

Query OK, 3 rows affected (0.04 sec)

mysql> /* ASSIGNMENT-3

/*> TASK -1 :DATABASE DESIGN

/*> 1. Create the database named "HMBank" */

mysql> CREATE DATABASE if not exists HMBank;

Query OK, 1 row affected (0.00 sec)

mysql> use HMBank;

Database changed

mysql> /* 2.define the schema for the customers,accounts and transaction tables based on the provided schema

/*> 5.Create Appropriate Primary Key and Foreign Key for referential integrity

/*> 6.write sql scripts to create the mentioned tables with appropriate data types constraints and relationships customers accounts transactions */

mysql> CREATE TABLE Customers (customer_id INT,first_name text,last_name text,DOB DATE,email text,phone_number text,address Text,PRIMARY KEY(customer_id));

Query OK, 0 rows affected (0.02 sec)

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	text	YES		NULL	
address	text	YES		NULL	

7 rows in set (0.01 sec)

mysql> CREATE TABLE Accounts (account_id INT PRIMARY KEY,customer_id INT,account_type text,balance decimal(10,2),FOREIGN KEY(customer_id) REFERENCES Customers(customer_id));

Query OK, 0 rows affected (0.02 sec)

mysql> desc Accounts;

Field	Type	Null	Key	Default	Extra
account_id	int	NO	PRI	NULL	
customer_id	int	YES	MUL	NULL	
account_type	text	YES		NULL	
balance	decimal(10,2)	YES		NULL	

4 rows in set (0.00 sec)

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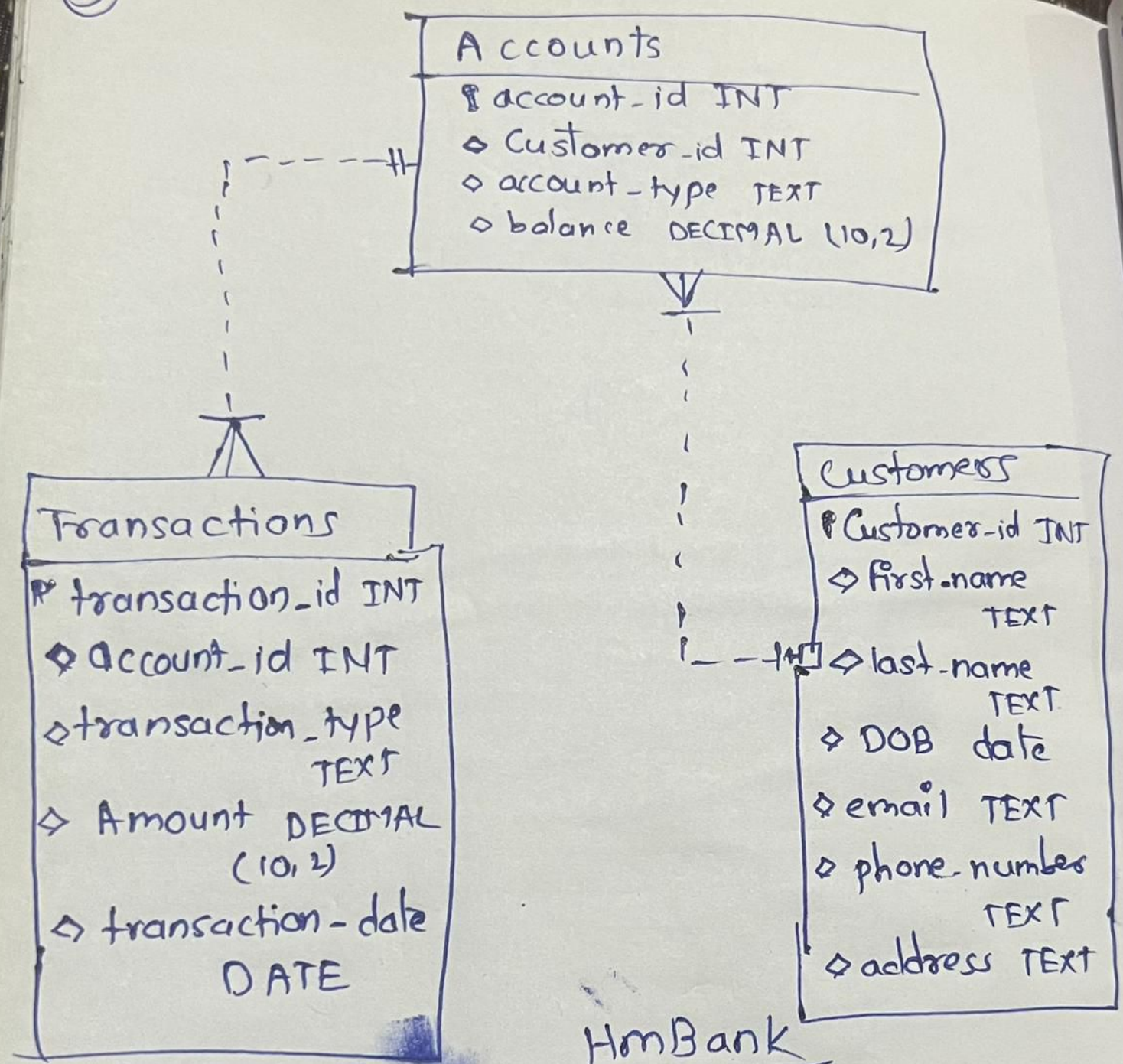


