CSC148 - Assignment 1: Calculating group scores

Suppose our desired group size is 4. Below is a dataset containing students' answers to a survey with one numeric question (where the minimum valid answer is 1 and the maximum is 5) and one multiple choice question. We have already divided the class up into 3 groups. Since our class size is not divisible by 4, there is one group of smaller size than 4.

Name	Year (Numeric, range 1-6)	College (Multiple choice)	(a) Homogeneous year score	(b) LonelyMember college score	Total group score
Priya Alain Zoe Francesco	3 2 3 3	Victoria New Woodsworth Victoria	9/10	0	(9/10 x 80) + (0x20) = 720/10 = 72
Mohammed Xiaoyuan Rohit Yimin	4 5 2 3	Woodsworth New New Trinity	2/3	0	(2/3 x 80) + (0 x 20) = 160/3 ≅ 53
Grace Claire Kai	5 1 1	Woodsworth Woodsworth Woodsworth	7/15	1	(7/15 x 80) + (1 x 20) = 560/15 + 20 ≅ 37 + 20 = 57

1. Suppose one of our criteria for group formation is this:

   (a) A group should be as homogeneous as possible in terms of what year the student is in.

   Just using your intution, which group best satisfies this criterion? Which group worst satisfies this criterion?

2. Find the method that computes a group's score for this criterion and read its docstring. Then, for each group: calculate the similarity for every pair of students in the group, and then average these results. Feel free to keep your answers as fractions.

   Group 1: Six comparisons, shown in blue

   $$\frac{4/5 + 1 + 1 + 4/5 + 4/5 + 1}{6} = \frac{27/5}{6} = \frac{27}{30} = \frac{9}{10}$$

   The most homogeneous group with respect to year

   Group 2: Six comparisons, shown in green

   $$\frac{4/5 + 3/5 + 4/5 + 2/5 + 3/5 + 4/5}{6} = \frac{20/5}{6} = \frac{20}{30} = \frac{2}{3}$$

   Less homogeneous w.r.t. year

   Group 3: Three comparisons, shown in orange

   $$\frac{1/5 + 1/5 + 1}{3} = \frac{7/5}{3} = \frac{7}{15}$$

   The least homogeneous w.r.t. year

   For each group, the average you calculated is the group's score for this criterion. Write it into column (a) above.

3. What is the highest score a group could get on this criterion? The lowest?

   ↳ 1 ↳ 0

4. Suppose we have a second criterion for group formation:

   (b) A group should have no member who is the only one from their college

   Find the method that computes a group's score for this criterion and read its docstring. (This one is simpler!) Then determine each group's score for criterion (b) and write it into the table.

5. Let's say these two criteria are not of equal importance. Criterion (a) has relative weight 80 and criterion (b) has relative weight 20. Find the method that computes the **total score** for each group based on multiple criteria and read its docstring. Then, for each group, compute the total group score on both of our criteria, and write it into the table. Feel free to give an approximate whole number answer.

6. What is the highest total score a group can earn, given these weightings? What is the lowest?

   ↳ 100 ↳ 0