CS 4513 - Fall 2013- Dr. Le Gruenwald
Group Project 3
Assigned: 9/25/13; Due: 10/14/13 by 1:30 PM (a hard copy submitted in class and a soft copy submitted to the class website)
(No late submission will be accepted; note the new instructions on Page 2 concerning the submission of member grades)

Problem 1 (20%):
Review the SQL file you have created for Problem 2 in Group Project 2, choose one table that should be indexed, include SQL statement(s) to create an index on that table, and rerun the queries that need to access the table and index. Provide your detailed explanations as to why you chose that table and search key for indexing, whether that index is primary or secondary, and why you chose those queries to rerun.

Problem 2 (60%):
Write **a JAVA program** using JDBC, PL/SQL, SQL Developer 3.2 and Oracle 11g to implement the following options for the relational database that you have created for Problem 2 in Group Project 2:

1. *Insert the fid, fname, deptid, and salary of a new faculty member into table Faculty. The salary is computed based on the average faculty salary of his/her department (if the average faculty salary is greater than $50,000 then the salary of the new faculty member will be equal to 90% of the average faculty salary; if the average faculty salary is less than $30,000, then the salary of the new faculty member will be equal to the average faculty salary; otherwise, the salary of the new faculty member will be equal to 80% of the average faculty salary);*
2. *Insert the fid, fname, deptid, and salary of a new faculty member into table Faculty. The salary is computed to be equal to the average salary of every faculty member in the university except the faculty members working for a particular department;*
3. *Display the complete information of all faculty members;*
4. *Quit (exit the program).*

Requirements:
- The program terminates only when the user chooses Option 4;
- Each of Options 1 and 2 must be implemented as a PL/SQL Stored Procedure and the fid, fname, deptid must be entered as the procedure parameter values at runtime when the procedure is called. In Option 2, "a particular department" must also be entered at runtime when the procedure is called;
- For testing, execute Option 5 once before and after each execution of Options 1 and 2; and execute each of Options 1 and 2 at least three times with different values of fid, fname, deptid and with different values of "a particular department" for Option 2;
- The Java program and all the PL/SQL procedures must be commented properly.

Problem 3 (20%):
Using the same database you used in Problem 2, write two PL/SQL modules, one with a different type (procedure/function/anonymous block/package) of your choice to perform some tasks on more than one table in the given database. Different modules must implement different tasks. Make sure that these tasks cannot be done if you use only SQL. Your PL/SQL modules can include any appropriate PL/SQL programming constructs, but at the minimum, one module must include the PL/SQL programming construct "IF-ELSEIF-ELSE" and one module must include the PL/SQL programming construct "WHILE/FOR loop." Compile, execute, and verify the results of your PL/SQL modules. Provide comments in your PL/SQL modules to include a detailed description of the tasks.

SUBMISSION:

- Soft and hard copies (one submission per group) must be submitted to **our class website (for soft copies) and in class (for hard copies) by 1:30 pm, 10/14/2013.** The soft and hard copies include the following:
  - Solutions for Problem 1: the SQL file and the text file that shows the creation of the index and the execution of the queries you chose to rerun, and the required explanations;
  - Soulutions for Problem 2: the script file that shows the Java source program, the PL/SQL stored procedures and the steps indicating that you have compiled and executed the program successfully (the output must be included);
  - Solutions for Problem 3: the script file that shows the two PL/SQL modules implementing the tasks of your choice and the steps indicating that you have compiled and executed the two modules successfully (the output must be included).

- For each group member, by the due time 1:30 PM 10/14/2013, you must submit the grades you give to your group members to the Dropbox of Group Project 3 (do not use Email). If you do not submit your member grades by that time, we will assume that you give equal points to all your members (i.e. 10 points to each of your members). The information you enter in the dropbox should include your group number and the names of your group members and the grades you give to each of them.

NOTES:

- Instructions for Oracle SQL Developer 3.2, JDBC and PL/SQL are available on the class website;
- If you have questions concerning your Oracle account, contact Mr. Jonathan Mullen (CS System Administrator) (mullen@ou.edu);
- If you have questions concerning Oracle SQL Developer 3.2, see your TA during her office hours or email her at Junjun.Hu-1@ou.edu;
- Start this project early to avoid last minute system problems. No late submission will be accepted.