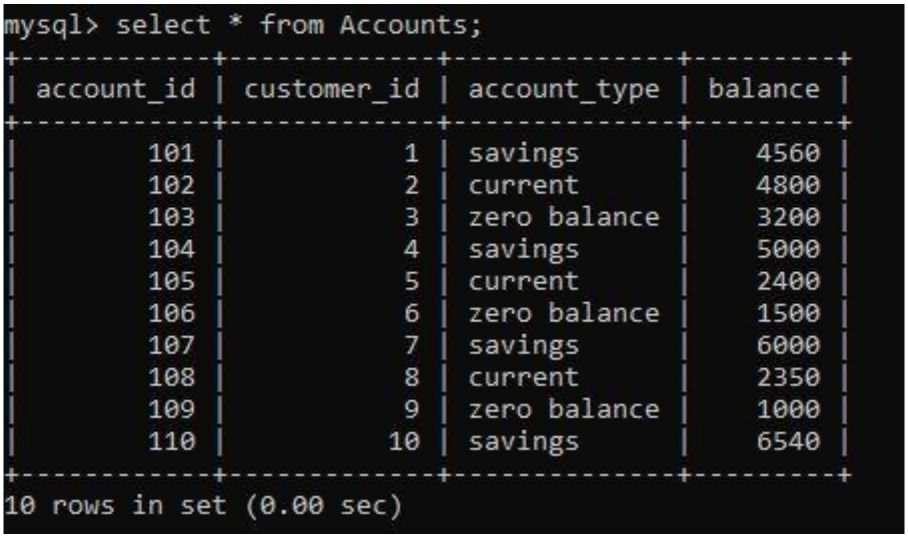


```
mysql> insert into Customers values(004,'John','Meshack','1997/10/26','john@gmail.com','7856289531','Kerala');
Query OK, 1 row affected, 1 warning (0.01 sec)

mysql> insert into Customers values(005,'Kala','Ramu','1998/12/08','kala@gmail.com','7843217890','Chennai');
Query OK, 1 row affected, 1 warning (0.07 sec)

mysql> insert into Customers values(006,'Logesh','Dhamodharan','1994/09/14','logesh@gmail.com','9956336622','Coimbatore');
Query OK, 1 row affected, 1 warning (0.02 sec)

mysql> insert into Customers values(007,'Maya','Tagore','1996/11/25','maya@gmail.com','9887766448','Kerala');
Query OK, 1 row affected, 1 warning (0.01 sec)

mysql> insert into Customers values(008,'Nikitha','Dhamu','1995/08/05','nikitha@gmail.com','7639835478','Andhra');
Query OK, 1 row affected, 1 warning (0.31 sec)

mysql> insert into Customers values(009,'Priya','Mani','1998/10/27','priya@gmail.com','7829541754','Mysore');
Query OK, 1 row affected, 1 warning (0.01 sec)

mysql> insert into Customers values(010,'Sasi','Kumar','1997/08/18','sasi@gmail.com','7845218765','Trivandrum');
Query OK, 1 row affected, 1 warning (0.01 sec)

mysql> select * from Customers;
+-------------+------------+-------------+------------+-------------------+--------------+------------+
| customer_id | first_name | last_name   | DOB        | email             | phone_number | address    |
+-------------+------------+-------------+------------+-------------------+--------------+------------+
|           1 | Abi        | Natarajan   | 1996-08-23 | abi@gmail.com     | 9090784523   | Chennai    |
|           2 | Arya       | John        | 1997-05-28 | arya@gmail.com    | 9356785423   | Hyderabad  |
|           3 | Babu       | Palanisamy  | 1998-07-11 | babu@gmail.com    | 8976342156   | Mysore     |
|           4 | John       | Meshack     | 1997-10-26 | john@gmail.com    | 7856289531   | Kerala     |
|           5 | Kala       | Ramu        | 1998-12-08 | kala@gmail.com    | 7843217890   | Chennai    |
|           6 | Logesh     | Dhamodharan | 1994-09-14 | logesh@gmail.com  | 9956336622   | Coimbatore |
|           7 | Maya       | Tagore      | 1996-11-25 | maya@gmail.com    | 9887766448   | Kerala     |
|           8 | Nikitha    | Dhamu       | 1995-08-05 | nikitha@gmail.com | 7639835478   | Andhra     |
|           9 | Priya      | Mani        | 1998-10-27 | priya@gmail.com   | 7829541754   | Mysore     |
|          10 | Sasi       | Kumar       | 1997-08-18 | sasi@gmail.com    | 7845218765   | Trivandrum |
+-------------+------------+-------------+------------+-------------------+--------------+------------+
10 rows in set (0.00 sec)
```

- Accounts

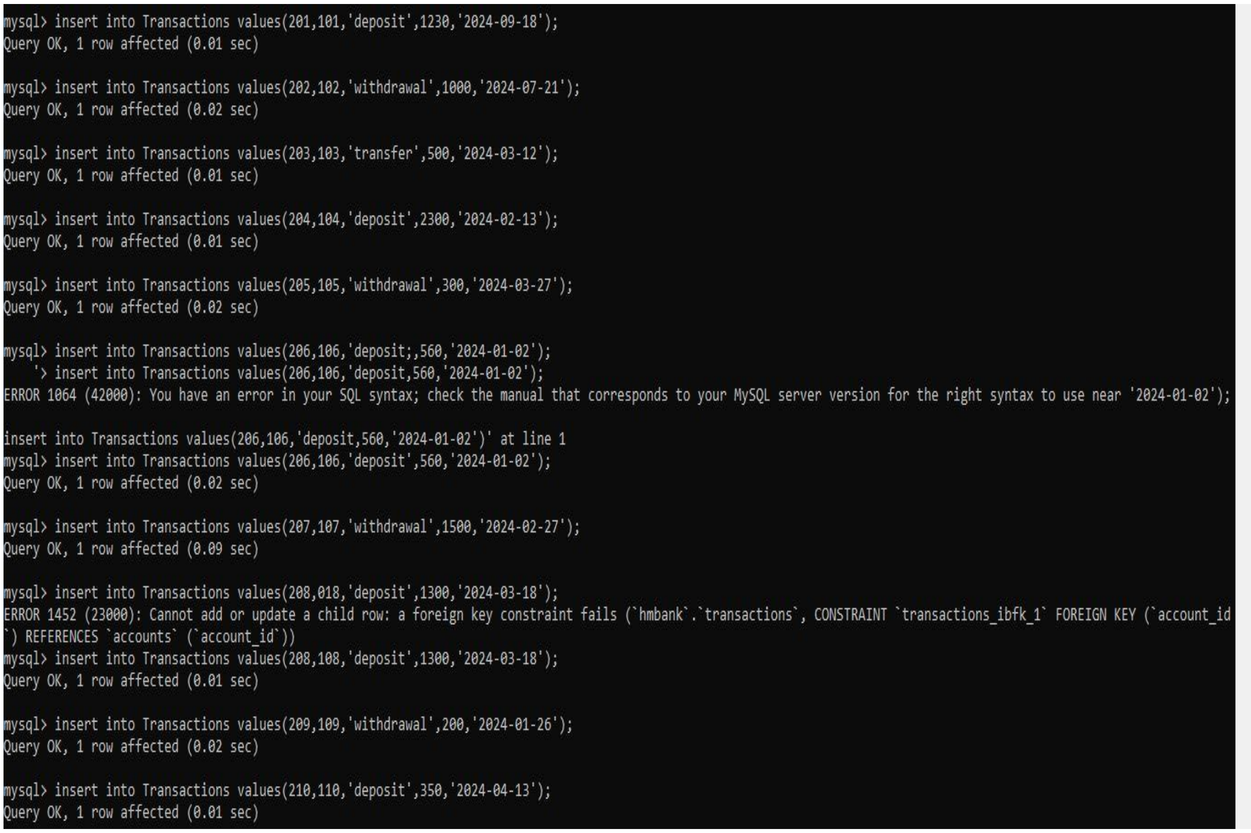


```
mysql> insert into Accounts values(101,1,'savings',4560);
Query OK, 1 row affected (0.02 sec)

mysql> insert into Accounts values(102,2,'current',4800);
Query OK, 1 row affected (0.00 sec)

mysql> insert into Accounts values(103,3,'zero balance',3200);
Query OK, 1 row affected (0.11 sec)

mysql> insert into Accounts values(104,4,'savings',5000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Accounts values(105,5,'current',2400);
Query OK, 1 row affected (0.00 sec)

mysql> insert into Accounts values(106,6,'zero balance',1500);
Query OK, 1 row affected (0.02 sec)

mysql> insert into Accounts values(107,7,'savings',6000);
Query OK, 1 row affected (0.02 sec)

mysql> insert into Accounts values(108,8,'current',2350);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Accounts values(109,9,'zero balance',1000);
Query OK, 1 row affected (0.02 sec)

mysql> insert into Accounts values(110,10,'savings',6540);
Query OK, 1 row affected (0.01 sec)
```

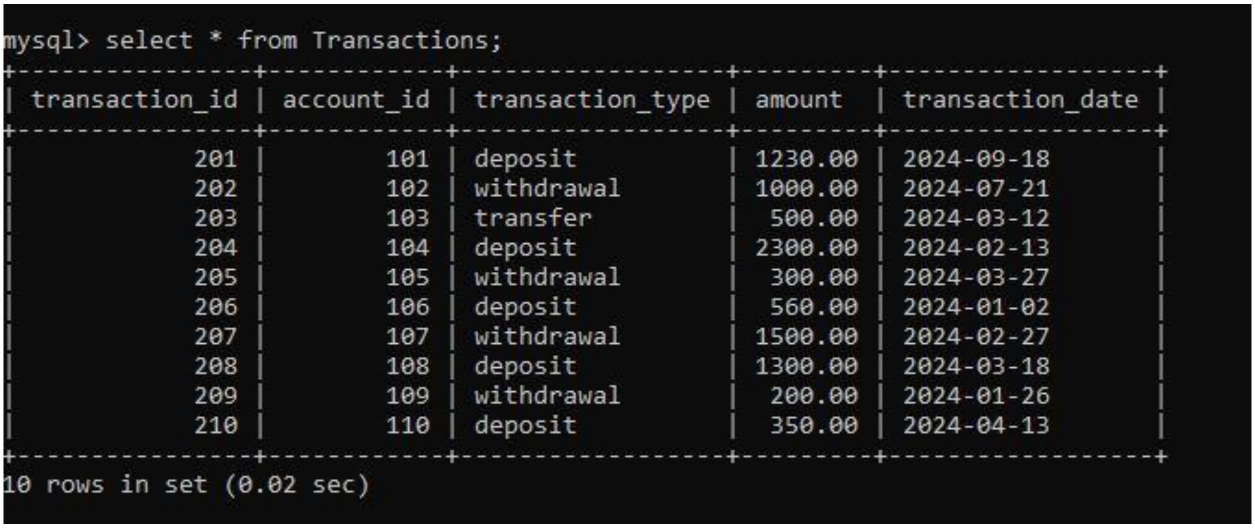


```
mysql> select * from Accounts;
+------------+-------------+--------------+---------+
| account_id | customer_id | account_type | balance |
+------------+-------------+--------------+---------+
|        101 |           1 | savings      |    4560 |
|        102 |           2 | current      |    4800 |
|        103 |           3 | zero balance |    3200 |
|        104 |           4 | savings      |    5000 |
|        105 |           5 | current      |    2400 |
|        106 |           6 | zero balance |    1500 |
|        107 |           7 | savings      |    6000 |
|        108 |           8 | current      |    2350 |
|        109 |           9 | zero balance |    1000 |
|        110 |          10 | savings      |    6540 |
+------------+-------------+--------------+---------+
10 rows in set (0.00 sec)
```

