

6306 Smartphone Manufacturing

In a highly competitive industry, such as the information technology industry, finding the right manufacturing partners is critical to ensure successful product release. Therefore, the *ACM* (Advanced Communication Machinery Corp.) is having difficulty choosing between one of three possible manufacturing companies to produce its next generation smartphones. The three companies, namely company A, B and C, all have a number of workers. For each company, the workers are split into two groups, working in two shifts: one group will work in one week; the other group work the following week; and then back to the first group for the third week, and so on. *ACM* wants to ensure the weekly phone manufacturing is as consistent as possible, so it has developed a complicated, yet accurate, formulation to predict each worker's weekly throughput. Let t_{Ai}, t_{Bi}, t_{Ci} denote the throughputs of i -th worker in company A, B, C, respectively. The criteria used for choosing manufacturing partner is as follows:

- Criteria 1: The entire workforce of the company must be used. No one can be left out.
- Criteria 2: The variation between weekly total phone output must be as small as possible.
- Criteria 3: The total phone output over a year (52 weeks) must be as large as possible.

Note that Criteria 1 takes precedence over Criteria 2 and Criteria 2 takes precedence over Criteria 3.

Given information about the workforce in manufacturing companies A, B, and C. Please decide which company should *ACM* choose to partner to manufacture its latest smartphone.

Technical Specifications

1. There are at least 2 and at most 1,000 workers in each of the three manufacturing companies.
2. The worker throughput is an integer between 1 and 500.

As an example, in the first sample input below, company A has two workers (throughput of 100 and 80). Company B has eight workers, which can be divided up into two shifts of equal phone output (11) per week. Company C has four workers which can be divided up into two shifts of equal phone output (3) per week. Therefore, company B will be chosen by *ACM* because it has the least variation (actually no variation) between weekly phone output, yet produces more phone in 52 week period than company C.

Input

The first line of the input file contains an integer n , denoting the number of test cases to follow. For each test case, there are 3 lines of integers, denoting the throughput of the workers in Company A, B and C, respectively. For each line, the first integer m denotes the number of workers in that company, followed by m integers denoting throughput of the m workers for that company.

Output

For each test case, output either A, B, or C, denoting the company that best meets *ACM*'s selection criteria, followed by the weekly throughput for the two shifts of workers, smaller throughput should be printed first.

Sample Input

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2
2 100 80
8 1 3 2 5 7 1 2 1
4 2 1 1 2
2 100 80
3 20 80 40
10 1 1 1 1 1 1 1 1 1 1 30
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Sample Output

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B 11 11
A 80 100
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