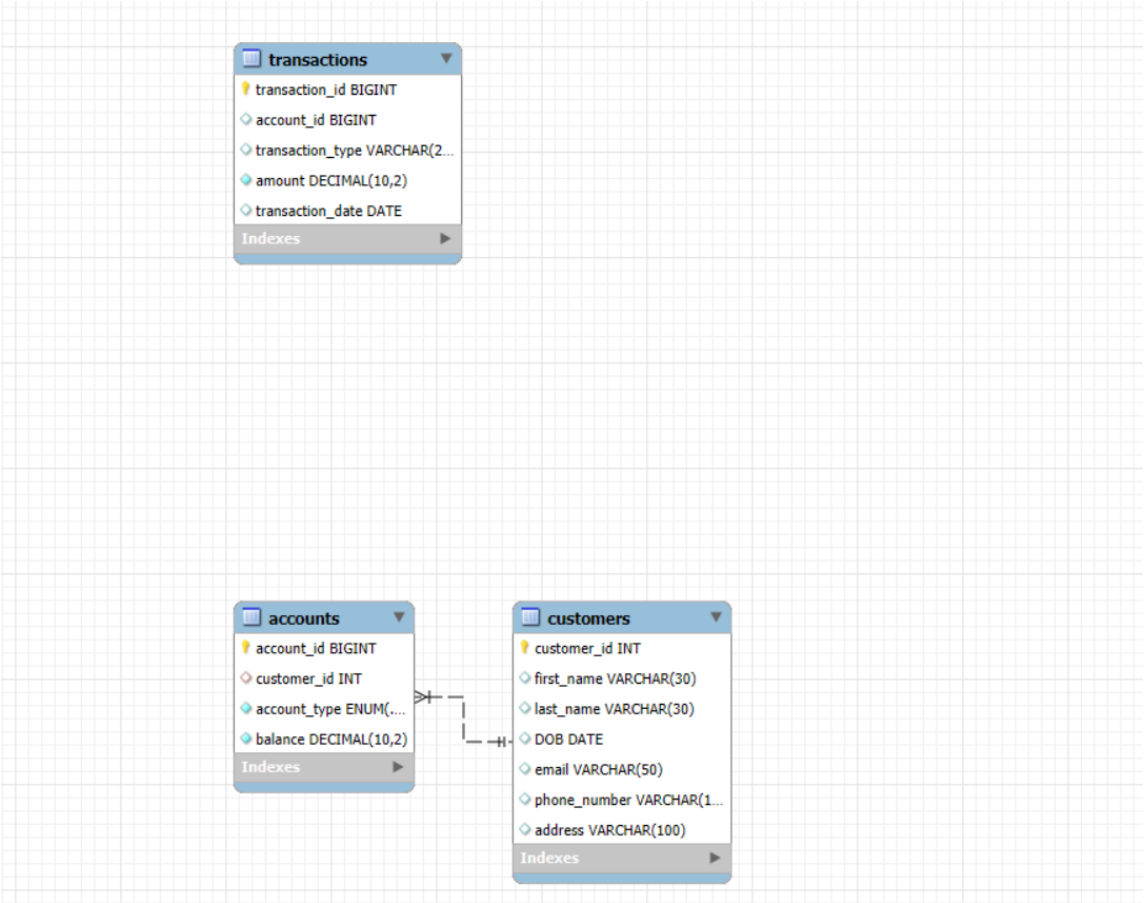
BANKING SYSTEM

Tasks 1: Database Design:

1. Create the database named "HMBank"

```
mysql> create database HMBank;
Query OK, 1 row affected (0.01 sec)
```

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



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

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

transaction_id INT PRIMARY KEY,

FOREIGN KEY (account_id) REFERENCES accounts(account_id)

account_id INT PRIMARY KEY,

customer_id INT PRIMARY KEY,

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

- **Customers**

```
mysql> create table Customers(customer_id int primary key auto_increment,
    -> first_name varchar(30),
    -> last_name varchar(30),
    -> DOB date,
    -> email varchar(50),
    -> phone_number int);
Query OK, 0 rows affected (0.03 sec)
```

- **Accounts**

```
mysql> create table Accounts(account_id int primary key ,
    -> customer_id int,
    -> account_type varchar(30),
    -> balance decimal(10,2),
    -> foreign key(customer_id) references Customers(customer_id)
    -> on delete cascade
    -> on update cascade);
Query OK, 0 rows affected (0.07 sec)
```

