**Example1: Control Structures**

Scenario 1:

SELECT \* FROM CUSTOMERS;

SELECT \* FROM LOANS;

SET SERVEROUTPUT ON;

DECLARE

CURSOR CUSTOMER\_CURSOR IS

SELECT CUSTOMERID, EXTRACT(YEAR FROM SYSDATE) - EXTRACT(YEAR FROM DOB) AS AGE

FROM CUSTOMERS;

VAR\_CUSTOMER\_ID CUSTOMERS.CUSTOMERID%TYPE;

VAR\_AGE NUMBER;

BEGIN

FOR CUSTOMER\_RECORD IN CUSTOMER\_CURSOR LOOP

VAR\_CUSTOMER\_ID := CUSTOMER\_RECORD.CUSTOMERID;

VAR\_AGE := CUSTOMER\_RECORD.AGE;

IF VAR\_AGE > 60 THEN

UPDATE LOANS

SET INTERESTRATE = INTERESTRATE - 1

WHERE CUSTOMERID = VAR\_CUSTOMER\_ID;

ELSE

DBMS\_OUTPUT.PUT\_LINE('CUSTOMER WITH CUSTOMER ID : ' || VAR\_CUSTOMER\_ID || ' IS OF AGE : ' || VAR\_AGE);

DBMS\_OUTPUT.PUT\_LINE('NO CHANGE IN LOAN');

END IF;

END LOOP;

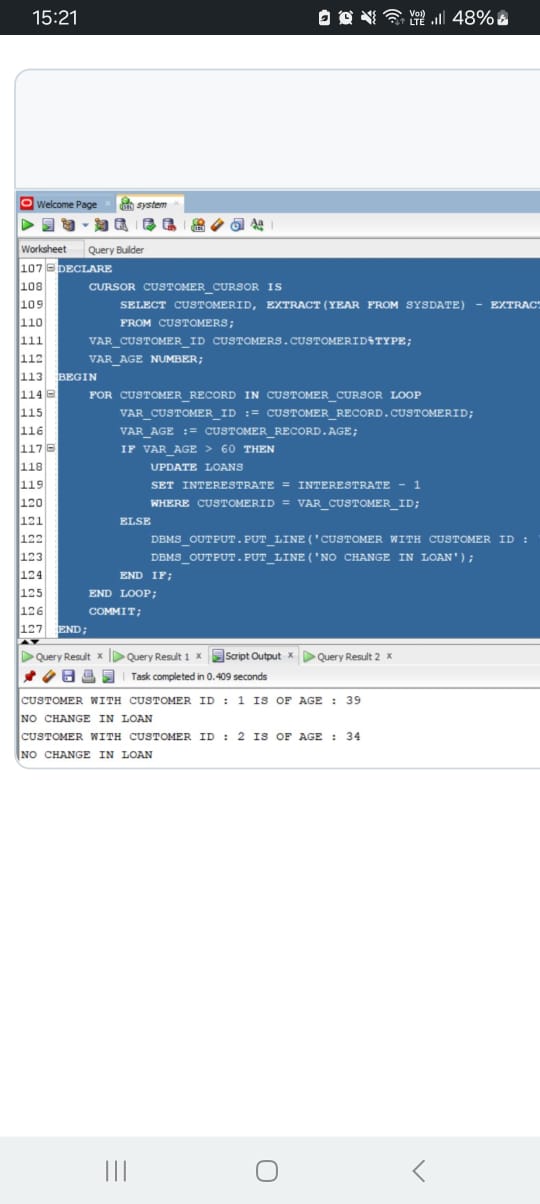
COMMIT;

END;

/

SELECT \* FROM LOANS;

Output:



Scenario 2:

DESC CUSTOMERS;

ALTER TABLE CUSTOMERS ADD ISVIP CHAR(10) CONSTRAINT CHK1 CHECK(ISVIP IN ('TRUE','FALSE')) ;

SELECT \* FROM CUSTOMERS;

SET SERVEROUTPUT ON;

DECLARE

CURSOR CUSTOMER\_CURSOR IS

SELECT CUSTOMERID, BALANCE

FROM CUSTOMERS;

VAR\_CUSTOMER\_ID CUSTOMERS.CUSTOMERID%TYPE;

VAR\_BALANCE CUSTOMERS.BALANCE%TYPE;

BEGIN

FOR CUSTOMER\_RECORD IN CUSTOMER\_CURSOR LOOP

VAR\_CUSTOMER\_ID := CUSTOMER\_RECORD.CUSTOMERID;

VAR\_BALANCE := CUSTOMER\_RECORD.BALANCE;

