Exercise 1: Control Structures

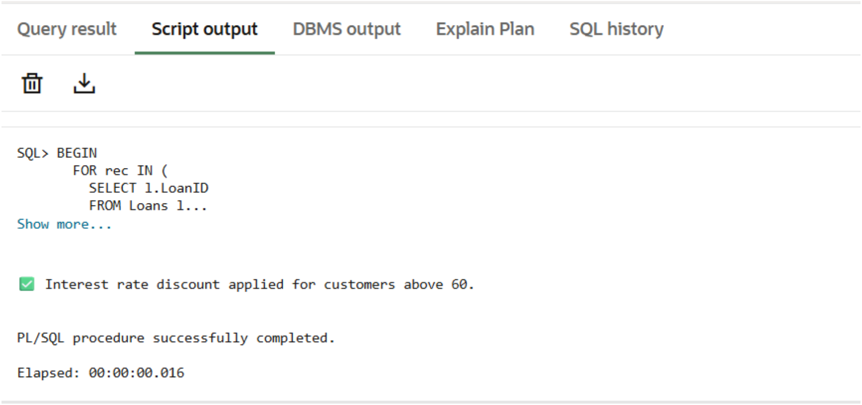
Scenario 1: The bank wants to apply a discount to loan interest rates for customers above 60 years old.

Question: Write a PL/SQL block that loops through all customers, checks their age, and if they are above 60, apply a 1% discount to their current loan interest rates.

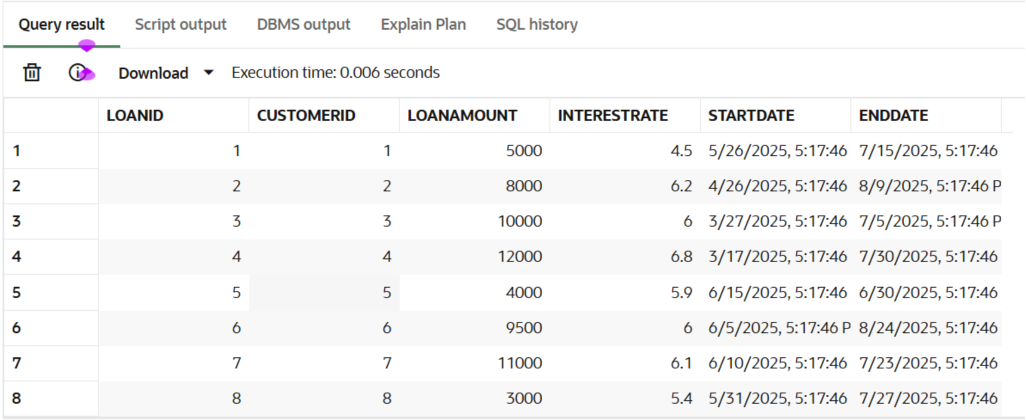
Solution:

```
BEGIN
  FOR rec IN (
    SELECT l.LoanID
    FROM Loans l
    JOIN Customers c ON l.CustomerID = c.CustomerID
    WHERE MONTHS_BETWEEN(SYSDATE, c.DOB) / 12 > 60
  )
  LOOP
    UPDATE Loans
    SET InterestRate = InterestRate - 1
    WHERE LoanID = rec.LoanID;
  END LOOP;

  COMMIT;
  DBMS_OUTPUT.PUT_LINE('✅ Interest rate discount applied for customers above 60.');
END;
/
```

OUTPUT:



```
SQL> BEGIN
       FOR rec IN (
         SELECT l.LoanID
         FROM Loans l...
Show more...

✅ Interest rate discount applied for customers above 60.

PL/SQL procedure successfully completed.

Elapsed: 00:00:00.016
```



Execution time: 0.006 seconds

	LOANID	CUSTOMERID	LOANAMOUNT	INTERESTRATE	STARTDATE	ENDDATE
1	1	1	5000	4.5	5/26/2025, 5:17:46	7/15/2025, 5:17:46
2	2	2	8000	6.2	4/26/2025, 5:17:46	8/9/2025, 5:17:46 P
3	3	3	10000	6	3/27/2025, 5:17:46	7/5/2025, 5:17:46 P
4	4	4	12000	6.8	3/17/2025, 5:17:46	7/30/2025, 5:17:46
5	5	5	4000	5.9	6/15/2025, 5:17:46	6/30/2025, 5:17:46
6	6	6	9500	6	6/5/2025, 5:17:46 P	8/24/2025, 5:17:46
7	7	7	11000	6.1	6/10/2025, 5:17:46	7/23/2025, 5:17:46
8	8	8	3000	5.4	5/31/2025, 5:17:46	7/27/2025, 5:17:46