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4) Create an ER diagram


```
mysql> CREATE TABLE Transactions (transaction_id INT PRIMARY KEY,account_id INT,transaction_type text,amount decimal(10,2),transaction_date DATE,FOREIGN KEY(account_id)
REFERENCES Accounts(account_id));
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> desc Transactions;
```

Field	Type	Null	Key	Default	Extra
transaction_id	int	NO	PRI	NULL	
account_id	int	YES	MUL	NULL	
transaction_type	text	YES		NULL	
amount	decimal(10,2)	YES		NULL	
transaction_date	date	YES		NULL	

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

```
mysql> /* Task 2:Select,where,Between,And ,Like*/
```

```
mysql> /* 1.INSERT AT LEAST 10 SAMPLE RECORDS INTO EACH OF THE FOLLOWING TABLES: -
```

```
/*> CUSTOMERS */
```

```
mysql> INSERT INTO Customers (customer_id, first_name, last_name, DOB, email, phone_number, address)
```

```
-> VALUES(1,'Amit','Kumar', '1990-05-15', 'amit.kumar@gmail.com','9876543210', '123 ABC Street, City'),(2, 'Priya', 'Sharma', '1985-08-22', 'priya.sharma@gmail.com'
,'8765432109', '456 XYZ Road, Town'),(3, 'Rajesh', 'Patil', '1992-03-10', 'rajesh.patil@gmail.com', '7654321098', '789 PQR Avenue, Village'),(4, 'Sneha', 'Singh', '1988-11-
05', 'sneha.singh@gmail.com', '6543210987', '101 LMN Lane, District'),(5, 'Vikram', 'Verma', '1995-02-18', 'vikram.verma@gmail.com', '5432109876', '202 EFG Street, City')
,(6, 'Anita', 'Rao', '1983-07-30', 'anita.rao@gmail.com', '4321098765', '303 HIJ Road, Town'),(7, 'Rahul', 'Mishra', '1991-09-12', 'rahul.mishra@gmail.com', '3210987654
', '404 KLM Avenue, Village'),(8, 'Pooja', 'Gupta', '1986-04-25', 'pooja.gupta@gmail.com', '2109876543', '505 NOP Lane, District'),(9, 'Arjun', 'Malik', '1993-12-08', '
arjun.malik@gmail.com', '1098765432', '606 QRS Road, City'),(10, 'Neha', 'Chopra', '1989-06-20', 'neha.chopra@gmail.com', '9876543210', '707 TUV Avenue, Town');
```

```
Query OK, 10 rows affected (0.01 sec)
```

```
Records: 10 Duplicates: 0 Warnings: 0
```

```
mysql> SELECT * FROM customers;
```

