```
PYSAL Report generation
                                                    16-04-24
                      radvantage: Readability in a formatted way.
-> Structured Language should satisfy sequential, conditional & iterative.
                    1) Declare - Optional to the last to
-> Sections in PLSQL:
                     2) Begin - end; - Mandatory
                     3) Exception - Optional
-> Every executable Statement should be terminated by 3
→ Chazacter Set:
    · Alphabets A-Z
                                         Comment lines
     · Number 0-9
                                     · Supposts ODPS, modulatzation
     · Special chaa:
            Arithmetic + - x / mod
            logical AND OR NOT NULL
            Relational <>=
 -> Block in PLSQL:
      Begin
           Statements
                 a) Find in Sett ) - To Find position of Story one in
       end;
  -> Procedure: 1) Write the program in any text editor.
            2) Save the file with Alename.sql
            3) Set the serves clarcuit output on
              SBL> Set senvenoutput xon (once)
            4) Compile and Lun
              @ filename. total paths of the care ) sings? ......
                                 J Fox dynamic input
  -> Example program: add.591
    -- Addition of a number
   declase
        a number(3):=10;
        b number (3):=20;
                                Cochiag St. 16 milder, while
       c number (3);
   begin
        dbms_output.put_line(c); (c is a stoing here)
   end;
```

(1

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Conditional controls in PLSQL:
Dif - (4) types
2) case - (2) types
3) go to (Unconditional boanching or jump)-Minimize it's use
> General Syntax: (Simple 14)
   If boolean_condition then
                             - If multiple statements then
                                use begin and end
      -- Sequence of Statements -
   end if;
                             Same of the state of
, General syntax: (if else)
    If boolean condition then
       -- toue sequence of executable statements
    Else
       -- false sequence of executable statements
     end if;
'General syntax: (if elsif)
if conds then
      JESUH1
    elsif conda then
        desult2
    else
       default statement
end if;
Mosste a PLSQL program to find given num is tre, -ve or o.
  declare
      n number (3): = 8 n3
  begin
      If n>0 then the
      dbms_output-line ('Pasitive number!);
      Elsif n<0 then
          dbms_output.put.line ('Neg Num');
      Else
          abms_output.put_line ('Zeso');
   end if;
  end;
```

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@ Stow Case Statements in PLSQL:
      i) Simple case - Evaluates for a value.
      2) Seasch case - Truly just like if else
 -> Syntax for case Simple case
     Case conditionlexpression
   when vall then
      -- block of statements
      when valo then
            -- block of statements
                                              + GERHARD SURGER
       Else
            -- default statement
       End cases
  -> Syntax for searched cases also many and an another and
      Case
                                     Advisory Myrece (H. 1894)
      when expris then check
                                         mair clants it .
                         if wong
          -- Statements
      when expire then check
            Statement2
      Else
           defaultstatement
      End cass
 3 GOTO:
                 The But I gave could be at the
  → Syntaz ·
     GOTO labelname;
      << label name>>
 → These will be forward goto and backward goto
                    Cichance of Infinite goto (be careful)
* Iterative Processing
  1) Simple loop
  2) whik 600p
  3) Numeric loop
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O Syntax for Simple loop LOOP Exit; executable-statement Exit when condition; end loop; @ Syntox foor while loop: while condition executable_statements end loop; (3) Syntax for numeric/for loop: four control-value in initial...final value (YDE TOTAL TE 11 forward loop loop instal Lanaly (Alaps) Executable -statemens. Caro Lacillation end loops four control-variable In Revenue initializate finalization // backward loop Executable_statements end loop; 0) 1. Find given number is 5 multiplier or not a. Find & power n 3. GCD OF 9, b 4: Display multiplication table for give in. 5. Given num in posime / perfect / armstrong a Display emptable 7 Display emp table whose sal is blw given a and b. a. Display books reserved by given sid. 10 Display sailors who one having the given rating 11 ... 4 , siesesved by the given color boots.

