CMPE 462 Assignment 2

(Haskell)

Due: 28 October 2019 (Monday), beginning of the lab session

To be done in groups of two. Pick your partner!

Implement the following functions in Haskell.

1) min_max list1 = the minimum and maximum values in **list1** as a pair. e.g. ***min_max [3,2,6,5,1]*** should return (1,6) as the result.

2) gpa list1 = the grade point average for a list of letter grades given as a list of strings. Assume all courses have one credit hour. e.g. ***gpa ["A", "B", "C"]*** should return 3, ***gpa ["A-","B+"]*** should return 3.5 etc. Use the *map* function in the implementation.

3) Assume we keep student information in lists as follows: [(studentName, course, grade),....]. Grades are on a scale of 0 to 100.

An example "database": [("ali", "cmpe200",85),("veli","cmpe300",98),....]

a. define two constants called **database1** and **database2** and set them each to a list of 20 entries of student enrolment. Assume there are only two courses. e.g. **database = [("ali", "cmpe200",85),("veli","cmpe300",98), ("ali", "cmpe300",90),....]**
b. With this representation, write functions in Haskell that do the following:
    i. **highestAchivers list1** = the *name* of the students who obtained the highest grades in each course as a pair
    ii. **totalStudents list1** = the total number of students in list1 (make sure you count each person only once)
    iii. **enrolment list1** = a list containing how many students are in each course. e.g. ***enrolment database*** could return [("cmpe200", 13), ("cmpe300", 7)]
    iv. **averageGrade list1** = a list containing the average grade in each course. For example, ***averageGrade database*** the answer can be like [("cmpe200", 45), ("cmpe300", 77)]

4) *Using the foldr* function, define a function **appendStrings aListOfStrings** that appends a list of strings to get one string. E.g **appendStrings [“abc”, “de”, “22”]** should return **“abcde22”.**

What to hand in: Your program, together with screen shots of two calls to each function, printed on paper. For question 3, use the two databases you defined for the two calls.