IF VAR\_BALANCE > 10000 THEN

DBMS\_OUTPUT.PUT\_LINE('CUSTOMER ID : ' || VAR\_CUSTOMER\_ID || ' HAS BALANCE GREATER THAN 10000');

UPDATE CUSTOMERS

SET ISVIP = 'TRUE'

WHERE CUSTOMERID = VAR\_CUSTOMER\_ID;

ELSE

DBMS\_OUTPUT.PUT\_LINE('CUSTOMER ID : ' || VAR\_CUSTOMER\_ID || ' HAS BALANCE LESSER THAN 10000');

UPDATE CUSTOMERS

SET ISVIP = 'FALSE'

WHERE CUSTOMERID = VAR\_CUSTOMER\_ID;

END IF;

END LOOP;

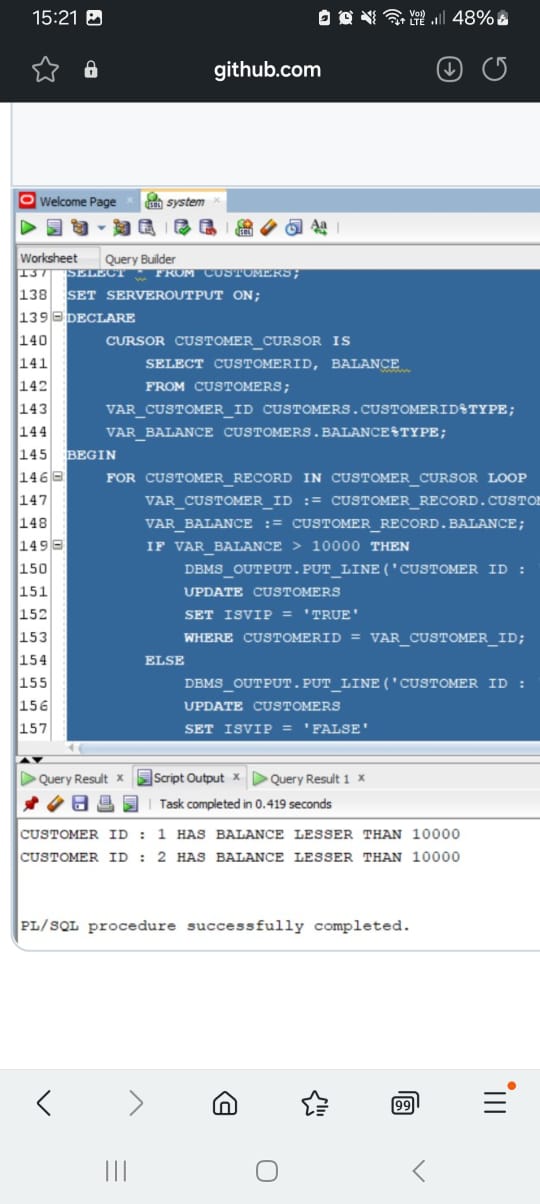
COMMIT;

END;

/

SELECT \* FROM CUSTOMERS;

Output:



Scenario 3:

SET SERVEROUTPUT ON;

DECLARE

CURSOR CUR\_LOANS IS

SELECT L.LOANID, L.CUSTOMERID, C.NAME, L.ENDDATE

FROM LOANS L

JOIN CUSTOMERS C ON L.CUSTOMERID = C.CUSTOMERID

WHERE L.ENDDATE BETWEEN SYSDATE AND SYSDATE + 30;

V\_LOAN\_ID LOANS.LOANID%TYPE;

V\_CUSTOMER\_ID LOANS.CUSTOMERID%TYPE;

V\_CUSTOMER\_NAME CUSTOMERS.NAME%TYPE;

V\_END\_DATE LOANS.ENDDATE%TYPE;

V\_FOUND BOOLEAN := FALSE;

BEGIN

OPEN CUR\_LOANS;

LOOP

FETCH CUR\_LOANS INTO V\_LOAN\_ID, V\_CUSTOMER\_ID, V\_CUSTOMER\_NAME, V\_END\_DATE;

EXIT WHEN CUR\_LOANS%NOTFOUND;

V\_FOUND := TRUE;

DBMS\_OUTPUT.PUT\_LINE('Reminder: Loan ' || V\_LOAN\_ID || ' for customer ' || V\_CUSTOMER\_NAME || ' (ID: ' || V\_CUSTOMER\_ID || ') is due on ' || TO\_CHAR(V\_END\_DATE, 'YYYY-MM-DD'));

END LOOP;

CLOSE CUR\_LOANS;

