Problem 228: SWAP-C Trade Study

Difficulty: Easy

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Originally Published: Code Quest 2024

Problem Background

In research and development, there are four key attributes of any component within a system:

- Size: How big is it?
- Weight: How heavy is it?
- Power: How much energy does it produce or consume?
- Cost: How expensive is it?

Together, these attributes are abbreviated as "SWAP-C" – Yes, the 'A' doesn't match up with anything, but it makes the acronym pronounceable.

You're part of the engineering team for the Atlas V rocket. This is the same rocket that took the Apollo missions to the moon in the 1960's and 1970's, but it hasn't been updated since then. It's time to see if there are any new components that provide the same functionality with a better SWAP-C.

Problem Description

Some components might be better on some attributes or worse on others, so there's usually a complex calculation to consider all of those factors based on the project you're working on. In this case, we'll make it simple; simply add the scores together. Lower total scores are considered to be better components.

Any design change will involve some overhead costs: labor, facility maintenance, etc. As a result, it's only worth replacing the original design if the replacement component scores at least 20% better than the current component. If no potential replacement is at least 20% better, we should continue using the current component. Be sure to round values to at least three decimal places before making this comparison.

Sample Input

The first line of your program's input, received from the standard input channel, will contain a positive integer representing the number of test cases. Each test case will include:

- A line containing a positive integer N representing the number of components to compare.
- A line containing information about the currently installed component, including the following values separated by spaces:
  - A six-digit model number, consisting of numbers

- o A positive integer representing the size rating of the component
- o A positive integer representing the weight rating of the component
- o A positive integer representing the power rating of the component
- o A positive integer representing the cost rating of the component
- N lines containing information about the potential replacement components. These lines will contain the same information and format as for the current component. All model numbers within a test case will be unique.

```
2
2
392984 45 88 3 124
320298 45 80 3 124
357159 45 85 3 120
3
203948 22 34 54 10000
357208 17 33 51 9999
857490 22 37 54 1111
258456 15 22 50 7777
```

Sample Output

For each test case, your program must print a single line containing the model number of the component that should be used and its total score, separated by a space.

```
392984 260
857490 1224
```