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| [PSOUG Home](http://psoug.org/index.htm) | [Code Snippets](http://psoug.org/browse.htm) | [Oracle Lookup](http://psoug.org/definition.htm) | [Oracle Reference](http://psoug.org/reference/library.html) | [Oracle Error Codes](http://psoug.org/oraerror.htm) | [Oracle Functions](http://psoug.org/reference/builtin_functions.html) | [PSOUG Forum](http://psoug.org/forum/) |

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| |  |  |  | | --- | --- | --- | |  |  |  | |  | [CODE](http://psoug.org/browse.htm) Oracle Code Library |  | |  |  |  | | |  |  |  | | --- | --- | --- | |  |  |  | |  | [JOBS](http://psoug.org/jobs/) Find Or Post Oracle Jobs |  | |  |  |  | | |  |  |  | | --- | --- | --- | |  |  |  | |  | [FORUM](http://psoug.org/forum/) Oracle Discussion & Chat |  | |  |  |  | |

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| |  | | --- | |  | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | [PSOUG Home](http://psoug.org/index.htm) | [Code Snippets](http://psoug.org/browse.htm) | [Oracle Reference](http://psoug.org/reference/library.html) | [Oracle Functions](http://psoug.org/reference/builtin_functions.html) | [PSOUG Forum](http://psoug.org/forum/) | [Oracle Blogs](http://psoug.org/blogs/) |  | | |  | | |  |  | | --- | --- | | **Search the Reference Library pages:** | Top of Form    Bottom of Form | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | [Free Oracle Magazine Subscriptions and Oracle White Papers](http://psoug-org.tradepub.com/?pt=adv&page=Oracle%20Corporation) | | |  | | --- | | **Oracle Procedures** | | **Version 11.1** | | |  |  | | --- | --- | | **General** | | | Related Data Dictionary Objects | |  |  |  | | --- | --- | --- | | error$ | source$ |  | | **DBA** | **ALL** | [**USER**](http://psoug.org/definition/USER.htm) | | dba\_arguments | all\_arguments | user\_arguments | | dba\_errors | all\_errors | user\_errors | | dba\_object\_size | all\_object\_size | user\_object\_size | | dba\_procedures | all\_procedures | user\_procedures | | dba\_source | all\_source | user\_source | | | System Privileges Related To Procedures | |  |  | | --- | --- | | create procedure | alter any procedure | |  | create any procedure | |  | debug any procedure | |  | drop any procedure | |  | execute any procedure | | | Object Privileges | [GRANT](http://psoug.org/definition/GRANT.htm) execute ON <procedure\_name>;  Privileges to tables and views granted through roles may not be valid within a procedure. See the section on AUTHID. | | [GRANT](http://psoug.org/definition/GRANT.htm) execute ON testproc TO uwclass; | |  | | | **Stored Procedure** | | | No Parameters | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) <procedure\_name> [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   <code here> [END](http://psoug.org/definition/END.htm) <procedure\_name>; / | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) no\_param [IS](http://psoug.org/definition/IS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   dbms\_output.put\_line('No Params'); [END](http://psoug.org/definition/END.htm) no\_param; /  set serveroutput on  exec no\_param; | | Single IN Parameter | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) <procedure\_name> ( <parameter\_name> [IN](http://psoug.org/definition/IN.htm) <data\_type>) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   <code here> [END](http://psoug.org/definition/END.htm) <procedure\_name>; / | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) in\_param (mesg [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   dbms\_output.put\_line(mesg); [END](http://psoug.org/definition/END.htm) in\_param; /  set serveroutput on  exec in\_param('Single IN Parameter'); | | OUT Parameter | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) <procedure\_name> ( <parameter\_name> OUT <data\_type>) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   <code here> [END](http://psoug.org/definition/END.htm) <procedure\_name>; / | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) out\_param(mesg OUT [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)) [IS](http://psoug.org/definition/IS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   mesg := 'Single OUT Parameter'; [END](http://psoug.org/definition/END.htm) out\_param; /  set serveroutput on  [DECLARE](http://psoug.org/definition/DECLARE.htm)  s [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)(50);  [BEGIN](http://psoug.org/definition/BEGIN.htm)   out\_param(s);   dbms\_output.put\_line(s); [END](http://psoug.org/definition/END.htm); / | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) out\_param (mesg OUT [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   mesg := 'Single OUT Parameter'; [END](http://psoug.org/definition/END.htm) out\_param; /  SQL> var x [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)(30) SQL> exec out\_param(:x) SQL> print x | | IN OUT Parameter | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) <procedure\_name> ( <parameter\_name> [IN](http://psoug.org/definition/IN.htm) OUT <data\_type>) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   <code here> [END](http://psoug.org/definition/END.htm) <procedure\_name>; / | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) inout\_param (mesg [IN](http://psoug.org/definition/IN.htm) OUT [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)) [IS](http://psoug.org/definition/IS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   mesg := mesg || ' an IN OUT Parameter'; [END](http://psoug.org/definition/END.htm) inout\_param; /  set serveroutput on  [DECLARE](http://psoug.org/definition/DECLARE.htm)  s [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)(50) := 'This procedure uses';  [BEGIN](http://psoug.org/definition/BEGIN.htm)   inout\_param(s);   dbms\_output.put\_line(s); [END](http://psoug.org/definition/END.htm); / | | Multiple Parameters | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) <procedure\_name> ( <parameter\_name> [IN](http://psoug.org/definition/IN.htm) <data\_type>, <parameter\_name> OUT <data\_type>, <parameter\_name> [IN](http://psoug.org/definition/IN.htm) OUT <data\_type>) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   <code here> [END](http://psoug.org/definition/END.htm) <procedure\_name>; / | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) many\_params (  mesg1 [IN](http://psoug.org/definition/IN.htm)     [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm),  mesg2 OUT    [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm),  mesg3 [IN](http://psoug.org/definition/IN.htm) OUT [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)) [IS](http://psoug.org/definition/IS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   mesg2 := mesg1 || 'Parameter As The OUT';   mesg3 := mesg3 || 'Returned'; [END](http://psoug.org/definition/END.htm) many\_params; /  set serveroutput on  [DECLARE](http://psoug.org/definition/DECLARE.htm)  iparm  [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)(50) := 'This is the IN ';  oparm  [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)(50);  ioparm [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)(50) := 'And This is the IN OUT ';  [BEGIN](http://psoug.org/definition/BEGIN.htm)   many\_params(iparm, oparm, ioparm);   dbms\_output.put\_line(oparm || ' ' || ioparm); [END](http://psoug.org/definition/END.htm); / | |  | | | **Parameter DEFAULT** | | | Procedure Without Default | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) <procedure\_name> ( <parameter\_name> <data\_type> <default\_value>) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   <code> [END](http://psoug.org/definition/END.htm); / | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) no\_default(num\_rows [PLS\_INTEGER](http://psoug.org/definition/PLS_INTEGER.htm)) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) r [IN](http://psoug.org/definition/IN.htm) ([SELECT](http://psoug.org/definition/SELECT.htm) object\_name [FROM](http://psoug.org/definition/FROM.htm) all\_objects             [WHERE](http://psoug.org/definition/WHERE.htm) rownum < num\_rows+1)   [LOOP](http://psoug.org/definition/LOOP.htm)     dbms\_output.put\_line(r.object\_name);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm); [END](http://psoug.org/definition/END.htm) no\_default; /  set serveroutput on  exec no\_default  exec no\_default(5); | | Procedure With Default | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) <procedure\_name> ( <parameter\_name> <data\_type> [DEFAULT](http://psoug.org/definition/DEFAULT.htm) <default\_value>) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   <code> [END](http://psoug.org/definition/END.htm); / | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) with\_default ( num\_rows [PLS\_INTEGER](http://psoug.org/definition/PLS_INTEGER.htm) [DEFAULT](http://psoug.org/definition/DEFAULT.htm) 20) [IS](http://psoug.org/definition/IS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) r [IN](http://psoug.org/definition/IN.htm) ([SELECT](http://psoug.org/definition/SELECT.htm) object\_name [FROM](http://psoug.org/definition/FROM.htm) all\_objects             [WHERE](http://psoug.org/definition/WHERE.htm) rownum < num\_rows+1)   [LOOP](http://psoug.org/definition/LOOP.htm)     dbms\_output.put\_line(r.object\_name);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm); [END](http://psoug.org/definition/END.htm) with\_default; /  set serveroutput on  exec with\_default  exec with\_default(5); | |  | | | **Parameter Notations** | | | Positional Notation | exec <procedure\_name> (<parameter>,<parameter>); | | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) positional ( min\_nr [PLS\_INTEGER](http://psoug.org/definition/PLS_INTEGER.htm) [DEFAULT](http://psoug.org/definition/DEFAULT.htm) 100, max\_nr [PLS\_INTEGER](http://psoug.org/definition/PLS_INTEGER.htm) [DEFAULT](http://psoug.org/definition/DEFAULT.htm) 1000) [IS](http://psoug.org/definition/IS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) r [IN](http://psoug.org/definition/IN.htm) ([SELECT](http://psoug.org/definition/SELECT.htm) table\_name [FROM](http://psoug.org/definition/FROM.htm) user\_tables              [WHERE](http://psoug.org/definition/WHERE.htm) num\_rows [BETWEEN](http://psoug.org/definition/BETWEEN.htm) min\_nr [AND](http://psoug.org/definition/AND.htm) max\_nr)   [LOOP](http://psoug.org/definition/LOOP.htm)     dbms\_output.put\_line(r.table\_name);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm); [END](http://psoug.org/definition/END.htm) positional; /  set serveroutput on  exec positional;  exec positional(1);  exec positional(1000, 500000); | | Named Notation | exec <procedure\_name> (<parameter\_name> **=>** <parameter>); | | exec positional;  exec positional(min\_nr => 1);  exec positional(max\_nr => 500);  exec positional(max\_nr => 5000);  exec positional(max\_nr => 10000);  exec positional(max\_nr => 50000);  exec positional(max\_nr => 999999); | | Mixed Notation | exec <procedure\_name> (<parameter>, <parameter\_name> **=>** <parameter>); | | exec positional(10, max\_nr => 1000);  exec dbms\_stats([USER](http://psoug.org/definition/USER.htm), cascade=>[TRUE](http://psoug.org/definition/TRUE.htm)); | |  | | | **Parameter NOCOPY** | | | **Note:** NOCOPY is a hint ... not a directive ... and may be ignored. | | | NOCOPY Performance Demo | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) <procedure\_name> ( <parameter\_name> NOCOPY <data\_type> <default\_value>) [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   <code> [END](http://psoug.org/definition/END.htm); / | | -- Note: This first demo shows an example of NOCOPY not working  conn / as sysdba  [GRANT](http://psoug.org/definition/GRANT.htm) execute ON dbms\_crypto TO uwclass;  conn uwclass/uwclass  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) default\_out (retval OUT [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)) [AS](http://psoug.org/definition/AS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   retval := dbms\_crypto.randombytes(32); [END](http://psoug.org/definition/END.htm) default\_out; /  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) nocopy\_out (retval OUT NOCOPY [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)) [AS](http://psoug.org/definition/AS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   retval := dbms\_crypto.randombytes(32); [END](http://psoug.org/definition/END.htm) nocopy\_out; /  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) nocopy\_test (reps [IN](http://psoug.org/definition/IN.htm) [PLS\_INTEGER](http://psoug.org/definition/PLS_INTEGER.htm)) [AS](http://psoug.org/definition/AS.htm)  bt1 [TIMESTAMP](http://psoug.org/definition/TIMESTAMP.htm)(9);  et1 [TIMESTAMP](http://psoug.org/definition/TIMESTAMP.htm)(9);   bt2 [TIMESTAMP](http://psoug.org/definition/TIMESTAMP.htm)(9);  et2 [TIMESTAMP](http://psoug.org/definition/TIMESTAMP.htm)(9);   outval [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)(64); [BEGIN](http://psoug.org/definition/BEGIN.htm)   bt1 := [SYSTIMESTAMP](http://psoug.org/definition/SYSTIMESTAMP.htm);   [FOR](http://psoug.org/definition/FOR.htm) i [IN](http://psoug.org/definition/IN.htm) 1..reps [LOOP](http://psoug.org/definition/LOOP.htm)     default\_out(outval);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);   et1 := [SYSTIMESTAMP](http://psoug.org/definition/SYSTIMESTAMP.htm);    bt2 := [SYSTIMESTAMP](http://psoug.org/definition/SYSTIMESTAMP.htm);   [FOR](http://psoug.org/definition/FOR.htm) i [IN](http://psoug.org/definition/IN.htm) 1..reps [LOOP](http://psoug.org/definition/LOOP.htm)     nocopy\_out(outval);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);   et2 := [SYSTIMESTAMP](http://psoug.org/definition/SYSTIMESTAMP.htm);    dbms\_output.put\_line('Default: ' || [TO\_CHAR](http://psoug.org/definition/TO_CHAR.htm)(et1-bt1));   dbms\_output.put\_line('No Copy: ' || [TO\_CHAR](http://psoug.org/definition/TO_CHAR.htm)(et2-bt2)); [END](http://psoug.org/definition/END.htm) nocopy\_test; /  -- Note: Tried this with REF CURSORS returning 40K rows with, again,  -- no measurable difference. But now watch what happens when used in a  -- demo received from Tom Kyte on 2/9/2007.  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) p3(x [IN](http://psoug.org/definition/IN.htm) OUT dbms\_sql.varchar2s) [AS](http://psoug.org/definition/AS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) i [IN](http://psoug.org/definition/IN.htm) 1 .. 2000000 [LOOP](http://psoug.org/definition/LOOP.htm)     x(i) := [RPAD](http://psoug.org/definition/RPAD.htm)('\*', 255, '\*');   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);   [RAISE](http://psoug.org/definition/RAISE.htm) PROGRAM\_ERROR; [END](http://psoug.org/definition/END.htm); /  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) p4(x [IN](http://psoug.org/definition/IN.htm) OUT NOCOPY dbms\_sql.varchar2s) [AS](http://psoug.org/definition/AS.htm) [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) i [IN](http://psoug.org/definition/IN.htm) 1 .. 2000000 [LOOP](http://psoug.org/definition/LOOP.htm)     x(i) := [RPAD](http://psoug.org/definition/RPAD.htm)( '\*', 255, '\*' );   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);   [RAISE](http://psoug.org/definition/RAISE.htm) PROGRAM\_ERROR; [END](http://psoug.org/definition/END.htm); /  set serveroutput on set timing on  [DECLARE](http://psoug.org/definition/DECLARE.htm)  l\_x dbms\_sql.varchar2s; [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) i [IN](http://psoug.org/definition/IN.htm) 1 .. 