- Transactions



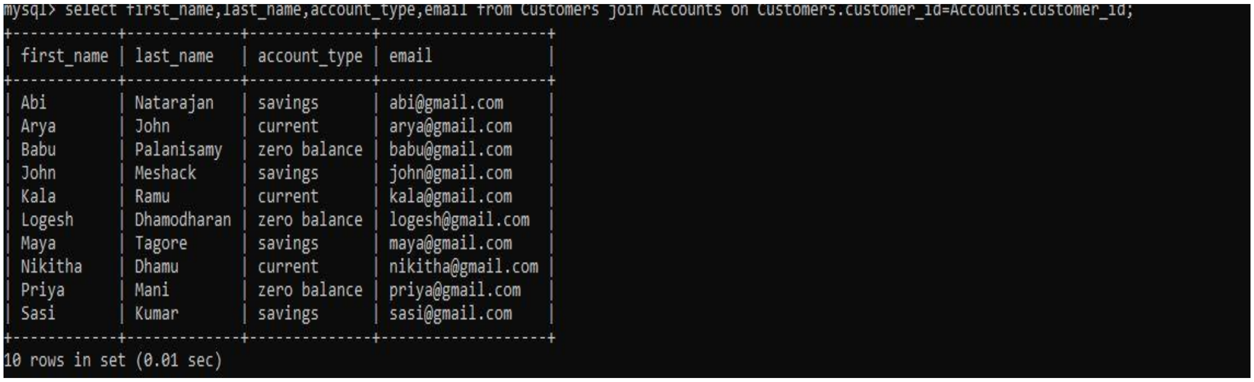
```
mysql> insert into Transactions values(201,101,'deposit',1230,'2024-09-18');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Transactions values(202,102,'withdrawal',1000,'2024-07-21');
Query OK, 1 row affected (0.02 sec)

mysql> insert into Transactions values(203,103,'transfer',500,'2024-03-12');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Transactions values(204,104,'deposit',2300,'2024-02-13');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Transactions values(205,105,'withdrawal',300,'2024-03-27');
Query OK, 1 row affected (0.02 sec)

mysql> insert into Transactions values(206,106,'deposit;,560,'2024-01-02');
    '> insert into Transactions values(206,106,'deposit,560,'2024-01-02');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '2024-01-02');

insert into Transactions values(206,106,'deposit,560,'2024-01-02')' at line 1
mysql> insert into Transactions values(206,106,'deposit',560,'2024-01-02');
Query OK, 1 row affected (0.02 sec)

mysql> insert into Transactions values(207,107,'withdrawal',1500,'2024-02-27');
Query OK, 1 row affected (0.09 sec)

mysql> insert into Transactions values(208,018,'deposit',1300,'2024-03-18');
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails (`hmbank`.`transactions`, CONSTRAINT `transactions_ibfk_1` FOREIGN KEY (`account_id
`) REFERENCES `accounts` (`account_id`))
mysql> insert into Transactions values(208,108,'deposit',1300,'2024-03-18');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Transactions values(209,109,'withdrawal',200,'2024-01-26');
Query OK, 1 row affected (0.02 sec)

mysql> insert into Transactions values(210,110,'deposit',350,'2024-04-13');
Query OK, 1 row affected (0.01 sec)
```



```
mysql> select * from Transactions;
+----------------+------------+------------------+---------+------------------+
| transaction_id | account_id | transaction_type | amount  | transaction_date |
+----------------+------------+------------------+---------+------------------+
|            201 |        101 | deposit          | 1230.00 | 2024-09-18       |
|            202 |        102 | withdrawal       | 1000.00 | 2024-07-21       |
|            203 |        103 | transfer         |  500.00 | 2024-03-12       |
|            204 |        104 | deposit          | 2300.00 | 2024-02-13       |
|            205 |        105 | withdrawal       |  300.00 | 2024-03-27       |
|            206 |        106 | deposit          |  560.00 | 2024-01-02       |
|            207 |        107 | withdrawal       | 1500.00 | 2024-02-27       |
|            208 |        108 | deposit          | 1300.00 | 2024-03-18       |
|            209 |        109 | withdrawal       |  200.00 | 2024-01-26       |
|            210 |        110 | deposit          |  350.00 | 2024-04-13       |
+----------------+------------+------------------+---------+------------------+
10 rows in set (0.02 sec)
```

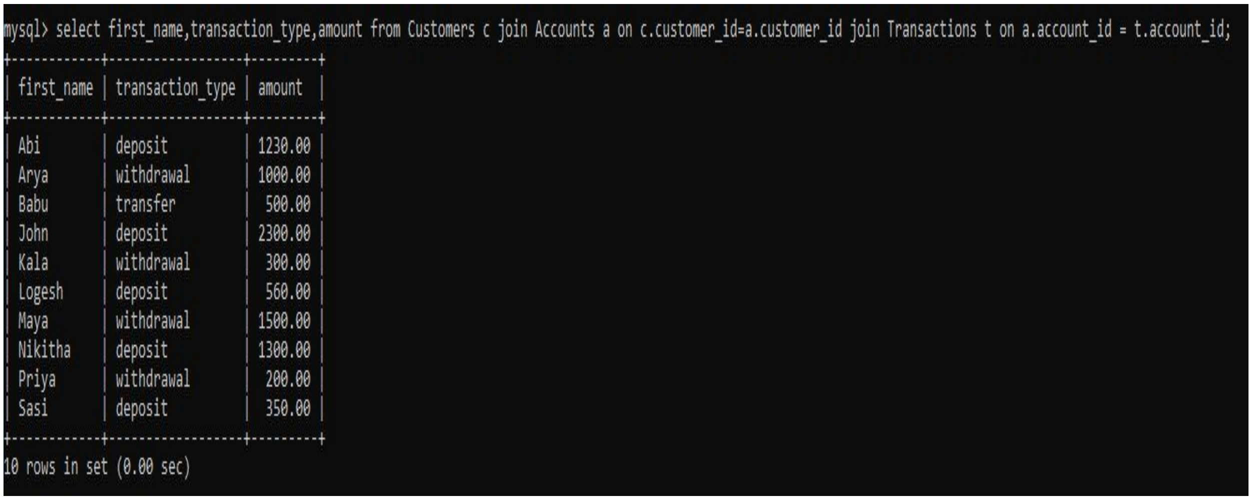
Write SQL queries for the following tasks:

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



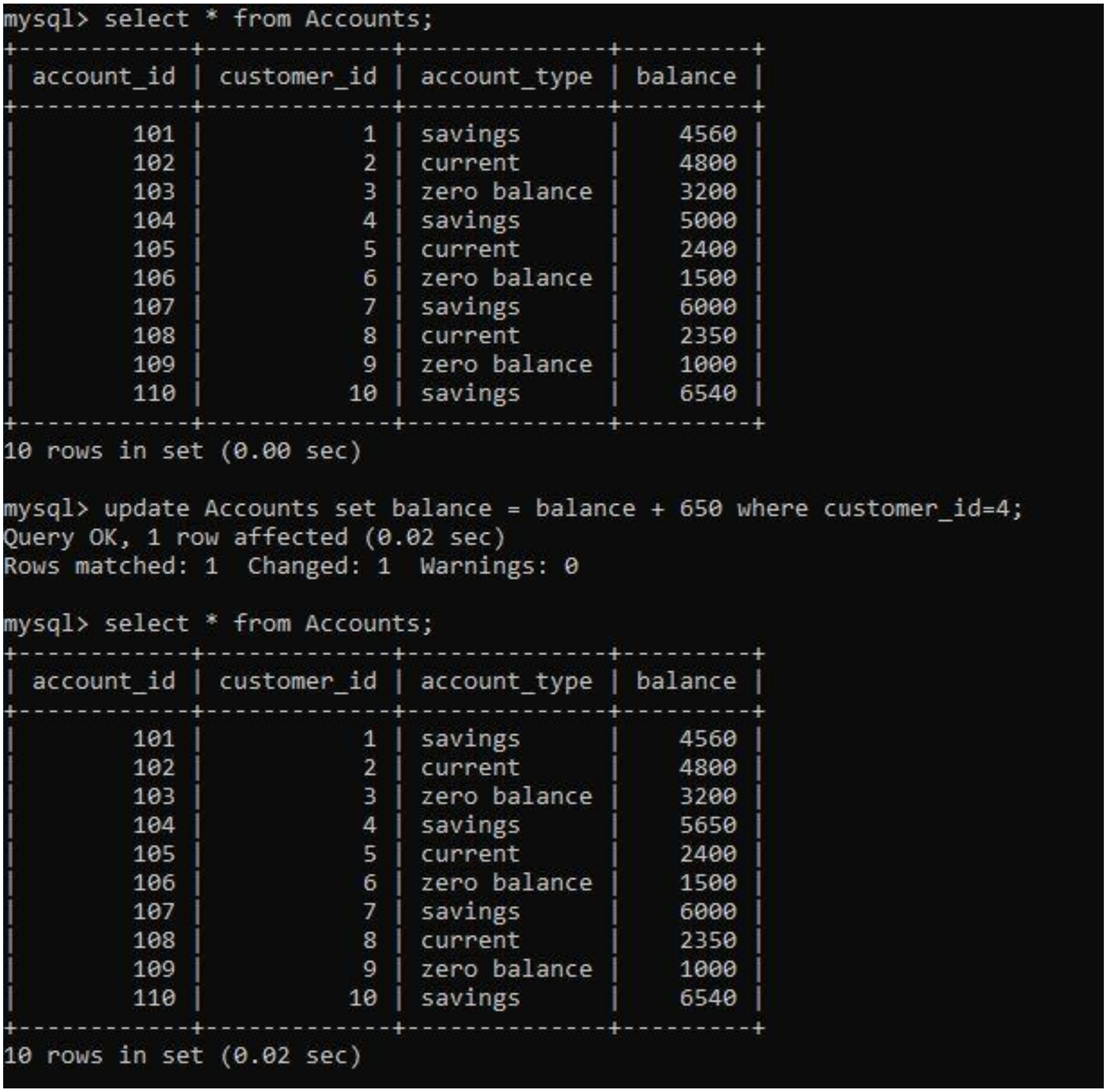
```
mysql> select first_name,last_name,account_type,email from Customers join Accounts on Customers.customer_id=Accounts.customer_id;
+------------+-------------+--------------+-------------------+
| first_name | last_name   | account_type | email             |
+------------+-------------+--------------+-------------------+
| Abi        | Natarajan   | savings      | abi@gmail.com     |
| Arya       | John        | current      | arya@gmail.com    |
| Babu       | Palanisamy  | zero balance | babu@gmail.com    |
| John       | Meshack     | savings      | john@gmail.com    |
| Kala       | Ramu        | current      | kala@gmail.com    |
| Logesh     | Dhamodharan | zero balance | logesh@gmail.com  |
| Maya       | Tagore      | savings      | maya@gmail.com    |
| Nikitha    | Dhamu       | current      | nikitha@gmail.com |
| Priya      | Mani        | zero balance | priya@gmail.com   |
| Sasi       | Kumar       | savings      | sasi@gmail.com    |
+------------+-------------+--------------+-------------------+
10 rows in set (0.01 sec)
```