IF NOT V\_FOUND THEN

DBMS\_OUTPUT.PUT\_LINE('No loans are due within the next 30 days.');

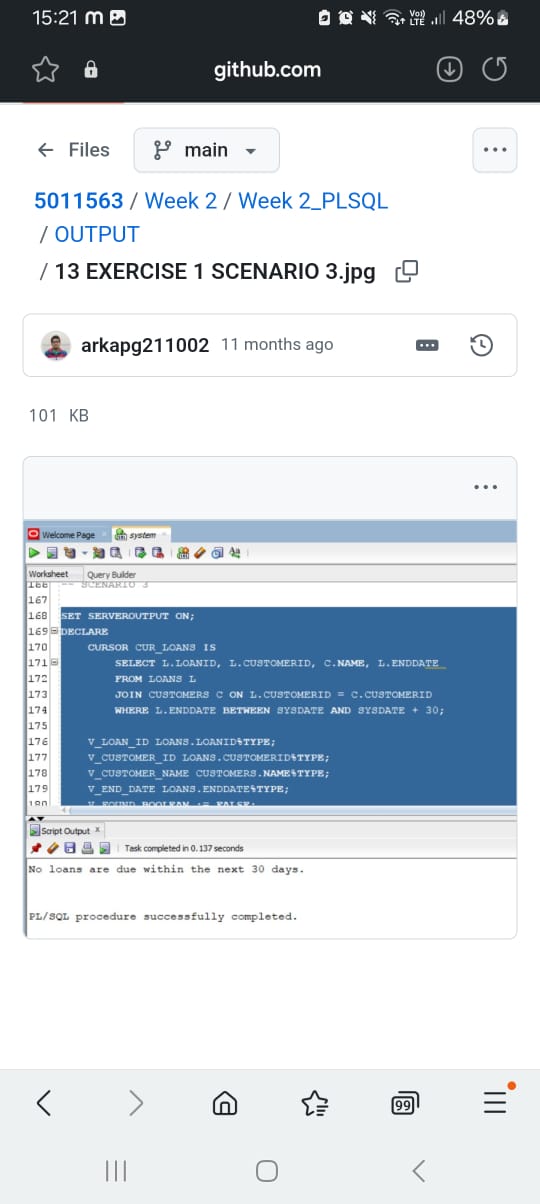
END IF;

END;

/

/\*

Output:



**Example3: Stored Procedures**

Scenario 1:

SELECT \* FROM ACCOUNTS;

SET SERVEROUTPUT ON;

CREATE OR REPLACE PROCEDURE PROCESSMONTHLYINTEREST AS

BEGIN

UPDATE ACCOUNTS

SET BALANCE = BALANCE \* 1.01,

LASTMODIFIED = SYSDATE

WHERE ACCOUNTTYPE = 'Savings';

COMMIT;

DBMS\_OUTPUT.PUT\_LINE('Monthly interest processed for all savings accounts.');

EXCEPTION

WHEN OTHERS THEN

ROLLBACK;

DBMS\_OUTPUT.PUT\_LINE('Error processing monthly interest: ' || SQLERRM);