- **Transactions**

```
mysql> create table Transactions ( transaction_id int primary key,
    -> account_id int,
    -> transaction_type enum('deposit','withdewal','transfer') not null,
    -> amount decimal(10,2) not null default 0.00,
    -> transaction_date date);
Query OK, 0 rows affected (0.03 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 (customer_id, first_name, last_name, DOB, email, phone_number, address) VALUES
    -> (1, 'Amit', 'Sharma', '1985-03-15', 'amit.sharma@example.com', '9876543210', '123 MG Road, Delhi'),
    -> (2, 'Priya', 'Verma', '1990-07-22', 'priya.verma@example.com', '9876543211', '456 Park Street, Mumbai'),
    -> (3, 'Rahul', 'Gupta', '1982-11-05', 'rahul.gupta@example.com', '9876543212', '789 Brigade Road, Bangalore'),
    -> (4, 'Neha', 'Patel', '1995-02-18', 'neha.patel@example.com', '9876543213', '101 SG Highway, Ahmedabad'),
    -> (5, 'Suresh', 'Reddy', '1988-09-30', 'suresh.reddy@example.com', '9876543214', '202 Banjara Hills, Hyderabad'),
    -> (6, 'Anjali', 'Nair', '1993-06-14', 'anjali.nair@example.com', '9876543215', '303 MG Road, Kochi'),
    -> (7, 'Vikram', 'Singh', '1977-12-03', 'vikram.singh@example.com', '9876543216', '404 Rajpath, Jaipur'),
    -> (8, 'Kavita', 'Iyer', '1981-04-25', 'kavita.iyer@example.com', '9876543217', '505 T Nagar, Chennai'),
    -> (9, 'Arjun', 'Chowdhury', '2000-08-19', 'arjun.chowdhury@example.com', '9876543218', '606 Salt Lake, Kolkata'),
    -> (10, 'Meera', 'Desai', '1997-05-10', 'meera.desai@example.com', '9876543219', '707 Law Garden, Surat');
Query OK, 10 rows affected (0.00 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from customers;
+-------------+------------+-----------+------------+---------------------------+--------------+-----------------------------+
| customer_id | first_name | last_name | DOB        | email                     | phone_number | address                     |
+-------------+------------+-----------+------------+---------------------------+--------------+-----------------------------+
|           1 | Amit       | Sharma    | 1985-03-15 | amit.sharma@example.com   | 9876543210   | 123 MG Road, Delhi          |
|           2 | Priya      | Verma     | 1990-07-22 | priya.verma@example.com   | 9876543211   | 456 Park Street, Mumbai     |
|           3 | Rahul      | Gupta     | 1982-11-05 | rahul.gupta@example.com   | 9876543212   | 789 Brigade Road, Bangalore |
|           4 | Neha       | Patel     | 1995-02-18 | neha.patel@example.com    | 9876543213   | 101 SG Highway, Ahmedabad   |
|           5 | Suresh     | Reddy     | 1988-09-30 | suresh.reddy@example.com  | 9876543214   | 202 Banjara Hills, Hyderabad |
|           6 | Anjali     | Nair      | 1993-06-14 | anjali.nair@example.com   | 9876543215   | 303 MG Road, Kochi          |
|           7 | Vikram     | Singh     | 1977-12-03 | vikram.singh@example.com  | 9876543216   | 404 Rajpath, Jaipur         |
|           8 | Kavita     | Iyer      | 1981-04-25 | kavita.iyer@example.com   | 9876543217   | 505 T Nagar, Chennai        |
|           9 | Arjun      | Chowdhury | 2000-08-19 | arjun.chowdhury@example.com | 9876543218 | 606 Salt Lake, Kolkata      |
|          10 | Meera      | Desai     | 1997-05-10 | meera.desai@example.com   | 9876543219   | 707 Law Garden, Surat       |
+-------------+------------+-----------+------------+---------------------------+--------------+-----------------------------+
10 rows in set (0.00 sec)
```