A THE WAY THAT I WAS THE THE TANKE TO SHOULD

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D) To find the sum or digits for a given number.
         declasie
                                                                                                                                               Education of the Control of the Cont
                               n number (15):= 80;
                               dem numbers
                               But ses number (15) := 0;
                                                                                                                                                         white confidence
           begin
                              while n>0
                               loop
                                                                                                                     Sharre L. Lamone Thousand
                                            91cm: - 17 $ 10;
                                                                                                            अलोक रेका के किए एक का का उन्होंने कि मान है।
                                             9185: = 9185 + Jem
                                              n: = n/10;00 1
                               end loop;
                dbms_output.put_line (ores);
                                                                                                                                                                                 . Eq 000 100pg.
              end;
                                                                                                                                               TO ITHACL WINABLE IN
         a) Find whether the given number is palindrome or not.
                  declasse
                                                                                                                                               Executable suitments
                                                                                                                                                                                    end loop;
                                          n number(15):= 多n;
                                          nem number (10);
                                                                                                                                                                                                              (13)
                                          sies number (15):=0;
                                          temp number (15):= no interpret & some my bont to
              begin
                                      while n>0 loop
                                                                                                                                                                           5 900 of 1,0
                                                       Hem:= n med 10; to so with although pulped +
                                                       9185: = (9185 + 10) + sem;
                                                       n: = float (n/10);
                                    end loop;
                                                                                                      a Original Courte seasons of Share
                                                  sies = temp then
                                                                                                             to Deplay sailor with an one pulged
                                                    dbms_output-put_line ('Palandsome');
                                 else
                                                    dbms_output. put_line ('Not paundome');
                               end if;
   end:
```

* Modular programming in PLSQL Modularization: completing by 1) Polocedusie - Single executable's totements. dividing & performing as tasks. - A procedure is a module that perform one imore actions. - A priocedure call is a standalone executable statement. - General symax: THE SHADOW Greate/Replace offermal parameter Coeate or Replace Procedure Procename (parameter Ust) IS local variables declaration. begin Executable statements end: - Calling a procedure: Procedur-rame (parametet); 3) Function - dependent subprogram - A function is a module that returns data through it's return clause. - A function can exist only as a part of an executable statement. -> General syntax: (allbllc): Coreate or Replace Function function name (parameters_list) RETURNI datatype It besit a particular to many 2 numbers Courte so Replace Proceeding Swap Cottanible Statemore and Integral begin - executable statements Trup Integras end: The Calling a function by assigning a variable expression / statement vas: = function_name (parameter_list); Can be used as expression. 3) Pagameter Modes - Parameter Modes defines the way in which they can be used. NI.(C we can use, we cannot modify. Description: Read-only samply RHS side. · default mode is IN · Simply its a call by value.

क्ष OUT lest oright Description: Write-only mode Read · Able to modify but we cannot use · We can use it for assignment of operation. 3) IN OUT Think I have Description: Read (Watte (both) · The module can both reference (sead) & modify (write) the parameters. Example; Czeate or replace Procedure add (a Integer, 6 Integer, COUT Integer) J3 by default IN begin Cresidable Just coming C:= Q+b; end; -- main of the property of the party of the party of declare a Integu:=8a; b Integer: = 86; - A function is a middle that setterns data through its spetiates - A function can exist only as a pant of an execution, 6, 6) abo. 9830 Genced syntax dbms (all bll c); Create or Replace Function functionname (parameters that) 2) Write a procedure to swap 2 numbers. squator 19973 Create or Replace Procedure Swap (X In Dut Integer, X In Out Integer) Is Temp Integen; - exceedible stellments begin control a function by authoris a palled, Temp:=x; VOB: = FLAMFORE FROME (DECEMBLE BE) } X:= Y: Y: = Temps End; cometa made differ the way to art a tay who be had wr.(t -- Main. declasse the not see the way न्त्रां से के में माम माम में y integer := 3y; Table of the Board of the plant "

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begin
        abms_output.put-line (x 11 y);
        exchange (x, y);
        abms-output-put_lene (x114);
   end;
a) Waite a procedure 2 numbers.
  Concate 08 Replace Procedure addrum (a IN Integer, 6 Integer,
                        C OUT Integes)
  IS
   begin
 on Factorial of a given number using procedure.
  Coneate or Replace Parcedine factorial (n IN Integer, a OUT Integer)
  IS
  begin
                                         reflecte the submit ?
      for i in loop
 the perfection and module that perfection a positional day
  I see see a combined to form larger paragraph is baskally
       end lops a byover at subpgin an be invoked by they push
                   a passes what he wild as the calling phogram.
   -- main
   declare.
                                A Strategies of the central a.
        n Integer = 80;
        a Integer: = 1;
                                              THE RESTRICT IN THE
   begin
        factorial (n, a);
        dbms-output.put_line ('Factorial = '11 a);
   end;
                   I From a property of the
* Assigning Sal Query results into PL/Sal Variables
- For Sclect' we need to use 'INTO'. For that we need to know
 1. The table must exist in the database.
a. We need to know the column names (Col names must be known)
3. Need to know the usage of PLISQL variables he how to declared
  write.
           and south south a fill to the south of search of the time.
```

company in the state below.

Pisar e agranda generation Q) Disphy deptno for given empno. mul bein sendable form declasie "column. empid emp. emp. no / type; dno emp deptno % type begin Select deptho soto dno from emp where empho = & empsod; about output. put line ('emp'll empte 11's in department = '11 dno); (x) Select depino from Emp where empno = 7934. DML - directly Deptino (No scadability. PLSQL - 0/p: Emp is in Department = 10 (-) * Procedures and Functions A subpringram is a program unit/module that performs a particular task. These subpagams are combined to form larger programs. This is basically called as 'Modulus design'. A subpogram can be invoked by another subpogram or program which is called as the calling program. A subpregram can be created a. Integes == 80; 1) · at Schema level Integus = 15 2) · Inside a package the miles of 3) · Insidea PLSQL block. 1) - A schema level subprogram & a standalone subprogram. Coleated with the CREATE PROCEDURE OF CREATE FUNCTION Statement. It is stored in the database and can be deleted with DROP PROCEDUR OX DROP FUNCTION Statement

It is stoned in the database and can be deleted only when package is deleted with DROP package statement.

- PLSQL Subperograms are named PLISQL blocks that can be invoked with a set of parameter.

PLISTAL polovides 2 kinds of subprograms . Functions: Return a single value, mainly used to compute and return a value · Procedure: Do not return a value directly, mainly used to perform an action. tagent constat -> Parts and Description 1. Declarative part - optional part 2. - Executable " - mandatory part the substitution of the substitution of the substitution of 3. Exception handling-optional. - Difference: The common parameters with the manual and a parameter of the best of Function is a subpart of executable statement Procedure is a standalone " [(Next Cursors) P.7.0] and infilling detent towns Philips hits in supert in mis accint Duestions on Functions 1) Coreate a function to add 2 numbers. Coreate 0x Replace Function Add (a in Integer, b In Integer) Return Integer .C Integer c:=a+b; and i was or similar and the self - breath the. setion C; I would be some a set of but some end; Declare it have a light of the state of the a Integer := sa; Lings of the hope in their b Integu: = 8 b; C Integer; नामा सा के वाला स्था वा माना होता का में माना वा समान वा स्थान है। begin Co = Add (9,6) & water of more of more of the contraction is dbms_output-put_line (c); End;

@ Factosial.

Principle in a symmetric

- -> Cursor is a location in the memory where the sal statement is processed. he when ever we send an SQL Statements the system allocates some memory by giving a name. After processesing the statement it automatically cleans the memo,
- There are 4 Steps, which are processed by system whenever we send an sol Statement they are:

1. Creating curisos: Allocates memory

2. Opening cursor: Process the sql statement

- 3. Fetching consor: Values satisfied by sql statement are retched from lable into cursor row by row
- 4. Closing cursor: This statement close the memory allocated for cursor
- > Types of cursoss: 2 types
 -) Implicit cursor or Simple cursors
- -> Oracle implicity opens a cursor to process each sql statement not associated with explicity declared cursor. Plligh lets us refer to the most recent JUNITIONS OF FURNCTION implicit cursons as the sal curson. Line of Author (Line)
- → Implicit cursors have 4 attributes:
 - Count was a land · 59.1 % sow count - Returns the no! - Of hows affected by an insert, update or delete.
 - . 591% found This attributes evaluate to true, if an insert or update or delete affected to one or mose sows. It evaluates to false if no 910w is affected.
 - · Sql % not found This attribute is logical opposite to sql % found. It without true if an insert or update or delete closs not affect to any Now. It returns false it any one now is affected.
- · so % isopen Checks whether the cursos that opened or not.

