1. Use the installed MySQL in the Given Folder to create the database BidvestBank:

```
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.19 MySQL Community Server - GPL

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.03 sec)

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

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| bidvestbank        |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.00 sec)
```

2. For all the above tables identify which of the attributes can be used as primary keys and assign primary keys to those tables.

```
mysql> use bidvestbank
Database changed
mysql> create table CustomerAccount
    -> (
    -> account_number char(5) not null primary key,
    -> branch_name varchar(10),
    -> balance double
    -> );
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> create table BankBranch
    -> (
    -> branch_name varchar(20),
    -> branch_city varchar(20) not null,
    -> assets double
    -> );
Query OK, 0 rows affected (0.04 sec)

mysql> create table Customer
    -> (
    -> customer_name varchar(20) not null,
    -> customer_street varchar(20) not null,
    -> customer_city varchar(20) not null
    -> );
Query OK, 0 rows affected (0.04 sec)

mysql> create table Loan
    -> (
    -> loan_number char(5) not null,
    -> branch_name varchar(20) not null,
    -> amount double
    -> );
Query OK, 0 rows affected (0.04 sec)

mysql> create table Depositor
    -> (
    -> customer_name varchar(20) not null,
    -> account_number char(6) not null
    -> );
Query OK, 0 rows affected (0.04 sec)

mysql> create table Borrower
    -> (
    -> customer_name varchar(20) not null,
    -> loan_number char(6) not null
    -> );
Query OK, 0 rows affected (0.04 sec)

mysql> create table Employee
    -> (
    -> employee_name varchar(20) not null,
    -> branch_name varchar(20) not null,
    -> salary double
    -> );
Query OK, 0 rows affected (0.05 sec)
```

3. Populate all the tables:

```
mysql> insert into CustomerAccount values('A-5324', 'Newton', 500);
ERROR 1406 (22001): Data too long for column 'account_number' at row 1
mysql> insert into CustomerAccount values('A-532', 'Newton', 500);
Query OK, 1 row affected (0.01 sec)

mysql> insert into CustomerAccount values('A-562', 'Sunnyside', 400);
Query OK, 1 row affected (0.01 sec)

mysql> insert into CustomerAccount values('A-779', 'Midrand', 900);
Query OK, 1 row affected (0.01 sec)

mysql> insert into CustomerAccount values('A-446', 'Mabopane', 700);
Query OK, 1 row affected (0.01 sec)

mysql> insert into CustomerAccount values('A-354', 'Midrand', 750);
Query OK, 1 row affected (0.00 sec)

mysql> insert into CustomerAccount values('A-345', 'Universitas', 700);
ERROR 1406 (22001): Data too long for column 'branch_name' at row 1
mysql> insert into CustomerAccount values('A-345', 'Universita', 700);
Query OK, 1 row affected (0.01 sec)

mysql> insert into CustomerAccount values('A-254', 'Mamelodi', 350);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into BankBranch values('Midrand', 'Johannesburg', 7100000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into BankBranch values('Newtown', 'Johannesburg', 9000000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into BankBranch values('Mabopane', 'Pretoria', 400000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into BankBranch values('Belgravia', 'Kimberly', 3700000);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into BankBranch values('Sunnyside', 'Pretoria', 1700000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into BankBranch values('Amanzimtoti', 'Durban', 300000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into BankBranch values('Universitas', 'Bloem', 2100000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into BankBranch values('Mamelodi', 'Pretoria', 8000000);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into Customer values('Brooks', 'Senator', 'Johannesburg');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values('Jooste', 'North', 'Kimberly');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values('Lombard', 'Sand Hill', 'Nelspruit');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values('Mokwena', 'Wallnut', 'PE');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values('Johnson', 'Mmabatho', 'Mafikeng');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values('Johnson', 'Alma', 'Bloem');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Customer values('Zwane', 'Main', 'Mafikeng');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values('Lindsay', 'Park', 'George');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Customer values('Smith', 'North', 'Kimberly');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values('Dlamini', 'Putnam', 'PE');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Customer values('Williams', 'Nassau', 'Giyane');
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into Depositor values('Johnson', 'A-5624');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Depositor values('Johnson', 'A-5624');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Depositor values('Johnson', 'A-7794');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Depositor values('Zwane', 'A-3546');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Depositor values('Lindsay', 'A-3453');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Depositor values('Smith', 'A-4467');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Depositor values('Dlamini', 'A-2542');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Loan values('L-11', 'Mamelodi', 900);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Loan values('L-14', 'Newtown', 1500);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Loan values('L-15', 'Sunnyside', 1500);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Loan values('L-16', 'Sunnyside', 1300);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Loan values('L-17', 'Newtown', 1000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Loan values('L-23', 'Universitas', 2000)
Query OK, 1 row affected (0.01 sec)

mysql> insert into Loan values('L-93', 'Mabopane', 500);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into Borrower values('Modise', 'L-16');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Borrower values('Jooste', 'L-93');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Borrower values('Johnson', 'L-15');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Borrower values('Jackson', 'L-14');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Borrower values('Zwane', 'L-17');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Borrower values('Smith', 'L-11');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Borrower values('Smith', 'L-23');
Query OK, 1 row affected (0.01 sec)

mysql> insert into Borrower values('Williams', 'L-17');
Query OK, 1 row affected (0.00 sec)

mysql> insert into Employee values('Modise', 'Sunnyside', 1500);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values('Brown', 'Sunnyside', 1300);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values('Gopal', 'Sunnyside', 5300);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values('Johnson', 'Newtown', 1500);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values('Loreena', 'Newtown', 1300);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values('Peterson', 'Newtown', 2500);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values('Rao', 'Austin', 1500);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values('Sato', 'Austin', 1600);
Query OK, 1 row affected (0.01 sec)
```