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



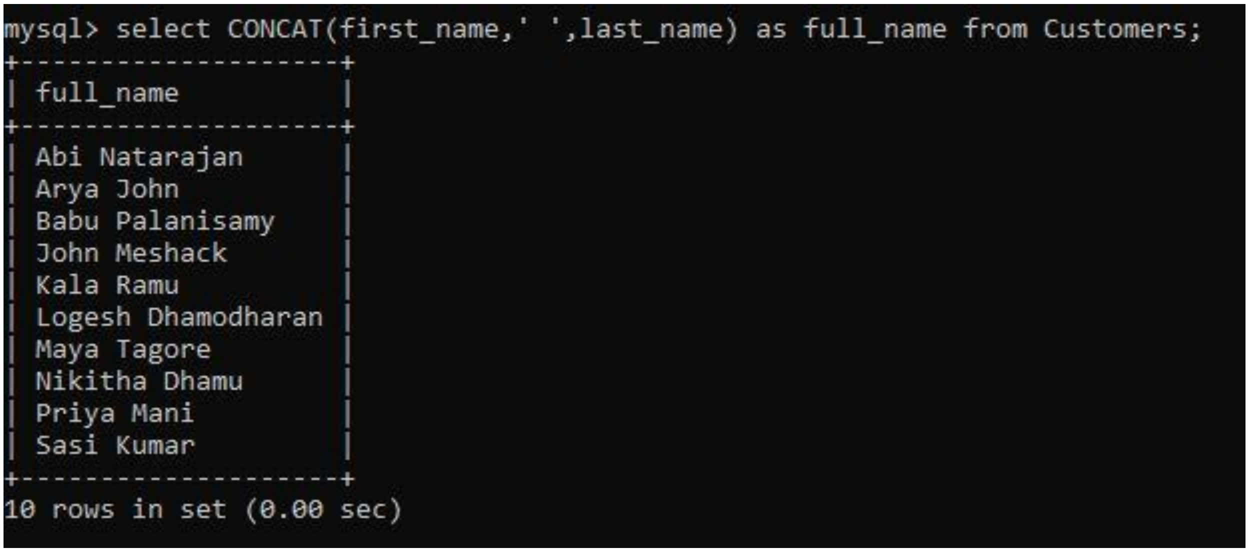
```
mysql> select first_name,transaction_type,amount from Customers c join Accounts a on c.customer_id=a.customer_id join Transactions t on a.account_id = t.account_id;
+------------+------------------+---------+
| first_name | transaction_type | amount  |
+------------+------------------+---------+
| Abi        | deposit          | 1230.00 |
| Arya       | withdrawal       | 1000.00 |
| Babu       | transfer         |  500.00 |
| John       | deposit          | 2300.00 |
| Kala       | withdrawal       |  300.00 |
| Logesh     | deposit          |  560.00 |
| Maya       | withdrawal       | 1500.00 |
| Nikitha    | deposit          | 1300.00 |
| Priya      | withdrawal       |  200.00 |
| Sasi       | deposit          |  350.00 |
+------------+------------------+---------+
10 rows in set (0.00 sec)
```

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



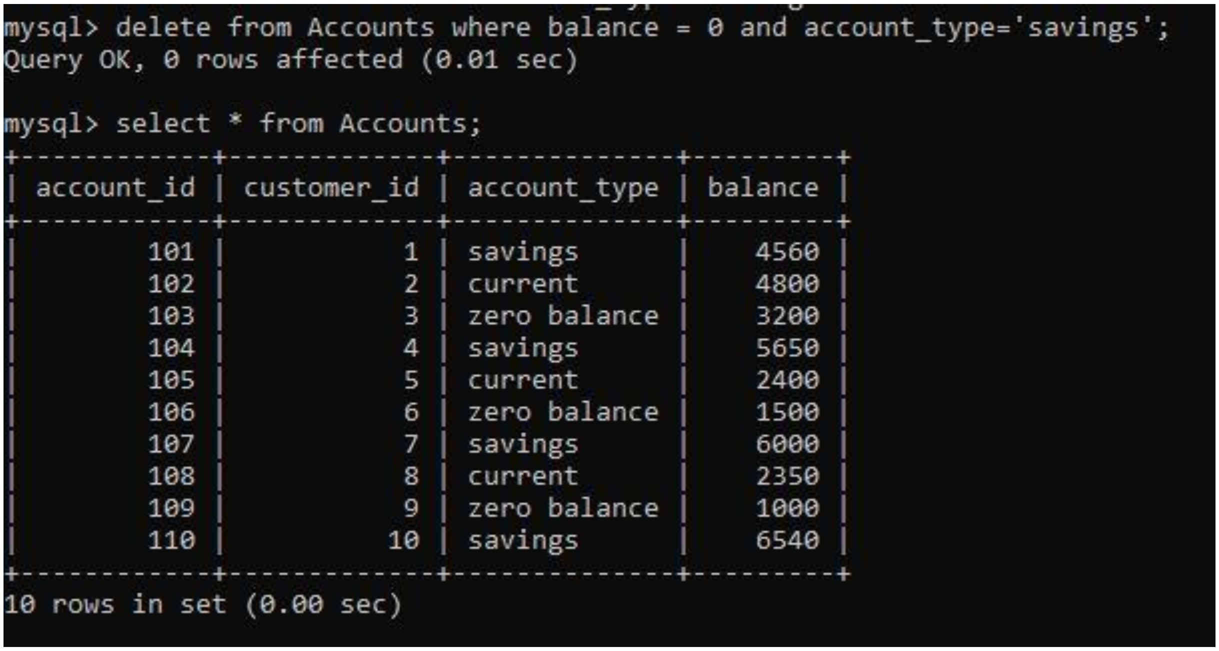
```
mysql> select * from Accounts;
+------------+-------------+--------------+---------+
| account_id | customer_id | account_type | balance |
+------------+-------------+--------------+---------+
|        101 |           1 | savings      |    4560 |
|        102 |           2 | current      |    4800 |
|        103 |           3 | zero balance |    3200 |
|        104 |           4 | savings      |    5000 |
|        105 |           5 | current      |    2400 |
|        106 |           6 | zero balance |    1500 |
|        107 |           7 | savings      |    6000 |
|        108 |           8 | current      |    2350 |
|        109 |           9 | zero balance |    1000 |
|        110 |          10 | savings      |    6540 |
+------------+-------------+--------------+---------+
10 rows in set (0.00 sec)

mysql> update Accounts set balance = balance + 650 where customer_id=4;
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from Accounts;
+------------+-------------+--------------+---------+
| account_id | customer_id | account_type | balance |
+------------+-------------+--------------+---------+
|        101 |           1 | savings      |    4560 |
|        102 |           2 | current      |    4800 |
|        103 |           3 | zero balance |    3200 |
|        104 |           4 | savings      |    5650 |
|        105 |           5 | current      |    2400 |
|        106 |           6 | zero balance |    1500 |
|        107 |           7 | savings      |    6000 |
|        108 |           8 | current      |    2350 |
|        109 |           9 | zero balance |    1000 |
|        110 |          10 | savings      |    6540 |
+------------+-------------+--------------+---------+
10 rows in set (0.02 sec)
```

4.Write a SQL query to Combine first and last names of customers as a full_name.



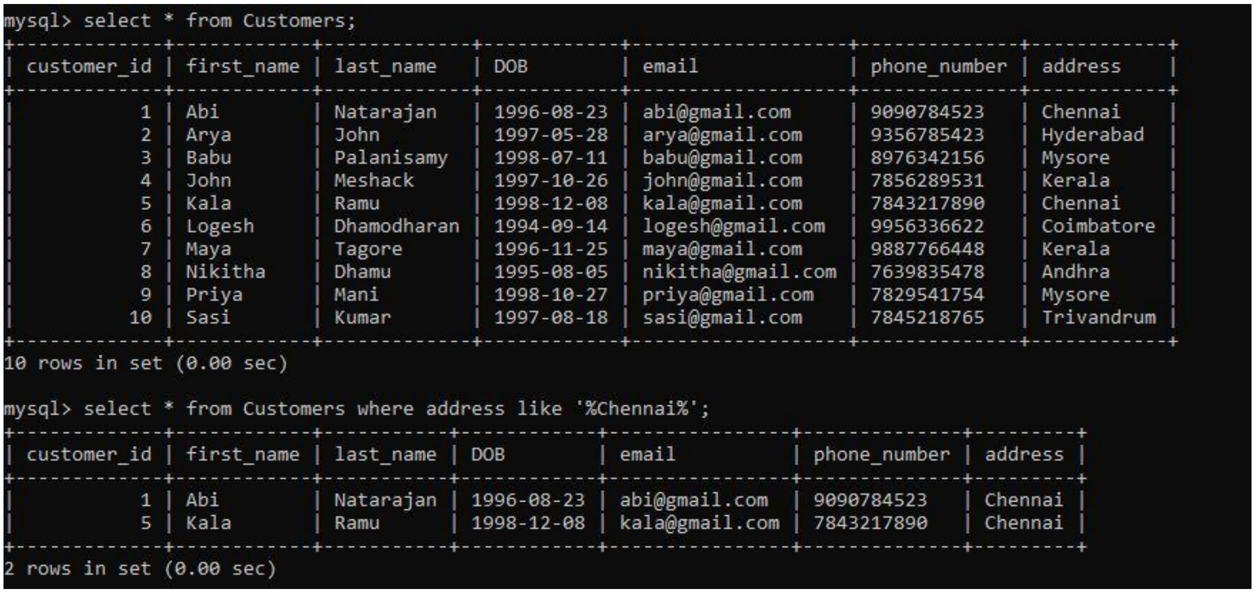
```
mysql> select CONCAT(first_name,' ',last_name) as full_name from Customers;
+--------------------+
| full_name          |
+--------------------+
| Abi Natarajan      |
| Arya John          |
| Babu Palanisamy    |
| John Meshack       |
| Kala Ramu          |
| Logesh Dhamodharan |
| Maya Tagore        |
| Nikitha Dhamu      |
| Priya Mani         |
| Sasi Kumar         |
+--------------------+
10 rows in set (0.00 sec)
```

