Assignment 3 – SRS (Student Record System)

Maximum Points = 50

The purpose of this lab is to focus on the study of classes, objects, inheritance and polymorphism.

The registrar is designing a new system to manage and process student records.

BASIC ASSIGNMENT

a) Design and implement a base class that represents up to 500 university students. A student has a code (U, G, T), a student ID, last name, first name, and major, hours completed, and GPA.
b) Design and implement classes for undergraduate, graduate, and transient students where undergraduates have a class level (freshman, sophomore, junior, senior) and transient students have a current university.
c) Make sure to include necessary constructors, accessors & mutators (gets/sets), and toString methods for all classes.
d) Design and implement a main class that
    a. reads the data from a file (students.txt) where the first field identifies the type of student (U – undergraduate, G – graduate, T - transient). Each record consists of the data for the activity with each field separated by #.
    b. After reading in **all** of the data, your main class should provide a menu that allows the user to do **at least four** of the following:
        i. Search for a student using a student ID entered by the user.
        ii. Allow the user to add a student to the list of students.
        iii. Print a list of students sorted by student ID.
        iv. Allow the user to compute the average GPA for a specified major.
        v. Print a list of majors and the total hours for all students with that major.
        vi. Remove a student from the list.
        vii. Print the list of undergraduates for a specified class level.
        viii. Print the list of undergraduates separated by class level (CHALLENGING).
        ix. Print a list of students sorted by a field specified by the user (CHALLENGING).
        x. Other approved option.

Sample Input

G#000111222#Slick#Grace#Music#12#3.25
U#000123456#Monet#Claude#Art#120#3.45#senior
T#000111333#Von Neumann#John#Computer Science#45#2.12#University of Sofia

(Due before class on Tuesday, February 24, 2009) Submit a .doc file containing the UML class diagram showing inheritance for all the classes used in your program. [10 pts]

(Due before class on Tuesday, March 3, 2009) Submit your .java files containing your program to the dropbox in WebCT. [50 pts]

Grades are determined using the following scale:

- Runs correctly..……:___/10
- Correct output……..……:___/10
- Design of output..……:___/8
- Design of logic……:___/10

- Standards…….:___/7
- Documentation……...:___/5

Grading Rubric (Word document)