4. Perform the following queries on the BidvestBank database and show the screenshot of each query.

i) Find all customer accounts whose balance is smaller than R700.
ii) Find all name of customers whose city is in Johannesburg.
iii) Find all employees whose salary is greater than R1500 and working branch is not Newtown.
iv) Calculate the average salary of all employees and show the average salary as "avg_salary"
v) Display the bank with the largest number of Assets.

```
mysql> SELECT * FROM CustomerAccount WHERE balance < 700;
+----------------+-------------+---------+
| account_number | branch_name | balance |
+----------------+-------------+---------+
| A-254          | Mamelodi    |     350 |
| A-532          | Newton      |     500 |
| A-562          | Sunnyside   |     400 |
+----------------+-------------+---------+
3 rows in set (0.00 sec)

mysql> SELECT * FROM Customer WHERE customer_city = Johannesburg;
ERROR 1054 (42S22): Unknown column 'Johannesburg' in 'where clause'
mysql> SELECT * FROM Customer WHERE customer_city = "Johannesburg";
+---------------+-----------------+---------------+
| customer_name | customer_street | customer_city |
+---------------+-----------------+---------------+
| Brooks        | Senator         | Johannesburg  |
+---------------+-----------------+---------------+
1 row in set (0.00 sec)

mysql> SELECT * FROM Employee WHERE salary > 1500 AND NOT branch_name = "Newtown";
+---------------+-------------+--------+
| employee_name | branch_name | salary |
+---------------+-------------+--------+
| Gopal         | Sunnyside   |   5300 |
| Sato          | Austin      |   1600 |
+---------------+-------------+--------+
2 rows in set (0.00 sec)

mysql> SELECT AVG(salary) 'avg_salary' FROM Employee;
+------------+
| avg_salary |
+------------+
|     2062.5 |
+------------+
1 row in set (0.00 sec)

mysql> SELECT MAX(assets) FROM BankBranch;
+-------------+
| MAX(assets) |
+-------------+
|     9000000 |
+-------------+
1 row in set (0.00 sec)

mysql> SELECT employee_name FROM Employee;
+---------------+
| employee_name |
+---------------+
| Modise        |
| Brown         |
| Gopal         |
| Johnson       |
| Loreena       |
| Peterson      |
| Rao           |
| Sato          |
+---------------+
8 rows in set (0.00 sec)
```

5. Provide the SQL code which can utilize BidvestBank database to provide the following:

i) Display the names of all employees who work in Sunnyside branch.
ii) Display the borrower table.
iii) Find the account number for all accounts where the balance is greater than R900.
iv) Find the account number and balance for all accounts from Newtown where the balance is greater than R600.
v) Display the branch name and assets from all branches.

```
mysql> SELECT employee_name FROM Employee WHERE branch_name = "Sunnyside";
+---------------+
| employee_name |
+---------------+
| Modise        |
| Brown         |
| Gopal         |
+---------------+
3 rows in set (0.00 sec)

mysql> SELECT * FROM Borrower
    -> ;
+---------------+-------------+
| customer_name | loan_number |
+---------------+-------------+
| Modise        | L-16        |
| Jooste        | L-93        |
| Johnson       | L-15        |
| Jackson       | L-14        |
| Zwane         | L-17        |
| Smith         | L-11        |
| Smith         | L-23        |
| Williams      | L-17        |
+---------------+-------------+
8 rows in set (0.00 sec)

mysql> SELECT account_number FROM CustomerAccount WHERE balance > 900;
Empty set (0.00 sec)

mysql> SELECT account_number AND balance FROM CustomerAccount WHERE branch_name = "Newton" AND
 balance > 600;
Empty set (0.00 sec)

mysql> SELECT branch_name AND assets FROM BankBranch;
+------------------------+
| branch_name AND assets |
+------------------------+
|                      0 |
|                      0 |
|                      0 |
|                      0 |
|                      0 |
|                      0 |
|                      0 |
|                      0 |
+------------------------+
8 rows in set, 8 warnings (0.00 sec)

mysql> SELECT branch_name, assets FROM BankBranch;
+-------------+---------+
| branch_name | assets  |
+-------------+---------+
| Midrand     | 7100000 |
| Newtown     | 9000000 |
| Mabopane    |  400000 |
| Belgravia   | 3700000 |
| Sunnyside   | 1700000 |
| Amanzimtoti |  300000 |
| Universitas | 2100000 |
| Mamelodi    | 8000000 |
+-------------+---------+
8 rows in set (0.00 sec)
```