# D: **Designing an Electronic Device**

Source file name: `device.c,` `device.cpp,` *or* `device.java`

Reviewers of Electronic Designs ∼ *International Service* (REDIS) is an organization that invests in electronic designs. Some time ago, REDIS invented an electronic device, called *Asynchronous Communication Internal Switch* (ACIS), that is built connecting some components in series. In order to ensure the proper function of ACIS, it is required that all components work correctly. For that purpose, inside each component can be installed a fixed number of regulators, decreasing the probability of failure of ACIS.
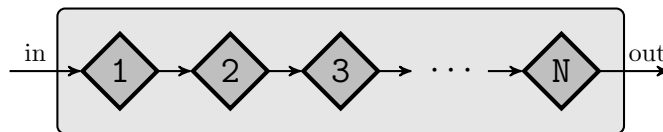
Components connected in series on ACIS.

For each component in ACIS, REDIS defines the maximum number of regulators that can be installed inside it. Also, for each component and for each possible number of regulators that can be installed inside that component, REDIS specifies the cost of installing that number of regulators inside the component, and the probability of failure of the component if it were installed that number of regulators inside it. For each component, it is guaranteed that the cost is strictly increasing on the number of regulators, and that the probability of failure is strictly decreasing on the number of regulators.

The Financial Manager of REDIS has hired you to design ACIS, minimizing its probability of failure. Given a specific budget, you must decide how many regulators you should install inside each component, in order to minimize the probability of failure of ACIS, ensuring that the total cost of your investment does not exceed the given budget.

Input

The input consists of several test cases, each one describing a distinct electronic device. The first line of a test case contains two blank-separated integers N and K indicating, respectively, the number of components connected on ACIS ($1 \leq N \leq 8$), and the budget you have to invest ($0 \leq K \leq 1000$). The second line of a test case contains exactly N blank-separated integers $M_1, M_2, \ldots, M_N$, where M_i denotes the maximum number of regulators that can be installed inside the i-th component ($1 \leq M_i \leq 16$), for each $1 \leq i \leq N$. Then N lines follow, each one describing a component: line i contains exactly $3 \cdot M_i$ blank-separated integers $\alpha_{i1}, \beta_{i1}, \gamma_{i1}, \alpha_{i2}, \beta_{i2}, \gamma_{i2}, \ldots, \alpha_{iM_i}, \beta_{iM_i}, \gamma_{iM_i}$, where γ_{im} is the cost of installing m regulators inside the i-th component ($1 \leq \gamma_{im} \leq 1000$, for each $1 \leq m \leq M_i$), and α_{im}/β_{im} is the probability of failure of the i-th component if it were installed m regulators inside it ($0 \leq \alpha_{im} < \beta_{im} \leq 100$, for each $1 \leq m \leq M_i$).

You can assume, for each component i, that:

- The cost of installing regulators inside that component, is strictly increasing on the number of regulators (i.e., $0 < \gamma_{i1} < \gamma_{i2} < \cdots < \gamma_{iM_i}$).

- The probability of failure of that component if it were installed regulators inside it, is strictly decreasing on the number of regulators (i.e., $1 > \alpha_{i1}/\beta_{i1} > \alpha_{i2}/\beta_{i2} > \cdots > \alpha_{iM_i}/\beta_{iM_i}$).
- The cost of installing 0 regulators inside that component is 0.
- The probability of failure of that component is 1 if it were installed 0 regulators inside it.

The input must be read from standard input.

Output

For each test case, print a line of the form 'a/b', where a, b are integers such that $0 \le a \le b$, $b > 0$, $gcd(a, b) = 1$, and the fraction a/b is the minimum probability of failure of ACIS with the constraints given. Note that, if such probability is 0, you must print '0/1'.

The output must be written to standard output.

Sample Input	Sample Output
1 50	1/1
1	0/1
0 1 100	11/20
1 100	1/1
1	
0 1 100	
2 300	
2 3	
2 3 10 1 10 100	
9 10 100 1 2 200 1 5 250	
2 100	
2 3	
2 3 10 1 10 100	
9 10 100 1 2 200 1 5 250	