customer_id	first_name	last_name	DOB	email	phone_number	address
1	Amit	Kumar	1990-05-15	amit.kumar@gmail.com	9876543210	123 ABC Street, City
2	Priya	Sharma	1985-08-22	priya.sharma@gmail.com	8765432109	456 XYZ Road, Town
3	Rajesh	Patil	1992-03-10	rajesh.patil@gmail.com	7654321098	789 PQR Avenue, Village
4	Sneha	Singh	1988-11-05	sneha.singh@gmail.com	6543210987	101 LMN Lane, District
5	Vikram	Verma	1995-02-18	vikram.verma@gmail.com	5432109876	202 EFG Street, City
6	Anita	Rao	1983-07-30	anita.rao@gmail.com	4321098765	303 HIJ Road, Town
7	Rahul	Mishra	1991-09-12	rahul.mishra@gmail.com	3210987654	404 KLM Avenue, Village
8	Pooja	Gupta	1986-04-25	pooja.gupta@gmail.com	2109876543	505 NOP Lane, District
9	Arjun	Malik	1993-12-08	arjun.malik@gmail.com	1098765432	606 QRS Road, City
10	Neha	Chopra	1989-06-20	neha.chopra@gmail.com	9876543210	707 TUV Avenue, Town

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```
mysql> INSERT INTO Transactions(transaction_id,account_id,transaction_type,amount,transaction_date)VALUES(201, 101, 'Deposit',5000.00,'2023-01-01'),(202,102, 'Withdrawal', 2000.00,'2023-01-02'),(203,103, 'Deposit', 7000.00,'2023-01-03'),(204,104, 'Withdrawal', 3000.00,'2023-01-04'),(205,105, 'Deposit', 4000.00,'2023-01-05'), (206,106, 'Withdrawal',1500.00,'2023-01-06'),(207,107, 'Deposit',6000.00,'2023-01-07'),(208, 108, 'Withdrawal',2500.00,'2023-01-08'),(209,109, 'Deposit', 3500.00 ,'2023-01-09'),(210, 110, 'Withdrawal', 1800.00,'2023-01-10');\nQuery OK, 10 rows affected (0.00 sec)\nRecords: 10  Duplicates: 0  Warnings: 0
```

```
mysql> Select * from Transactions;
```

transaction_id	account_id	transaction_type	amount	transaction_date
201	101	Deposit	5000.00	2023-01-01
202	102	Withdrawal	2000.00	2023-01-02
203	103	Deposit	7000.00	2023-01-03
204	104	Withdrawal	3000.00	2023-01-04
205	105	Deposit	4000.00	2023-01-05
206	106	Withdrawal	1500.00	2023-01-06
207	107	Deposit	6000.00	2023-01-07
208	108	Withdrawal	2500.00	2023-01-08
209	109	Deposit	3500.00	2023-01-09
210	110	Withdrawal	1800.00	2023-01-10

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

```
mysql> /* 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 C.first_name,C.last_name,A.account_type,C.email FROM Customers C JOIN Accounts A ON C.customer_id = A.customer_id;
```

first_name	last_name	account_type	email
Amit	Kumar	Savings	amit.kumar@gmail.com
Priya	Sharma	Current	priya.sharma@gmail.com
Rajesh	Patil	Savings	rajesh.patil@gmail.com
Sneha	Singh	Current	sneha.singh@gmail.com
Vikram	Verma	Savings	vikram.verma@gmail.com
Anita	Rao	Current	anita.rao@gmail.com
Rahul	Mishra	Savings	rahul.mishra@gmail.com
Pooja	Gupta	Current	pooja.gupta@gmail.com
Arjun	Malik	Savings	arjun.malik@gmail.com
Neha	Chopra	Current	neha.chopra@gmail.com

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

```
mysql>
```

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```
mysql> /*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.transaction_date, T.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	last_name	transaction_id	transaction_type	transaction_date	amount
Amit	Kumar	201	Deposit	2023-01-01	5000.00
Priya	Sharma	202	Withdrawal	2023-01-02	2000.00
Rajesh	Patil	203	Deposit	2023-01-03	7000.00
Sneha	Singh	204	Withdrawal	2023-01-04	3000.00
Vikram	Verma	205	Deposit	2023-01-05	4000.00
Anita	Rao	206	Withdrawal	2023-01-06	1500.00
Rahul	Mishra	207	Deposit	2023-01-07	6000.00
Pooja	Gupta	208	Withdrawal	2023-01-08	2500.00
Arjun	Malik	209	Deposit	2023-01-09	3500.00
Neha	Chopra	210	Withdrawal	2023-01-10	1800.00

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