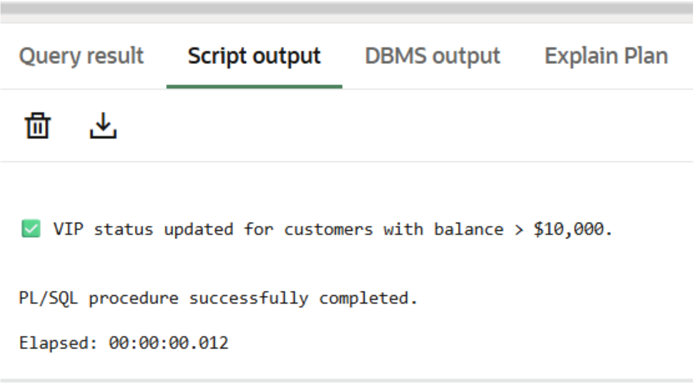
Scenario 2: A customer can be promoted to VIP status based on their balance.

Question: Write a PL/SQL block that iterates through all customers and sets a flag IsVIP to TRUE for those with a balance over $10,000.

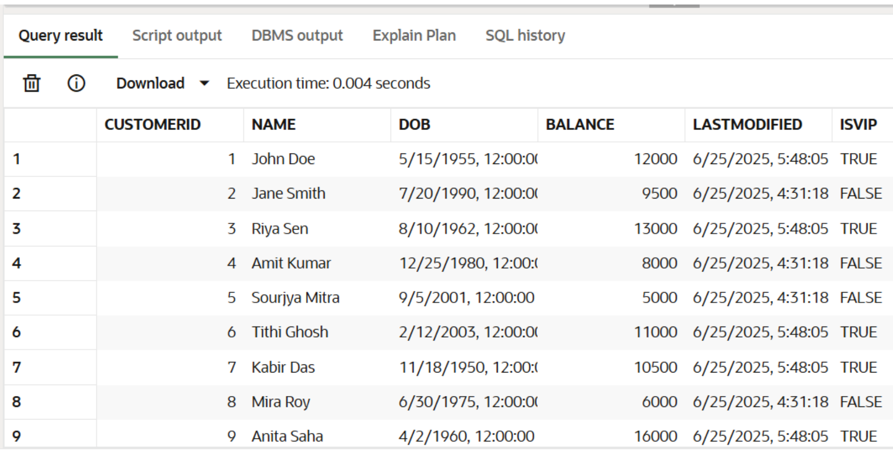
Solution:

```
---------------------------------------------------------------------------------------------------------------

ALTER TABLE Customers

ADD IsVIP VARCHAR2(5) DEFAULT 'FALSE';

/

BEGIN

  FOR vip_rec IN (

    SELECT CustomerID

    FROM Customers

    WHERE Balance > 10000

  )

  LOOP

    UPDATE Customers

    SET IsVIP = 'TRUE'

    WHERE CustomerID = vip_rec.CustomerID;

  END LOOP;

  COMMIT;

  DBMS_OUTPUT.PUT_LINE('✅ VIP status updated for customers with balance > 10000.');

END;

/
```

OUTPUT:



```
✅ VIP status updated for customers with balance > $10,000.

PL/SQL procedure successfully completed.

Elapsed: 00:00:00.012
```



Execution time: 0.004 seconds

	CUSTOMERID	NAME	DOB	BALANCE	LASTMODIFIED	ISVIP
1	1	John Doe	5/15/1955, 12:00:0	12000	6/25/2025, 5:48:05	TRUE
2	2	Jane Smith	7/20/1990, 12:00:0	9500	6/25/2025, 4:31:18	FALSE
3	3	Riya Sen	8/10/1962, 12:00:0	13000	6/25/2025, 5:48:05	TRUE
4	4	Amit Kumar	12/25/1980, 12:00:	8000	6/25/2025, 4:31:18	FALSE
5	5	Sourjya Mitra	9/5/2001, 12:00:00	5000	6/25/2025, 4:31:18	FALSE
6	6	Tithi Ghosh	2/12/2003, 12:00:0	11000	6/25/2025, 5:48:05	TRUE
7	7	Kabir Das	11/18/1950, 12:00:	10500	6/25/2025, 5:48:05	TRUE
8	8	Mira Roy	6/30/1975, 12:00:0	6000	6/25/2025, 4:31:18	FALSE
9	9	Anita Saha	4/2/1960, 12:00:00	16000	6/25/2025, 5:48:05	TRUE

