Store Procedure

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Overview of PL/SQL Stored Program Units

- Program unit
  - Self-contained group of program statements that can be used within larger program
- Anonymous PL/SQL programs
  - Programs that do not interact with other program units
- Stored PL/SQL program units
  - Programs that other programs can reference
  - Programs that other DB users can execute
- Server-side program units
  - Stored as DB objects and execute on the DB server
- Client-side program units
  - Stored in the workstation's file system & execute on the client

Types of Oracle Stored Program Units

Program Unit Type	Description	Where Stored	Where Executed
Procedure	Can accept multiple input parameters, and return multiple output values	Database	Server-side
Function	Can accept multiple input parameters, and can return a single output value	Database	Server-side
Library	Contains code for multiple related procedures or functions	Operating system file	Client-side
Package	Contains code for multiple related procedures, functions, and variables and can be made available to other database users	Database	Server-side
Database trigger	Contains code that executes when a user inserts, updates, or deletes records	Database	Server-side

Table 9-1 Types of Oracle10g stored program units

Creating Stored Program Units

- Procedures
  - Receive multiple input parameters
  - Return multiple output values or return no output values
  - Perform action such as inserting, updating, or deleting database records
- Functions
  - Receive multiple input parameters
  - Always returns single output value

Syntax to Create a Stored Program Unit Procedure

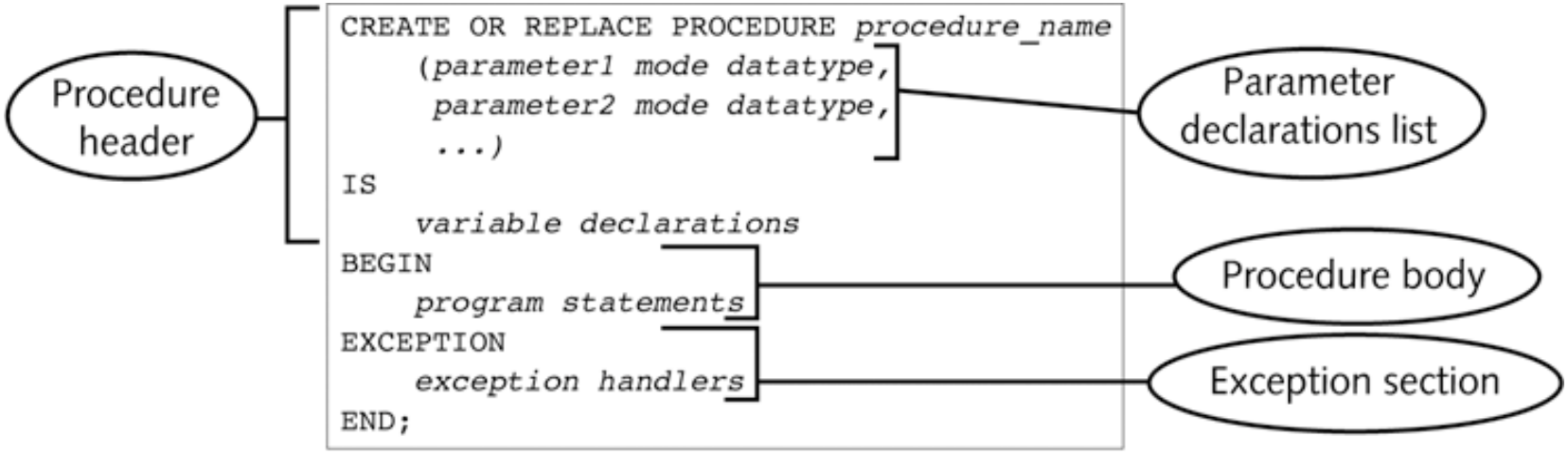

Figure 9-9 Syntax to create a stored program unit procedure

- Parameter mode
  - IN specifies a parameter passed as a read-only value that the receiving program cannot change
  - OUT specifies a parameter passed as a write-only value that can appear only on the left side of an assignment statement in the program unit
  - IN OUT specifies a parameter that is passed and whose value can be changed within the receiving program unit.