```
mysql> /* Write a SQL query to increase the balance of a specific account by a certain amount.*/
```

```
mysql> UPDATE Accounts SET balance=balance+10000;
```

```
Query OK, 10 rows affected (0.00 sec)
```

```
Rows matched: 10  Changed: 10  Warnings: 0
```

```
mysql> /*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;
```

```
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 'Customers' at line 1
```

```
mysql> SELECT CONCAT(first_name, ' ', last_name) AS full_name FROM Customers;
```

full_name
Amit Kumar
Priya Sharma
Rajesh Patil
Sneha Singh
Vikram Verma
Anita Rao
Rahul Mishra
Pooja Gupta
Arjun Malik
Neha Chopra

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```
mysql> SELECT *FROM Customers WHERE address LIKE '606 QRS Road, City';
```

customer_id	first_name	last_name	DOB	email	phone_number	address
9	Arjun	Malik	1993-12-08	arjun.malik@gmail.com	1098765432	606 QRS Road, City

1 row in set (0.00 sec)

```
mysql> /* 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, 0 rows affected (0.00 sec)
```

```
mysql> /* 6. Write a SQL query to Find customers living in a specific city.*/
```

```
mysql> SELECT *FROM Customers WHERE address LIKE '606 QRS Road, City';
```

customer_id	first_name	last_name	DOB	email	phone_number	address
9	Arjun	Malik	1993-12-08	arjun.malik@gmail.com	1098765432	606 QRS Road, City

1 row in set (0.00 sec)

```
mysql> /* 7. Write a SQL query to Get the account balance for a specific account.*/
```

```
mysql> SELECT balance FROM accounts WHERE account_id = 101;
```

balance
60000.00

1 row in set (0.00 sec)

```
mysql> /* 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	110000.00
104	4	Current	130000.00
106	6	Current	100000.00
108	8	Current	120000.00
110	10	Current	105000.00

5 rows in set (0.00 sec)

```
mysql> /*Write a SQL query to Retrieve all transactions for a specific account.*/
```

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10-12-2023

MySQL 8.0 Command Line Client

SQL query to Retrieve all transactions for a specific account.*/

/9' at line 1

mysql> /* Write a SQL query to Retrieve all transactions for a specific account.*/

mysql> SELECT T.transaction_id,T.transaction_type,T.transaction_date,T.amount FROM Transactions T
-> JOIN Accounts A ON T.account_id = A.account_id WHERE A.account_id = 101;

transaction_id	transaction_type	transaction_date	amount
201	Deposit	2023-01-01	5000.00

1 row in set (0.00 sec)

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

mysql> SELECT account_id, balance * 0.05 AS interest_accrued FROM Accounts WHERE account_type = 'savings';

account_id	interest_accrued
101	3000.0000
103	4250.0000
105	3500.0000
107	4500.0000
109	4000.0000

5 rows in set (0.00 sec)

ERROR 1054 (42S22): Unknown column 'customers.customer_id' in 'on clause'

mysql> /*11. Write a SQL query to Identify accounts where the balance is less than a specified overdraft limit Assuming overdraft limit is -5000.00*/

mysql> SELECT * FROM Accounts WHERE balance < -5000.00;

Empty set (0.00 sec)

mysql> /* 12. Write a SQL query to Find customers not living in a specific city.*/

mysql> SELECT * FROM Customers WHERE address NOT LIKE '123 ABC Street, City';

customer_id	first_name	last_name	DOB	email	phone_number	address
2	Priya	Sharma	1985-08-22	priya.sharma@gmail.com	8765432109	456 XYZ Road, Town
3	Rajesh	Patil	1992-03-10	rajesh.patil@gmail.com	7654321098	789 PQR Avenue, Village
4	Sneha	Singh	1988-11-05	sneha.singh@gmail.com	6543210987	101 LMN Lane, District
5	Vikram	Verma	1995-02-18	vikram.verma@gmail.com	5432109876	202 EFG Street, City
6	Anita	Rao	1983-07-30	anita.rao@gmail.com	4321098765	303 HIJ Road, Town
7	Rahul	Mishra	1991-09-12	rahul.mishra@gmail.com	3210987654	404 KLM Avenue, Village
8	Pooja	Gupta	1986-04-25	pooja.gupta@gmail.com	2109876543	505 NOP Lane, District
9	Arjun	Malik	1993-12-08	arjun.malik@gmail.com	1098765432	606 QRS Road, City
10	Neha	Chopra	1989-06-20	neha.chopra@gmail.com	9876543210	707 TUV Avenue, Town

9 rows in set (0.00 sec)

mysql> /*Write a SQL query to Find the average account balance for all customers. */

mysql> SELECT
-> AVG(A.balance) AS average_balance
-> FROM
-> Accounts A;

average_balance
95000.000000

1 row in set (0.00 sec)

mysql> /* 2. Write a SQL query to Retrieve the top 10 highest account balances.*/

mysql> SELECT customer_id, account_id, balance FROM Accounts ORDER BY balance DESC LIMIT 10;

customer_id	account_id	balance
4	104	130000.00
8	108	120000.00
2	102	110000.00
10	110	105000.00
6	106	100000.00

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customer_id	account_id	balance
4	104	130000.00
8	108	120000.00
2	102	110000.00
10	110	105000.00
6	106	100000.00
7	107	90000.00
3	103	85000.00
9	109	80000.00
5	105	70000.00
1	101	60000.00

10 rows in set (0.00 sec)

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

mysql> -- Assuming the specific date is '2023-01-01'

mysql> SELECT