- **Accounts**

```
mysql> INSERT INTO Accounts (account_id, customer_id, account_type, balance) VALUES
    -> (100012345678, 1, 'savings', 50000.00),
    -> (100012345679, 2, 'current', 120000.50),
    -> (100012345680, 3, 'zero_balance', 0.00),
    -> (100012345681, 4, 'savings', 75000.25),
    -> (100012345682, 5, 'current', 89000.75),
    -> (100012345683, 6, 'savings', 66000.00),
    -> (100012345684, 7, 'zero_balance', 0.00),
    -> (100012345685, 8, 'current', 157000.80),
    -> (100012345686, 9, 'savings', 43000.55),
    -> (100012345687, 10, 'current', 93000.40);
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from accounts;
+--------------+-------------+--------------+-----------+
| account_id   | customer_id | account_type | balance   |
+--------------+-------------+--------------+-----------+
| 100012345678 |           1 | savings      |  50000.00 |
| 100012345679 |           2 | current      | 120000.50 |
| 100012345680 |           3 | zero_balance |      0.00 |
| 100012345681 |           4 | savings      |  75000.25 |
| 100012345682 |           5 | current      |  89000.75 |
| 100012345683 |           6 | savings      |  66000.00 |
| 100012345684 |           7 | zero_balance |      0.00 |
| 100012345685 |           8 | current      | 157000.80 |
| 100012345686 |           9 | savings      |  43000.55 |
| 100012345687 |          10 | current      |  93000.40 |
+--------------+-------------+--------------+-----------+
10 rows in set (0.00 sec)
```

- **Transactions**

```
mysql> INSERT INTO Transactions (transaction_id, account_id, transaction_type, amount, transaction_date) VALUES
    -> (202503100001, 100012345678, 'deposit', 20000.00, '2025-03-10'),
    -> (202503110002, 100012345679, 'withdrawal', 5000.00, '2025-03-11'),
    -> (202503120003, 100012345680, 'deposit', 10000.00, '2025-03-12'),
    -> (202503130004, 100012345681, 'transfer', 7500.00, '2025-03-13'),
    -> (202503140005, 100012345682, 'withdrawal', 3000.00, '2025-03-14'),
    -> (202503150006, 100012345683, 'deposit', 50000.00, '2025-03-15'),
    -> (202503160007, 100012345684, 'deposit', 7000.00, '2025-03-16'),
    -> (202503170008, 100012345685, 'transfer', 12000.00, '2025-03-17'),
    -> (202503180009, 100012345686, 'withdrawal', 2500.00, '2025-03-18'),
    -> (202503190010, 100012345687, 'deposit', 31000.00, '2025-03-19');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> select * from transactions;
+----------------+-------------+------------------+----------+------------------+
| transaction_id | account_id  | transaction_type | amount   | transaction_date |
+----------------+-------------+------------------+----------+------------------+
|   202503100001 | 100012345678 | deposit          | 20000.00 | 2025-03-10       |
|   202503110002 | 100012345679 | withdrawal       |  5000.00 | 2025-03-11       |
|   202503120003 | 100012345680 | deposit          | 10000.00 | 2025-03-12       |
|   202503130004 | 100012345681 | transfer         |  7500.00 | 2025-03-13       |
|   202503140005 | 100012345682 | withdrawal       |  3000.00 | 2025-03-14       |
|   202503150006 | 100012345683 | deposit          | 50000.00 | 2025-03-15       |
|   202503160007 | 100012345684 | deposit          |  7000.00 | 2025-03-16       |
|   202503170008 | 100012345685 | transfer         | 12000.00 | 2025-03-17       |
|   202503180009 | 100012345686 | withdrawal       |  2500.00 | 2025-03-18       |
|   202503190010 | 100012345687 | deposit          | 31000.00 | 2025-03-19       |
+----------------+-------------+------------------+----------+------------------+
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 CONCAT(customers.first_name, ' ', customers.last_name) AS Name,
    ->        accounts.account_type,
    ->        customers.email
    -> FROM customers
    -> JOIN accounts ON customers.customer_id = accounts.customer_id;
+-----------------+--------------+-----------------------------+
| Name            | account_type | email                       |
+-----------------+--------------+-----------------------------+
| Amit Sharma     | savings      | amit.sharma@example.com     |
| Priya Verma     | current      | priya.verma@example.com     |
| Rahul Gupta     | zero_balance | rahul.gupta@example.com     |
| Neha Patel      | savings      | neha.patel@example.com      |
| Suresh Reddy    | current      | suresh.reddy@example.com    |
| Anjali Nair     | savings      | anjali.nair@example.com     |
| Vikram Singh    | zero_balance | vikram.singh@example.com    |
| Kavita Iyer     | current      | kavita.iyer@example.com     |
| Arjun Chowdhury | savings      | arjun.chowdhury@example.com |
| Meera Desai     | current      | meera.desai@example.com     |
+-----------------+--------------+-----------------------------+
10 rows in set (0.00 sec)
```

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

```
mysql> SELECT
    ->     CONCAT(c.first_name, ' ', c.last_name) AS Name,
    ->     t.transaction_id,
    ->     t.transaction_type,
    ->     t.amount,
    ->     t.transaction_date,
    ->     a.account_id
    -> FROM customers c
    -> JOIN accounts a ON c.customer_id = a.customer_id
    -> JOIN transactions t ON t.account_id = a.account_id;
```

