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

```
Enter password: ****
Welcome to the MySQL monitor. Commands end with ;
Your MySQL connection id is 8
Server version: 8.0.19 MySQL Community Server - GPL
                                        Commands end with; or \q.
Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.
Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective
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
  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, O 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, O 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 \text{ 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('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)
mysgl> 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;
                                        balance
 account_number
                      branch_name
                      Mamelodi
                                             350
 A-532
A-562
                      Newton
                                             500
                      Sunnyside
                                             400
 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
 row in set (0.00 sec)
nysql> SELECT * FROM Employee WHERE salary > 1500 AND NOT branch_name = "Newtown";
 employee_name | branch_name
                                      salary
                     Sunnyside
Austin
                                         5300
1600
 Gopal
 Sato
 rows in set (0.00 sec)
nysql> SELECT AVG(salary) 'avg_salary' FROM Employee;
 avg_salary
      2062.5
 row in set (0.00 sec)
nysql> SELECT MAX(assets) FROM BankBranch;
 MAX(assets)
      9000000
 row in set (0.00 sec)
nysql> SELECT employee_name FROM Employee;
 employee_name
 Modise
 Brown
 Gopal
Johnson
 Loreena
 Peterson
 Rao
 Sato
 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
  rows in set (0.00 sec)
ysql> SELECT * FROM Borrower
                      loan_number
  customer_name |
                      L-16
L-93
L-15
L-14
L-17
L-11
  Modise
  Jooste
Johnson
  Jackson
  Zwane
  Smith
Smith
  Williams
  rows in set (0.00 sec)
nysql> SELECT account_number FROM CustomerAccount WHERE balance > 900;
mpty set (0.00 sec)
mysql> SELECT account_number AND balance FROM CustomerAccount WHERE branch_name = "Newton" AND balance > 600;
Empty set (0.00 sec)
nysql> SELECT branch_name AND assets FROM BankBranch;
  branch_name AND assets
                            00000000
  rows in set, 8 warnings (0.00 sec)
 ysql> SELECT branch_name, assets FROM BankBranch;
 branch_name | assets
                   7100000
9000000
  Midrand
  Newtown
                   400000
3700000
1700000
  Mabopane
  Belgravia
Sunnyside
Amanzimtoti
                     300000
                   2100000
8000000
  Universitas
  Mamelodi
  rows in set (0.00 sec)
```