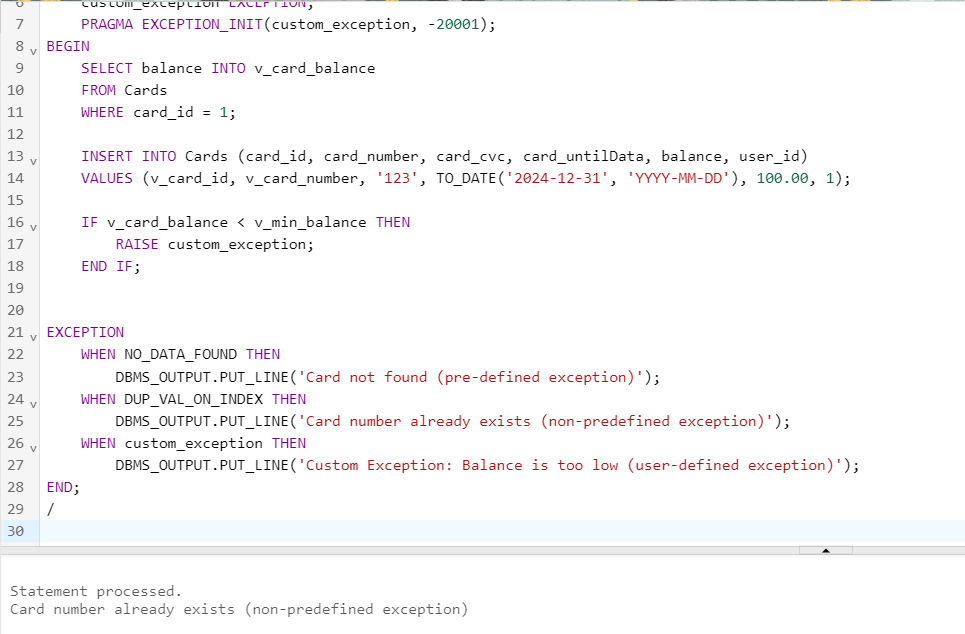
**Lab3. Handling exceptions**

1. Add at least three exception handling sections that trap all three different types of exceptions (pre-defined, non-predefined, user-defined).



DECLARE

v\_card\_balance DECIMAL(10, 2);

v\_min\_balance DECIMAL(10, 2) := 100.00;

v\_card\_id INT := 1;

v\_card\_number VARCHAR2(16) := '1234567890123456';

custom\_exception EXCEPTION;

PRAGMA EXCEPTION\_INIT(custom\_exception, -20001);

BEGIN

SELECT balance INTO v\_card\_balance

FROM Cards

WHERE card\_id = 1;

INSERT INTO Cards (card\_id, card\_number, card\_cvc, card\_untilData, balance, user\_id)

VALUES (v\_card\_id, v\_card\_number, '123', TO\_DATE('2024-12-31', 'YYYY-MM-DD'), 100.00, 1);

IF v\_card\_balance < v\_min\_balance THEN

RAISE custom\_exception;

END IF;

EXCEPTION

WHEN NO\_DATA\_FOUND THEN

DBMS\_OUTPUT.PUT\_LINE('Card not found (pre-defined exception)');

WHEN DUP\_VAL\_ON\_INDEX THEN

DBMS\_OUTPUT.PUT\_LINE('Card number already exists (non-predefined exception)');