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



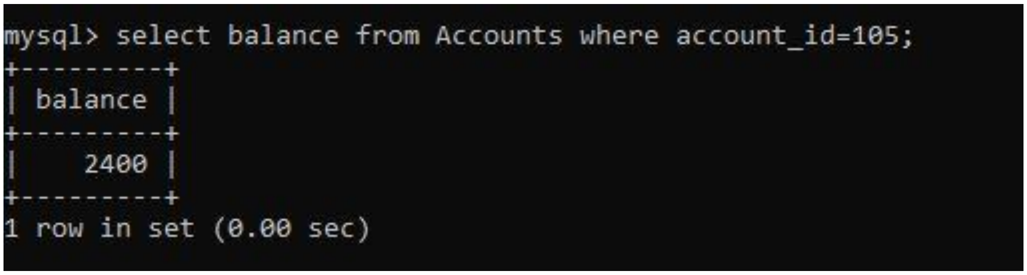
```
mysql> delete from Accounts where balance = 0 and account_type='savings';
Query OK, 0 rows affected (0.01 sec)

mysql> select * from Accounts;
+------------+-------------+--------------+---------+
| account_id | customer_id | account_type | balance |
+------------+-------------+--------------+---------+
|        101 |           1 | savings      |    4560 |
|        102 |           2 | current      |    4800 |
|        103 |           3 | zero balance |    3200 |
|        104 |           4 | savings      |    5650 |
|        105 |           5 | current      |    2400 |
|        106 |           6 | zero balance |    1500 |
|        107 |           7 | savings      |    6000 |
|        108 |           8 | current      |    2350 |
|        109 |           9 | zero balance |    1000 |
|        110 |          10 | savings      |    6540 |
+------------+-------------+--------------+---------+
10 rows in set (0.00 sec)
```

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



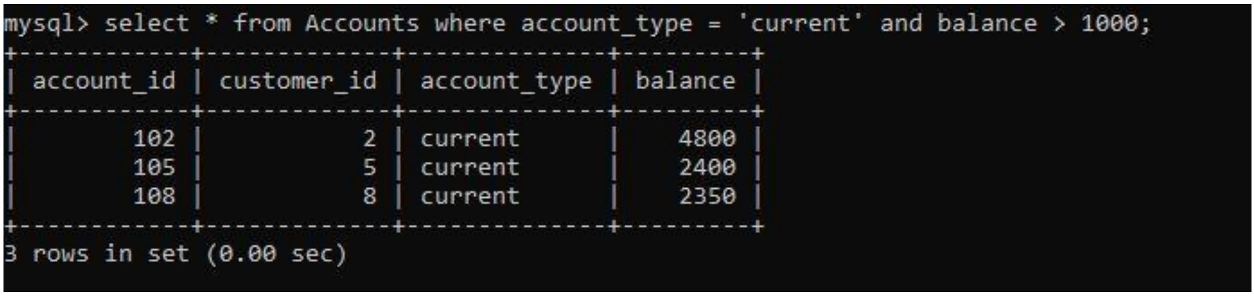
```
mysql> select * from Customers;
+-------------+------------+-------------+------------+-------------------+--------------+------------+
| customer_id | first_name | last_name   | DOB        | email             | phone_number | address    |
+-------------+------------+-------------+------------+-------------------+--------------+------------+
|           1 | Abi        | Natarajan   | 1996-08-23 | abi@gmail.com     | 9090784523   | Chennai    |
|           2 | Arya       | John        | 1997-05-28 | arya@gmail.com    | 9356785423   | Hyderabad  |
|           3 | Babu       | Palanisamy  | 1998-07-11 | babu@gmail.com    | 8976342156   | Mysore     |
|           4 | John       | Meshack     | 1997-10-26 | john@gmail.com    | 7856289531   | Kerala     |
|           5 | Kala       | Ramu        | 1998-12-08 | kala@gmail.com    | 7843217890   | Chennai    |
|           6 | Logesh     | Dhamodharan | 1994-09-14 | logesh@gmail.com  | 9956336622   | Coimbatore |
|           7 | Maya       | Tagore      | 1996-11-25 | maya@gmail.com    | 9887766448   | Kerala     |
|           8 | Nikitha    | Dhamu       | 1995-08-05 | nikitha@gmail.com | 7639835478   | Andhra     |
|           9 | Priya      | Mani        | 1998-10-27 | priya@gmail.com   | 7829541754   | Mysore     |
|          10 | Sasi       | Kumar       | 1997-08-18 | sasi@gmail.com    | 7845218765   | Trivandrum |
+-------------+------------+-------------+------------+-------------------+--------------+------------+
10 rows in set (0.00 sec)

mysql> select * from Customers where address like '%Chennai%';
+-------------+------------+-----------+------------+----------------+--------------+---------+
| customer_id | first_name | last_name | DOB        | email          | phone_number | address |
+-------------+------------+-----------+------------+----------------+--------------+---------+
|           1 | Abi        | Natarajan | 1996-08-23 | abi@gmail.com  | 9090784523   | Chennai |
|           5 | Kala       | Ramu      | 1998-12-08 | kala@gmail.com | 7843217890   | Chennai |
+-------------+------------+-----------+------------+----------------+--------------+---------+
2 rows in set (0.00 sec)
```

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



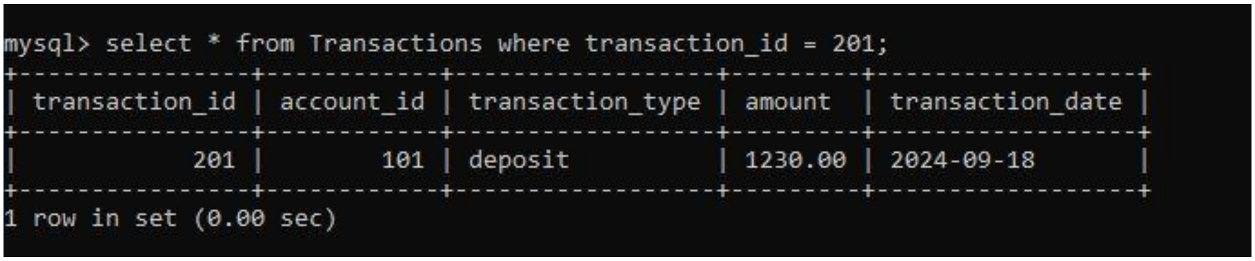
```
mysql> select balance from Accounts where account_id=105;
+---------+
| balance |
+---------+
|    2400 |
+---------+
1 row in set (0.00 sec)
```

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



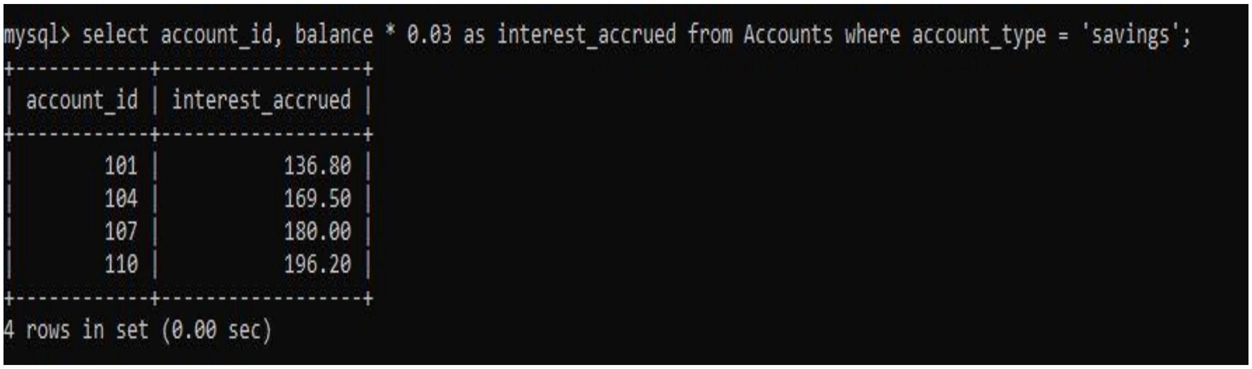
```
mysql> select * from Accounts where account_type = 'current' and balance > 1000;
+------------+-------------+--------------+---------+
| account_id | customer_id | account_type | balance |
+------------+-------------+--------------+---------+
|        102 |           2 | current      |    4800 |
|        105 |           5 | current      |    2400 |
|        108 |           8 | current      |    2350 |
+------------+-------------+--------------+---------+
3 rows in set (0.00 sec)
```

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



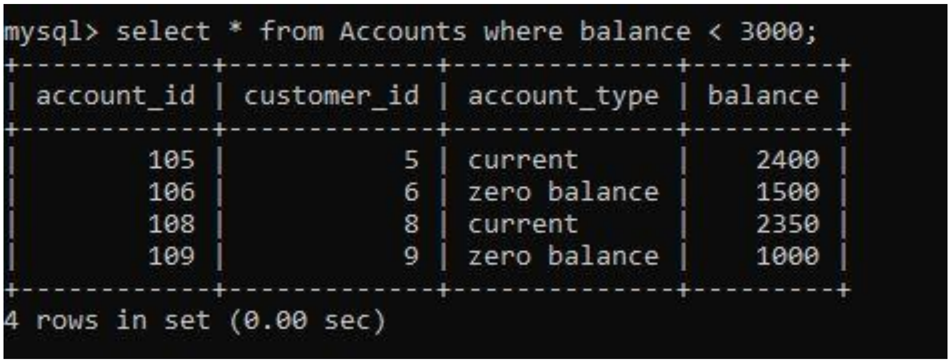
```
mysql> select * from Transactions where transaction_id = 201;
+----------------+------------+------------------+---------+------------------+
| transaction_id | account_id | transaction_type | amount  | transaction_date |
+----------------+------------+------------------+---------+------------------+
|            201 |        101 | deposit          | 1230.00 | 2024-09-18       |
+----------------+------------+------------------+---------+------------------+
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.



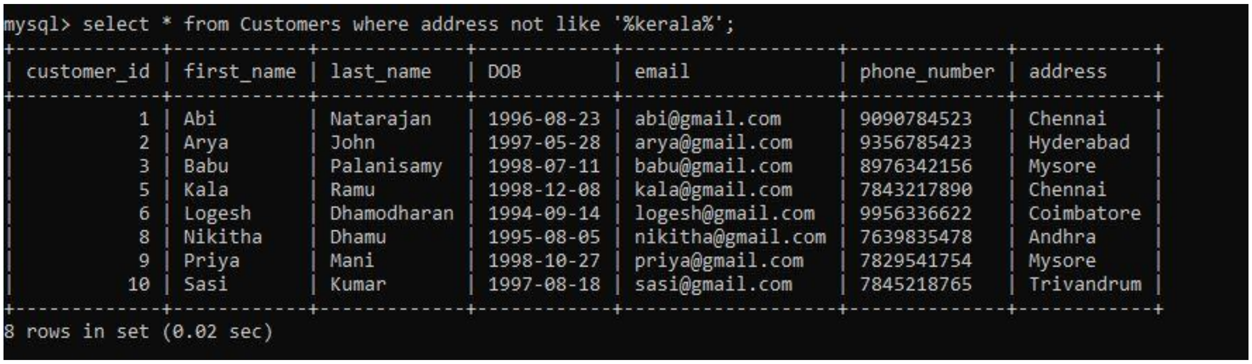
```
mysql> select account_id, balance * 0.03 as interest_accrued from Accounts where account_type = 'savings';
+------------+------------------+
| account_id | interest_accrued |
+------------+------------------+
|        101 |           136.80 |
|        104 |           169.50 |
|        107 |           180.00 |
|        110 |           196.20 |
+------------+------------------+
4 rows in set (0.00 sec)
```

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



```
mysql> select * from Accounts where balance < 3000;
+------------+-------------+--------------+---------+
| account_id | customer_id | account_type | balance |
+------------+-------------+--------------+---------+
|        105 |           5 | current      |    2400 |
|        106 |           6 | zero balance |    1500 |
|        108 |           8 | current      |    2350 |
|        109 |           9 | zero balance |    1000 |
+------------+-------------+--------------+---------+
4 rows in set (0.00 sec)
```

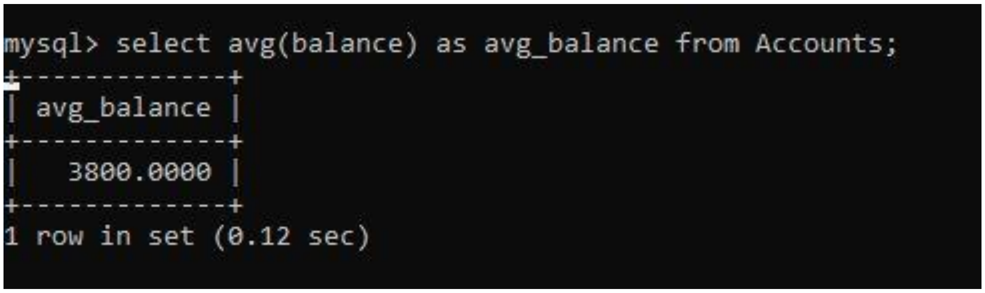
12.Write a SQL query to Find customers not living in a specific city.



