

# **PACKAGES:**

- > IT IS A COLLECTION OF VARIABLES, CURSORS, PROCEDURES & FUNCTIONS ARE STORED IN ONE LOCATION.
- > EASY TO SHARE THE SUBPROGRAMS IN APPLICATION S/W TOOLS
- > THEY IMPROVE PERFORMANCE WHILE ACCESSING SUBPROGRAMS FROM CLIENT LOCATION
- > THEY ARE STORED IN "USER\_SOURCE" SYSTEM TABLE
- > THEY SUPPORTS FUNCTION OVERLOADING, ENCAPSULATION & DATABINDING
- > IT HAS TWO PARTS

## **1. PACKAGE SPECIFICATION:**

IT HOLDS THE DECLARATION OF VARIABLES, CURSORS & SUBPROGRAMS.

### **SYNTAX:**

```
CREATE [OR REPLACE] PACKAGE <PACKAGE NAME>
IS / AS
<DECLARE VARIABLES, CURSORS, SUB BLOCKS>;
END;
/
```

## **2. PACKAGE BODY:**

IT HOLDS THE BODY OF SUBPROGRAMS.

### **SYNTAX:**

```
CREATE [OR REPLACE] PACKAGE BODY <PACKAGE NAME>
IS / AS
<IMPLEMENTING SUB BLOCKS>;
END;
/
```

**EX1:**

**CREATE A PACKAGE TO ENCAPSULATE / BIND MULTIPLE  
PROCEDURES?**

**SQL> CREATE OR REPLACE PACKAGE PK1**

**IS**

**PROCEDURE SP1;**

**PROCEDURE SP2;**

**END;**

**/**

**PACKAGE CREATED.**

**SQL> CREATE OR REPLACE PACKAGE BODY PK1**

**IS**

**PROCEDURE SP1**

**AS**

**BEGIN**

**DBMS\_OUTPUT.PUT\_LINE ('MY NAME IS PROCEDURE1');**

**END SP1;**

**PROCEDURE SP2**

**AS**

**BEGIN**

**DBMS\_OUTPUT.PUT\_LINE ('MY NAME IS PROCEDURE2');**

**END SP2;**

**END;**

**/**

**PACKAGE BODY CREATED.**

**SQL> EXECUTE PK1.SP1;**

**MY NAME IS PROCEDURE**

**PL/SQL PROCEDURE SUCCESSFULLY COMPLETED.**

**SQL> EXECUTE PK1.SP2;**  
**MY NAME IS PROCEDURE2**  
**PL/SQL PROCEDURE SUCCESSFULLY COMPLETED.**

**EX2:**

**CREATE A PACKAGE TO BIND VARIABLE, PROCEDURE &  
FUNCTION?**

**CREATE PACKAGE PK2**

**IS**

**A NUMBER (10): =2000;**

**PROCEDURE SP1;**

**FUNCTION SF1(X NUMBER) RETURN NUMBER;**

**END;**

**/**

**PACKAGE CREATED.**

**CREATE PACKAGE BODY PK2**

**IS**

**PROCEDURE SP1**

**AS**

**X NUMBER (10);**

**BEGIN**

**X: =A/2;**

**DBMS\_OUTPUT.PUT\_LINE(X);**

**END SP1;**

**FUNCTION SF1(X NUMBER)**

**RETURN NUMBER**

**AS**

**BEGIN**

**RETURN X\*A;**

**END SF1;**

**END;**

**/**

**PACKAGE BODY CREATED.**

**EX3:**

**PACKAGE SPECIFICATION:**

**CREATE OR REPLACE PACKAGE MY\_PACK**

**IS.**

**RESULT VARCHAR2(50);**

**PROCEDURE EMP\_EXP (TEMPNO EMP.EMPNO%TYPE);**

**FUNCTION EMP\_NETSAL (TEMPNO EMP.EMPNO%TYPE) RETURN  
VARCHAR2;**

**END MY\_PACK;**

**PACKAGE BODY:**

**CREATE OR REPLACE PACKAGE BODY MY\_PACK**

**IS**

**PROCEDURE EMP\_EXP (TEMPNO EMP.EMPNO%TYPE)**

**IS**

**TDATE EMP.HIREDATE%TYPE; -- PRIVATE VARIABLES**

**TEXP NUMBER;**

**BEGIN**

**SELECT HIREDATE INTO TDATE FROM EMP WHERE  
EMPNO=TEMPNO;**

**TEXP: =ROUND((SYSDATE-TDATE)/365);**

**DBMS\_OUTPUT.PUT\_LINE (TEMPNO||' EMPLOYEE EXPERIENCE  
IS '||TEXP||'YEARS.');**

**END EMP\_EXP;**

**FUNCTION EMP\_NETSAL (TEMPNO EMP.EMPNO%TYPE)**

**RETURN VARCHAR2**

**IS**

**TSAL EMP.SAL%TYPE;**

**TCOMM EMP.COMM%TYPE;**

**BEGIN**

**SELECT SAL+NVL(COMM,0) INTO RESULT FROM EMP**

```
WHERE EMPNO=TEMPNO;
RETURN (TEMPNO||'EMPLOYEE NET SALARY RS.'||RESULT);
END EMP_NETSAL;
END MY_PACK;
```