```
-> C.customer_id,
-> C.first_name,
-> C.last_name,
-> SUM(T.amount) AS total_deposits
-> FROM
-> Customers C
-> JOIN
-> Accounts A ON C.customer_id = A.customer_id
-> JOIN
-> Transactions T ON A.account_id = T.account_id
-> WHERE
-> T.transaction_type = 'Deposit' AND
-> T.transaction_date = '2023-01-01'
-> GROUP BY
-> C.customer_id, C.first_name, C.last_name;
```

customer_id	first_name	last_name	total_deposits
1	Amit	Kumar	5000.00

1 row in set (0.01 sec)

mysql> /* 4. Write a SQL query to Find the Oldest and Newest Customers. */

mysql> /* --oldest customer*/

mysql> SELECT

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```
mysql> SELECT customer_id,first_name,last_name,DOB FROM Customer ORDER BY DOB DESC LIMIT 1;
```

```
ERROR 1146 (42502): Table 'hmbank.customer' doesn't exist
```

```
mysql> /* 4. Write a SQL query to Find the Oldest and Newest Customers. */
```

```
mysql> /* --oldest customer*/
```

```
mysql> SELECT customer_id,first_name,last_name,DOB FROM Customers ORDER BY DOB ASC LIMIT 1;
```

customer_id	first_name	last_name	DOB
6	Anita	Rao	1983-07-30

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

```
mysql> /* --newest customer*/
```

```
mysql> SELECT customer_id,first_name,last_name,DOB FROM Customers ORDER BY DOB DESC LIMIT 1;
```

customer_id	first_name	last_name	DOB
5	Vikram	Verma	1995-02-18

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

```
mysql> /*5. Write a SQL query to Retrieve transaction details along with the account type.*/
```

```
mysql> SELECT T.transaction_id,T.account_id, A.account_type,T.transaction_type,T.transaction_date,T.amount FROM Transactions T JOIN Accounts A ON T.account_id = A.account_id;
```

transaction_id	account_id	account_type	transaction_type	transaction_date	amount
201	101	Savings	Deposit	2023-01-01	5000.00
202	102	Current	Withdrawal	2023-01-02	2000.00
203	103	Savings	Deposit	2023-01-03	7000.00
204	104	Current	Withdrawal	2023-01-04	3000.00
205	105	Savings	Deposit	2023-01-05	4000.00
206	106	Current	Withdrawal	2023-01-06	1500.00
207	107	Savings	Deposit	2023-01-07	6000.00
208	108	Current	Withdrawal	2023-01-08	2500.00
209	109	Savings	Deposit	2023-01-09	3500.00
210	110	Current	Withdrawal	2023-01-10	1800.00

