

# PL/SQL Notes

1. What is PL/SQL and how does it differ from SQL?

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PL/SQL is Oracle's procedural language extension for SQL. It adds procedural constructs like loops, conditions, and exception handling to SQL, allowing for more complex and reusable code.

2. Explain the structure of a PL/SQL block.

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A PL/SQL block has three sections:

1. Declaration: Declares variables, constants, and cursors.
2. Execution: Contains the procedural code.
3. Exception: Handles runtime errors.

3. How do you declare a variable in PL/SQL?

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Variables are declared in the declaration section using the `VARIABLE_NAME DATA_TYPE` syntax.  
For example:  
`v_employee_name VARCHAR2(50);`

4. What is a cursor in PL/SQL?

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A cursor is a pointer to a result set from a query.

There are two types:

1. Implicit cursors: Managed automatically by Oracle.
2. Explicit cursors: Defined and controlled by the programmer.

5. How do you handle exceptions in PL/SQL?

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Exceptions are handled in the `EXCEPTION` section using predefined exceptions (like `NO_DATA_FOUND`) or user-defined exceptions.

6. What is the difference between a procedure and a function in PL/SQL?

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- A procedure performs an action but does not return a value.

- A function returns a single value and can be used in SQL statements.

## 7. Explain the use of %TYPE and %ROWTYPE.

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- %TYPE is used to declare a variable with the same data type as a column in a table.
- %ROWTYPE is used to declare a record with the same structure as a row in a table or cursor.

## 8. Triggers

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A trigger is a stored procedure that is automatically executed in response to certain events on a particular table or view. Triggers can be used to enforce business rules, validate data, and update other tables or views.

## 9. What is a package in PL/SQL?

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A package is a schema object that groups logically related PL/SQL types, variables, and subprograms (procedures and functions). It has two parts:

1. Specification (interface): Defines the public components.
2. Body (implementation): Contains the actual code.

## 10. What is a nested table in PL/SQL?

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A nested table is a table stored within another table's column, allowing you to store a set of values in a single column.

## Example Code Snippets

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### Example 1: Basic PL/SQL Block

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```
DECLARE
    v_message VARCHAR2(50);
BEGIN
    v_message := 'Hello, PL/SQL!';
    DBMS_OUTPUT.PUT_LINE(v_message);
END;
```

### Example 2: Exception Handling

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DECLARE

    v\_number NUMBER;

BEGIN

    v\_number := 10 / 0;

EXCEPTION

    WHEN ZERO\_DIVIDE THEN

        DBMS\_OUTPUT.PUT\_LINE('Cannot divide by zero');

END;

Notes:

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- Use DBMS\_OUTPUT.PUT\_LINE to print messages in PL/SQL.
- Always handle exceptions to avoid runtime errors.
- Use %TYPE and %ROWTYPE for dynamic and reusable code.
- Packages help organize and modularize your PL/SQL code.