Database Programming with PL/SQL

2-7
Good Programming Practices

Objectives

This lesson covers the following objectives:

- List examples of good programming practices

- Accurately insert comments into PL/SQL code

- Create PL/SQL code that follows formatting guidelines to produce readable code

Purpose

- Good programming practices are techniques that you can follow to create the best code possible.

- Programming practices cover everything from making code more readable to creating code with faster performance.

- Software engineering teams often follow a style guide so that everyone on the team uses the same techniques.

- This makes it easier to read and modify code written by others.

- Course work should follow the conventions demonstrated in this lesson.

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Good Programming Practices

- Several examples of good programming practices have already been demonstrated and/or discussed in this course:

- Use explicit data type conversions because implicit data type conversions can be slower and the rules can change in later software releases.

- Use meaningful identifiers when declaring variables, constants, and parameters.

- Declare one variable or constant identifier per line for better readability and code maintenance.

Good Programming Practices

- Other good programming practices demonstrated and/or discussed:

- Avoid ambiguity when choosing identifiers.

- Use the %TYPE attribute to declare a variable according to another previously declared variable or database column.

- Use the NOT NULL constraint when declaring a variable that must hold a value.

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Programming Guidelines

- Other programming guidelines include:

- Documenting code with comments

- Developing a case convention for the code

- Developing naming conventions for identifiers and other objects

- Enhancing readability by indenting

Commenting Code

- Comments assist in future maintenance or modification by helping other programmers know what the original programmer intended by the code written.

- Even the original programmer will benefit from commenting his/her code when returning for the first time to that code six months hence.

- Comments are strictly informational and do not enforce any conditions or behavior on logic or data. They are ignored when code is compiled.

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Commenting Code Example

- Prefix single-line comments with two dashes (--).
- Place multiple-line comments between the symbols " /* " and " */ ".

```
DECLARE
-- Created by Clara Oswald
 ...
 v_annual_sal NUMBER (9,2);

BEGIN      -- Start of executable section

/* Compute the annual salary based on the monthly
   salary input from the user */

 v_annual_sal := v_monthly_sal * 12;
 ...
END;       -- End of executable section
```

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Variable Case Conventions

- Case Conventions are shown below.

- The following table provides guidelines for writing code in uppercase and lowercase to help you distinguish keywords from named objects.

Category	Case Convention	Examples
SQL keywords	Uppercase	`SELECT, INSERT`
PL/SQL keywords	Uppercase	`DECLARE, BEGIN, IF`
Data types	Uppercase	`VARCHAR2, BOOLEAN`
Identifiers (variables, etc.)	Lowercase	`v_salary, emp_cursor, c_tax_rate, p_empno`
Tables and columns	Lowercase	`employees, dept_id, salary, hire_date`

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Naming Conventions

- The naming of identifiers should be clear, consistent, and unambiguous.

- One commonly-used convention is to name:
  - Variables starting with v_
  - Constants starting with c_
  - Parameters starting with p_ (for passing to procedures and functions)

Naming Conventions

Examples:

- v_date_of_birth

- v_last_name

- c_tax_rate

- c_commission_rate

- p_employee_id

- p_salary

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Indenting Code

- For clarity, indent each level of code. Examples:

```
BEGIN
  IF x = 0 THEN
    y := 1;
  END IF;
END;
```

```
DECLARE
  v_deptno    NUMBER(4);
  v_location_id NUMBER(4);
BEGIN
  SELECT  department_id, location_id
    INTO  v_deptno, v_location_id
    FROM  departments
    WHERE department_name = 'Sales';
  DBMS_OUTPUT.PUTLINE(...
END;
```

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Summary

In this lesson, you should have learned how to:

- List examples of good programming practices

- Accurately insert comments into PL/SQL code

- Create PL/SQL code that follows formatting guidelines to produce readable code