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

```
mysql> UPDATE Accounts
    -> SET balance = balance + 300000.00
    -> WHERE customer_id = 100012345680;
Query OK, 0 rows affected (0.00 sec)
Rows matched: 0  Changed: 0  Warnings: 0
```

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      |
+----------------+
| AmitSharma     |
| PriyaVerma     |
| RahulGupta     |
| NehaPatel      |
| SureshReddy    |
| AnjaliNair     |
| VikramSingh    |
| KavitaIyer     |
| ArjunChowdhury |
| MeeraDesai     |
+----------------+
10 rows in set (0.01 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 account_type = 'savings';
Query OK, 4 rows affected (0.01 sec)
```

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

```
mysql> select * from customers where address like "%Delhi";
+-------------+------------+-----------+------------+-----------------------+--------------+--------------------+
| customer_id | first_name | last_name | DOB        | email                 | phone_number | address            |
+-------------+------------+-----------+------------+-----------------------+--------------+--------------------+
|           1 | Amit       | Sharma    | 1985-03-15 | amit.sharma@example.com | 9876543210   | 123 MG Road, Delhi |
+-------------+------------+-----------+------------+-----------------------+--------------+--------------------+
1 row in set (0.01 sec)
```

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

```
mysql> select balance from accounts where account_id=100012345679;
+------------+
| balance    |
+------------+
| 120000.50 |
+------------+
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   |
+--------------+-------------+--------------+-----------+
| 100012345679 |           2 | current      | 120000.50 |
| 100012345682 |           5 | current      |  89000.75 |
| 100012345685 |           8 | current      | 157000.80 |
| 100012345687 |          10 | current      |  93000.40 |
+--------------+-------------+--------------+-----------+
4 rows in set (0.00 sec)
```

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

```
mysql> select * from transactions where account_id =  100012345684;
+----------------+--------------+------------------+---------+------------------+
| transaction_id | account_id   | transaction_type | amount  | transaction_date |
+----------------+--------------+------------------+---------+------------------+
|   202503160007 | 100012345684 | deposit          | 7000.00 | 2025-03-16       |
+----------------+--------------+------------------+---------+------------------+
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 balance , (balance * 4/100) as Intrest_accrued from accounts where account_type="savings";
+----------+-----------------+
| balance  | Intrest_accrued |
+----------+-----------------+
| 50000.00 |     2000.000000 |
| 75000.25 |     3000.010000 |
| 66000.00 |     2640.000000 |
| 43000.55 |     1720.022000 |
+----------+-----------------+
4 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> select account_id from accounts where balance < 5000 and account_type = "current";
Empty set (0.00 sec)
```

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

```
mysql> select * from customers where not address like "%chennai";
+-------------+------------+-----------+------------+---------------------------+--------------+-----------------------------+
| customer_id | first_name | last_name | DOB        | email                     | phone_number | address                     |
+-------------+------------+-----------+------------+---------------------------+--------------+-----------------------------+
|           1 | Amit       | Sharma    | 1985-03-15 | amit.sharma@example.com   | 9876543210   | 123 MG Road, Delhi          |
|           2 | Priya      | Verma     | 1990-07-22 | priya.verma@example.com   | 9876543211   | 456 Park Street, Mumbai     |
|           3 | Rahul      | Gupta     | 1982-11-05 | rahul.gupta@example.com   | 9876543212   | 789 Brigade Road, Bangalore |
|           4 | Neha       | Patel     | 1995-02-18 | neha.patel@example.com    | 9876543213   | 101 SG Highway, Ahmedabad   |
|           5 | Suresh     | Reddy     | 1988-09-30 | suresh.reddy@example.com  | 9876543214   | 202 Banjara Hills, Hyderabad |
|           6 | Anjali     | Nair      | 1993-06-14 | anjali.nair@example.com   | 9876543215   | 303 MG Road, Kochi          |
|           7 | Vikram     | Singh     | 1977-12-03 | vikram.singh@example.com  | 9876543216   | 404 Rajpath, Jaipur         |
|           9 | Arjun      | Chowdhury | 2000-08-19 | arjun.chowdhury@example.com | 9876543218 | 606 Salt Lake, Kolkata      |
|          10 | Meera      | Desai     | 1997-05-10 | meera.desai@example.com   | 9876543219   | 707 Law Garden, Surat       |
+-------------+------------+-----------+------------+---------------------------+--------------+-----------------------------+
9 rows in set (0.00 sec)
```