

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 its 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 its 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

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);
```

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

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 factorial
(n IN NUMBER) RETURN NUMBER IS
    result NUMBER := 1;
BEGIN
    IF n < 0 THEN
        RETURN NULL;
    END IF;
    FOR i IN 1..n LOOP
        result := result * i;
    END LOOP;
    RETURN result;
END;
```

Function FACTORIAL compiled
Elapsed: 00:00:00.012

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 get_book_info(
    p_book_id      IN NUMBER,
    p_title        OUT VARCHAR2,
    p_author       OUT VARCHAR2,
    p_copies       IN OUT NUMBER
) IS
BEGIN
    SELECT title, author, copies INTO p_title, p_author, p_copies
    FROM library_books
    WHERE book_id = p_book_id;
EXCEPTION
    WHEN NO_DATA_FOUND THEN
        p_title  := 'NOT FOUND';
        p_author := 'NOT FOUND';
        p_copies := 0;
END;
/
SET SERVEROUTPUT ON;          PL/SQL procedure successfully completed.
DECLARE
    v_book_id NUMBER := 1;           Elapsed: 00:00:00.015
    v_title   VARCHAR2(100);
    v_author  VARCHAR2(100);
    v_copies  NUMBER := 0;
BEGIN
    get_book_info(v_book_id, v_title, v_author, v_copies);
    DBMS_OUTPUT.PUT_LINE('Title: ' || v_title);
    DBMS_OUTPUT.PUT_LINE('Author: ' || v_author);
    DBMS_OUTPUT.PUT_LINE('Copies available: ' || v_copies);
END;
/
```

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