Creating a Stored Procedure in SQL*Plus

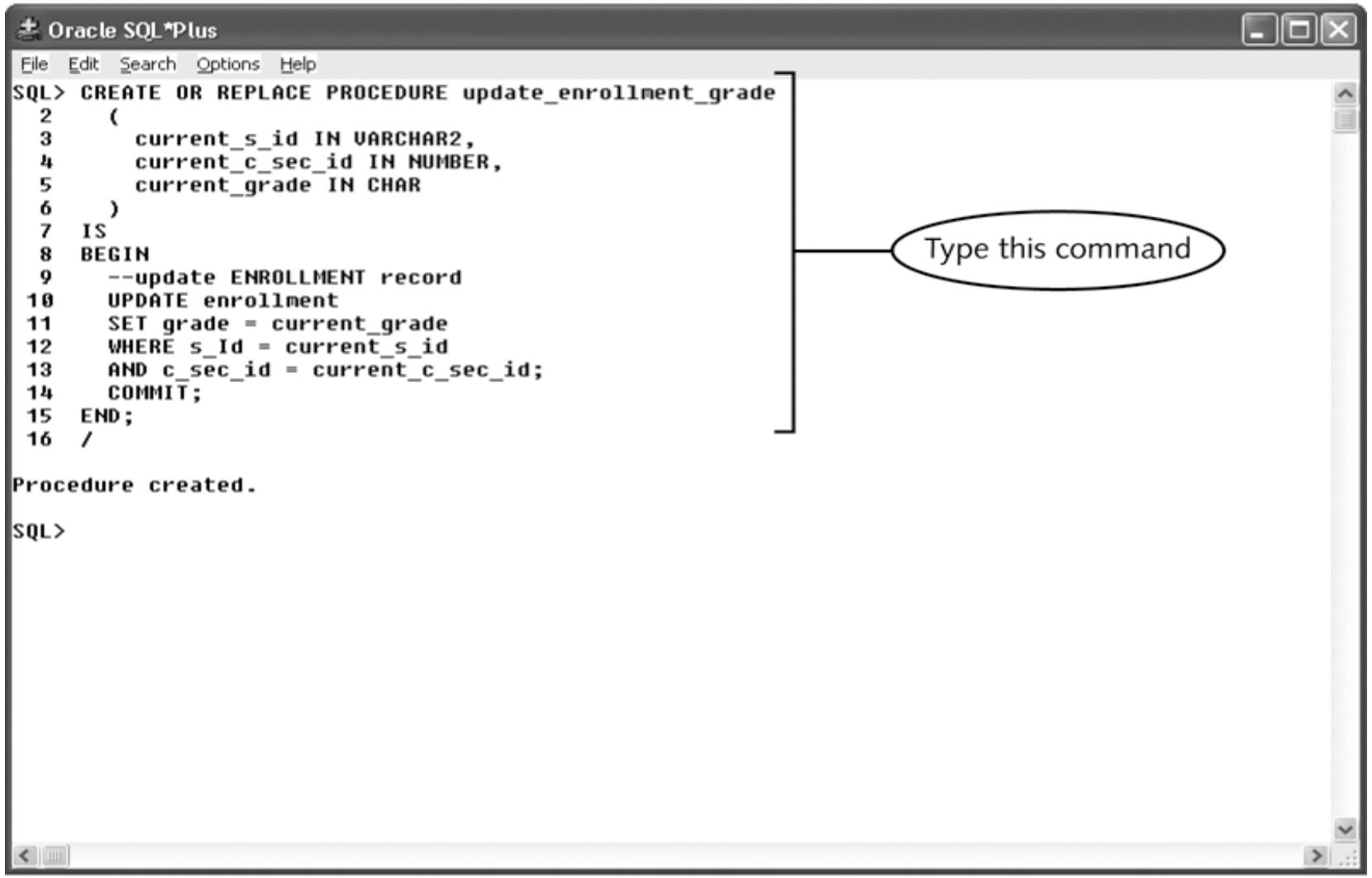

Figure 9-10 Creating a stored procedure in SQL*Plus

Calling a Stored Procedure

- Execute directly from SQL*Plus command line
- Create separate PL/SQL program that contains
  - Command to call stored procedure
  - Passes parameter values to procedure
- Calling stored procedure from SQL*Plus command line:

```
EXECUTE procedure_name
(parameter1_value, parameter2_value,
  ...);
```

```
Procedure Header
PROCEDURE update_enrollment_grade
      (current_s_idINVARCHAR2,current_c_sec_id IN NUMBER, current_grade INVARCHAR2)

Procedure Call: EXECUTE update_enrollment_grade(MA100,12,B);
```