Eds: Weste a pergam to check whether there is atleast one now satisfying the given select statement or not using implicit cusous. Declase

> Emp % 40w type 3 eno Emp & Empno % type;



Salar Standard Williams Company Begin select * Into i from Emp where Empno = 8 enos of sql% found then dbms-output ('Record found');

end if;

End;

Exa: To display 1 to 5 seconds from Emp table.

2) Explicit cursors

> The uses creates these cursons for applying 2 or more DML operations on a table. Using a curspo cue can fetch all the sow values from the table into a variable for pointing them or performing some action with them.

7 Uses 4 steps (Calcuting to closing)

Declaring a Cursor: A cursor is defined in declarative part by noming it and associating it with a quisy.

Declare

CLUSSOR CLUSTOR_name is < select statement >

-> Opening a cursor: The cursor must be initialized or opened with open statement L. Executes query and identifies the sesult set which consists of all Dows that meets the quity search cultura.

Begin

Open curron-name

End;

Fetching with a cursor: Used to retisieve the cursors current sow. Fetching can be

```
executed repeatedly until all rows have been relieved.
        Begin
            Open < cursov_name>
             Fetch (consornames into (var), (var), -.
        End;
-> Closing a cursor: When the last now has been processed, the cursor is closed with
                the close statement which disables the custor.
        Begin
              Open --
              Fetch--
              close < cursor-name>
        End;
   Exi)Using an explicit clussor, Display all sows from Emp table.
       Declasie
            Select # from Emp; -- eventing
                  e €mp% slowtype;
       Begin
               Open (1);
               LOOP_
                         -- Simple loop
                    Fetch (1 Porto e;
                   Dbms_output.put-line (e. Empno 11 'is '11 e. Ename _ 11e. Sal);
                   Exit when co% notfound;
               End loop;
               Close (1)
      End:
Exx) Display Emp table whose salary is blw 1000 and 5000 using explicit curve.
   Declasse
          Cusisox 5 is Select + from Imp where Sal between 1000 and 5000;
          e : Emp % sowtype;
   Begin
          open cs;.
          100p.
               Fetch (1 into e;
               about output put line (e. Ename 11 has a salary of 11 e. 591);
               Exit when 12% notfound;
        End loop;
Endi
        close co;
```

Type of Exception - 2 types 1) Pose Defined

2) User Defined.

1) Prie Defined Exceptions -

- > Used to handle some logical errors known to the system are pre-defined
- Impostant pse-defined exception:
 - O no_data-found

 This exception raises when there is no hows to be retrieved from a table according to given condition.
 - ② deup-val-on-index

 Raises when ever you try to store duplicate values into a table, which

 has been indexed (unique indexed)
 - 3 Cuil abready-open
 Raises whenever you program attempts to open an already opened
 Cursos. A cursor must be closed before its can be slopened. A cursor for
 loop automatically open the cursor to which it refers. So your program can't
 open that cursor inside the loop.
- 4 Invalid-curisor
 Raises whenever your program attempts an illegal curisor operation, such as closing an unopened cursor.
- S zesto_divide Raises whenever your projom attempts to divide a number by zero.
- © program_ezzoz Raises whenever PL/sQL internal problem
- Parses whenever PL/sal auns out of memory.
- (8) too_many-rows
 Rasses whenever a select statement returns more than one row-

1 login_denied Raises when ever your pagam attempts to login to oxacle with an invalid username and/or password 19 Bu Destand Grephers (1) value_erros is an hereth after lagical man when it has Raises whenever an anithmetic conversion or size constraint error occurs. For ex: when we selects a column value into a variable. If the value is longer than declared length of variable pl/sql abords the assignment and signse the exception value evior mentales assign at Bailton so skilling > Syntax: 3 aupral-palitie begin. Exception, the response to the state of the one one make seeing When pullefined-exception name then some with and and Handling-code 3 and abouty apon when predefined exception name then-Handling code ? elg note more not copy assemble each) CLUMA A CHARLE HER DE CHEER DESCRIPT Program Remarks of the good 1) Write a program for handling an error when we try to open an already opened cursos. Declare tille i station langel in committe one pag song summitur raind CLUSOD KJ 85 Select * from Emp's X Emp% youtype; thereto me was properly to a Begin

DARGARD_CARD_CARD

KALC WHILAKS PAJAST STORE CH

when cursus-already-open then

open cas

open (1;

close (3)

Exception

fetch c1 into a;

dbms_output_-. (x-Empro 11'-'11 x. Ename);

```
dbms_output-putline ("Sozzy friend, cursor already Opened");
     end;
2). WAP for handling datatype of a variable by exceeding to store a
     value declare.
