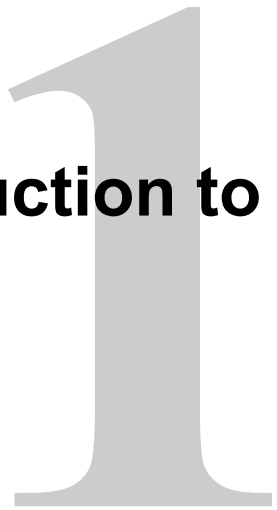


Introduction to PL/SQL

Objectives

After completing this lesson, you should be able to do the following:

- Explain the need for PL/SQL
- Explain the benefits of PL/SQL
- Identify the different types of PL/SQL blocks
- Output messages in PL/SQL

About PL/SQL

PL/SQL:

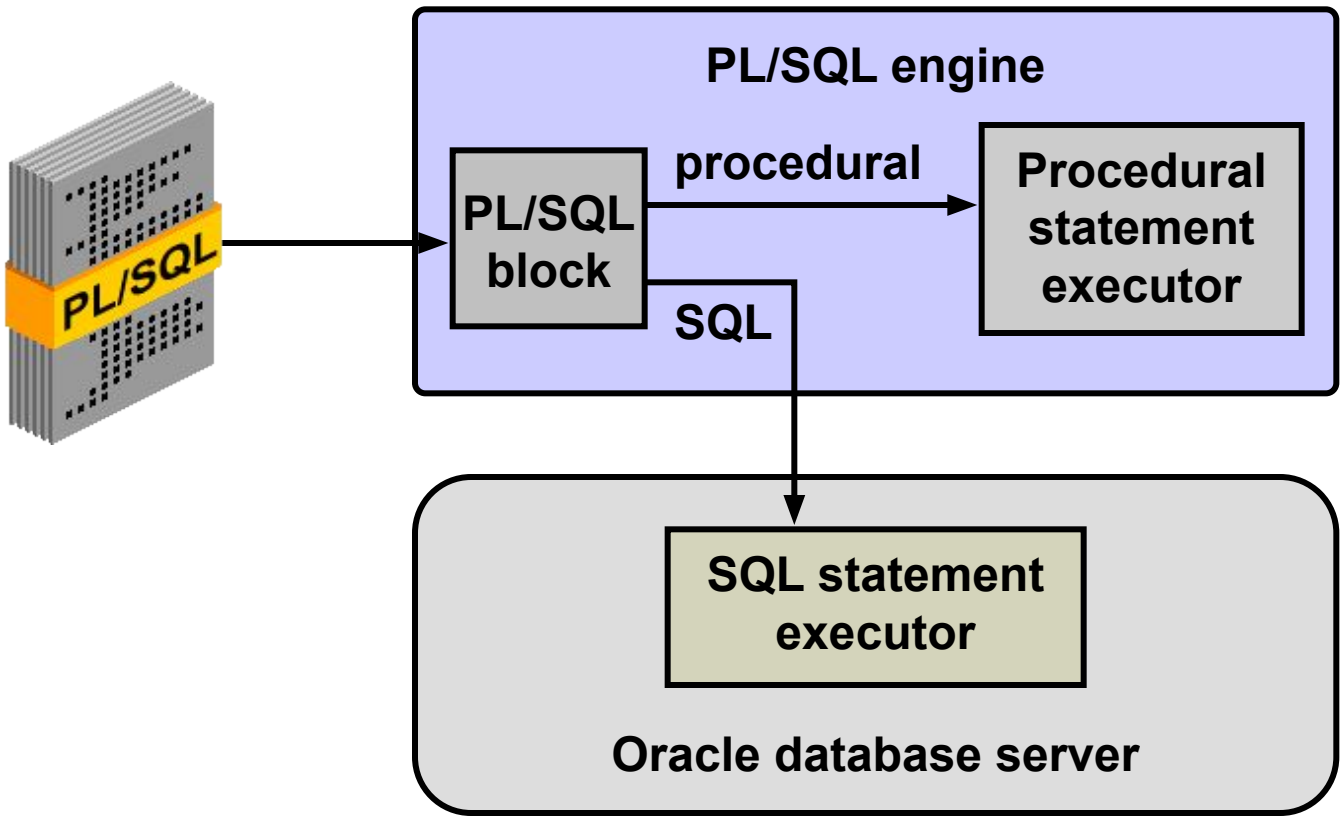
- Stands for “Procedural Language extension to SQL”
- Is Oracle Corporation’s standard data access language for relational databases
- Seamlessly integrates procedural constructs with SQL

