- PL/SQL includes procedural language elements such as condition & Loops. It allows declaration of constants & variable. It handle exceptions (runtime error)

- In Summary, the major goals of PL/SQL are to
> Increase the expressiveness of SQL
> Process query result in a tuple-oriented way
> optimize combined SQL statements
> develop modular database appln programs
> Reuse program code.
> Reduce code for maintaining & appln.

- Advantages of PL/SQL :
1) Support for SQL
- supports all the functionalities of SQL
- Efficient database handling

2) Reduces overheads to improve performance

3) PL/SQL is a block structure Language

4) Higher productivity

5) Portable, Appln, written in PL/SQL are Portable to any computer hardware.

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Lab Assignment No-5

- Aim:
  Unnamed PL/SQL code block: Use of control structure & Except handling is mandatory. Write a PL/SQL block of code for following requirment schema.

1) Borrower (Roll_no, Name, Date of Issue, Name of Book, Status)
2) Fine (Roll_no, Date, Amt)
- Accept roll_no & name of book from User
- Check the no of days (from date of issue) if days are betn 15 to 30 then fine amount will be Rs 5 per day.
- If no of days > 30 per day fine will be Rs 50.
- After submitting the book, status will change from I to R.
- If condition of fine is true then details will be stored into fine table.

- Objectives: Learn the concept of PL/SQL

- Theory:

Introduction: PL/SQL:
- PL/SQL stands for procedure Language / structure Query Language. It is the combin of SQL along with procedural features of programming.

Title :
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- Features of PL/SQL

1) We can define & use variable & constants in PL/SQL

2) PL/SQL provides control structure to control the flow of a program. The control supported by PL/SQL are if then loop for loop & others.

3) We can do row processing of data in PL/SQL PL/SQL supports row by row processing using the mechanism called cursor

4) We can handle pre-defined & user-defined error situation. Error are warning & called as exception in PL/SQL.

5) We can write modular appln by using sub program

- The Structure of PL/SQL program

- The basic unit of code in any PL/SQL program is a block All PL/SQL program are composed of blocks These blocks can be written sequentially.

- The structure of PL/SQL block

Title : Consider Tables: 1. Borrower(Roll_no, Name, DateofIssue, NameofBook, Status) 2. Fine(R... amt) ...k from user.

DECLARE
  Declaration section
BEGIN
  Executable section
Exception
  Exception handling section
END;

Where

1) Declaration section
  PL/SQL variable types, cursors & local subprograms are defined here

2) Executable section.
  Procedure & SQL statements are written here. These is the main part of the block. This section is required.

3) Exception handling section.

Error handling code is written here. This section is optional whether it is defined within body or outside body of program.

- Conditional statements & Loops used in PL/SQL
- Conditional statement check the validity of a condition & accordingly execute a set of statements
- The conditional statement supported by PL/SQL is
  i) If THEN
  ii) If ... THEN ELSE
  iii) If ... THEN ... ELSE

i) If ... THEN

Syntax 1:

```
If condition THEN
statement list
END If;
```

ii) If ... THEN ... ELSE

Syntax 2:

```
If condition THEN
statement list
ELSE
statements
END If;
```

iii) If ... THEN ... ELSE

Syntax 3:

```
If conditon THEN
  Statement list
ELSE If condition THEN
  Statement list
```

Title : Consider Tables 1. Borrower(Roll_no, Name, DateofIssue, Name...
Fine(Roll_no,Date,Amt)

- Accept Roll_no and NameofBook from user.
- Check the number of ... ...

```
ELSE
   Statement list
END If;
END If;
```

- CASE Expression:
  CASE expression can also be used to control the branching logic within PL/SQL block. The general syntax is

```
CASE
   WHEN <expression> THEN <statements>;
   WHEN <expression> THEN <statements>;
   ---
   ---
   ELSE
   <statements>;
   END CASE;
```

- Here, expression in WHEN clause is evaluated sequentially. When result of expression is TRUE then corresponding set of statement are executable & program flow goes to END CASE.

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. ITERATIVE constructs:
- Iterative constructs are used to execute a set of statm respectively. The iterative constructs supported by PL/SQL follows
i) SIMPLE LOOP
ii) WHILE LOOP
iii) FOR LOOP

i) simple loop:
It is the simplest iterative construct & has syntax like Loop
statements
END Loop;
The loop does not facilitate a checking for a condition & so it is an endless loop
LOOP
<statement list>
IF condition THEN
EXIT;
END IF;
END LOOP;

- The statm here is executable statm which will be executable repeatedly until the condition given if — THEN evaluates TRUE.

2) The WHILE LOOP

- The WHILE Loop is a Condition driven control condition is a part of the loop construct & not to be checked seperately. The loop is executed as long as the condition evaluates to TRUE

Syntax.

```
WHILE Condition Loop
    Statements
END Loop;
```

3) The FOR Loop:-

- The Number of iterations for Loop & WHILE Loop is not known in advance. The number of iteration depends on Loop condition. The FOR Loop can be used to have a definite no. of iterations

- Syntax is

```
for Loop counter IN[REVERSE] Low bound..High
bound Loop
statements;
END Loop;
```

Conclusion:-

We have studied Importance & Implementation of PL/SQL block