TOPS TECHNOLOGY

Module 4 – Introduction to DBMS

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SQL Cursors

1. What is a cursor in PL/SQL? Explain the difference between implicit and explicit cursors.

- PL/SQL, a **cursor** is a pointer that allows you to retrieve and manipulate data row by row from a result set returned by a query. Cursors are necessary for handling SQL queries that return multiple rows, enabling the programmer to process each row individually.
- Types of Cursors:
- **Implicit Cursor**:
- Automatically created by Oracle when a SQL query (such as SELECT, INSERT, UPDATE, or DELETE) is executed.
- Used for single SQL statements that return a single value or affect one or more rows.
- Does not require explicit declaration or management from the programmer.

- Oracle manages it in the background, handling the opening, fetching, and closing of the cursor.
- **Example**:
  - BEGIN
  - UPDATE employees SET salary = salary * 1.1 WHERE department_id = 10;
  - -- No need to explicitly declare a cursor here, Oracle handles it.
  - END;
- **Explicit Cursor**:
- Declared explicitly by the programmer for queries that return multiple rows.
- Gives the programmer full control over the cursor's behavior: opening, fetching rows, and closing the cursor.
- Useful when you need to process each row individually or perform operations on multiple result sets.

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- **Example**:
  - DECLARE
  - CURSOR emp_cursor IS
  - SELECT employee_id, employee_name FROM employees WHERE department_id = 10;
  - emp_record emp_cursor%ROWTYPE;
  - BEGIN
  - OPEN emp_cursor;
  - LOOP
  - FETCH emp_cursor INTO emp_record;
  - EXIT WHEN emp_cursor%NOTFOUND;
  - DBMS_OUTPUT.PUT_LINE(emp_record.employee_id || '' ||

2.When would you use an explicit cursor over an implicit one?

- You would use an **explicit cursor** over an **implicit cursor** when you need to process multiple rows individually, require fine control over the cursor (e.g., opening, fetching, and closing), or need to handle complex queries with custom logic.
- Explicit cursors are ideal for iterating over result sets, handling dynamic conditions, and managing multiple cursors in a single block of code.
- For simple SQL operations returning single rows or for automatic query handling, implicit cursors are sufficient.