



Advanced SQL

By
K.Karthikeyan



Advanced SQL



- SQL does not support the conditional execution of procedures (IF-THEN-ELSE) or loops
- One way to do this is by writing procedural code in a programming language and including SQL statements in the program
 - This spreads out SQL code in many programs and make changes difficult
- A better way is to isolate critical code and have all applications call this shared code
 - Needed by distributed and OO databases
 - SQL 99 defined the use of **persistent stored modules** (PSMs)



Cont..



- A PSM is a block of code that is stored and executed at the DBMS server
 - Represents business logic that can be shared among multiple database users
 - Access can be controlled by the DBA
 - Oracle supports this through Procedural SQL – PL/SQL

Basic Syntax

DECLARE

<declarations section>

BEGIN

<executable command(s)>

EXCEPTION

<exception handling>

END;



PL/SQL Block Examples



FIGURE 7.28 ANONYMOUS PL/SQL BLOCK EXAMPLES

```
Oracle SQL*Plus
File Edit Search Options Help
SQL> BEGIN
  2 INSERT INTO VENDOR
  3 VALUES (25678,'Microsoft Corp.', 'Bill Gates','765','546-8484','WA','N');
  4 END;
  5 /

PL/SQL procedure successfully completed.

SQL> SET SERVEROUTPUT ON
SQL>
SQL> BEGIN
  2 INSERT INTO VENDOR
  3 VALUES (25772,'Clue Store','Issac Hayes','456','323-2009','UA','N');
  4 DBMS_OUTPUT.PUT_LINE('New Vendor Added!');
  5 END;
  6 /

New Vendor Added!

PL/SQL procedure successfully completed.

SQL> SELECT * FROM VENDOR;

   U_CODE U_NAME                                U_CONTACT          U_A U_PHONE  U_  U
-----
21225 Bryson, Inc.                            Smithson           615 223-3234 TN Y
21226 SuperLoo, Inc.                         Flushing          904 215-8995 FL N
21231 D&E Supply                             Singh             615 228-3245 TN Y
21344 Gomez Bros.                            Ortega            615 889-2546 KY N
22567 Dome Supply                             Smith             901 678-1419 GA N
23119 Randsets Ltd.                          Anderson          901 678-3998 GA Y
24004 Brackman Bros.                         Browning          615 228-1410 TN N
24288 ORDUA, Inc.                             Hakford           615 898-1234 TN Y
25443 B&K, Inc.                               Smith             904 227-0093 FL N
25501 Damal Supplies                          Smythe            615 890-3529 TN N
25595 Rubicon Systems                         Orton             904 456-0092 FL Y
25678 Microsoft Corp.                        Bill Gates        765 546-8484 WA N
25772 Clue Store                              Issac Hayes       456 323-2009 UA N

13 rows selected.

SQL>
```



Ex-Program : Calling a procedure to add two numbers with input output parameters



```
create or replace procedure add(n1  
in int,n2 in int, result out int)  
as  
begin result :=n1+n2;  
end;
```

this procedure is created successfully,

```
declare result int;  
begin add(5,5,result);  
dbms_output.putline(result);  
end;
```

- (Or)

Declare

X number(7);

Y number (7);

Z number (7);

X:=10;

Y:=20;

Z:=x+y;

dbms_output.putline(' sum is' ||
z); end;



Find the Minimum No's



```
DECLARE a number;  
b number;  
c number;  
PROCEDURE findMin(x IN number, y IN number, z OUT number)  
IS BEGIN IF x < y THEN z:= x;  
ELSE z:= y;  
END IF;  
END;  
BEGIN a:= 23;  
b:= 45;  
findMin(a, b, c);  
dbms_output.put_line(' Minimum of (23, 45) : ' || c);  
END;
```



Advantages



- Substantially reduce network traffic and increase performance
- No transmission of individual SQL statements over network
- Help reduce code duplication by means of code isolation and code sharing
- Minimize chance of errors and cost of application development and maintenance



TRIGGER



- A **trigger** is a special kind of stored procedures that automatically executes when an event occurs in the database server.
- **Triggers** executes when a user tries to modify data through a data manipulation language (DML) event, such as Insert, Delete, Update.

Trigger	Stored Procedure
Trigger is an act which is performed automatically before or after an event occurs.	Stored procedure is a set of functionality which is executed when it is explicitly invoked.
It cannot accept parameters.	It can accept parameters.
A trigger cannot return any value.	A stored procedure can return a value.
It is executed automatically on some event.	It needs to be explicitly called.
Triggers are used for insertion, update and deletion.	Stored procedures are often using independently in the database.



SQL Vs PL / SQL



S.NO	SQL	PL/SQL
1	It is a database Structured Query Language.	It is a database programming language using SQL.
2	Data variable are not available	Data variable are available.
3	No Supported Control Structures.	Control Structures are available Like, For loop, While loop.
4	Query performs single operation.	PLSQL block performs Group of Operation as single bloack.
5	SQL is declarative language.	PLSQL is procedural language.
6	SQL can be embedded in PLSQL	PLSQL can be embedded in SQL.
7	It is directly interact with the database server.	It is not interact with the database server.
8	It is Data oriented language.	It is application oriented language.



ACTIVITY

SQL Vs PL / SQL

S.NO	SQL	PL/SQL
1	It is a database _____ Query Language.	It is a database _____ language using SQL.
2	Data variable are _____ available	Data variable are available.
3	No Supported _____.	Control Structures are available Like, _____
4	Query performs _____ operation.	PLSQL block performs _____ Operation as single block.
5	SQL is _____ language.	PLSQL is _____ language.
6	It is _____ oriented language.	It is _____ oriented language.



Thank You