Programming Assignment 3: Admissions

Total Points (50 pts) – Due Monday, October 12th at 11:59 PM

This assignment will give you practice with interactive programs and if/else statements.

Admissions [50 points]

You are to write a program that prompts the user for information about two applicants and that computes an overall score for each applicant.

For each applicant, we prompt for exam scores (either SAT or ACT) and overall GPA. The exam information is turned into a number between 0 and 100 and the GPA information is turned into a number between 0 and 100 and these two scores are added together to get an overall score between 0 and 200. After obtaining scores for each applicant, the program reports which one looks better or whether they look equal.

Notice that the program asks for each applicant whether to enter SAT scores or ACT scores (SAT scores are integers that vary between 200 and 800, while ACT scores are integers that vary between 1 and 36). \\

In the case of SAT scores, the user is prompted for SAT verbal and SAT math subscores. In the case of ACT scores, the user is prompted for English, math, reading and science subscores. These scores are turned into a number between 0 and 100 using the following formulas:

$$\text{For SAT Scores: } \frac{2 \cdot verbal + math}{24}$$

$$\text{For ACT Scores: } \frac{2 \cdot reading + English + math + science}{1.8}$$

These formulas produce numbers in the range of 0 to 100. After computing this exam score, we compute a number between 0 and 100 based on the GPA. You will notice that the program prompts for the GPA and the maximum GPA. Both the GPA and maximum GPA are real values (i.e., they can have a decimal part). You should turn this into a score between 0 and 100 using the following formula:

$$\frac{actual\_gpa}{\max\_gpa} \cdot 100$$

At this point your program has two scores that vary from 0 to 100, one from their test score and one from their GPA. The overall score for the applicant is computed as the sum of these two numbers (exam result + gpa result). Because each of these numbers is between 0 and 100, the overall score for an applicant ranges from 0 to 200.

You do not have to perform any error checking. We will assume that the user enters numbers and that they are in the appropriate range.

Be sure to once again include a short comment at the beginning of your program. Also remember that because this program involves both integer data and real data, you need to use appropriate type declarations (type int and calls on **nextInt** for integer data, type double and calls on **nextDouble** for real-valued data).

Sample run 1:

```
This program compares two applicants to
determine which one seems like the stronger
applicant.  For each candidate I will need
either SAT or ACT scores plus a weighted GPA.

Information for the first applicant:
    do you have 1) SAT scores or 2) ACT scores? 1
    SAT math? 450
    SAT verbal? 530
    overall GPA? 3.4
    max GPA? 4.0

Information for the second applicant:
    do you have 1) SAT scores or 2) ACT scores? 2
    ACT English? 25
    ACT math? 20
    ACT reading? 18
    ACT science? 15
    overall GPA? 3.3
    max GPA? 4.0

First applicant overall score  = 147.91666666666666
Second applicant overall score = 135.83333333333331
The first applicant seems to be better
```

Sample run 2:

```
This program compares two applicants to
determine which one seems like the stronger
applicant.  For each candidate I will need
either SAT or ACT scores plus a weighted GPA.

Information for the first applicant:
    do you have 1) SAT scores or 2) ACT scores? 2
    ACT English? 20
    ACT math? 19
    ACT reading? 21
    ACT science? 30
    overall GPA? 3.5
    max GPA? 4.0

Information for the second applicant:
    do you have 1) SAT scores or 2) ACT scores? 1
    SAT math? 610
    SAT verbal? 640
    overall GPA? 4.3
    max GPA? 5.0

First applicant overall score  = 149.16666666666666
Second applicant overall score = 164.75
The second applicant seems to be better
```

Sample run 3:

```
This program compares two applicants to
determine which one seems like the stronger
applicant.  For each candidate I will need
either SAT or ACT scores plus a weighted GPA.

Information for the first applicant:
    do you have 1) SAT scores or 2) ACT scores? 1
    SAT math? 510
    SAT verbal? 530
    overall GPA? 3.4
    max GPA? 4.0

Information for the second applicant:
    do you have 1) SAT scores or 2) ACT scores? 1
    SAT math? 570
    SAT verbal? 500
    overall GPA? 3.4
    max GPA? 4.0

First applicant overall score  = 150.41666666666669
Second applicant overall score = 150.41666666666669
The two applicants seem to be equal
```

CLASS NAME. Your program class should be called *Admissions.java*

Rules

- You will not receive any points for a non-working program.
- Before submitting an assignment, test it on several types of input.
- Do not change the purpose of program variables or output. Write your program so that it does exactly what is asked.
- Much of your code will involve conditional execution with `if` and `if/else` statements. Part of your grade will come from using these statements appropriately. You may want to review Chapter 3 of the textbook about nested `if/else` statements.

Submission Instructions

- Execute the program and copy/paste the output that is produced by your program into the bottom of the source code file, making it into a comment. I will run the programs myself to see the output.
- Make sure the run "matches" your source. If the run you submit could not have come from the source you submit, it will be graded as if you did not hand in a run.
- Use the Assignment Submission link to submit the source code file.
- Submit the following file:
    - Admissions.java
- Do not submit **.class** files.

Standard program header

Each programming assignment should have the following header, with italicized text, appropriately replaced.

```
/*
 * Class: CS1A
 * Description: (Give a brief description of Assignment 3)
 * Due date:
 * Name: (your name)
 * File name: Admissions.java
 */
```