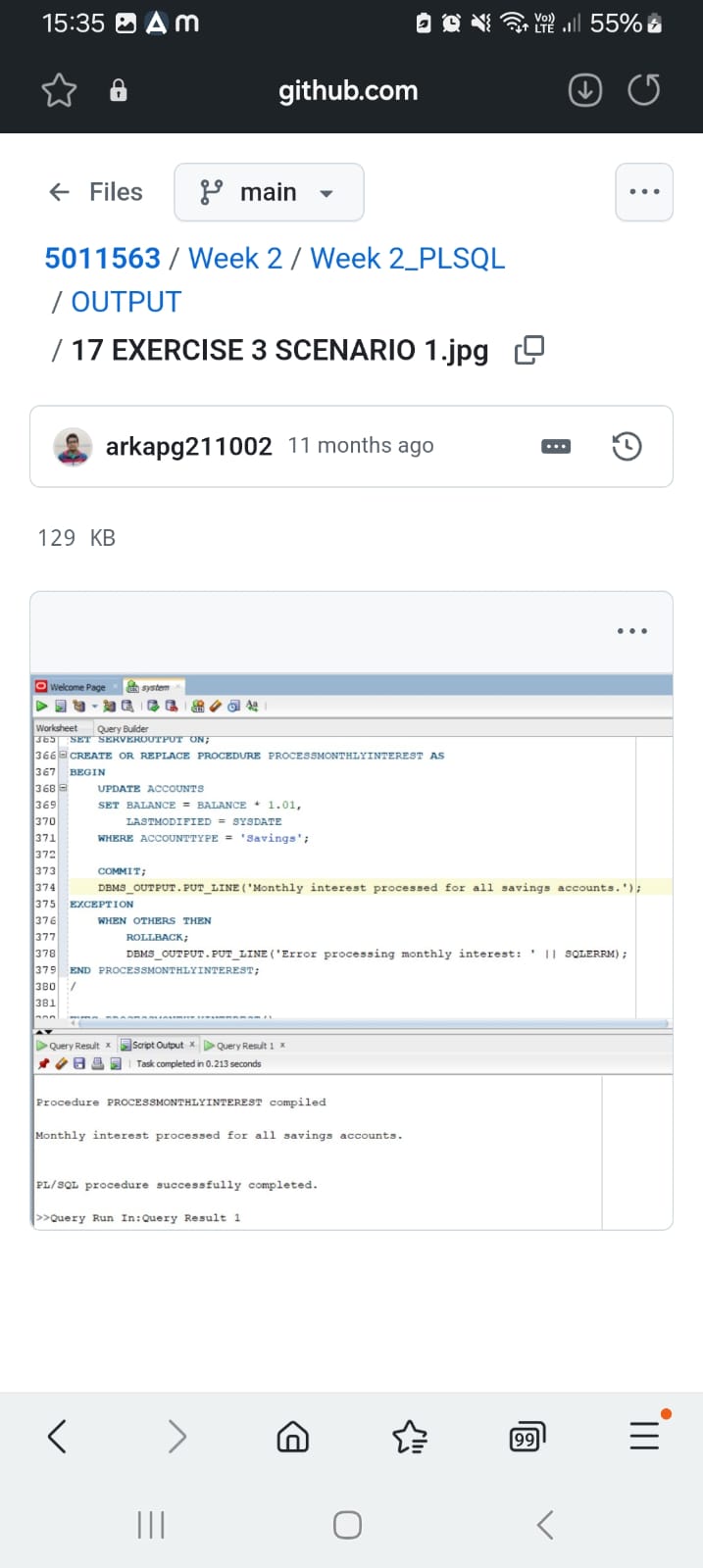
END PROCESSMONTHLYINTEREST;

/

EXEC PROCESSMONTHLYINTEREST();

SELECT \* FROM ACCOUNTS;

Output:



Scenario 2:

SELECT \* FROM EMPLOYEES;

SET SERVEROUTPUT ON;

CREATE OR REPLACE PROCEDURE UPDATEEMPLOYEEBONUS(

P\_DEPARTMENT IN EMPLOYEES.DEPARTMENT%TYPE,

P\_BONUS\_PERCENTAGE IN NUMBER

) AS

BEGIN

UPDATE EMPLOYEES

SET SALARY = SALARY \* (1 + P\_BONUS\_PERCENTAGE / 100),

HIREDATE = SYSDATE

WHERE DEPARTMENT = P\_DEPARTMENT;

COMMIT;

DBMS\_OUTPUT.PUT\_LINE('Bonus applied to employees in the ' || P\_DEPARTMENT || ' department.');

EXCEPTION

WHEN OTHERS THEN

ROLLBACK;

DBMS\_OUTPUT.PUT\_LINE('Error updating employee bonuses: ' || SQLERRM);

END UPDATEEMPLOYEEBONUS;