```
mysql> select * from Customers where address not like '%kerala%';
+-------------+------------+-------------+------------+-------------------+--------------+------------+
| customer_id | first_name | last_name   | DOB        | email             | phone_number | address    |
+-------------+------------+-------------+------------+-------------------+--------------+------------+
|           1 | Abi        | Natarajan   | 1996-08-23 | abi@gmail.com     | 9090784523   | Chennai    |
|           2 | Arya       | John        | 1997-05-28 | arya@gmail.com    | 9356785423   | Hyderabad  |
|           3 | Babu       | Palanisamy  | 1998-07-11 | babu@gmail.com    | 8976342156   | Mysore     |
|           5 | Kala       | Ramu        | 1998-12-08 | kala@gmail.com    | 7843217890   | Chennai    |
|           6 | Logesh     | Dhamodharan | 1994-09-14 | logesh@gmail.com  | 9956336622   | Coimbatore |
|           8 | Nikitha    | Dhamu       | 1995-08-05 | nikitha@gmail.com | 7639835478   | Andhra     |
|           9 | Priya      | Mani        | 1998-10-27 | priya@gmail.com   | 7829541754   | Mysore     |
|          10 | Sasi       | Kumar       | 1997-08-18 | sasi@gmail.com    | 7845218765   | Trivandrum |
+-------------+------------+-------------+------------+-------------------+--------------+------------+
8 rows in set (0.02 sec)
```

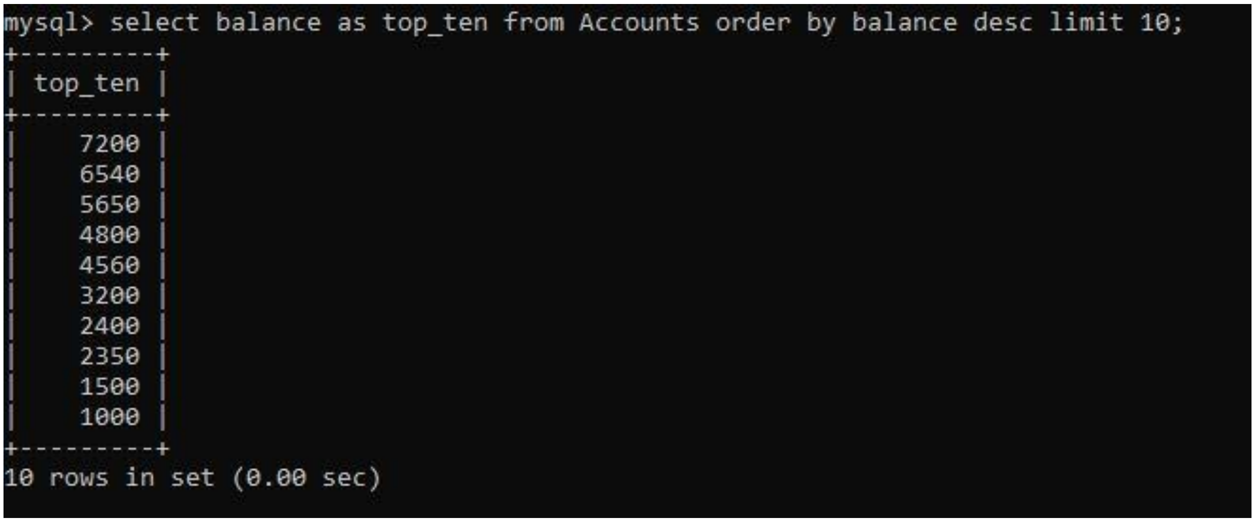
Tasks 3: Aggregate functions, Having, Order By, GroupBy and Joins:

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



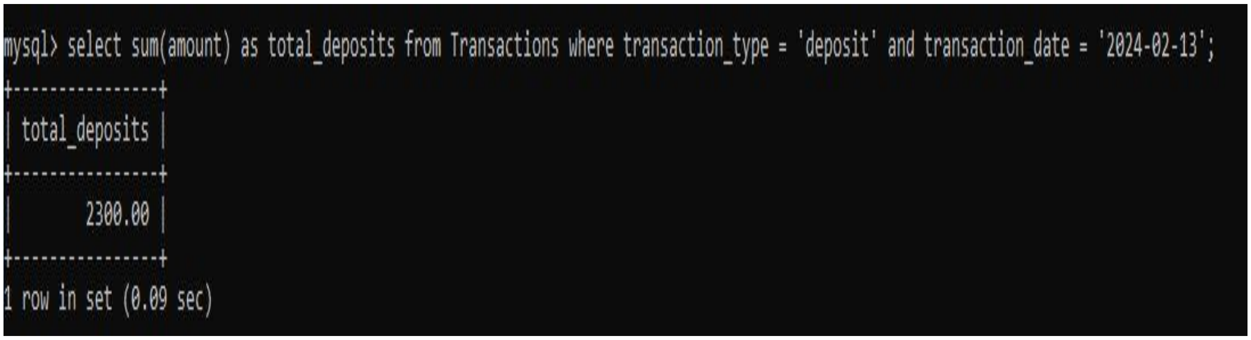
```
mysql> select avg(balance) as avg_balance from Accounts;
+-------------+
| avg_balance |
+-------------+
|   3800.0000 |
+-------------+
1 row in set (0.12 sec)
```

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



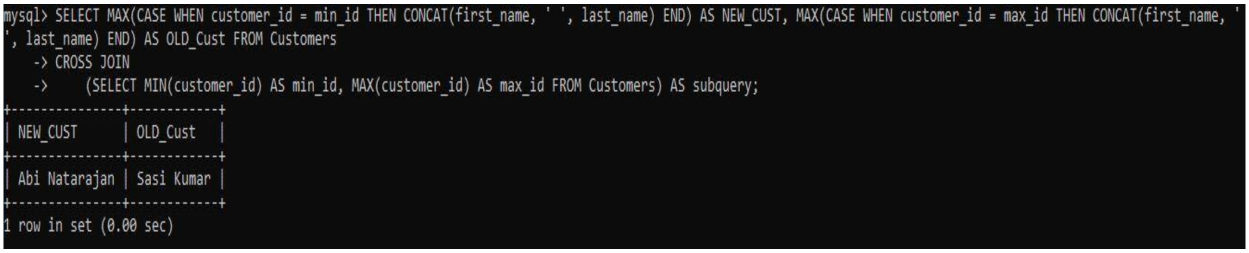
```
mysql> select balance as top_ten from Accounts order by balance desc limit 10;
+---------+
| top_ten |
+---------+
|    7200 |
|    6540 |
|    5650 |
|    4800 |
|    4560 |
|    3200 |
|    2400 |
|    2350 |
|    1500 |
|    1000 |
+---------+
10 rows in set (0.00 sec)
```

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



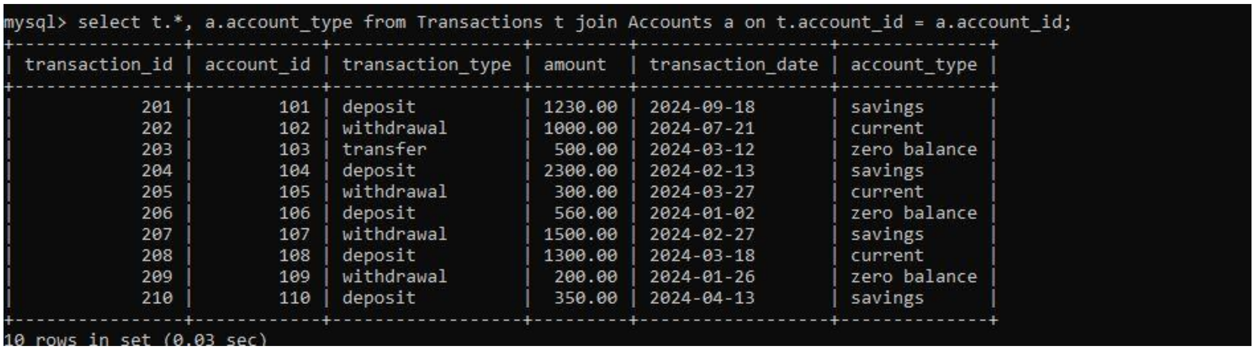
```
mysql> select sum(amount) as total_deposits from Transactions where transaction_type = 'deposit' and transaction_date = '2024-02-13';
+----------------+
| total_deposits |
+----------------+
|        2300.00 |
+----------------+
1 row in set (0.09 sec)
```

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



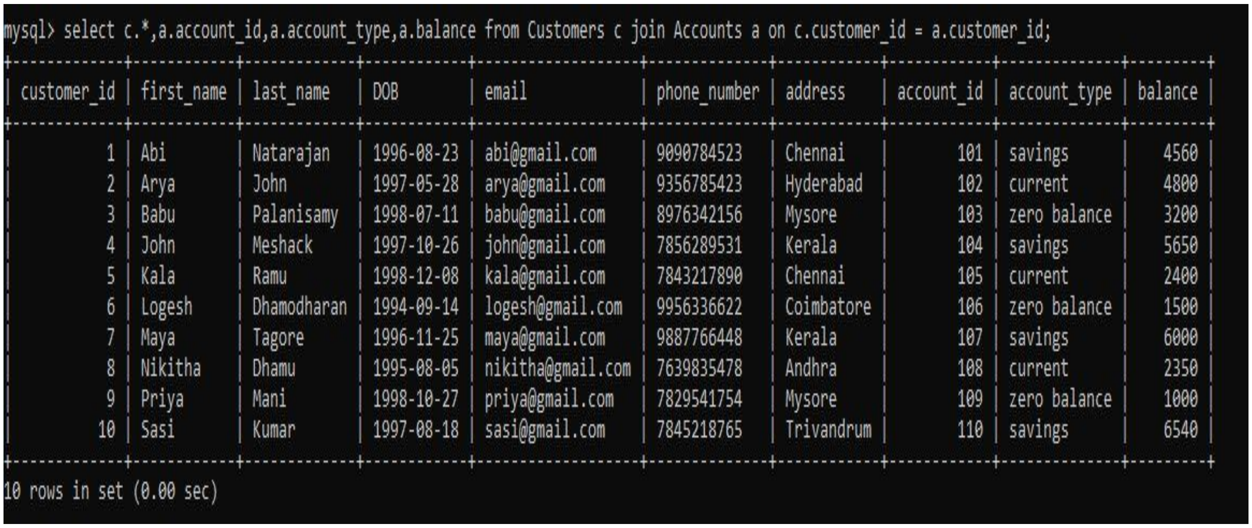
```
mysql> SELECT MAX(CASE WHEN customer_id = min_id THEN CONCAT(first_name, ' ', last_name) END) AS NEW_CUST, MAX(CASE WHEN customer_id = max_id THEN CONCAT(first_name, ' ', last_name) END) AS OLD_Cust FROM Customers
    -> CROSS JOIN
    ->     (SELECT MIN(customer_id) AS min_id, MAX(customer_id) AS max_id FROM Customers) AS subquery;
+---------------+------------+
| NEW_CUST      | OLD_Cust   |
+---------------+------------+
| Abi Natarajan | Sasi Kumar |
+---------------+------------+
1 row in set (0.00 sec)
```

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



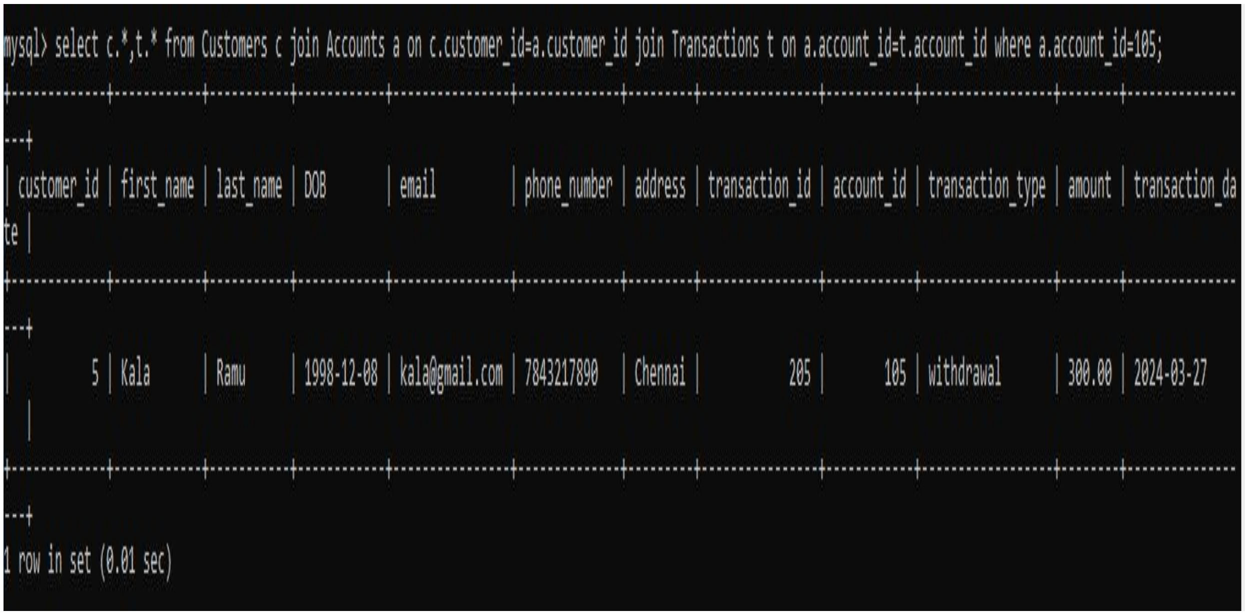
```
mysql> select t.*, a.account_type from Transactions t join Accounts a on t.account_id = a.account_id;
+----------------+------------+------------------+---------+------------------+--------------+
| transaction_id | account_id | transaction_type | amount  | transaction_date | account_type |
+----------------+------------+------------------+---------+------------------+--------------+
|            201 |        101 | deposit          | 1230.00 | 2024-09-18       | savings      |
|            202 |        102 | withdrawal       | 1000.00 | 2024-07-21       | current      |
|            203 |        103 | transfer         |  500.00 | 2024-03-12       | zero balance |
|            204 |        104 | deposit          | 2300.00 | 2024-02-13       | savings      |
|            205 |        105 | withdrawal       |  300.00 | 2024-03-27       | current      |
|            206 |        106 | deposit          |  560.00 | 2024-01-02       | zero balance |
|            207 |        107 | withdrawal       | 1500.00 | 2024-02-27       | savings      |
|            208 |        108 | deposit          | 1300.00 | 2024-03-18       | current      |
|            209 |        109 | withdrawal       |  200.00 | 2024-01-26       | zero balance |
|            210 |        110 | deposit          |  350.00 | 2024-04-13       | savings      |
+----------------+------------+------------------+---------+------------------+--------------+
10 rows in set (0.03 sec)
```

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



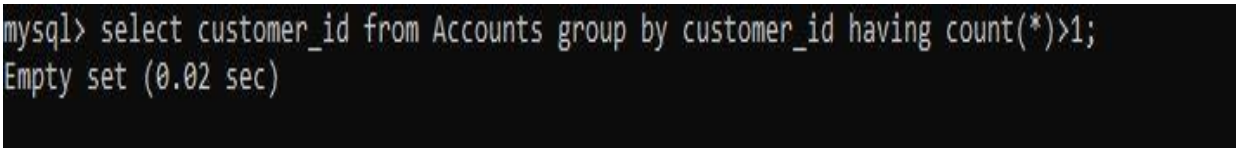
```
mysql> select c.*,a.account_id,a.account_type,a.balance from Customers c join Accounts a on c.customer_id = a.customer_id;
+-------------+------------+-------------+------------+-------------------+--------------+------------+------------+--------------+---------+
| customer_id | first_name | last_name   | DOB        | email             | phone_number | address    | account_id | account_type | balance |
