CS 440 Spring 2015
Homework 9
Due Monday, April 13th

Whatsamatta University has heavily modified their schema, and their database is open for your inspection under user wv. Tables in the schema include DEPARTMENTS, CLASSES, AND STUDENTS.

Using the tables in the wv schema, create a script to create the following structure in your database:

1. Create an object, ***classes_ty*** that contains attributes ***CRN*** varchar2(5), ***Department*** varchar2(8), and ***CourseTitle*** varchar2(25).
2. Create an object table, ***classes_ot*** with a single attribute of type ***classes_ty.*** Define appropriate constraints for this table.
3. Populate ***classes_ot***, using sql or pl/sql, with all the information in the ***wv.classes*** table.
4. Create a nested table type ***classes_ref_ty*** which contains REFS to the ***classes_ot*** table.
5. Create a table ***student_plus,*** along with appropriate constraints, that contains the following attributes: ***student#*** varchar2(11), ***student_name*** varchar2(10), ***major*** varchar2(8), ***advisor*** varchar2(10), and ***enrolled*** classes_ref_ty.
6. Populate ***student_plus***, using sql or pl/sql, directly from (and only from) the ***wv.students*** and ***classes_ot*** tables.

Since you did such a great job with this conversion, you are asked to administer the new database. Using ONLY Tables ***Student_Plus*** and ***Classes_OT,*** perform the following operations with SQL and/or PL/SQL:

7. List the names of all students who are enrolled in classes with CRN 45673 or CRN 34228.
8. List the course titles of all courses in which student Sherman is enrolled.
9. List the names of students who are advised by VanScoy.
10. List the number of students who are enrolled in Linear Algebra.
11. Modify student Adams major to PHYSICS.
12. Write a procedure, AddClass, that is passed a student number and a CRN. The procedure adds the class to the student's classes.
13. Use procedure AddClass to add CRN 31245 to Hood's list of classes.
14. List the CRNs for Hood's classes.
15. Write a procedure, DeleteClass, that is passed a student number and a CRN. The procedure deletes the specified class from the student's list of classes. If the student is not enrolled in that class, raise the error code 20200 and the message 'Student not enrolled in that class'.
16. Remove CRN 34129 from Sherman's list of classes.
17. List the CRNs for Sherman's classes.
18. List the names of students who are not enrolled in any classes.

Set server output & echo on, and run your script to do all 18 steps. Spool your output to a file, and submit a printed copy of the output file.