

EXERCISE-16

PROCEDURES AND FUNCTIONS

PROCEDURES

DEFINITION

A procedure or function is a logically grouped set of SQL and PL/SQL statements that perform a specific task. They are essentially sub-programs. Procedures and functions are made up of,

- Declarative part
- Executable part
- Optional exception handling part

These procedures and functions do not show the errors.

KEYWORDS AND THEIR PURPOSES

REPLACE: It recreates the procedure if it already exists.

PROCEDURE: It is the name of the procedure to be created.

ARGUMENT: It is the name of the argument to the procedure. Paranthesis can be omitted if no arguments are present.

IN: Specifies that a value for the argument must be specified when calling the procedure ie. used to pass values to a sub-program. This is the default parameter.

OUT: Specifies that the procedure passes a value for this argument back to it's calling environment after execution ie. used to return values to a caller of the sub-program.

INOUT: Specifies that a value for the argument must be specified when calling the procedure and that procedure passes a value for this argument back to it's calling environment after execution.

RETURN: It is the datatype of the function's return value because every function must return a value, this clause is required.

PROCEDURES – SYNTAX

```
create or replace procedure <procedure name> (argument {in,out,inout} datatype ) {is,as}
variable declaration;
constant declaration;
begin
PL/SQL subprogram body;
exception
exception PL/SQL block;
end;
```

FUNCTIONS – SYNTAX

```
create or replace function <function name> (argument in datatype,.....) return datatype {is,as}
variable declaration;
```

```
constant declaration;
begin
PL/SQL subprogram body;
exception
exception PL/SQL block;
end;
```

CREATING THE TABLE 'ITITEMS' AND DISPLAYING THE CONTENTS

```
SQL> create table ititems(itemid number(3), actualprice number(5), ordid number(4), prodid
number(4));
Table created.
```

```
SQL> insert into ititems values(101, 2000, 500, 201);
1 row created.
```

```
SQL> insert into ititems values(102, 3000, 1600, 202);
1 row created.
```

```
SQL> insert into ititems values(103, 4000, 600, 202);
1 row created.
```

```
SQL> select * from ititems;
ITEMID ACTUALPRICE    ORDID    PRODID
-----  -----  -----  -----
101      2000          500     201
102      3000          1600    202
103      4000          600     202
```

PROGRAM FOR GENERAL PROCEDURE – SELECTED RECORD'S PRICE IS INCREMENTED BY 500 , EXECUTING THE PROCEDURE CREATED AND DISPLAYING THE UPDATED TABLE

```
SQL> create procedure itsum(identity number, total number) is price number;
2 null_price exception;
3 begin
4 select actualprice into price from ititems where itemid=identity;
5 if price is null then
6 raise null_price;
7 else
8 update ititems set actualprice=actualprice+total where itemid=identity;
9 end if;
10 exception
11 when null_price then
12 dbms_output.put_line('price is null');
13 end;
14 /
Procedure created.
```

```
SQL> exec itsum(101, 500);
PL/SQL procedure successfully completed.
```

```
SQL> select * from ititems;
ITEMID ACTUALPRICE    ORDID    PRODID
```

101	2500	500	201
102	3000	1600	202
103	4000	600	202

PROCEDURE FOR 'IN' PARAMETER – CREATION, EXECUTION

SQL> set serveroutput on;

```
SQL> create procedure yyy (a IN number) is price number;
  2 begin
  3 select actualprice into price from ititems where itemid=a;
  4 dbms_output.put_line('Actual price is ' || price);
  5 if price is null then
  6 dbms_output.put_line('price is null');
  7 end if;
  8 end;
 9 /
```

Procedure created.

```
SQL> exec yyy(103);
Actual price is 4000
PL/SQL procedure successfully completed.
```

PROCEDURE FOR 'OUT' PARAMETER – CREATION, EXECUTION

SQL> set serveroutput on;

```
SQL> create procedure zzz (a in number, b out number) is identity number;
  2 begin
  3 select ordid into identity from ititems where itemid=a;
  4 if identity<1000 then
  5 b:=100;
  6 end if;
  7 end;
 8 /
```

Procedure created.

```
SQL> declare
  2 a number;
  3 b number;
  4 begin
  5 zzz(101,b);
  6 dbms_output.put_line('The value of b is '|| b);
  7 end;
 8 /
```

The value of b is 100

PL/SQL procedure successfully completed.

PROCEDURE FOR 'INOUT' PARAMETER – CREATION, EXECUTION

```
SQL> create procedure itit ( a in out number) is
  2 begin
  3 a:=a+1;
```

```
4 end;
5 /
Procedure created.
```

```
SQL> declare
2 a number:=7;
3 begin
4 itit(a);
5 dbms_output.put_line('The updated value is '||a);
6 end;
7 /
```

The updated value is 8
PL/SQL procedure successfully completed.

CREATE THE TABLE 'ITTRAIN' TO BE USED FOR FUNCTIONS

```
SQL>create table ittrain ( tno number(10), tfare number(10));
Table created.
```

```
SQL>insert into ittrain values (1001, 550);
1 row created.
```

```
SQL>insert into ittrain values (1002, 600);
1 row created.
```

```
SQL>select * from ittrain;
```

TNO	TFARE
1001	550
1002	600

PROGRAM FOR FUNCTION AND IT'S EXECUTION

```
SQL> create function aaa (trainnumber number) return number is
2 trainfunction ittrain.tfare % type;
3 begin
4 select tfare into trainfunction from ittrain where tno=trainnumber;
5 return(trainfunction);
6 end;
7 /
```

Function created.

```
SQL> set serveroutput on;
```

```
SQL> declare
2 total number;
3 begin
4 total:=aaa (1001);
5 dbms_output.put_line('Train fare is Rs. '||total);
6 end;
7 /
```

Train fare is Rs.550
PL/SQL procedure successfully completed.

Program 1

FACTORIAL OF A NUMBER USING FUNCTION

```
create or replace function
get_factorial(p_num IN NUMBER)
RETURN NUMBER
IS
    v_fact NUMBER := 1;
BEGIN
    IF p_num < 0 THEN
        RETURN RETURNNULL;
    ELSE IF p_num = 0 THEN
        RETURN 1;
    ELSG
        FOR i IN 1... p_num(00)
            v_fact := v_fact * i;
        END LOOP;
        RETURN v_fact;
    END IF;
END;
```

```
SET SBK.GROUPID TO
DECLARE
    v_result NUMBER;
BEGIN
    v_result := get_factorial(5);
    DBMS_OUTPUT.PUT_LINE(
        ('Factorial of 5 is: '
        || v_result));
END;
```

Program 2

Write a PL/SQL program using Procedures IN,INOUT,OUT parameters to retrieve the corresponding book information in library

```
create or replace procedure
manage-book-into (
    p_book-id IN
    library-books.bookid%TYPE,
    p_title OUT
    library-books.title%TYPE,
    p_author OUT
    library-books.author%TYPE,
    p_copies-in-out INOUT
    library-books.copies-available%TYPE%TYPE
)

```

```
IS
v_actionstate varchar(100);
BEGIN
    select title, author,
    copies-available into
    v-title, v-author,
    FROM library-books
    WHERE book-id =
    p_book-id;
```

Evaluation Procedure	Marks awarded
PL/SQL Procedure(5)	
Program/Execution (5)	
Viva(5)	
Total (15)	
Faculty Signature	