1000000 [LOOP](http://psoug.org/definition/LOOP.htm)     l\_x(i) := [RPAD](http://psoug.org/definition/RPAD.htm)('\*', 250, '\*');   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);   p3(l\_x); [EXCEPTION](http://psoug.org/definition/EXCEPTION.htm)   [WHEN](http://psoug.org/definition/WHEN.htm) [OTHERS](http://psoug.org/definition/OTHERS.htm) [THEN](http://psoug.org/definition/THEN.htm)     dbms\_output.put\_line('count = ' || l\_x.count); [END](http://psoug.org/definition/END.htm); /  [DECLARE](http://psoug.org/definition/DECLARE.htm)   l\_x dbms\_sql.varchar2s; [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) i [IN](http://psoug.org/definition/IN.htm) 1 .. 1000000 [LOOP](http://psoug.org/definition/LOOP.htm)     l\_x(i) := [RPAD](http://psoug.org/definition/RPAD.htm)( '\*', 250, '\*' );   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);   p4(l\_x); [EXCEPTION](http://psoug.org/definition/EXCEPTION.htm)   [WHEN](http://psoug.org/definition/WHEN.htm) [OTHERS](http://psoug.org/definition/OTHERS.htm) [THEN](http://psoug.org/definition/THEN.htm)     dbms\_output.put\_line('count = ' || l\_x.count); [END](http://psoug.org/definition/END.htm); / | | **Note:** If a subprogram exists with an unhandled exception, the value assigned to its OUT and IN OUT formal parameters are not copied into the corresponding actual parameters, the changes appear to roll back. However, when you specify NOCOPY, assignments to the formal parameters immediately affect the actual parameters. So, if the subprogram exits with an unhandled exception, the (possibly unfinished) changes are not "rolled back." | | | Error Handling With NOCOPY | [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) raise\_error (  p\_Raise [BOOLEAN](http://psoug.org/definition/BOOLEAN.htm),  p\_ParameterA OUT NOCOPY [NUMBER](http://psoug.org/definition/NUMBER.htm)) [AS](http://psoug.org/definition/AS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   p\_ParameterA := 7;   [IF](http://psoug.org/definition/IF.htm) p\_Raise [THEN](http://psoug.org/definition/THEN.htm)     [RAISE](http://psoug.org/definition/RAISE.htm) DUP\_VAL\_ON\_INDEX;   [ELSE](http://psoug.org/definition/ELSE.htm)     [RETURN](http://psoug.org/definition/RETURN.htm);   [END](http://psoug.org/definition/END.htm) [IF](http://psoug.org/definition/IF.htm); [EXCEPTION](http://psoug.org/definition/EXCEPTION.htm)   [WHEN](http://psoug.org/definition/WHEN.htm) [OTHERS](http://psoug.org/definition/OTHERS.htm) [THEN](http://psoug.org/definition/THEN.htm)     [RETURN](http://psoug.org/definition/RETURN.htm); [END](http://psoug.org/definition/END.htm) raise\_error; /  set serveroutput on  [DECLARE](http://psoug.org/definition/DECLARE.htm)  p\_B [BOOLEAN](http://psoug.org/definition/BOOLEAN.htm) := [TRUE](http://psoug.org/definition/TRUE.htm);  n [NUMBER](http://psoug.org/definition/NUMBER.htm); [BEGIN](http://psoug.org/definition/BEGIN.htm)   raise\_error(p\_B, n);   dbms\_output.put\_line(n); [END](http://psoug.org/definition/END.htm); /  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) raise\_error (  p\_Raise      [BOOLEAN](http://psoug.org/definition/BOOLEAN.htm),  p\_ParameterA [IN](http://psoug.org/definition/IN.htm) OUT NOCOPY [NUMBER](http://psoug.org/definition/NUMBER.htm)) [AS](http://psoug.org/definition/AS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   [IF](http://psoug.org/definition/IF.htm) p\_Raise [THEN](http://psoug.org/definition/THEN.htm)     [RAISE](http://psoug.org/definition/RAISE.htm) DUP\_VAL\_ON\_INDEX;   [ELSE](http://psoug.org/definition/ELSE.htm)     p\_ParameterA := 999;   [END](http://psoug.org/definition/END.htm) [IF](http://psoug.org/definition/IF.htm); [EXCEPTION](http://psoug.org/definition/EXCEPTION.htm)   [WHEN](http://psoug.org/definition/WHEN.htm) [OTHERS](http://psoug.org/definition/OTHERS.htm) [THEN](http://psoug.org/definition/THEN.htm)     [NULL](http://psoug.org/definition/NULL.htm); [END](http://psoug.org/definition/END.htm) raise\_error; /  [DECLARE](http://psoug.org/definition/DECLARE.htm)  p\_B [BOOLEAN](http://psoug.org/definition/BOOLEAN.htm) := [FALSE](http://psoug.org/definition/FALSE.htm);  n [NUMBER](http://psoug.org/definition/NUMBER.htm) := 100; [BEGIN](http://psoug.org/definition/BEGIN.htm)   raise\_error(p\_B, n);   dbms\_output.put\_line(n); [END](http://psoug.org/definition/END.htm); /  [DECLARE](http://psoug.org/definition/DECLARE.htm)   p\_B [BOOLEAN](http://psoug.org/definition/BOOLEAN.htm) := [TRUE](http://psoug.org/definition/TRUE.htm);   n [NUMBER](http://psoug.org/definition/NUMBER.htm) := 100; [BEGIN](http://psoug.org/definition/BEGIN.htm)   raise\_error(p\_B, n);   dbms\_output.put\_line(n); [END](http://psoug.org/definition/END.htm); / | |  | | | **AUTHID** | | | **Note:** For DEFINER RIGHTS objects execute privileges must be granted directly to the user; not to a role. With CURRENT USER rights can be granted to a role. AUTHID DEFINER (default) stored procedures are executed in environment equivalent to the one you get after SET ROLE NONE. In other words, roles are disabled for PL/SQL and any privileges granted via roles do not apply unless you created the procedure with AUTHID CURRENT\_USER, in which case role privileges do apply (but executing such procedures is a bit more expensive because Oracle has to evaluate the privileges on every call). | | | AUTHID Demo | AUTHID DEFINER (the default) run the procedure with the rights of the procedure's owner.  AUTHID CURRENT\_USER run the procedure with the rights of the executing schema. | | conn / as sysdba  [CREATE](http://psoug.org/definition/CREATE.htm) [USER](http://psoug.org/definition/USER.htm) abc IDENTIFIED BY abc [DEFAULT](http://psoug.org/definition/DEFAULT.htm) [TABLESPACE](http://psoug.org/definition/TABLESPACE.htm) uwdata TEMPORARY [TABLESPACE](http://psoug.org/definition/TABLESPACE.htm) temp [QUOTA](http://psoug.org/definition/QUOTA.htm) 10M ON uwdata;  [GRANT](http://psoug.org/definition/GRANT.htm) create session, create table, create procedure to abc;  conn abc/abc  [CREATE](http://psoug.org/definition/CREATE.htm) [TABLE](http://psoug.org/definition/TABLE.htm) t1 ( mycol [VARCHAR2](http://psoug.org/definition/VARCHAR2.htm)(20));  [CREATE](http://psoug.org/definition/CREATE.htm) [TABLE](http://psoug.org/definition/TABLE.htm) t2 ( yourcol [NUMBER](http://psoug.org/definition/NUMBER.htm)(10,2));  [CREATE](http://psoug.org/definition/CREATE.htm) [TABLE](http://psoug.org/definition/TABLE.htm) t3 ( ourcol [DATE](http://psoug.org/definition/DATE.htm));  conn uwclass/uwclass  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) definer\_test AUTHID DEFINER [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) rec [IN](http://psoug.org/definition/IN.htm) ([SELECT](http://psoug.org/definition/SELECT.htm) table\_name [FROM](http://psoug.org/definition/FROM.htm) user\_tables)   [LOOP](http://psoug.org/definition/LOOP.htm)     dbms\_output.put\_line(rec.table\_name);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm); [END](http://psoug.org/definition/END.htm) definer\_test; /  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) cu\_test AUTHID CURRENT\_USER [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) rec [IN](http://psoug.org/definition/IN.htm) ([SELECT](http://psoug.org/definition/SELECT.htm) table\_name [FROM](http://psoug.org/definition/FROM.htm) user\_tables)   [LOOP](http://psoug.org/definition/LOOP.htm)     