About PL/SQL

PL/SQL:

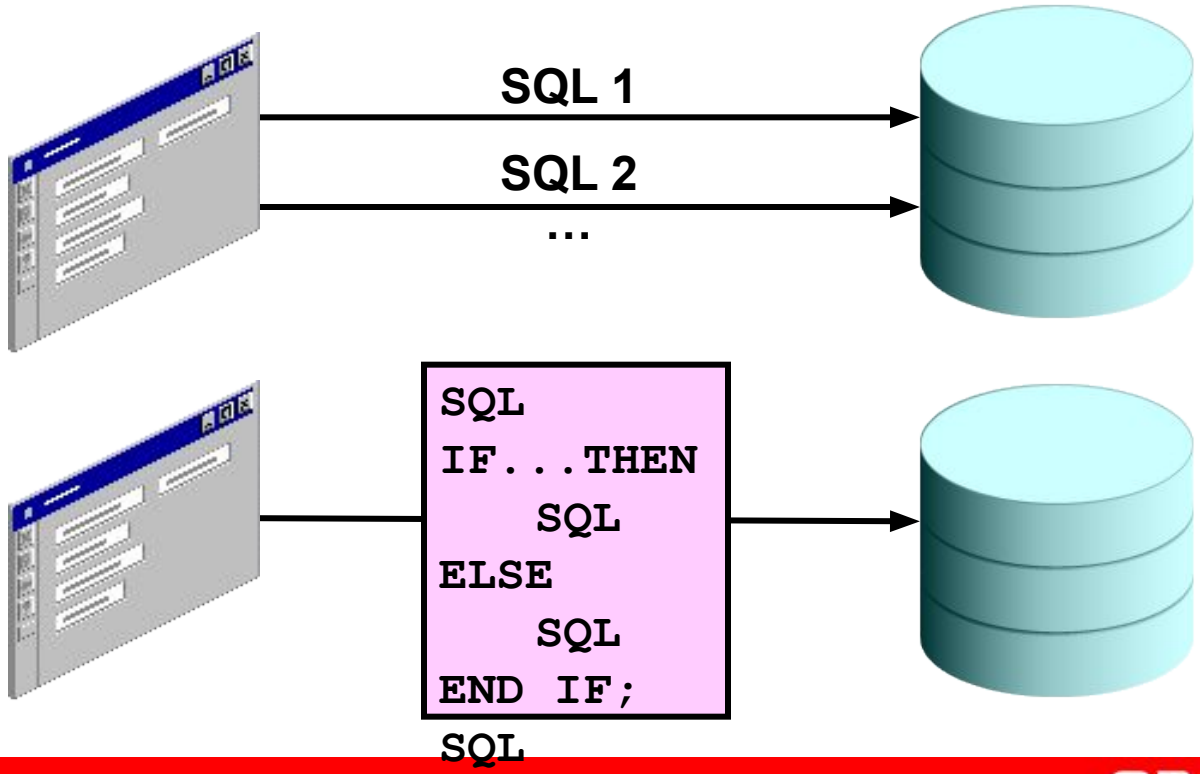
- Provides a block structure for executable units of code. Maintenance of code is made easier with such a well-defined structure.
- Provides procedural constructs such as:
  - Variables, constants, and data types
  - Control structures such as conditional statements and loops
  - Reusable program units that are written once and executed many times

PL/SQL Environment



Benefits of PL/SQL

- Integration of procedural constructs with SQL
- Improved performance



Benefits of PL/SQL

- Modularized program development
- Integration with Oracle tools
- Portability
- Exception handling