+-------------+------------+-------------+------------+-------------------+--------------+------------+------------+--------------+---------+
|           1 | Abi        | Natarajan   | 1996-08-23 | abi@gmail.com     | 9090784523   | Chennai    |        101 | savings      |    4560 |
|           2 | Arya       | John        | 1997-05-28 | arya@gmail.com    | 9356785423   | Hyderabad  |        102 | current      |    4800 |
|           3 | Babu       | Palanisamy  | 1998-07-11 | babu@gmail.com    | 8976342156   | Mysore     |        103 | zero balance |    3200 |
|           4 | John       | Meshack     | 1997-10-26 | john@gmail.com    | 7856289531   | Kerala     |        104 | savings      |    5650 |
|           5 | Kala       | Ramu        | 1998-12-08 | kala@gmail.com    | 7843217890   | Chennai    |        105 | current      |    2400 |
|           6 | Logesh     | Dhamodharan | 1994-09-14 | logesh@gmail.com  | 9956336622   | Coimbatore |        106 | zero balance |    1500 |
|           7 | Maya       | Tagore      | 1996-11-25 | maya@gmail.com    | 9887766448   | Kerala     |        107 | savings      |    6000 |
|           8 | Nikitha    | Dhamu       | 1995-08-05 | nikitha@gmail.com | 7639835478   | Andhra     |        108 | current      |    2350 |
|           9 | Priya      | Mani        | 1998-10-27 | priya@gmail.com   | 7829541754   | Mysore     |        109 | zero balance |    1000 |
|          10 | Sasi       | Kumar       | 1997-08-18 | sasi@gmail.com    | 7845218765   | Trivandrum |        110 | savings      |    6540 |
+-------------+------------+-------------+------------+-------------------+--------------+------------+------------+--------------+---------+
10 rows in set (0.00 sec)
```

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



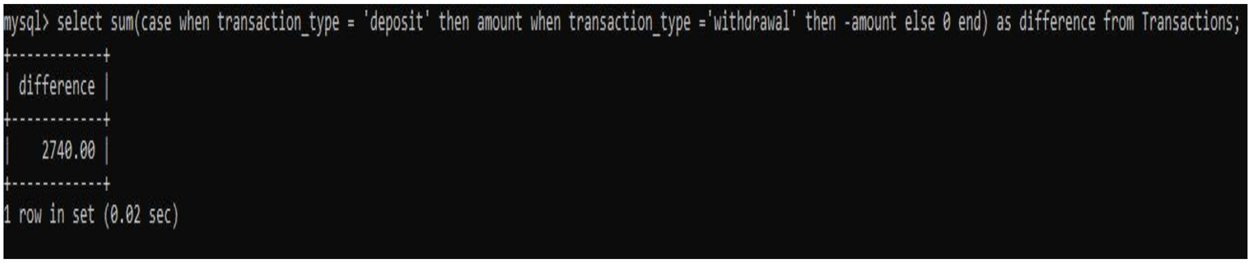
```
mysql> select c.*,t.* from Customers c join Accounts a on c.customer_id=a.customer_id join Transactions t on a.account_id=t.account_id where a.account_id=105;
+-------------+------------+-----------+------------+----------------+--------------+---------+----------------+------------+------------------+--------+---------------
---+
| customer_id | first_name | last_name | DOB        | email          | phone_number | address | transaction_id | account_id | transaction_type | amount | transaction_da
te |
+-------------+------------+-----------+------------+----------------+--------------+---------+----------------+------------+------------------+--------+---------------
---+
|           5 | Kala       | Ramu      | 1998-12-08 | kala@gmail.com | 7843217890   | Chennai |            205 |        105 | withdrawal       | 300.00 | 2024-03-27
   |
+-------------+------------+-----------+------------+----------------+--------------+---------+----------------+------------+------------------+--------+---------------
---+
1 row in set (0.01 sec)
```

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



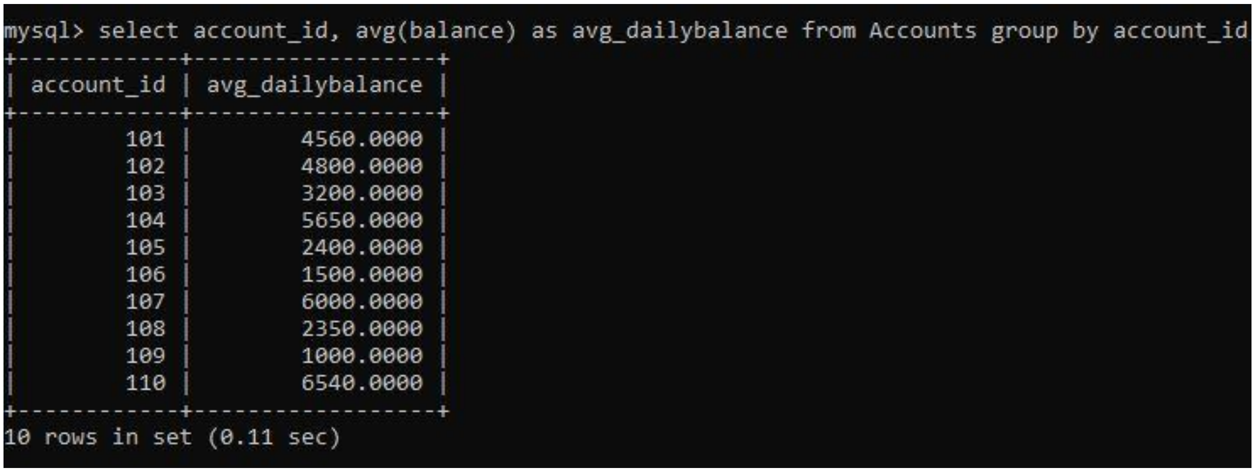
```
mysql> select customer_id from Accounts group by customer_id having count(*)>1;
Empty set (0.02 sec)
```

9.Write a SQL query to Calculate the difference in transaction amounts between deposits andwithdrawals.



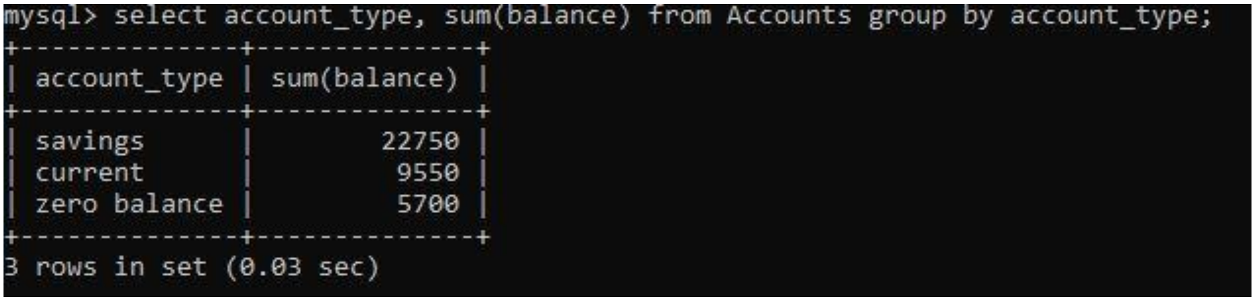
```
mysql> select sum(case when transaction_type = 'deposit' then amount when transaction_type ='withdrawal' then -amount else 0 end) as difference from Transactions;
+------------+
| difference |
+------------+
|    2740.00 |
+------------+
1 row in set (0.02 sec)
```

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



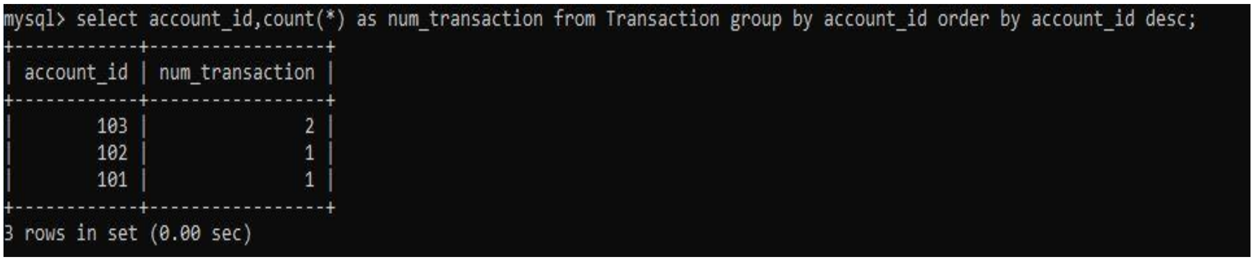
```
mysql> select account_id, avg(balance) as avg_dailybalance from Accounts group by account_id
+------------+------------------+
| account_id | avg_dailybalance |
+------------+------------------+
|        101 |        4560.0000 |
|        102 |        4800.0000 |
|        103 |        3200.0000 |
|        104 |        5650.0000 |
|        105 |        2400.0000 |
|        106 |        1500.0000 |
|        107 |        6000.0000 |
|        108 |        2350.0000 |
|        109 |        1000.0000 |
|        110 |        6540.0000 |
+------------+------------------+
10 rows in set (0.11 sec)
```

11. Calculate the total balance for each account type.



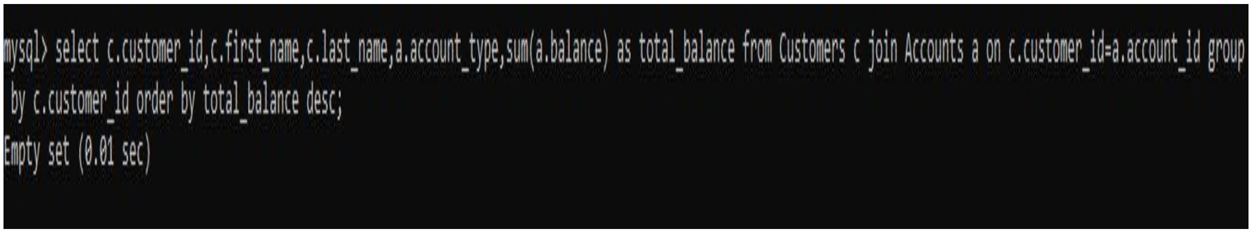
```
mysql> select account_type, sum(balance) from Accounts group by account_type;
+--------------+--------------+
| account_type | sum(balance) |
+--------------+--------------+
| savings      |        22750 |
| current      |         9550 |
| zero balance |         5700 |
+--------------+--------------+
3 rows in set (0.03 sec)
```

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



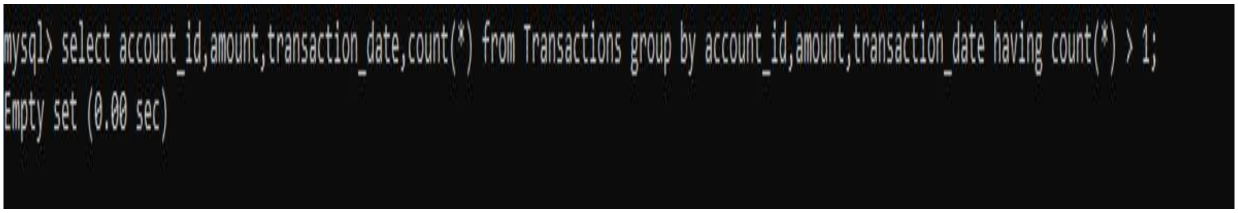
```
mysql> select account_id,count(*) as num_transaction from Transaction group by account_id order by account_id desc;
+------------+-----------------+
| account_id | num_transaction |
+------------+-----------------+
|        103 |               2 |
|        102 |               1 |
|        101 |               1 |
+------------+-----------------+
3 rows in set (0.00 sec)
```

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



