

# COMP 3311: Database Management Systems

## Lab 6 Exercise: Oracle PL/SQL and Stored Procedures

### HOW TO GET THE CREDIT FOR THIS LAB

1. **Download** the zipped folder Lab6Exercise.zip from the **Oracle PL/SQL and Stored Procedures** entry of the Lab Schedule course webpage and **unzip** it. The folder contains the two SQL script files Lab6DB.sql and Lab6Queries.sql and the text file Lab6CgaCalculations.txt.
2. **Place** your InsertMyself.sql script file **inside** the Lab6Exercise folder and **modify** it so that it inserts the value **null** for the cga attribute. **All other values should be the same as those for Lab 5.** ← **IMPORTANT!**
3. **Execute** the Lab6DB.sql script file in SQL Developer.
4. **Create** a stored procedure named Lab6CgaCalculations in SQL Developer.
5. **Replace** the code BEGIN...NULL; in your Lab6CgaCalculations procedure with the code in the file Lab6CgaCalculations.txt. **Be careful not to delete or replace either the first or last statement of the procedure.**
6. **Complete** the **TODOs** in the Lab6CgaCalculations procedure to do the following.
  - a. Complete the declaration of the all the variables needed for the cga calculation as well as replacing with the correct select statement the declaration of the enrollInCursor for the EnrollIn table.
  - b. For each student record retrieved by the studentCursor
    - i. retrieve all its related EnrollIn records and collect the data needed to calculate the student's cga.
    - ii. calculate the student's cga to two decimal places according to the formula given below and update the student's record with the calculated cga.
    - iii. insert the record into the LowCga table if the cga is less than or equal to 2. The LowCga table is created by the Lab6DB.sql script file.
7. **After your Lab6CgaCalculations procedure executes correctly, execute** the Lab6Queries.sql script file in SQL Developer. The Lab6Queries.sql script file contains the following code.

```
clear screen
set serveroutput on
set pagesize 30
set termout off
@Lab6DB
set termout on
set feedback off
```

The set commands do the following:

- set serveroutput on - enables display of the dbms\_output.put\_line command argument;
- set pagesize 30 - sets the output page size to 30 lines;
- set termout off - disables display to the Script Output pane;
- set termout on - enables display to the Script Output pane.

```
exec Lab6CgaCalculations;
select studentId, firstName, lastName, cga from Student order by cga desc;
select studentId, firstName, lastName, cga from LowCga order by cga desc;
```

The final two lines display the result of calculating each student's CGA as well as those students whose CGA is less than or equal to 2.

### CGA CALCULATION

A student's cga is calculated according to the following formula:

$$cga = \frac{\sum(\text{course credit} \times \text{course grade point})}{\sum \text{course credit}}$$

For each course in which the student is enrolled, multiply the course credit by the course grade point and sum these values for all courses. Then, divide the previous sum by the sum of the course credit of all the courses in which the student is enrolled.

To obtain the grade point for a course, convert the course grade to a grade point according to the following formula:

$$\text{course grade point} = \text{maximum}((\text{grade} / 20) - 1, 0)$$

Note that the code to do the grade to grade point conversion is already given in the file Lab6CgaCalculations.

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### WHAT TO SUBMIT

1. Your completed Lab6CgaCalculations procedure code as a text file. You can copy and paste your code from SQL Developer into a text (txt) file.
2. A screenshot of the SQL Developer window or a text file that shows the result of running the Lab6Queries.sql script file in the Script Output pane as shown in Figure 1.

```
>>> Alan Turing (28918856) with cga=3.56 is an honours Student.  
>>> Typical Student (11111111) with cga=3.64 is an honours Student.
```

STUDENTI	FIRSTNAME	LASTNAME	CGA
11111111	Typical	Student	3.64
28918856	Alan	Turing	3.56
15000655	Steve	Jobs	3.45
26186666	Warren	Buffet	3.42
15085942	Bill	Gates	3.4
29873381	Nikola	Tesla	3.37
13556789	Legolas	Greenleaf	3.36
18792018	Elon	Musk	3.25
13782973	Edith	Clarke	3.15
28834512	Issac	Newton	2.98
13456789	Ariana	Grande	2.82
13455789	Harry	Potter	2.76
15678989	Maria	Callas	2.73
15456789	Leonardo	Da Vinci	2.72
16789012	Robert	Redford	2.57
15678901	Albert	Einstein	2.56
26184624	Bruce	Wayne	2.47
14567890	Julius	Caesar	1.9
99987654	Lazy	Lazy	1.67
66666666	Ferris	Bueller	1.64
26184444	Donald	Trump	1.49

  

STUDENTI	FIRSTNAME	LASTNAME	CGA
14567890	Julius	Caesar	1.9
99987654	Lazy	Lazy	1.67
66666666	Ferris	Bueller	1.64
26184444	Donald	Trump	1.49

Your record should be shown in the top message and in the result of the first query.

Figure 1: Example SQL Developer Script Output showing the result of executing the Lab6Queries.sql script file.

### How To SUBMIT

**By 11:00 p.m. today**, upload your completed Lab6CgaCalculations.txt text file and the screenshot or text file showing the result of running the Lab6Queries.sql script file to Canvas by selecting *Lab 6* in the Assignments section of Canvas, and then selecting the Submit Assignment button.