PL/SQL Block Structure

- DECLARE (optional)
  - Variables, cursors, user-defined exceptions
- BEGIN (mandatory)
  - SQL statements
  - PL/SQL statements
- EXCEPTION (optional)
  - Actions to perform when errors occur
- END; (mandatory)

Block Types

Anonymous

```
[DECLARE]

BEGIN
  --statements

[EXCEPTION]

END;
```

Procedure

```
PROCEDURE name
IS

BEGIN
  --statements

[EXCEPTION]

END;
```

Function

```
FUNCTION name
RETURN datatype
IS
BEGIN
  --statements
  RETURN value;
[EXCEPTION]

END;
```

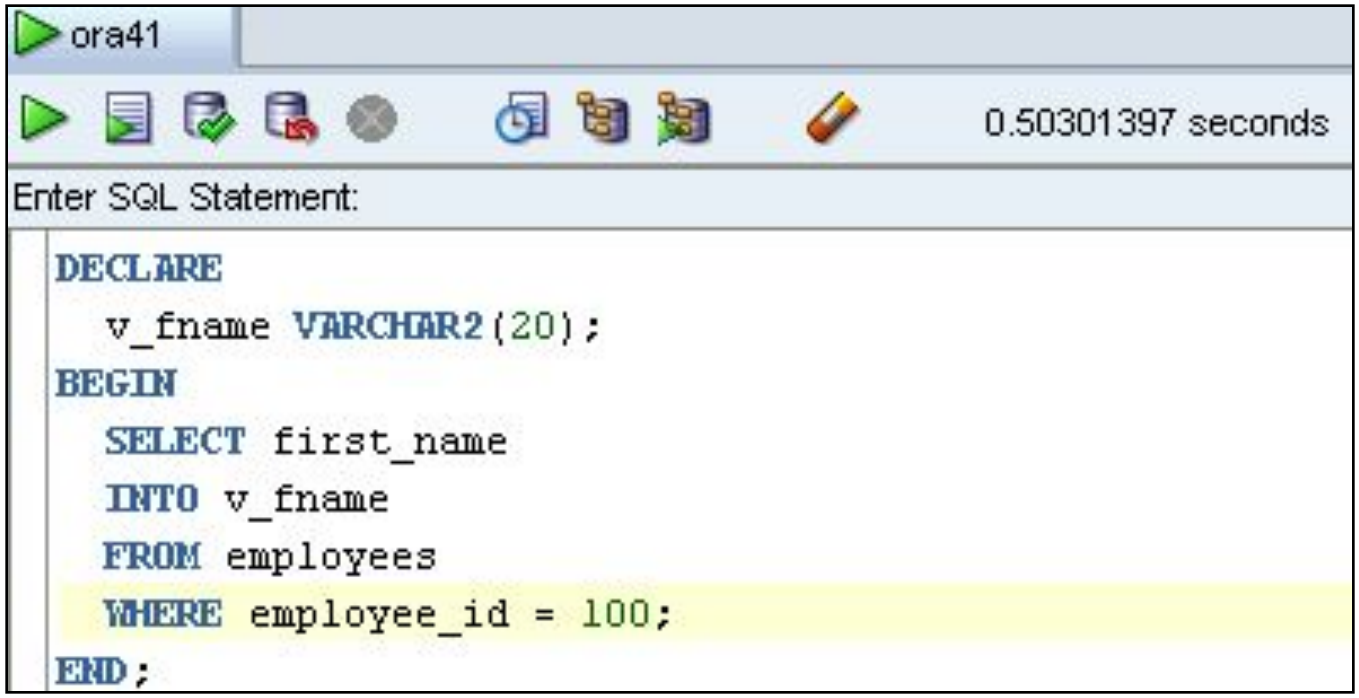
Program Constructs

Tools Constructs
Anonymous blocks
Application procedures or functions
Application packages
Application triggers
Object types

Database Server Constructs
Anonymous blocks
Stored procedures or functions
Stored packages
Database triggers
Object types