```
mysql> select c.customer_id,c.first_name,c.last_name,a.account_type,sum(a.balance) as total_balance from Customers c join Accounts a on c.customer_id=a.account_id group
 by c.customer_id order by total_balance desc;
Empty set (0.01 sec)
```

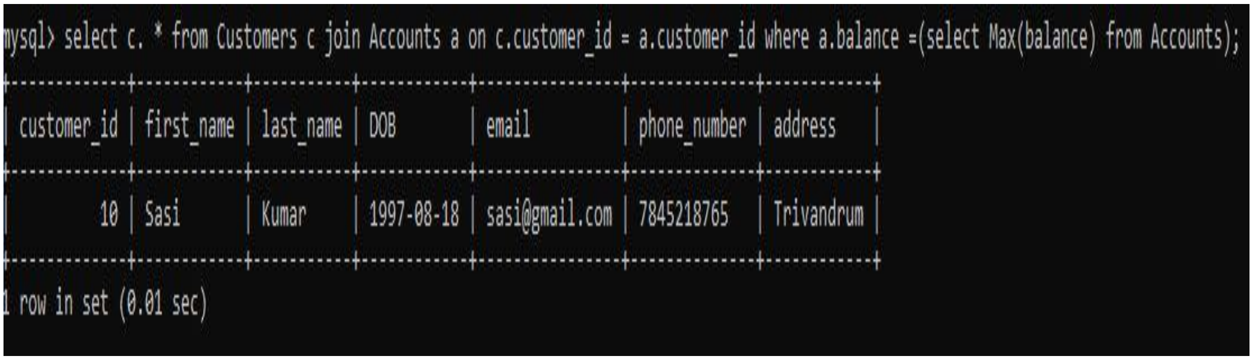
14.Identify and list duplicate transactions based on transaction amount, date, and account.