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

```
mysql> /*6. Write a SQL query to Get a list of customers along with their account details.*/
```

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

mysql> SELECT C.*,A.* 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	customer_id	account_type	balance
1	Amit	Kumar	1990-05-15	amit.kumar@gmail.com	9876543210	123 ABC Street, City	101	1	Savings	60000
2	Priya	Sharma	1985-08-22	priya.sharma@gmail.com	8765432109	456 XYZ Road, Town	102	2	Current	110000
3	Rajesh	Patil	1992-03-10	rajesh.patil@gmail.com	7654321098	789 PQR Avenue, Village	103	3	Savings	85000
4	Sneha	Singh	1988-11-05	sneha.singh@gmail.com	6543210987	101 LMN Lane, District	104	4	Current	130000
5	Vikram	Verma	1995-02-18	vikram.verma@gmail.com	5432109876	202 EFG Street, City	105	5	Savings	70000
6	Anita	Rao	1983-07-30	anita.rao@gmail.com	4321098765	303 HIJ Road, Town	106	6	Current	100000
7	Rahul	Mishra	1991-09-12	rahul.mishra@gmail.com	3210987654	404 KLM Avenue, Village	107	7	Savings	90000
8	Pooja	Gupta	1986-04-25	pooja.gupta@gmail.com	2109876543	505 NOP Lane, District	108	8	Current	120000
9	Arjun	Malik	1993-12-08	arjun.malik@gmail.com	1098765432	606 QRS Road, City	109	9	Savings	80000
10	Neha	Chopra	1989-06-20	neha.chopra@gmail.com	9876543210	707 TUV Avenue, Town	110	10	Current	105000

10 rows in set (0.00 sec)

mysql> /*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 = 101;

customer_id	first_name	last_name	DOB	email	phone_number	address	transaction_id	account_id	transaction_type	amount	transaction_date
1	Amit	Kumar	1990-05-15	amit.kumar@gmail.com	9876543210	123 ABC Street, City	201	101	Deposit	5000	2023-01-01

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accounts with the highest number of transactions order by descendi' at line 1

mysql> /* 8. Write a SQL query to Identify customers who have more than one account.*/

mysql> SELECT C.* ,COUNT(A.account_id) AS num_accounts FROM Customers C JOIN Accounts A ON C.customer_id = A.customer_id GROUP BY C.customer_id, C.first_name, C.last_name
-> HAVING COUNT(A.account_id) > 1;
Empty set (0.00 sec)

mysql> /* 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	385000.00
Current	565000.00

2 rows in set (0.00 sec)

mysql> /*12. Identify accounts with the highest number of transactions order by descending order.*/

mysql> SELECT A.account_id, COUNT(T.transaction_id) AS transaction_count FROM Accounts A JOIN Transactions T ON A.account_id = T.account_id GROUP BY A.account_id ORDER BY transaction_count DESC;

account_id	transaction_count
101	1
102	1
103	1
104	1
105	1
106	1
107	1
108	1
109	1
110	1

10 rows in set (0.00 sec)

mysql> /* 13. List customers with high aggregate account balances, along with their account types.*/

mysql> SELECT C.*, A.account_type, SUM(A.balance) AS aggregate_balance FROM Customers C JOIN Accounts A ON C.customer_id = A.customer_id GROUP BY C.customer_id, C.first_name, C.last_name, A.account_type HAVING aggregate_balance > 100000;

customer_id	first_name	last_name	DOB	email	phone_number	address	account_type	aggregate_balance
2	Priya	Sharma	1985-08-22	priya.sharma@gmail.com	8765432109	456 XYZ Road, Town	Current	110000.00
4	Sneha	Singh	1988-11-05	sneha.singh@gmail.com	6543210987	101 LMN Lane, District	Current	130000.00

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Database changed

```
mysql> /*9. Write a SQL query to Calculate the difference in transaction amounts between deposits and withdrawals.*/
```

```
mysql> SELECT
->     SUM(CASE WHEN transaction_type = 'deposit' THEN amount ELSE 0 END) -
->     SUM(CASE WHEN transaction_type = 'withdrawal' THEN amount ELSE 0 END) AS difference_amount
-> FROM
->     Transactions;
```

```
+-----+
| difference_amount |
+-----+
|          14700.00 |
+-----+
```

