

Best Bootcamps

camp.txt

In order to keep learning how to code, you are trying to find different coding bootcamps to attend. To keep track of which camp best, you've created your own scale (the LP scale) to measure how much you're learning. Initially, some camps are better than others, and therefore offer more LP points. However, you plan on attending more than just one camp, and you've also found that going to different camps in a certain order can help boost (or lower) the amount of learning you take in. For example, taking the bootcamp A class and then the bootcamp B class will give you the LP points of A, while giving you a bonus of a certain number of LP points for following up with B. Similarly, if you follow up camp B with another camp C, you might gain or lose another amount of points, depending on whether camp C builds upon or subtracts from B. Your task is to find the best order of classes to take to maximize your LP points.

Input:

The first line contains two integers. The first integer N represents the number of bootcamps there are, and the second integer represents the number of camps you have the budget to attend (assume you will attend as many camps as your budget allows). The next line contains the name of N bootcamps followed by the LP points they offer you for choosing them as your initial bootcamp. The next line contains another integer L. Each of the following L lines contains the name of two bootcamps, followed by an integer representing how many extra points you gain (or lose) from following up with the second bootcamp after taking the first bootcamp.

Output:

Output the bootcamps you attend, in order, followed by the maximum amount of LP points you can gain.

Example Input:

```
5 4
CodeNow 50 SmartCoder 75 BasicOOP 55 BigHack 65 CodingTeam 80
7
BasicOOP SmartCoder 35
CodeNow CodingTeam 15
BigHack BasicOOP -10
SmartCoder BigHack 20
CodingTeam BasicOOP -5
BigHack CodeNow 10
SmartCoder CodingTeam 5
```

Example Output:

```
CodingTeam BasicOOP SmartCoder BigHack 130
```