R·I·T | **Rochester Institute of Technology**
Golisano College of Computing and Information Sciences
Department of Information Sciences & Technology

ISTE-200 Java for Programmers

Name: _____

Practice Exercise 02b
Arrays and ArrayLists

GPA calculation using arrays
The exercise must be completed during the lab period.

You are to write a java program to calculate the standard grade point average (GPA) for a student at RIT. The program will prompt the user to enter the credits and letter grade for each of exactly 4 courses.

The GPA is calculated by dividing the sum of points by the sum of credits. To compute the sum of points, the letter grade must be converted to its equivalent number of points as follows: A is 4 points, B is 3 points, C is 2 points, D is 1 point, and F is 0 points. Then multiply the points by the number of credits and sum for the 4 courses. For example, for the first sample output below:

Sum of credits = 3 + 4 + 4 + 3 = 14
Sum of points = 3 * 2 (=C) + 4 * 3 (=B) + 4 * 1 (=D) + 3 * 4 (=A) = 34
GPA = 34 / 14= 2.42857... = 2.43 (rounded to 2 decimal places.

After the user enters the credits and letter grade for all four courses, print the sum of the credits for all four courses, the sum of the points for all four courses and the GPA for all four courses.
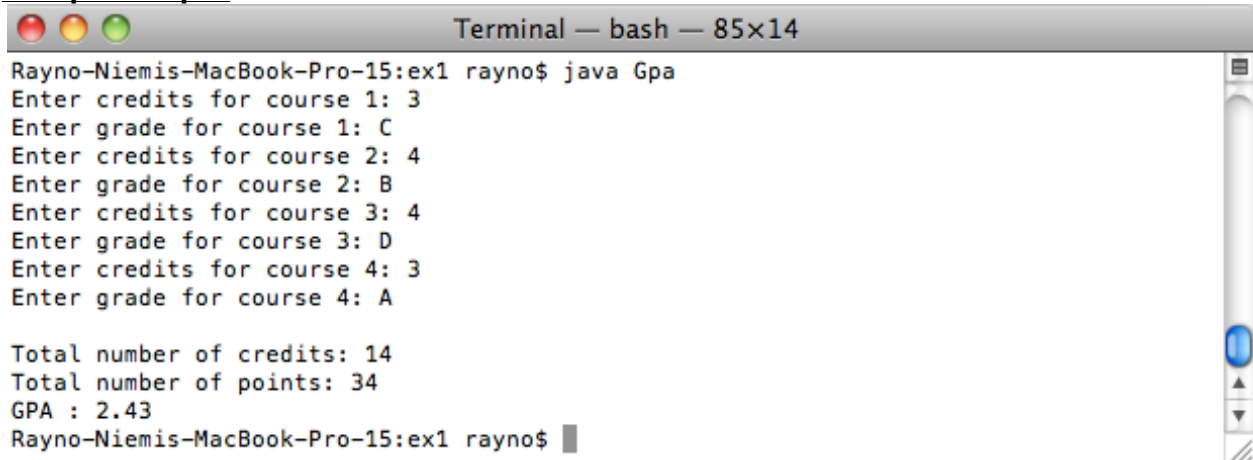
Store the credits for each course in an array with 4 elements.   Store the letter grades in another array with 4 elements. When you compute the sum of the credits, you **must** use an enhanced for loop. This exercise uses "parallel" arrays to hold the course information as the same index position in the two arrays refers to the same course. You **must** define and use a constant for the number of courses.

Notes:
- Assume that the credits will be a valid number between 0 and 9, inclusively.
- Assume that the letter grade will be a single character with value A, B, C, D, or F (upper or lower case).
- Read in the letter grade as a type String. Assume that the user enters only one letter.
- Attempt to print the GPA to two decimal places using printf. No points will be deducted if more than two decimal points are printed with the print or println command.
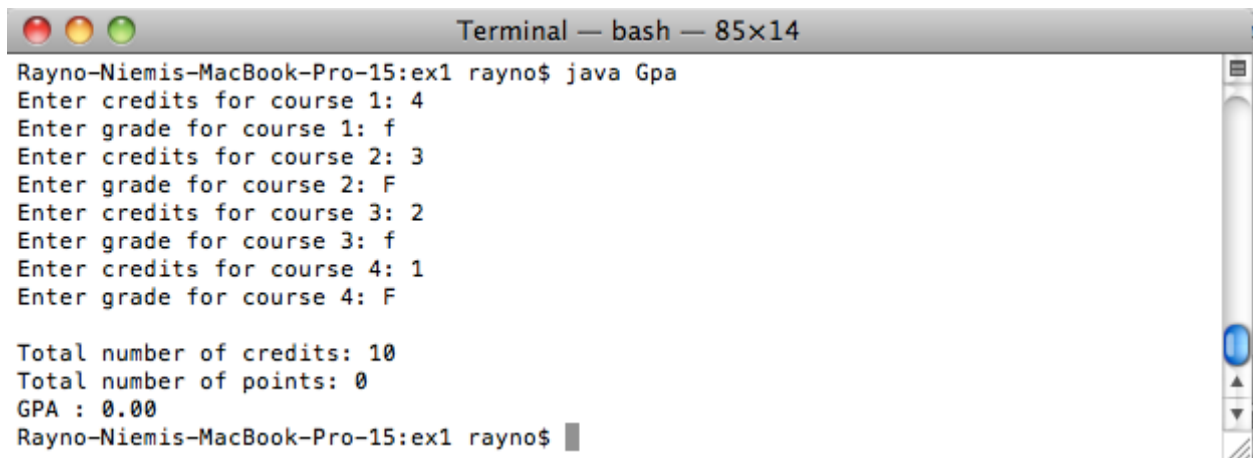- If the GPA cannot be calculated, set the GPA to zero.

Sample Output

```
                      Terminal — bash — 85×14
Rayno-Niemis-MacBook-Pro-15:ex1 rayno$ java Gpa
Enter credits for course 1: 3
Enter grade for course 1: C
Enter credits for course 2: 4
Enter grade for course 2: B
Enter credits for course 3: 4
Enter grade for course 3: D
Enter credits for course 4: 3
Enter grade for course 4: A

Total number of credits: 14
Total number of points: 34
GPA : 2.43
Rayno-Niemis-MacBook-Pro-15:ex1 rayno$
```

```
                      Terminal — bash — 85×14
Rayno-Niemis-MacBook-Pro-15:ex1 rayno$ java Gpa
Enter credits for course 1: 4
Enter grade for course 1: f
Enter credits for course 2: 3
Enter grade for course 2: F
Enter credits for course 3: 2
Enter grade for course 3: f
Enter credits for course 4: 1
Enter grade for course 4: F

Total number of credits: 10
Total number of points: 0
GPA : 0.00
Rayno-Niemis-MacBook-Pro-15:ex1 rayno$
```

Question: Draw the two arrays to show their contents for the data in the above execution.

Instructor / TA: _____