1 row in set (0.01 sec)

```
mysql> /*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 aggregate_balance
-> FROM
->     Customers c
-> JOIN
->     Accounts a ON c.customer_id = a.customer_id
-> GROUP BY
->     c.customer_id, c.first_name, c.last_name, a.account_type
-> HAVING
->     aggregate_balance > 4000;
```

customer_id	first_name	last_name	account_type	aggregate_balance
1	Amit	Kumar	Savings	60000.00
2	Priya	Sharma	Current	110000.00
3	Rajesh	Patil	Savings	85000.00
4	Sneha	Singh	Current	130000.00
5	Vikram	Verma	Savings	70000.00
6	Anita	Rao	Current	100000.00
7	Rahul	Mishra	Savings	90000.00
8	Pooja	Gupta	Current	120000.00
9	Arjun	Malik	Savings	80000.00
10	Neha	Chopra	Current	105000.00

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```
mysql> /* 14. Identify and list duplicate transactions based on transaction amount, date, and account.
```

```
*/> */
```

```
mysql> SELECT
```

```
->     transaction_id,
```

```
->     account_id,
```

```
->     transaction_type,
```

```
->     amount,
```

```
->     transaction_date
```

```
-> FROM
```

```
->     Transactions
```

```
-> WHERE
```

```
->     (amount, transaction_date, account_id) IN (
```

```
->         SELECT
```

```
->             amount,
```

```
->             transaction_date,
```

```
->             account_id
```

```
->         FROM
```

```
->             Transactions
```

```
->         GROUP BY
```

```
->             amount, transaction_date, account_id
```

```
->         HAVING
```

```
->             COUNT(*) > 1
```

```
->     );
```

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

```
mysql> /*Tasks 4: Subquery and its type*/
```

```
mysql> /* 1.Retrieve the customer(s) with the highest account balance*/
```

```
mysql> SELECT
```

```
->     c.customer_id,
```

```
->     c.first_name,
```

```
->     c.last_name,
```

```
->     a.account_type,
```

```
->     a.balance
```

```
-> FROM
```

```
->     Customers c
```

```
-> JOIN
```

```
->     Accounts a ON c.customer_id = a.customer_id
```

```
-> WHERE
```

```
->     a.balance = (
```

```
->         SELECT
```

```
->             MAX(balance)
```

```
->         FROM
```

```
->             Accounts
```

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```
-> a.balance
-> 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	account_type	balance
4	Sneha	Singh	Current	130000.00

1 row in set (0.01 sec)

mysql> /*2. Calculate the average account balance for customers who have more than one account*/

```
mysql> SELECT
-> c.customer_id,
-> c.first_name,
-> c.last_name,
-> AVG(a.balance) AS average_balance
-> FROM
-> Customers c
-> JOIN
-> Accounts a ON c.customer_id = a.customer_id
-> WHERE
-> c.customer_id IN (
->     SELECT
->         customer_id
->     FROM
->         Accounts
->     GROUP BY
->         customer_id
->     HAVING
->         COUNT(*) > 1
-> )
-> GROUP BY
-> c.customer_id, c.first_name, c.last_name;
```

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Empty set (0.01 sec)

mysql> /*3 .Retrieve accounts with transactions whose amounts exceed the average transaction amount*/

mysql> SELECT

```
-> a.account_id,
-> a.account_type,
-> t.transaction_id,
-> t.transaction_type,
-> t.amount,
-> t.transaction_date
-> FROM
-> Accounts a
-> JOIN
-> Transactions t ON a.account_id = t.account_id
-> WHERE
-> t.amount > (
->     SELECT
->     AVG(amount)
->     FROM
->     Transactions
-> );
```

account_id	account_type	transaction_id	transaction_type	amount	transaction_date
101	Savings	201	Deposit	5000.00	2023-01-01
103	Savings	203	Deposit	7000.00	2023-01-03
105	Savings	205	Deposit	4000.00	2023-01-05
107	Savings	207	Deposit	6000.00	2023-01-07

4 rows in set (0.00 sec)

mysql> /*4.Identify customers who have no recorded transactions.*/

mysql> SELECT