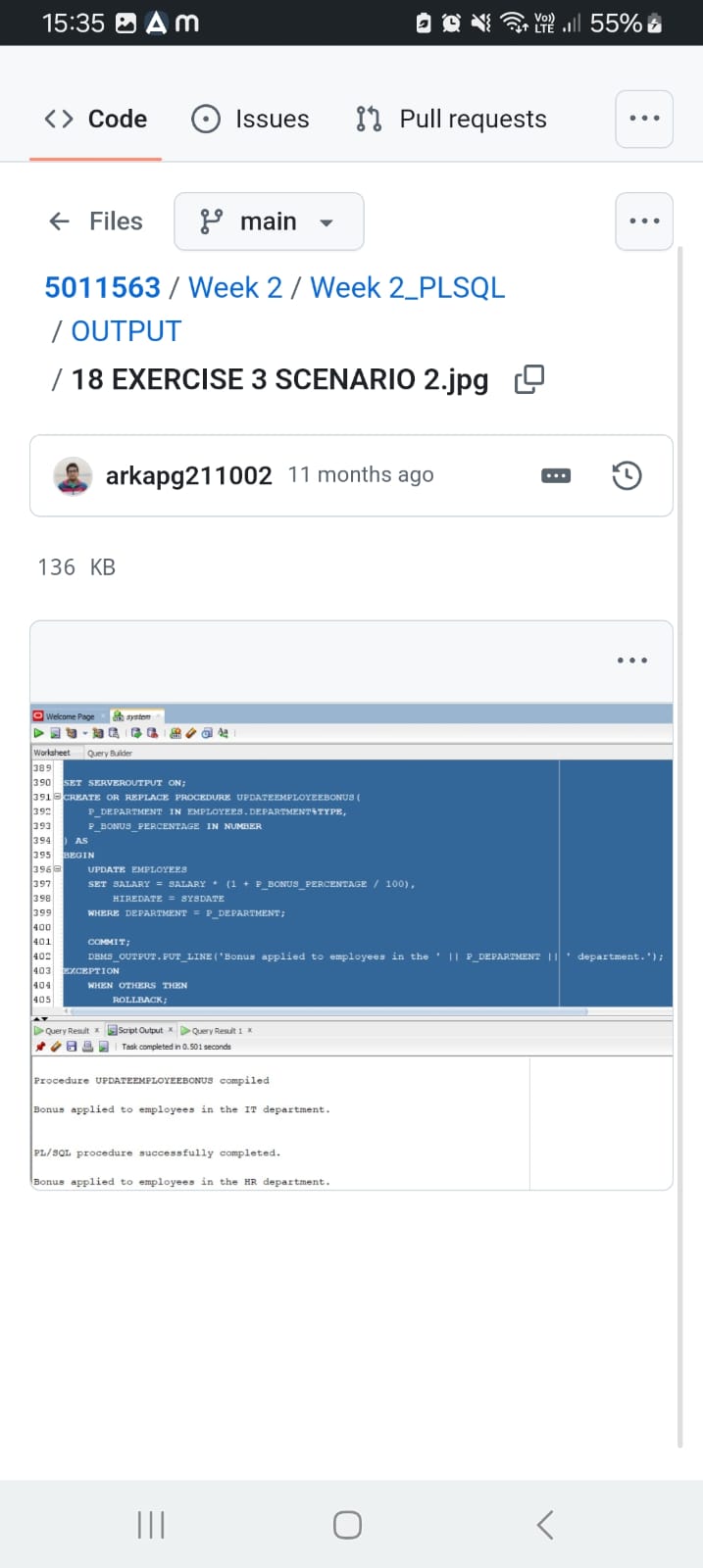
/

EXEC UPDATEEMPLOYEEBONUS('IT',5);

EXEC UPDATEEMPLOYEEBONUS('HR',3);

SELECT \* FROM EMPLOYEES;

Output:



Scenario 3:

SELECT \* FROM ACCOUNTS;

SET SERVEROUTPUT ON;

CREATE OR REPLACE PROCEDURE TRANSFERFUNDS(

P\_FROM\_ACCOUNT\_ID IN ACCOUNTS.ACCOUNTID%TYPE,

P\_TO\_ACCOUNT\_ID IN ACCOUNTS.ACCOUNTID%TYPE,

P\_AMOUNT IN NUMBER

) AS

V\_FROM\_BALANCE ACCOUNTS.BALANCE%TYPE;

BEGIN

SELECT BALANCE INTO V\_FROM\_BALANCE

FROM ACCOUNTS

WHERE ACCOUNTID = P\_FROM\_ACCOUNT\_ID

FOR UPDATE;

-- Check for sufficient funds

IF V\_FROM\_BALANCE < P\_AMOUNT THEN

RAISE\_APPLICATION\_ERROR(-20001, 'Insufficient funds in the source account.');

END IF;

-- Perform the transfer

UPDATE ACCOUNTS

SET BALANCE = BALANCE - P\_AMOUNT,

LASTMODIFIED = SYSDATE

WHERE ACCOUNTID = P\_FROM\_ACCOUNT\_ID;

UPDATE ACCOUNTS

SET BALANCE = BALANCE + P\_AMOUNT,

LASTMODIFIED = SYSDATE

WHERE ACCOUNTID = P\_TO\_ACCOUNT\_ID;

COMMIT;

DBMS\_OUTPUT.PUT\_LINE('Transfer of ' || P\_AMOUNT || ' from account ' || P\_FROM\_ACCOUNT\_ID || ' to account ' || P\_TO\_ACCOUNT\_ID || ' completed successfully.');

EXCEPTION

WHEN OTHERS THEN

ROLLBACK;

DBMS\_OUTPUT.PUT\_LINE('Transfer failed: ' || SQLERRM);

END TRANSFERFUNDS;

/

EXEC TRANSFERFUNDS(1,2,100);

SELECT \* FROM ACCOUNTS;

/\*

Output:

