

CEGEP VANIER COLLEGE

CENTRE FOR CONTINUING EDUCATION

Developing Applications using Oracle

420-987-VA

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Lab 3

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Lab 3: Database Processing using PL/SQL Programming

Submit all PL/SQL programs and their output to be saved into a text file *Programs_Lab3.sql* with *sql* extension.

Execute the script file *registration.sql* from Lab 2 for creating tables of Registration System.

1. Explicit cursor using %TYPE anchored declaration.

Complete all these following programs as explained in my **Lab 3 YouTube Video 1**. Notice all *missing* coding statements are presented in this video with explanation.

a) Four Steps for creating and using **explicit cursor**:

- *Declare cursor*:
CURSOR faculty_cursor **IS**
 SELECT f_id, f_last, f_first
 FROM faculty;
- *Open cursor*: **OPEN** faculty_cursor;
- *Fetch data rows*
Alternative 1: FETCH faculty_cursor INTO listvariables;
 /* listvariables are is declared with TYPE declaration attribute*/
Alternative 2: FETCH faculty_cursor INTO current_row;
 /* current_row is declared with ROWTYPE declaration attribute*/
- *Close cursor*: **CLOSE** faculty_cursor;

Alternative 1:

FETCH faculty_cursor INTO INTO listvariables;

```
DECLARE
    ----- %TYPE;
    ----- %TYPE;

    CURSOR faculty_cursor IS
        SELECT f_last, f_first
        FROM faculty;

BEGIN
    OPEN faculty_cursor;
    LOOP
        FETCH ----- ;
        EXIT WHEN faculty_cursor%NOTFOUND;
        DBMS_OUTPUT.PUT_LINE('The faculty member: ' ||
            ----- );
    END LOOP;
    CLOSE faculty_cursor;

END;
```

2. Execute the script file *registration.sql* for creating tables of Registration System.

- a) Using *explicit cursor*, and the reserved word *%TYPE* variables to display explicit cursor values, Edit PL/SQL program to display all level classes and the description of class using the nested IF/THEN/ELSE as shown in Figure 1.

If (lc_max <= 12): display the following message " Need to upgrade..."

If (lc_max <= 30 and lc_min > 12): display the following message " Need to Renovate..."

If (lc_max <= 90 and lc_min > 30): display the following message " No Renovation ..."

otherwise: display the following message " Need to equip this class..."

```

40 /
The List of LEVEL CLASS are:
LC Type: 1, Desc of Class: Small Class, Need to upgrade this class building
LC Type: 2, Desc of Class: Medium Class, Need to Renovate this class building
LC Type: 3, Desc of Class: Large Class, No Renovation for this class building
LC Type: 4, Desc of Class: Extra Large Class, Need to equip this class building with new speakers
PL/SQL procedure successfully completed.

```

Figure 1

- b) Using *Explicit Cursor*, Edit PL/SQL program to display all students' names within *student* table along with the first name and last name of their respective supervisor to be fetched from *faculty* table as shown in Figure 2. Use *%ROWTYPE* variable to display explicit cursor values.

```

35 /
The List of students of Vanier College are:
Graham Bill, who's S_class is JR, Supervisor name: Fillipo Paul
Sanchez Jim, who's S_class is EX, Supervisor name: Arlec Lisa
White Peter, who's S_class is EX, Supervisor name: Arlec Lisa
Phelp David, who's S_class is JR, Supervisor name: Robertson Myra
Lewis Sheila, who's S_class is SR, Supervisor name: Smith Neal
James Thomas, who's S_class is JR, Supervisor name: Robertson Myra
PL/SQL procedure successfully completed.

SQL> select * from student
2 ;

```

S_ID	S_LAST	S_FIRST	S_	F_ID	BIRTHDAY	SOC_INS
1	Graham	Bill	JR	4	30-JUL-80	456-123-789
2	Sanchez	Jim	EX	3	12-MAY-81	654-123-789
3	White	Peter	EX	3	24-MAR-87	456-321-789
4	Phelp	David	JR	1	11-FEB-88	456-123-987
5	Lewis	Sheila	SR	2	09-OCT-70	456-321-987
6	James	Thomas	JR	1	07-DEC-60	654-321-987

```

6 rows selected.

SQL> select * from faculty;