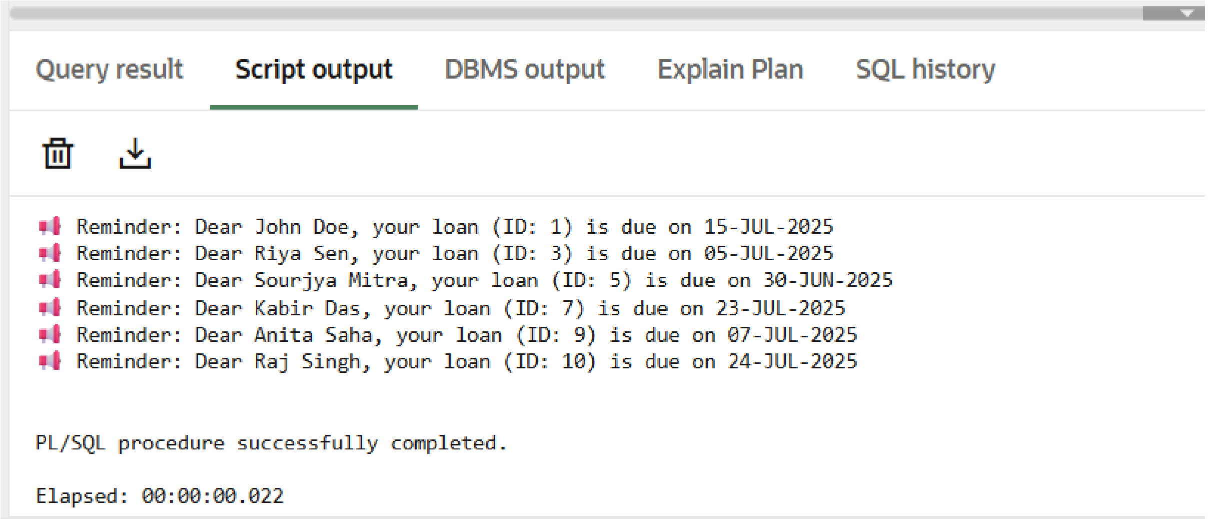
Scenario 3: The bank wants to send reminders to customers whose loans are due within the next 30 days.

Question: Write a PL/SQL block that fetches all loans due in the next 30 days and prints a reminder message for each customer.

Solution:

```
DECLARE
 v_name Customers.Name%TYPE;
BEGIN
 FOR loan_rec IN (
  SELECT LoanID, CustomerID, EndDate
  FROM Loans
  WHERE EndDate <= SYSDATE + 30
 )
 LOOP
  SELECT Name INTO v_name
  FROM Customers
  WHERE CustomerID = loan_rec.CustomerID;


  DBMS_OUTPUT.PUT_LINE('📢 Reminder: Dear ' || v_name ||
             ', your loan (ID: ' || loan_rec.LoanID ||
             ') is due on ' || TO_CHAR(loan_rec.EndDate, 'DD-MON-YYYY'));
 END LOOP;
END;
/
```

Output:



```
📢 Reminder: Dear John Doe, your loan (ID: 1) is due on 15-JUL-2025
📢 Reminder: Dear Riya Sen, your loan (ID: 3) is due on 05-JUL-2025
📢 Reminder: Dear Sourjya Mitra, your loan (ID: 5) is due on 30-JUN-2025
📢 Reminder: Dear Kabir Das, your loan (ID: 7) is due on 23-JUL-2025
📢 Reminder: Dear Anita Saha, your loan (ID: 9) is due on 07-JUL-2025
📢 Reminder: Dear Raj Singh, your loan (ID: 10) is due on 24-JUL-2025


PL/SQL procedure successfully completed.

Elapsed: 00:00:00.022
```