

Database Programming with PL/SQL

10-2: Managing Package Concepts

Practice Activities

Vocabulary

Identify the vocabulary word for each definition below:

VISIBILITY	Describes if a component can be seen, that is, referenced and used by other components or objects.
PRIVATE COMPONENTS	are declared only in the package body and can be referenced only by other (public or private) constructs within the same package body.
PUBLIC COMPONENTS	are declared in the package specification and can be invoked from any calling environment, provided the user has been granted EXECUTE privilege on the package.

Try It / Solve It

1. Create a package called hellofrom that contains three public procedures named proc_1, proc_2 and proc_3. Each of these procedures should use DBMS_OUTPUT.PUT_LINE() to display the message "Hello from Proc x" where "x" is 1 or 2 or 3, as appropriate.

CREATE OR REPLACE PACKAGE HELLOFROM AS

PROCEDURE proc_1;

PROCEDURE proc_2;

PROCEDURE proc_3;

END;

CREATE OR REPLACE PACKAGE BODY HELLOFROM i

PROCEDURE proc_1 IS

BEGIN

DBMS_OUTPUT.PUT_LINE('Hello from Proc 1');

Proc_2;

Proc_3;

END proc_1;

PROCEDURE proc_2 IS

BEGIN

DBMS_OUTPUT.PUT_LINE('Hello from Proc 2');

END proc_2;

PROCEDURE proc_3 IS

BEGIN

DBMS_OUTPUT.PUT_LINE('Hello from Proc 3');

END proc_3;

END HELLOFROM;

Also, proc_1 should call proc_2 and proc_2 should call proc_3, so you need to include a reference to proc_2 from proc_1, and a reference to proc_3 from proc_2.

CREATE OR REPLACE PACKAGE BODY HELLOFROM is

PROCEDURE proc_1 IS

BEGIN

DBMS_OUTPUT.PUT_LINE('Hello from Proc 1');

Proc_2;

Proc_3;

END proc_1;

```
PROCEDURE proc_2 IS
BEGIN
DBMS_OUTPUT.PUT_LINE('Hello from Proc 2');
END proc_2;
```

```
PROCEDURE proc_3 IS
BEGIN
DBMS_OUTPUT.PUT_LINE('Hello from Proc 3');
END proc_3;
END HELLOFROM;
```

You will be making changes to this package specification and body, so make sure you save both the specification and body in your Application Express session.

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2. DESCRIBE the package to check that all three procedures are visible. Then, create and execute an anonymous block which displays all three messages with only one procedure call.

```
DESCRIBE HELLOFROM;
BEGIN
HELLOFROM.proc_1;
END;
```

Modify the hellofrom package specification (not the body) so that only proc_1 is public and proc_2 and proc_3 are private. Recreate the package and then DESCRIBE it. What do you see?

```
CREATE OR REPLACE PACKAGE HELLOFROM AS
PROCEDURE proc_1;
```

END;

DESCRIBE HELLOFROM;

3. What will happen if you try to run `hellofrom.proc_1` now, before you make any changes to the body?
Try it.

No funciona

4. What changes can you make to the package body in order for `proc_1` to run successfully? Make the changes and recreate the body.

Se tiene que cambiar el orden del código de los procedimientos, primero el `proc_2` y el `proc_3`, al ultimo se declara el `proc_1`, porque es el que llama a le `proc_2` y `proc_3`.

5. Try to call each of the three procedures from anonymous blocks. What happens? Explain why some of these calls fail.

El `proc_2` y `proc_3` no están declarados como públicos.

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6. Look in `USER_PROCEEDURES` for the `hellofrom` package. What do you see?

En `object_name` está el nombre del package y en `procedure_name` está el nombre del `proc_1`.

7. Also have a look in `USER_SOURCE`. Unlike `USER_PROCEEDURES`, `USER_SOURCE` shows the entire body, including the private procedures.

SELECT * FROM USER_SOURCE;

8. Make sure you have saved the hellofrom package body code from question 1. Then try to drop just the body. What happens? What do you see when you DESCRIBE helloform?

Sigue apareciendo la estructura del package.

9. Re-create the body from your saved code. Now try to drop just the specification. What happens?

`Object to be described could not be found.`

El body del package sigue estando en la base de datos, pero la especificación se elimino.

10. Name at least two advantages of enclosing these three procedures in a package.

Brinda mayor seguridad a la base de datos.

Solamente se puede acceder a los procedimientos privados mediante otro procedimiento dentro del mismo package.