   Declasie
              name vouchar (3);
   Begin
                nome: = 'Anitha';
                Exception
                 when value error then the second also an allowed then
                                    dbms.gutput-put_line ('Storage exceeded');
    Ends
3) WAP to display a no data found in the table.
     Declasie
                e Emp% sowtype; and application of spine ) weet in the spine of the
                                                                                         with the state of the surface of the
    Begin
                  Select * into e from Emp where Empro= Sempro;
                  about .. ('Empro : Ename Job)?
                 dbms_out -- (E. Empro 11''1) e. Ename 11' 11 e.job);
                Exception
                 when nodata-found then
                                dbms.output.put_line ('Sovry! No data found);
                                                                                           ल्याम् - जामि जिल्लाता कर्माण्या
     End;
2) User-Defined Exceptions:
    A uses can define / coeate exceptions, which must be maised automatically, because
    the system does not know
                                                                          i carpor, (miding) aliabais, oraș se tin
     1) Coleating Exception
    2) Raising
    3) Hondling 4.
```

```
- Syntax:
   Declasie
       < Exception Name > Exception; -- creating
                                               much for handleg de
    begin
         Raise Exception; -- Raising
                                       - handling . The read was comed
         Exception
             when kexception names then - - handling
                                               nome:= 'Abina';
             Message
    End;
  → To generate an error message en a pre-defined ever format , e use
     Stalse_Application_ Exxox
     Syntax:
       Raise-Application_Force (Force number, Message);
     Example:
       Raise Application_€2200 (-20173, 'Some essor');
     #Note: Error number for (uses defined exception) must be in blw -20001 to -20999
    Programs
   1) WAP for coeating an exception & rassing it when ever you by to insert
   any -ve number into a table.
    Declare
                                               Impossible and and
         invalid_number exception;
                                     Counse Outre - - - Counse Counse
         e' Employee. empno% type := sempno;
   Begin
                                              Densey Denned ( .. comme
        Pf eco then
            paise invalid_number; and a management of the management A
       else
            insent into Employer (empno) values (e);
            dbms_output.put/Ine ('Record Inserted..');
       end if;
      Exception
            when
                  invalid number then
```

* Torggeois

- Talgger & an event handling mechanism, a self contained block of statements, a flying program.
- → Tollageous are stored programs, which are automotically executed or Azed when some events occur.
- → Tolggers are written to be executed in response to any of events such as DML, DDL, a data base operation.
- -> B Tuliggeois can be wellten for following purpose:
 - · Generating some desirved column values automically.
 - · Enforcing referential integraty Ex delicting rec in master table
 - · Event legging and storing information on table access. Go sharing tables
 - · Auditing ic maintaining data such au permissions, how many accessed etc
 - · Synchronous deplication of tables
 - * Imposting security authorization
 - · Security Preventing Invalid transactions

→ Tongger syntax:

Create or Replace Tolgger Tolgger-nome

{ Before | After | Instead of }

¿ Insert [OR] UPDATE [OR] Delete y -- any combination

[OF col-name]

ON table_name

[Referencing old as o New asn]

[For Each Row]

When (condition)

Declare

Begin - -Exception Ea: To restrict employee only an working days. Coreate or Replace Tologer securemp Total Files Before 4 plate or Insut or Delete on employee while mean the appear to produce on a collicit " Begin If (to_chan (sysdate, 'Dy') in ('Sun')) THEN Raise Application_Exxox (-20500, Youmay insert Porto employee table only on working days). Endif; mind Danis, Doze a stanistic in the application End; The Transport out of the state Sychologian man prant man sand Cutenish . THE RESERVE OF THE PROPERTY OF STREET, THE PROPERTY OF THE PARTY OF * Event algorithment and the comments of the second of the second The third expression of mirror or in the week of Chaptery. and a marting the morning . motorpool of the form Statement of miles from the state and the same of th Citie co Repuire Tabyer 1944 with E BEIER / HILLIAM LANGUAGE / Third had been some says - Lorendon Follow CON - PROPER LANGEST NO. LECTION & TO THE PROPERTY ! LFID EARLY ROW !