dbms\_output.put\_line(rec.table\_name);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm); [END](http://psoug.org/definition/END.htm) cu\_test; /  set serveroutput on  exec definer\_test;  exec cu\_test;  [GRANT](http://psoug.org/definition/GRANT.htm) execute on definer\_test TO abc; [GRANT](http://psoug.org/definition/GRANT.htm) execute on cu\_test TO abc;  conn abc/abc  set serveroutput on  exec uwclass.definer\_test;  exec uwclass.cu\_test;  --======================================  conn abc/abc  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) definer\_test AUTHID DEFINER [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) rec [IN](http://psoug.org/definition/IN.htm) ([SELECT](http://psoug.org/definition/SELECT.htm) srvr\_id [FROM](http://psoug.org/definition/FROM.htm) servers)   [LOOP](http://psoug.org/definition/LOOP.htm)     dbms\_output.put\_line(rec.srvr\_id);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm); [END](http://psoug.org/definition/END.htm) definer\_test; /  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) cu\_test AUTHID CURRENT\_USER [IS](http://psoug.org/definition/IS.htm)  [BEGIN](http://psoug.org/definition/BEGIN.htm)   [FOR](http://psoug.org/definition/FOR.htm) rec [IN](http://psoug.org/definition/IN.htm) ([SELECT](http://psoug.org/definition/SELECT.htm) srvr\_id [FROM](http://psoug.org/definition/FROM.htm) servers)   [LOOP](http://psoug.org/definition/LOOP.htm)     dbms\_output.put\_line(rec.srvr\_id);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm); [END](http://psoug.org/definition/END.htm) cu\_test; /  set serveroutput on  exec definer\_test;  exec cu\_test;  [GRANT](http://psoug.org/definition/GRANT.htm) execute on definer\_test TO uwclass; [GRANT](http://psoug.org/definition/GRANT.htm) execute on cu\_test TO uwclass;  conn uwclass/uwclass  set serveroutput on  exec abc.definer\_test;  exec abc.cu\_test; | |  | | | **Procedure Demos** | | | Calculate Business Days | [CREATE](http://psoug.org/definition/CREATE.htm) [TABLE](http://psoug.org/definition/TABLE.htm) daterange ( beg\_date [DATE](http://psoug.org/definition/DATE.htm), end\_date [DATE](http://psoug.org/definition/DATE.htm), biz\_days [NUMBER](http://psoug.org/definition/NUMBER.htm)(5));  [INSERT](http://psoug.org/definition/INSERT.htm) [INTO](http://psoug.org/definition/INTO.htm) daterange [VALUES](http://psoug.org/definition/VALUES.htm) ([SYSDATE](http://psoug.org/definition/SYSDATE.htm)-10, [SYSDATE](http://psoug.org/definition/SYSDATE.htm)+10, [NULL](http://psoug.org/definition/NULL.htm)); [INSERT](http://psoug.org/definition/INSERT.htm) [INTO](http://psoug.org/definition/INTO.htm) daterange [VALUES](http://psoug.org/definition/VALUES.htm) ([SYSDATE](http://psoug.org/definition/SYSDATE.htm)-17, [SYSDATE](http://psoug.org/definition/SYSDATE.htm)+10, [NULL](http://psoug.org/definition/NULL.htm)); [INSERT](http://psoug.org/definition/INSERT.htm) [INTO](http://psoug.org/definition/INTO.htm) daterange [VALUES](http://psoug.org/definition/VALUES.htm) ([SYSDATE](http://psoug.org/definition/SYSDATE.htm)-22, [SYSDATE](http://psoug.org/definition/SYSDATE.htm)+12, [NULL](http://psoug.org/definition/NULL.htm));  [CREATE](http://psoug.org/definition/CREATE.htm) OR [REPLACE](http://psoug.org/definition/REPLACE.htm) [PROCEDURE](http://psoug.org/definition/PROCEDURE.htm) bizdays AUTHID CURRENT\_USER [IS](http://psoug.org/definition/IS.htm)  [CURSOR](http://psoug.org/definition/CURSOR.htm) bd\_cur [IS](http://psoug.org/definition/IS.htm) [SELECT](http://psoug.org/definition/SELECT.htm) beg\_date, end\_date, 0 [FROM](http://psoug.org/definition/FROM.htm) daterange;  [TYPE](http://psoug.org/definition/TYPE.htm) bDate\_tab [IS](http://psoug.org/definition/IS.htm) [TABLE](http://psoug.org/definition/TABLE.htm) OF [DATE](http://psoug.org/definition/DATE.htm) [INDEX](http://psoug.org/definition/INDEX.htm) BY [BINARY\_INTEGER](http://psoug.org/definition/BINARY_INTEGER.htm); bdate bDate\_tab;  [TYPE](http://psoug.org/definition/TYPE.htm) eDate\_tab [IS](http://psoug.org/definition/IS.htm) [TABLE](http://psoug.org/definition/TABLE.htm) OF [DATE](http://psoug.org/definition/DATE.htm) [INDEX](http://psoug.org/definition/INDEX.htm) BY [BINARY\_INTEGER](http://psoug.org/definition/BINARY_INTEGER.htm); edate eDate\_tab;  [TYPE](http://psoug.org/definition/TYPE.htm) bDay\_tab [IS](http://psoug.org/definition/IS.htm) [TABLE](http://psoug.org/definition/TABLE.htm) OF [NUMBER](http://psoug.org/definition/NUMBER.htm) [INDEX](http://psoug.org/definition/INDEX.htm) BY [BINARY\_INTEGER](http://psoug.org/definition/BINARY_INTEGER.htm); bDays bDay\_tab;  NumDays [PLS\_INTEGER](http://psoug.org/definition/PLS_INTEGER.htm); TestDate [DATE](http://psoug.org/definition/DATE.htm);  [BEGIN](http://psoug.org/definition/BEGIN.htm)   [OPEN](http://psoug.org/definition/OPEN.htm) bd\_cur;   [LOOP](http://psoug.org/definition/LOOP.htm)     FETCH bd\_cur BULK COLLECT [INTO](http://psoug.org/definition/INTO.htm) bDate, eDate, bDays LIMIT 100;     EXIT [WHEN](http://psoug.org/definition/WHEN.htm) bd\_cur%NOTFOUND;      [FOR](http://psoug.org/definition/FOR.htm) i [IN](http://psoug.org/definition/IN.htm) bdate.FIRST .. bdate.[LAST](http://psoug.org/definition/LAST.htm) [LOOP](http://psoug.org/definition/LOOP.htm)       TestDate := bdate(i);       NumDays := 0;        [FOR](http://psoug.org/definition/FOR.htm) j [IN](http://psoug.org/definition/IN.htm) 1 .. (edate(i) - bdate(i) + 1) [LOOP](http://psoug.org/definition/LOOP.htm)         [IF](http://psoug.org/definition/IF.htm) [TO\_CHAR](http://psoug.org/definition/TO_CHAR.htm)(TestDate, 'D') [BETWEEN](http://psoug.org/definition/BETWEEN.htm) '2' [AND](http://psoug.org/definition/AND.htm) '6' [THEN](http://psoug.org/definition/THEN.htm)           NumDays := NumDays+1;         [END](http://psoug.org/definition/END.htm) [IF](http://psoug.org/definition/IF.htm);          TestDate := TestDate + 1;       [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);        bDays(i) := NumDays;        [UPDATE](http://psoug.org/definition/UPDATE.htm) daterange       SET biz\_days = bDays(i)       [WHERE](http://psoug.org/definition/WHERE.htm) beg\_date = bDate(i)       [AND](http://psoug.org/definition/AND.htm) end\_date = eDate(i);     [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);   [END](http://psoug.org/definition/END.htm) [LOOP](http://psoug.org/definition/LOOP.htm);   [COMMIT](http://psoug.org/definition/COMMIT.htm);   [CLOSE](http://psoug.org/definition/CLOSE.htm) bd\_cur; [END](http://psoug.org/definition/END.htm) bizdays; / | | |  | | |  | | --- | | **Related Topics** | | [Anonymous Blocks](http://psoug.org/reference/anonymous_blocks.html) | | [Autonomous Transactions](http://psoug.org/reference/autonomous_tx.html) | | [Bulk Collection &](http://psoug.org/reference/array_processing.html) [FORALL](http://psoug.org/definition/FORALL.htm) | | [Control Structures](http://psoug.org/reference/control_struct.html) | | [DBMS\_METADATA](http://psoug.org/reference/dbms_metadata.html) | | [DBMS\_WARNINGS](http://psoug.org/reference/dbms_warning.html) | | [Functions](http://psoug.org/reference/functions.html) | | [Nested Loops](http://psoug.org/reference/nested_loops.html) | | [Packages](http://psoug.org/reference/packages.html) | | [Pipelined Table Functions](http://psoug.org/reference/pipelined.html) | | Pragma Inline | | |  | |  |  | | --- | |  | | [Home](http://psoug.org/)      :      [Code Library](http://psoug.org/browse.htm)      :      [Sponsors](http://psoug.org/sponsor.htm)      :      [Privacy](http://psoug.org/w3c/privacy.htm)      :      [Terms of Use](http://psoug.org/w3c/tos.htm)      :      [Contact Us](http://psoug.org/contact.htm) | [224 users online]    © 2010 psoug.org | |