```

F_ID	F_LAST	F_FIRST	BIRTHDAY	DEPTID	SOC_INS
1	Robertson	Myra	30-JUL-40	10	123-456-789
2	Smith	Neal	12-MAY-50	20	321-456-789
3	Arlec	Lisa	24-MAR-41	30	123-554-789
4	Fillipo	Paul	11-FEB-71	10	123-456-987
5	Denver	Paul	09-OCT-80	40	123-654-987

Figure 2

- c) Using *explicit cursor*, and the *anchored declaration %TYPE* to display explicit cursor values. Edit PL/SQL program to display the total of all available seats (*max_enrl*) of all courses. Display the output as shown in Figure 3.

```

52 /
The Total of available seat courses is:
The Course Inf MIS 101, Course Literal String MIS, Course Code 101 Course Seats 140
The Course Inf MIS 301, Course Literal String MIS, Course Code 301 Course Seats 35
The Course Inf MIS 441, Course Literal String MIS, Course Code 441 Course Seats 12
The Course Inf CS 155, Course Literal String CS, Course Code 155 Course Seats 90
The Course Inf MIS 451, Course Literal String MIS, Course Code 451 Course Seats 30
The Course Inf MIS 551, Course Literal String MIS, Course Code 551 Course Seats 30
The Course Inf MIS 651, Course Literal String MIS, Course Code 651 Course Seats 30
The Total of Course Numbering is: 367
PL/SQL procedure successfully completed.

```

Figure 3

3. Using multiple Explicit Cursors and Joining Tables.

- a) Using *explicit cursor* and the *anchored declaration %TYPE* when declaring variable, edit PL/SQL program to display all Faculties, their supervised students and to which department they belong. Display the output as shown in Figure 4.

```
29 /
The Faculty List Supervision :
The Faculty Inf: 1, Robertson, Myra
  Student Name:Phelp, David, St Class Type:JR
  Dep Info: Computer Science, Campus CS
The Faculty Inf: 1, Robertson, Myra
  Student Name:James, Thomas, St Class Type:JR
  Dep Info: Computer Science, Campus CS
The Faculty Inf: 2, Smith, Neal
  Student Name:Lewis, Sheila, St Class Type:SR
  Dep Info: Telecommunication, Campus TEL
The Faculty Inf: 3, Arlec, Lisa
  Student Name:Sanchez, Jim, St Class Type:EX
  Dep Info: Accounting, Campus AC
The Faculty Inf: 3, Arlec, Lisa
  Student Name:White, Peter, St Class Type:EX
  Dep Info: Accounting, Campus AC
The Faculty Inf: 4, Fillipo, Paul
  Student Name:Graham, Bill, St Class Type:JR
  Dep Info: Computer Science, Campus CS

PL/SQL procedure successfully completed.
```

Figure 4

- b) Using explicit cursor, edit PL/SQL program to display all departments, and its faculties. Display the output shown in Figure 5. Use *%ROWTYPE* variable to display explicit cursor values.

```
53 /
The List of Departments and its Faculties:

Dep ID:10, Dep Name: Computer Science, Dep Loc: Campus CS
1)      Robertson Myra, who's SOCIAL INS is 123-456-789
2)      Fillipo Paul, who's SOCIAL INS is 123-456-987

Dep ID:20, Dep Name: Telecommunication, Dep Loc: Campus TEL
1)      Smith Neal, who's SOCIAL INS is 321-456-789

Dep ID:30, Dep Name: Accounting, Dep Loc: Campus AC
1)      Arlec Lisa, who's SOCIAL INS is 123-554-789

Dep ID:40, Dep Name: Math and Science, Dep Loc: Campus MS
1)      Denver Paul, who's SOCIAL INS is 123-654-987

Dep ID:50, Dep Name: Liberal Arts, Dep Loc: Campus LA
      -----No Faculty Assigned for this Department so far--

PL/SQL procedure successfully completed.
```

Figure 5