Figure 9-13 Passing parameters to a procedure

Calling a Stored Procedure (continued)

- Variables passed for each parameter
  - Must be in same order as parameters appear in parameter declarations list
- Calling stored procedure **from separate PL/SQL program**
  - Similar to calling stored procedure from SQL*Plus command line
  - Omit EXECUTE command

```
update_enrollment_grade(MA100, 12, B);
```

Creating a Stored Program Unit Function

- Use `CREATE OR REPLACE FUNCTION`

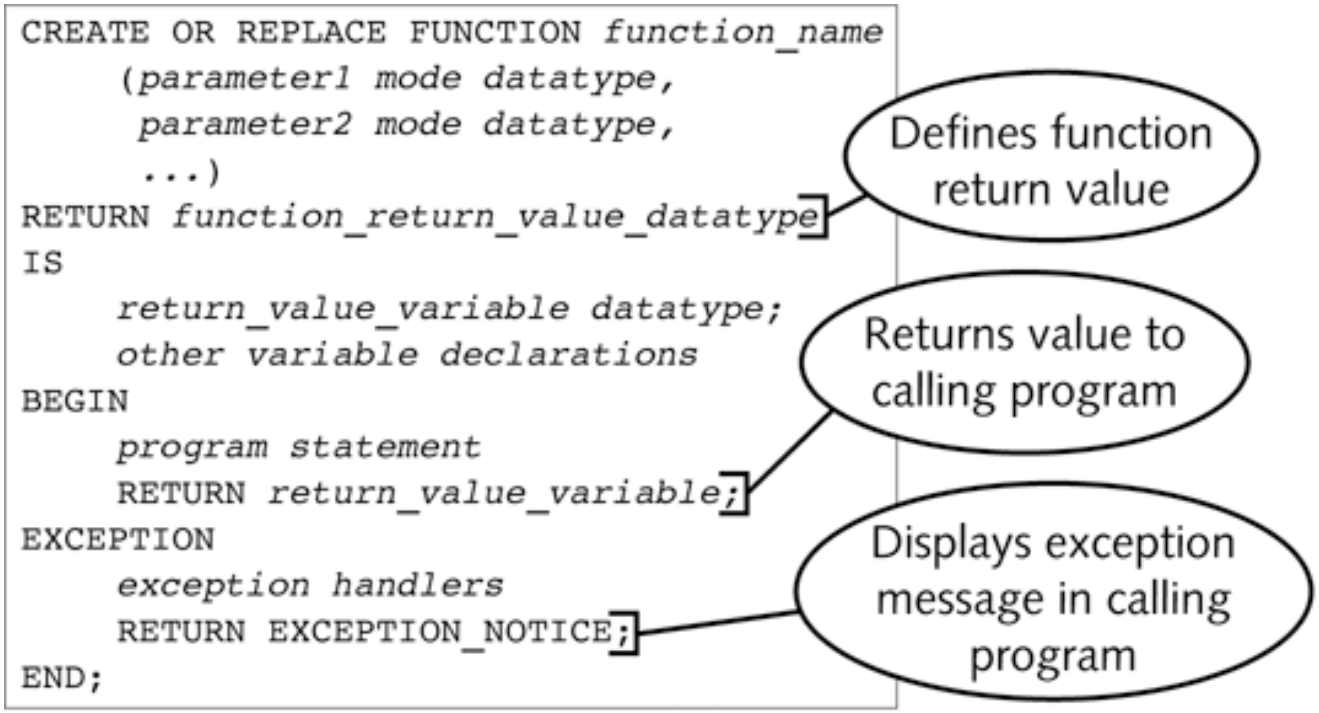

Figure 9-16 Commands to create a stored program unit function

Creating a Stored Program Unit Function

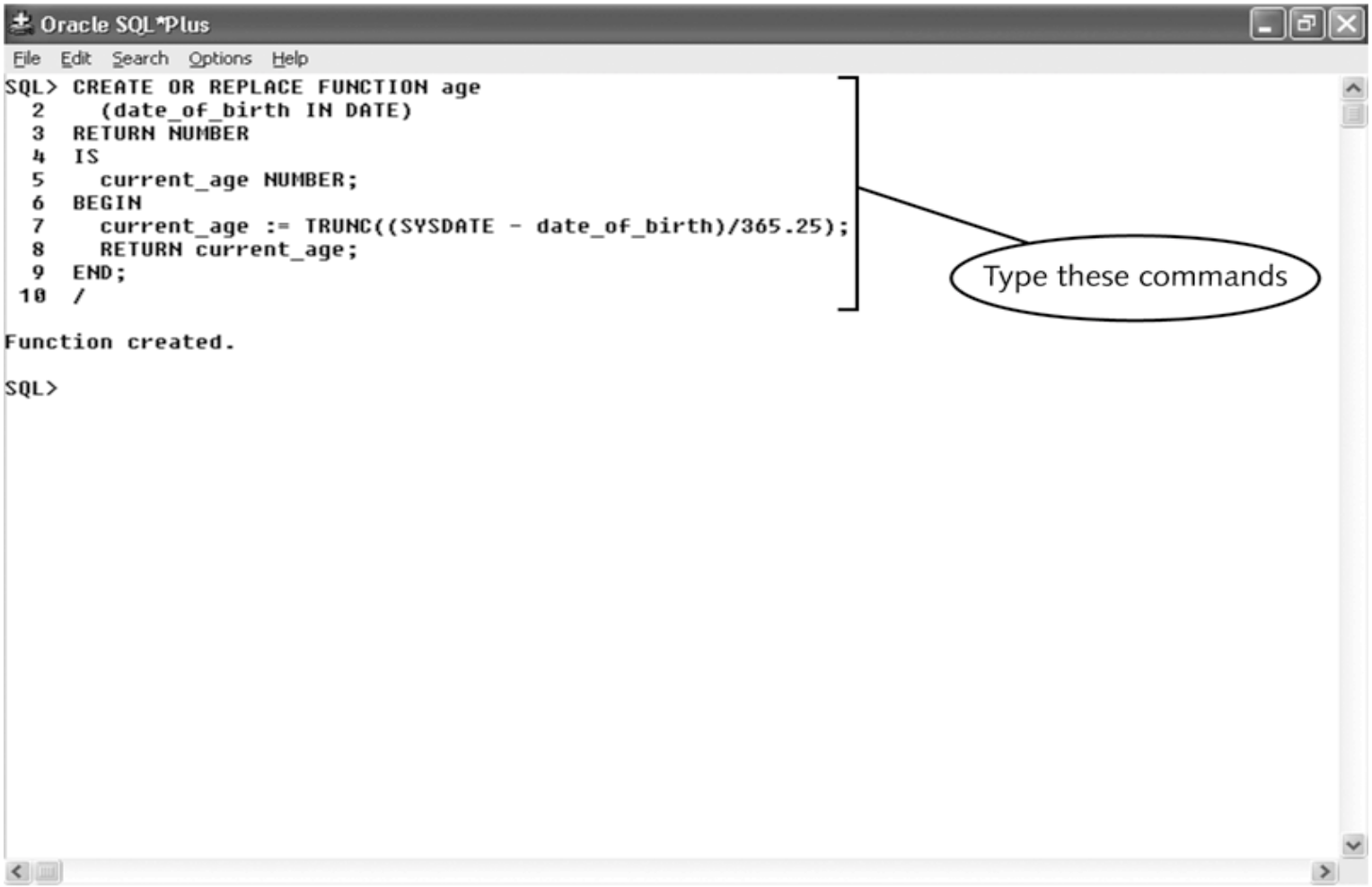

Figure 9-17 Creating a stored program unit function

Calling a Function

- Syntax:

```
variable_name :=
  function_name(parameter1,
  parameter2, ...);
```

- Variables passed for parameter values
  - Must be in same order as parameters appear in function declaration

Using Forms Builder to Create Stored Procedures and Functions

- Create and test program unit within form
- Save as stored program unit in database schema
- Advantage of using Forms Builder
  - Provides enhanced development and debugging environment
  - PL/SQL Editor

Creating, Testing, and Saving a Stored Program Unit Procedure in Forms Builder

- Create stored procedure in test form
- Create form trigger to test program unit procedure
- Save program unit as stored procedure in database
- Database Objects node
  - Contains child nodes that represent every database user

Creating, Testing, and Saving a Stored Program Unit Function in Forms Builder (continued)

- Create program unit function in Forms Builder
- Test program unit function
- Save program unit form as stored program unit in database

Show how to use
Ch9ATest_PROCEDURE.fmb and
Ch9ATest_FUNCTION.fmb