**TO EXECUTE ABOVE PACKAGE:**

```
EXEC MY_PACK.EMP_EXP (7788);
SELECT MY_PACK.EMP_NETSAL (7788) FROM DUAL;
```

**FUNCTION OVERLOADING USING PACKAGE:**

**EX:**

```
SQL> CREATE OR REPLACE PACKAGE PK3
```

```
IS
```

```
FUNCTION SF1(X NUMBER, Y NUMBER) RETURN NUMBER
```

```
FUNCTION SF1(A NUMBER, B NUMBER, C NUMBER) RETU
```

```
END;
```

```
/
```

```
PACKAGE CREATED.
```

```
SQL> CREATE OR REPLACE PACKAGE BODY PK3
```

```
IS
```

```
FUNCTION SF1(X NUMBER, Y NUMBER)
```

```
RETURN NUMBER
```

```
AS
```

```
BEGIN
```

```
RETURN (X*Y);
```

```
END SF1;
```

```
FUNCTION SF1(A NUMBER, B NUMBER, C NUMBER)
```

```
RETURN NUMBER
```

```
AS
```

```
BEGIN
```

```
RETURN A+B+C;
```

**END SF1;**

**END;**

**/**

**PACKAGE BODY CREATED.**

**SQL> SELECT PK3.SF1 (10,20,30) FROM DUAL;**

**PK3.SF1 (10,20,30)**

-----

**60**

**SQL> SELECT PK3.SF1 (10,20) FROM DUAL;**

**PK3.SF1 (10,20)**

-----

**200**

**EX:**

**CREATE OR REPLACE PACKAGE FO\_PACK**

**IS**

**FUNCTION ADDVAL (A NUMBER, B NUMBER) RETURN NUMBER;**

**FUNCTION ADDVAL (A NUMBER, B NUMBER, C NUMBER) RETURN  
NUMBER;**

**FUNCTION ADDVAL (STR1 VARCHAR2, STR2 VARCHAR2) RETURN  
VARCHAR2;**

**FUNCTION ADDVAL (STR1 VARCHAR2, STR2 VARCHAR2, STR3  
VARCHAR2) RETURN VARCHAR2;**

**END FO\_PACK;**

**PACKAGE BODY:**

**CREATE OR REPLACE PACKAGE BODY FO\_PACK**

**IS**

**FUNCTION ADDVAL (A NUMBER, B NUMBER) RETURN NUMBER**

**IS**

**BEGIN**

**RETURN(A+B);**

**END ADDVAL;**

**FUNCTION ADDVAL (A NUMBER, B NUMBER, C NUMBER) RETURN  
NUMBER**

**IS**

**BEGIN**

**RETURN(A+B+C);**

**END ADDVAL;**

**FUNCTION ADDVAL (STR1 VARCHAR2, STR2 VARCHAR2) RETURN  
VARCHAR2**

**IS**

**BEGIN**

**RETURN(STR1||STR2);**

**END ADDVAL;**

**FUNCTION ADDVAL (STR1 VARCHAR2, STR2 VARCHAR2, STR3  
VARCHAR2) RETURN VARCHAR2**

**IS**

**BEGIN**

**RETURN(STR1||STR2||STR3);**

**END ADDVAL;**

**END FO\_PACK;**

**/**

### **CALLING PACKAGE:**

**SELECT FO\_PACK.ADDVAL(10,20) FROM DUAL;**

**SELECT FO\_PACK.ADDVAL('RAMA ','KRISHNA ','RAJU') FROM DUAL;**

**SELECT FO\_PACK.ADDVAL(10,20,50) FROM DUAL;**

### **NOTE:**

**> ALL PACKAGES BODIES ARE STORED IN 'USER\_SOURCE'.**

**> TO SEE THE PACKAGE BODY.**

**EX:**

**SQL> SELECT TEXT FROM USER\_SOURCE WHERE  
NAME='FO\_PACK';**

### **DROPPING PACKAGE BODY:**

**SYNTAX:**

**SQL> DROP PACKAGE BODY <PACKAGE NAME>;**

**EX:**

**SQL> DROP PACKAGE BODY MY\_PACK;**

### **DROPPING PACKAGES:**

-----

**SYNTAX:**

**SQL> DROP PACKAGE <PACKAGE NAME>;**

**EX:**

**SQL> DROP PACKAGE MY\_PACK;**