

# DBS Labsheet-8

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## Introduction to PL-SQL

PL/SQL is Oracle's *Procedural Language extension to SQL*.

PL/SQL is a block structured language that enables developers to combine the power of SQL with procedural statements.

All the statements of a block are passed to oracle engine all at once which increases processing speed and decreases the traffic.

### Disadvantages of SQL:

1. SQL doesn't provide the programmers with a technique of condition checking, looping and branching.
2. SQL statements are passed to Oracle engine one at a time which increases traffic and decreases speed.
3. SQL has no facility of error checking during manipulation of data.

### Features of PL SQL

1. PL/SQL is basically a procedural language, which provides the functionality of decision making, iteration and many more features of procedural programming languages.
2. PL/SQL can execute a number of queries in one block using single command.
3. One can create a PL/SQL unit such as ***procedures, functions***, packages, ***triggers***, and types, which are stored in the database for reuse by applications.
4. PL/SQL provides a feature to handle the exception which occurs in PL/SQL block known as exception handling block.
5. Applications written in PL/SQL are portable to computer hardware or operating system where Oracle is operational.

6. PL/SQL Offers extensive error checking.

We study more about: Stored Procedure; Triggers; Functions; and Cursors

## PL-SQL Stored Procedures

A stored procedure is a **PL/SQL** block that **Oracle** stores **in the** database and can be called by name from an application.

When you create a stored procedure, **Oracle** compiles the procedure and stores its code **in the** database.

- 1.A stored procedure is a named collection of procedural and SQL statements.
- 2.A procedure can be stored in the database.
- 3.Set of SQL statements that perform a business transaction can be encapsulated within a procedure and stored at the server.
- 4.Can be called by invocation as required.
- 5.This reduces the network traffic.
- 6.Helps in reducing the code duplication. Can be called by many applications.

Now create a simple table BOOK

With (bid int pk, title vc(10), price int)

Insert following tuples

<101, 'OPERATIONS', 300>; <107, 'DATABASES' , 370>;<128, 'NETWORKS', 175>

Note: For creating procedure the user must get permission from the admin.

Before creating a procedure, we must grant permissions to user

SQL> grant create procedure to <user>;

### Example-1

**// Procedure to perform updates to BOOK table**

```
SQL> create or replace procedure proc1 as
  2 begin
  3 update Book set price=250 where price=300;
  4 dbms_output.put_line(' Update done : ');
  5 end;
  6 /
```

Procedure created.

//note that the numbers on the left of lines are line numbers generated by system just ignore.

This compiled block of code called ***proc1*** will be stored at DB server,

Note:

```
dbms_output.put_line(' Update done : ');
```

is a output statement like printf() in C.

First make server output on by executing the statement.

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

To execute the procedure.

```
SQL> begin
  proc1;
  end;
/
```

// modify the above code block to print string 'Proc1 executed'.

```
SQL> begin
proc1;
dbms_output.put_line(' Proc1 executed: ');

end;

/
```

// the above is calling a procedure in another block executed at SQL command prompt.

If executed, this will output:

Update done :

OR

```
SQL> exec proc1;
```

Will output same as previous approach.

### Example:2

// Procedure with input parameter (bid) and prints the price of the book with bid sent as the parameter

//Exercise:

1. Write a procedure sum\_proc which takes three integers as input and prints the sum. Ex invocation is sum\_proc(12,10,5);  
Output format: 'the sum of integers 12, 10, 5 is : 27'

### Example-3:

**Procedure to illustrate the use of input and output parameters ;**

### Example:4

// Procedure to insert a new book record into Book table.

Now students will work on the following SQL Built in Functions:



Q1) Use the following functions →

1. chr (n): Ex. → Select chr(97) from dual; prints 'a'.
2. concat(char1, char2): Ex. → Select concat('H', 'i') from dual;
3. instr(string, char): Ex. → Select instr('Hello', 'e') from dual  
1 2 3 4 5      return = 2
- 2nd be string/lnk → 4. length(n): Ex. → Select length(12) from dual;      2
5. lpad(char1, n [, char2]): 2 lpad('s', 4, 'd') → dddsd. total 1
6. ltrim(string [, char(s)]): Select ltrim('...Hello') → 'Hello'.
7. rpad(char1, n [, char2]): → ('s', 3, 'd') ltrim('kkHello', 'k')  
→ 'Sdd' → 'Hello'
8. rtrim(string [, char(s)]): ✓
9. replace(<sup>Struf</sup>char, search\_string, replacement\_string): ✓
10. substr(string, position, substring length): Substr('Hello', 2, 3)  
1 2 3 4 5      1 2 3

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