```
mysql> select account_id,amount,transaction_date,count(*) from Transactions group by account_id,amount,transaction_date having count(*) > 1;
Empty set (0.00 sec)
```

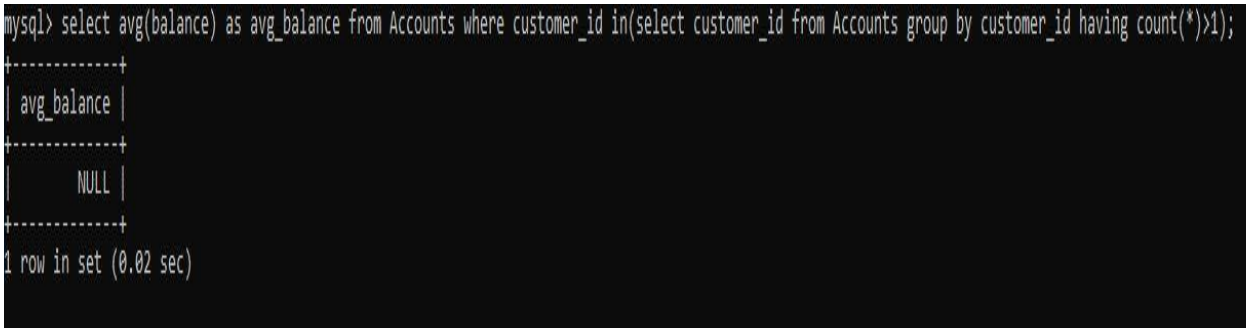
Tasks 4: Subquery and its type:

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



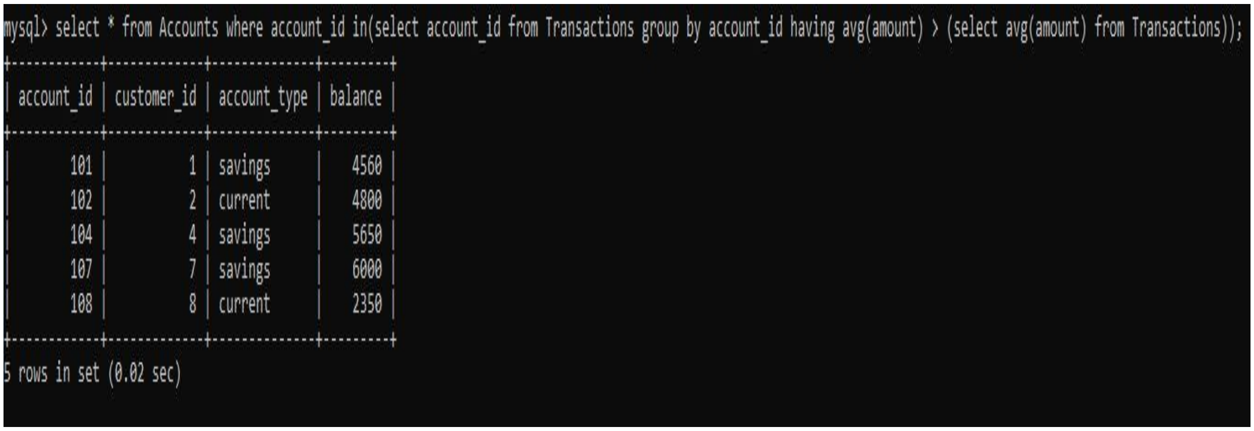
```
mysql> select c. * from Customers c join Accounts a on c.customer_id = a.customer_id where a.balance =(select Max(balance) from Accounts);
+-------------+------------+-----------+------------+----------------+--------------+------------+
| customer_id | first_name | last_name | DOB        | email          | phone_number | address    |
+-------------+------------+-----------+------------+----------------+--------------+------------+
|          10 | Sasi       | Kumar     | 1997-08-18 | sasi@gmail.com | 7845218765   | Trivandrum |
+-------------+------------+-----------+------------+----------------+--------------+------------+
1 row in set (0.01 sec)
```

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



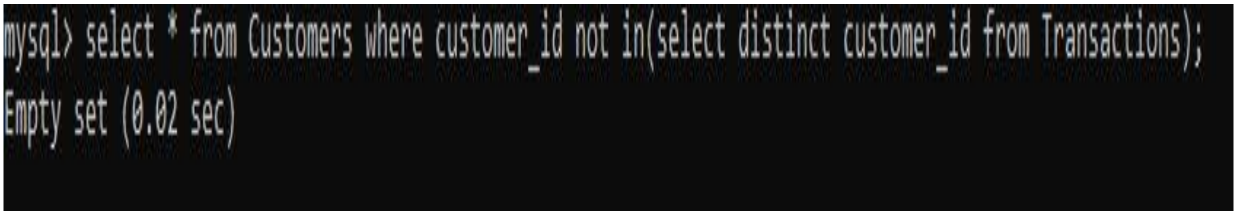
```
mysql> select avg(balance) as avg_balance from Accounts where customer_id in(select customer_id from Accounts group by customer_id having count(*)>1);
+-------------+
| avg_balance |
+-------------+
|        NULL |
+-------------+
1 row in set (0.02 sec)
```

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



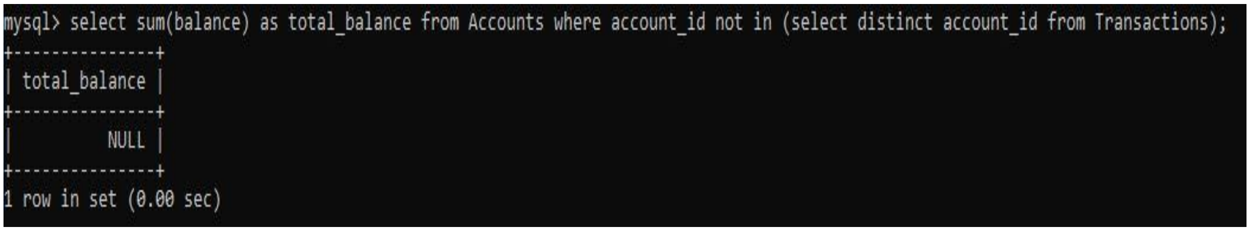
```
mysql> select * from Accounts where account_id in(select account_id from Transactions group by account_id having avg(amount) > (select avg(amount) from Transactions));
+------------+-------------+--------------+---------+
| account_id | customer_id | account_type | balance |
+------------+-------------+--------------+---------+
|        101 |           1 | savings      |    4560 |
|        102 |           2 | current      |    4800 |
|        104 |           4 | savings      |    5650 |
|        107 |           7 | savings      |    6000 |
|        108 |           8 | current      |    2350 |
+------------+-------------+--------------+---------+
5 rows in set (0.02 sec)
```

4.Identify customers who have no recorded transactions.



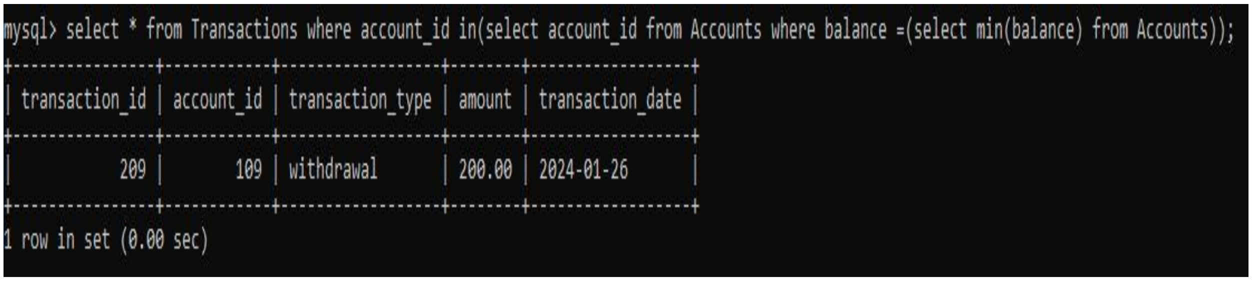
```
mysql> select * from Customers where customer_id not in(select distinct customer_id from Transactions);
Empty set (0.02 sec)
```

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



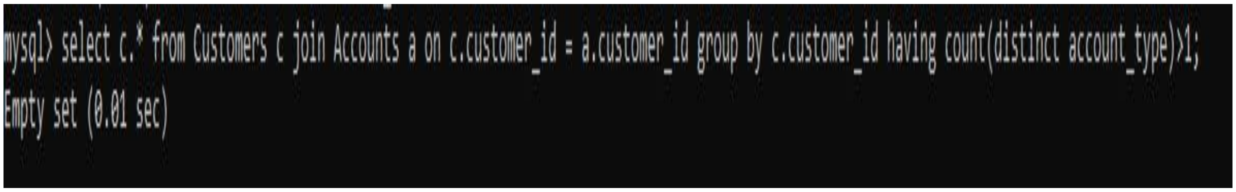
```
mysql> select sum(balance) as total_balance from Accounts where account_id not in (select distinct account_id from Transactions);
+---------------+
| total_balance |
+---------------+
|          NULL |
+---------------+
1 row in set (0.00 sec)
```

6.Retrieve transactions for accounts with the lowest balance.



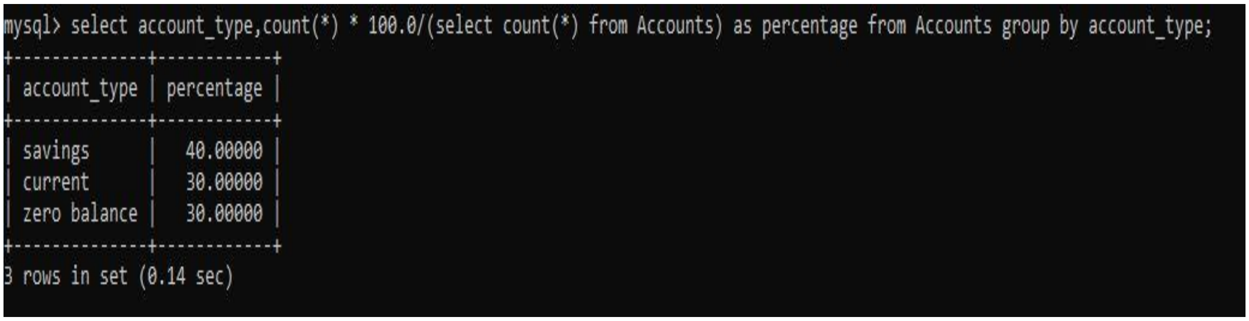
```
mysql> select * from Transactions where account_id in(select account_id from Accounts where balance =(select min(balance) from Accounts));
+----------------+------------+------------------+--------+------------------+
| transaction_id | account_id | transaction_type | amount | transaction_date |
+----------------+------------+------------------+--------+------------------+
|            209 |        109 | withdrawal       | 200.00 | 2024-01-26       |
+----------------+------------+------------------+--------+------------------+
1 row in set (0.00 sec)
```

7.Identify customers who have accounts of multiple types.



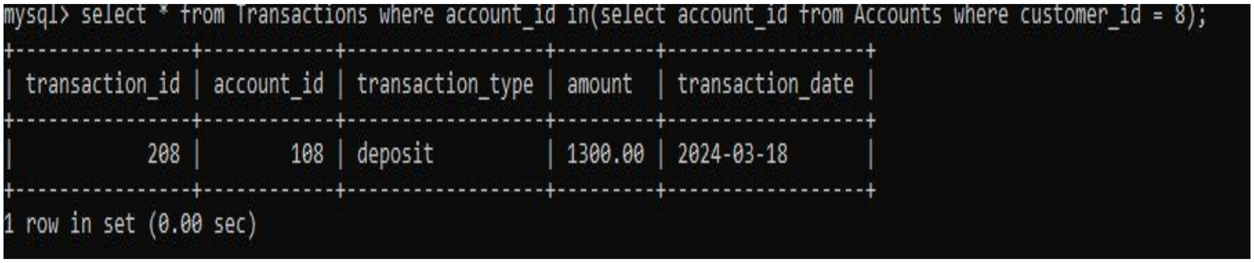
```
mysql> select c.* from Customers c join Accounts a on c.customer_id = a.customer_id group by c.customer_id having count(distinct account_type)>1;
Empty set (0.01 sec)
```

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



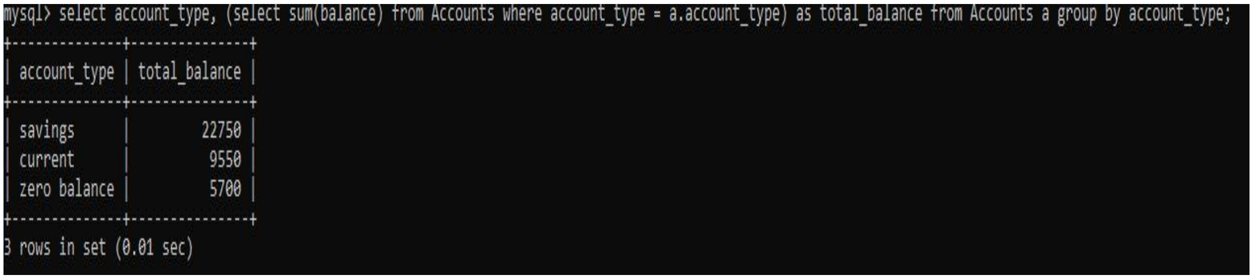
```
mysql> select account_type,count(*) * 100.0/(select count(*) from Accounts) as percentage from Accounts group by account_type;
+--------------+------------+
| account_type | percentage |
+--------------+------------+
| savings      |   40.00000 |
| current      |   30.00000 |
| zero balance |   30.00000 |
+--------------+------------+
3 rows in set (0.14 sec)
```

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



```
mysql> select * from Transactions where account_id in(select account_id from Accounts where customer_id = 8);
+----------------+------------+------------------+---------+------------------+
| transaction_id | account_id | transaction_type | amount  | transaction_date |
+----------------+------------+------------------+---------+------------------+
|            208 |        108 | deposit          | 1300.00 | 2024-03-18       |
+----------------+------------+------------------+---------+------------------+
1 row in set (0.00 sec)
```

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



```
mysql> select account_type, (select sum(balance) from Accounts where account_type = a.account_type) as total_balance from Accounts a group by account_type;
+--------------+---------------+
| account_type | total_balance |
+--------------+---------------+
| savings      |         22750 |
| current      |          9550 |
| zero balance |          5700 |
+--------------+---------------+
3 rows in set (0.01 sec)
```