```
-> c.customer_id,
-> c.first_name,
-> c.last_name
-> FROM
-> Customers c
-> WHERE
-> c.customer_id NOT IN (
->     SELECT DISTINCT
->     a.customer_id
->     FROM
->     Accounts a
```

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```
-> Accounts a
-> JOIN
-> Transactions t ON a.account_id = t.account_id
-> );
```

Empty set (0.00 sec)

```
mysql> /*5.Calculate the total balance of accounts with no recorded transactions*/
```

```
mysql> SELECT
-> SUM(a.balance) AS total_balance
-> FROM
-> Accounts a
-> LEFT JOIN
-> Transactions t ON a.account_id = t.account_id
-> WHERE
-> t.transaction_id IS NULL;
```

```
+-----+
| total_balance |
+-----+
| NULL |
+-----+
```

1 row in set (0.00 sec)

```
mysql> /*6.Retrieve transactions for accounts with the lowest balance.*/
```

```
mysql> SELECT
-> t.transaction_id,
-> t.account_id,
-> t.transaction_type,
-> t.amount,
-> t.transaction_date
-> FROM
-> Transactions t
-> JOIN (
-> SELECT
-> account_id,
-> MIN(balance) AS min_balance
-> FROM
-> Accounts
-> GROUP BY
-> account_id
-> ) AS min_balances ON t.account_id = min_balances.account_id
-> JOIN
-> Accounts a ON t.account_id = a.account_id AND a.balance = min_balances.min_balance;
```

```
+-----+-----+-----+-----+-----+
| transaction_id | account_id | transaction_type | amount | transaction_date |
```

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204	104	Withdrawal	3000.00	2023-01-04
205	105	Deposit	4000.00	2023-01-05
206	106	Withdrawal	1500.00	2023-01-06
207	107	Deposit	6000.00	2023-01-07
208	108	Withdrawal	2500.00	2023-01-08
209	109	Deposit	3500.00	2023-01-09
210	110	Withdrawal	1800.00	2023-01-10

10 rows in set (0.01 sec)

mysql> /*7. Identify customers who have accounts of multiple types.*/

```
mysql> SELECT
->   c.customer_id,
->   c.first_name,
->   c.last_name
-> FROM
->   Customers c
-> JOIN (
->   SELECT
->     customer_id
->   FROM
->     Accounts
->   GROUP BY
->     customer_id
->   HAVING
->     COUNT(DISTINCT account_type) > 1
-> ) AS multiple_account_types ON c.customer_id = multiple_account_types.customer_id;
```

Empty set (0.00 sec)

mysql> /*8. Calculate the percentage of each account type out of the total number of accounts*/

```
mysql> SELECT
->   account_type,
->   COUNT(*) AS account_count,
->   (COUNT(*) / (SELECT COUNT(*) FROM Accounts)) * 100 AS percentage
-> FROM
->   Accounts
-> GROUP BY
->   account_type;
```

account_type	account_count	percentage
Savings	5	50.0000
Current	5	50.0000

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```
mysql>
mysql>
mysql> /*Retrieve all transactions for a customer with a given customer_id.*/
mysql> SELECT
```

```
->     t.transaction_id,
->     t.account_id,
->     t.transaction_type,
->     t.amount,
->     t.transaction_date
-> FROM
->     Transactions t
-> JOIN
->     Accounts a ON t.account_id = a.account_id
-> WHERE
->     a.customer_id = 9;
```

transaction_id	account_id	transaction_type	amount	transaction_date
209	109	Deposit	3500.00	2023-01-09

1 row in set (0.00 sec)

```
mysql> /*10.Calculate the total balance for each account type, including a subquery within the SELECT
/*> clause*/
```

```
mysql> SELECT
->     account_type,
->     (SELECT SUM(balance) FROM Accounts a2 WHERE a2.account_type = a.account_type) AS total_balance
-> FROM
->     Accounts a
-> GROUP BY
->     account_type;
```

account_type	total_balance
Savings	385000.00
Current	565000.00

2 rows in set (0.00 sec)

```
mysql> _
```

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