DBMS SQL Stored Procedures and Stored Functions

Note: Database commands are given on the 2nd page.

1. Create a stored procedure **usp_calculate_future_value_for_account** that uses a function **ufn_calculate_future_value** that accepts as parameters – sum, yearly interest rate, and number of years to give future value to a person's account

   ($V= I\times((1+R)^{T})$, I – Initial sum, R – Yearly interest rate, T – Number of years),

   along with information about his/her account ID, first name, last name, and current balance as it is shown in the example below. It should take the account_id, number of years and the interest_rate as parameters. The interest rate should have a precision of up to 0.0001.

   Expected output:

   ```
   +-------------------+------------+-----------+-----------------+----------------+
   | account_holder_id | first_name | last_name | initial_balance | future_balance |
   +-------------------+------------+-----------+-----------------+----------------+
   |                 3 | Michael    | Johnson   |       3000.0000 |      3477.8223 |
   +-------------------+------------+-----------+-----------------+----------------+
   ```

2. Write a stored procedure **usp_update_account_balance** to update the account balance of each customer by 10%.

   Expected output:

   ```
   +-----+-------------------+-----------+
   | id  | account_holder_id | balance   |
   +-----+-------------------+-----------+
   | 101 |                 1 | 5500.0000 |
   | 102 |                 2 | 8250.0000 |
   | 103 |                 3 | 3300.0000 |
   | 104 |                 4 | 2750.0000 |
   | 105 |                 5 | 6600.0000 |
   +-----+-------------------+-----------+
   ```

3. Create a stored procedure **usp_calculate_avg_value** to calculate average of deposits made for an account with a balance of a minimum of Rs.5000/- (Make sure an account has at least one deposit.)

   Expected output:

   ```
   +--------+--------+--------+-------------+--------------+
   | f_name | l_name | acc_id | acc_balance | avg_deposits |
   +--------+--------+--------+-------------+--------------+
   ```

```
| John   | Doe  |        101 |            5500 |          3667 |
+--------+--------+--------+-------------+--------------+

+--------+--------+--------+-------------+--------------+
| f_name | l_name | acc_id | acc_balance | avg_deposits |
+--------+--------+--------+-------------+--------------+
| Jane   | Smith  |        102 |            8250 |          1150 |
+--------+--------+--------+-------------+--------------+
```

(10+5+5)

Database Commands:

The schema for this Question is:
account_holders(id (PK), first_name, last_name)
accounts(id (PK), account_holder_id (FK), balance).
Deposit(deposit_id(PK),amount ,investment_duration_years ,account_id(FK))

```
CREATE TABLE account_holders (
   id INT PRIMARY KEY,
   first_name VARCHAR(100),
   last_name VARCHAR(100)
);

CREATE TABLE accounts (
   id INT PRIMARY KEY,
   account_holder_id INT,
   balance DECIMAL(18, 4),
   FOREIGN KEY (account_holder_id) REFERENCES account_holders(id)
);


CREATE TABLE Deposit (
          deposit_id INT PRIMARY KEY,
          amount DECIMAL(18, 4),
          investment_duration_years INT,
          account_id INT,
          FOREIGN KEY (account_id) REFERENCES accounts(id)
);

-- Insert sample data into account_holders table
INSERT INTO account_holders (id, first_name, last_name)
```

```
VALUES
   (1, 'John', 'Doe'),
   (2, 'Jane', 'Smith'),
   (3, 'Michael', 'Johnson'),
   (4, 'Emily', 'Brown'),
   (5, 'David', 'Williams');

-- Insert sample data into the accounts table
INSERT INTO accounts (id, account_holder_id, balance)
VALUES
   (101, 1, 5000.00),
   (102, 2, 7500.00),
   (103, 3, 3000.00),
   (104, 4, 2500.00),
   (105, 5, 6000.00);


INSERT INTO Deposit (deposit_id, amount, investment_duration_years, account_id)
VALUES(201, 10000.00, 3, 101),
          (202, 1500.00, 5, 102),
          (203, 20000.00, 2, 103),
          (204, 500.00, 4, 101),
          (205, 30000.00, 2, 103),
          (206, 500.00, 4, 101),
          (207, 800.00, 1, 102);
```