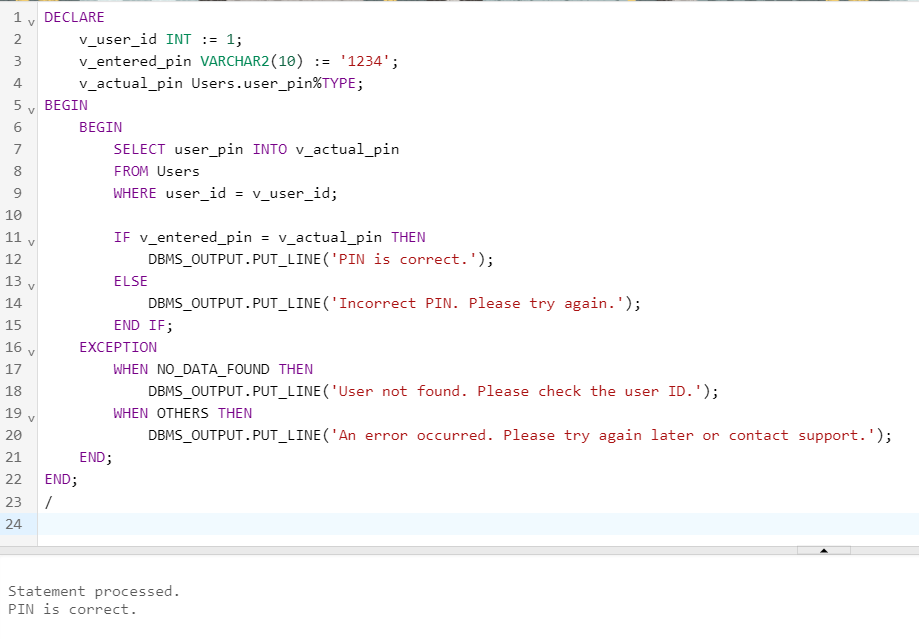
WHEN custom\_exception THEN

DBMS\_OUTPUT.PUT\_LINE('Custom Exception: Balance is too low (user-defined exception)');

END;

/

1. Try incorporating exception handling into the anonymous blocks you created in lab 2.



DECLARE

v\_user\_id INT := 1;

v\_entered\_pin VARCHAR2(10) := '1234';

v\_actual\_pin Users.user\_pin%TYPE;

BEGIN

BEGIN

SELECT user\_pin INTO v\_actual\_pin

FROM Users

WHERE user\_id = v\_user\_id;

IF v\_entered\_pin = v\_actual\_pin THEN

DBMS\_OUTPUT.PUT\_LINE('PIN is correct.');

ELSE

DBMS\_OUTPUT.PUT\_LINE('Incorrect PIN. Please try again.');

END IF;

EXCEPTION

WHEN NO\_DATA\_FOUND THEN

DBMS\_OUTPUT.PUT\_LINE('User not found. Please check the user ID.');

WHEN OTHERS THEN

DBMS\_OUTPUT.PUT\_LINE('An error occurred. Please try again later or contact support.');

END;

END;

/

Questions:

1. What is an exception?
2. What types of exceptions exist in PL/SQL?
3. How are exceptions handled?
4. Describe the structure of the exception handling section.
5. What are predefined Oracle server errors and how are they handled?
6. What are non-predefined Oracle server errors and how are they handled?
7. What are user-defined exceptions and how are they handled?

DECLARE

v\_user\_id INT := 2;

v\_uname VARCHAR2(255);

v\_ulastname VARCHAR2(255);

v\_card\_number VARCHAR2(16);

v\_loan\_sum DECIMAL(10, 2);

BEGIN

SELECT uname, ulastname

INTO v\_uname, v\_ulastname

FROM Users

WHERE user\_id = v\_user\_id;

SELECT card\_number, loan\_sum

INTO v\_card\_number, v\_loan\_sum

FROM Cards c

JOIN Loan l ON c.user\_id = l.user\_id

WHERE c.user\_id = v\_user\_id;

DBMS\_OUTPUT.PUT\_LINE('User ID: ' || v\_user\_id || ', Username: ' || v\_uname || ', Last Name: ' || v\_ulastname|| ', Card Number: ' || v\_card\_number || ', Loan Sum: ' || v\_loan\_sum);

EXCEPTION

WHEN NO\_DATA\_FOUND THEN

INSERT INTO Users (user\_id, uname, ulastname, uphone\_number, user\_password, user\_pin, mybank\_id)

VALUES (v\_user\_id, 'Anthony', 'Stark', '+1234567890', 'password', '5555', 1);

COMMIT;

END;

/

SELECT \* FROM USERS WHERE USER\_ID = 2;