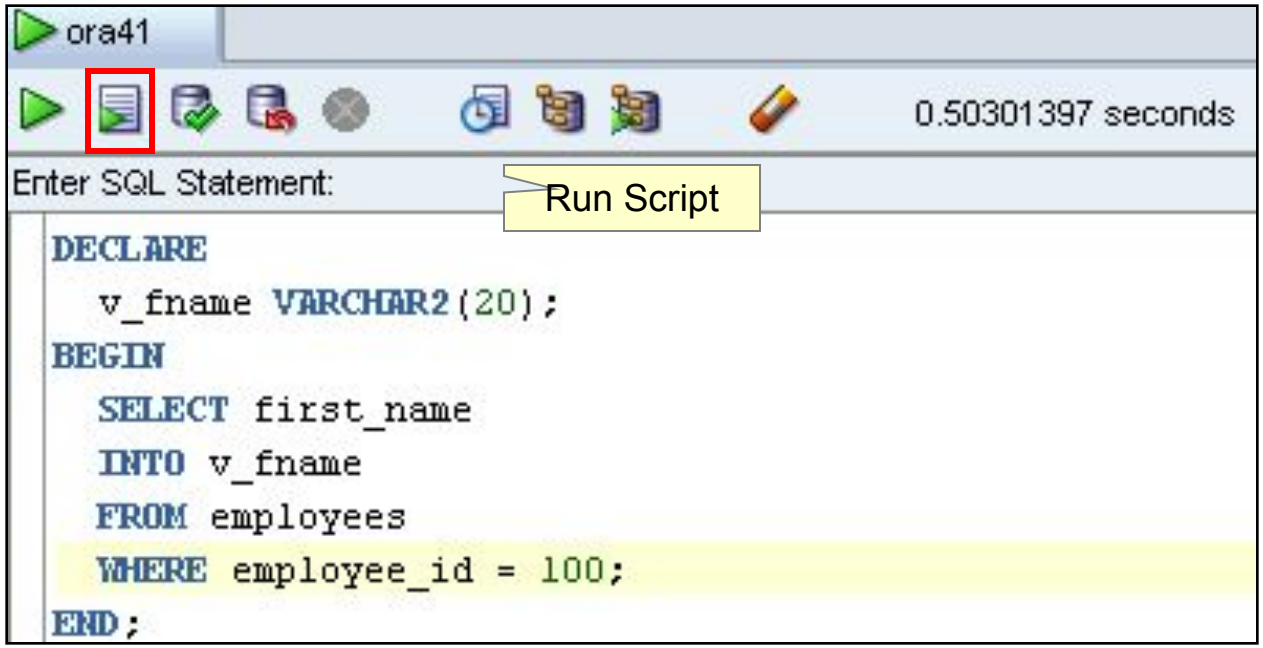
Create an Anonymous Block

Enter the anonymous block in the SQL Developer workspace:



Execute an Anonymous Block

Click the Run Script button to execute the anonymous block:



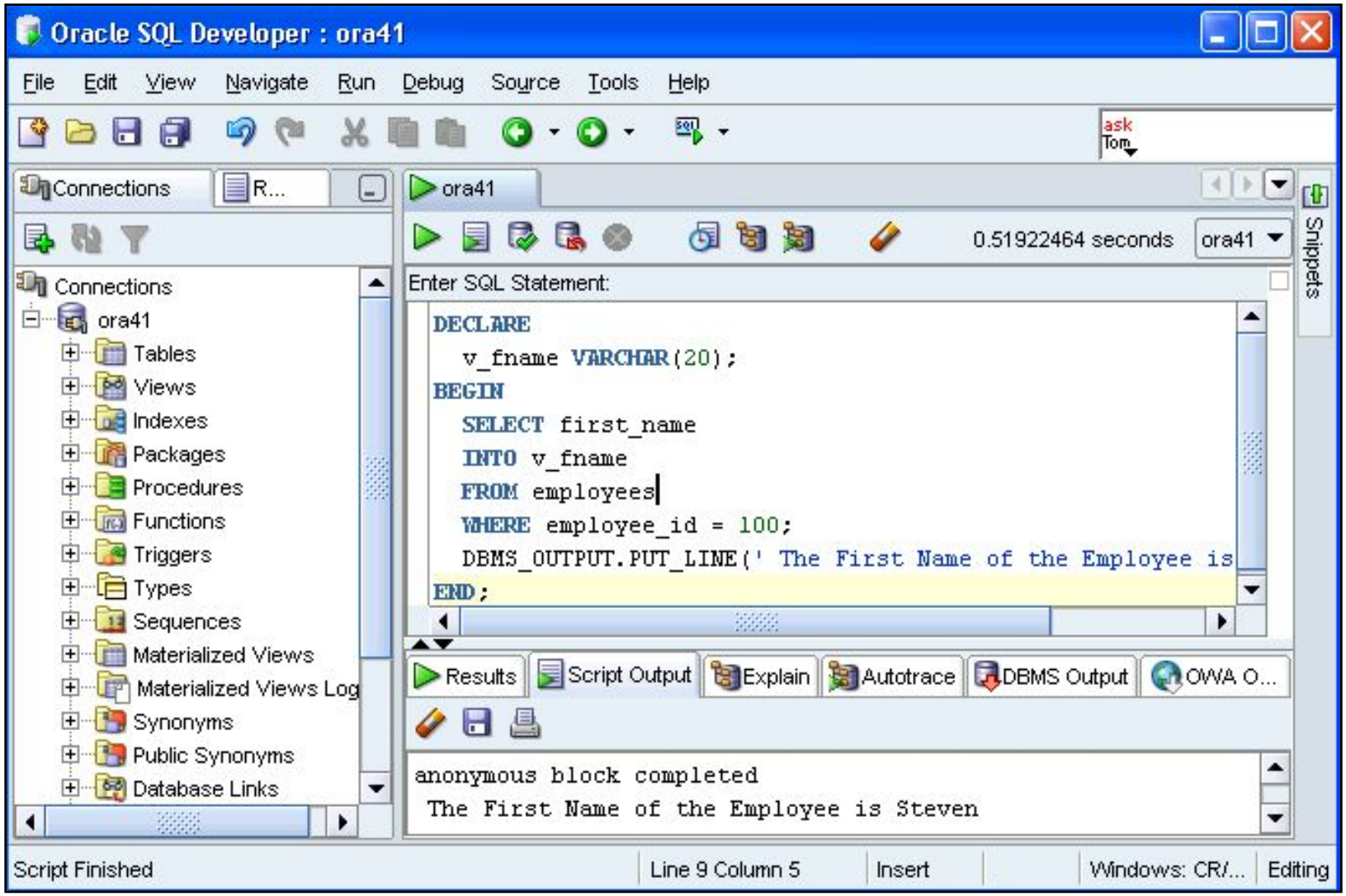
Test the Output of a PL/SQL Block

- Enable output in SQL Developer by clicking the Enable DBMS Output button on the DBMS Output tab:

- Use a predefined Oracle package and its procedure:
  - `DBMS_OUTPUT.PUT_LINE`

```
DBMS_OUTPUT.PUT_LINE(' The First Name of the
Employee is ' || v_fname);
...
```

Test the Output of a PL/SQL Block



Quiz

A PL/SQL block *must* consist of the following three sections:

- A Declarative section which begins with the keyword `DECLARE` and ends when the executable section starts.
- An Executable section which begins with the keyword `BEGIN` and ends with `END`.
- An Exception handling section which begins with the keyword `EXCEPTION` and is nested within the executable section.

1. True
2. False

Summary

In this lesson, you should have learned how to:

- Integrate SQL statements with PL/SQL program constructs
- Describe the benefits of PL/SQL
- Differentiate between PL/SQL block types
- Output messages in PL/SQL

Practice 1: Overview

This practice covers the following topics:

- Identifying the PL/SQL blocks that execute successfully
- Creating and executing a simple PL/SQL block