3. Machine Shop (masinad)

1 sec / 3 sec 40 points

Elise Isabella Oya works in the Cute Machine Shop. The shop sells many different machines. All of them can be bought from suppliers. Some of them can also be built in the shop from others; this may also be the case for the others in turn. For example, it may be possible to build the machine A from machines B and C, and the machine B in turn from machines D and E; thus, in this case, the machine A could also be built from machines C, D, and E.

Elise was asked for a price quote for a machine. To respond, she needs to know the lowest possible cost of obtaining the machine, whether by buying or by building it. The cost of labor in building a machine from others can be neglected.

Input. The first line contains space-separated integers N and K ($1 \leq K \leq N \leq 1\,000$), the number of different machines and the number of the machine Elise needs to obtain. The machines are numbered $1, \ldots, N$.

The following N lines describe the machines, in the order of their numbers. First on each line is P_i ($0 \leq P_i \leq 10\,000$), the cost of buying the machine i. If the machine can only be obtained by buying it, the price is followed by a 0 and there will be no more data on that line. Otherwise, the price is followed by M_i ($1 \leq M_i \leq N$), the number of other machines needed to build the machine i, and then by M_i space-separated integers: the numbers of the other machines; these M_i numbers will always be distinct. Additionally, it is known that no machine is a component of itself when it is built, neither directly nor indirectly (in graph-theoretical terms, we have a directed acyclic graph).

Output. Output exactly one integer: the minimal cost of obtaining the machine K.

Example.

Input	Output
1 1 10 0	10

The only machine can only be bought at the price of 10 units.

Example.

Input	Output
5 1 50 3 2 3 4 30 2 4 5 20 2 4 5 5 1 5 10 0	35

Elise needs to obtain the machine 1. Let's investigate backwards:

- Machine 5 can only be bought for 10 units.
- Machine 4 can be either bought for 5 or built from the machine 5 for 10 units. Buying is cheaper.
- Machine 3 can be either bought for 30 or built from machines 4 and 5 for a total of 15 units. Building is cheaper.
- Machine 2 can be either bought for 20 or built from machines 4 and 5 for a total of 15 units. Building is cheaper.
- Machine 1 can be either bought for 50 or built from machines 2, 3, and 4 for a total of 35 units. Building is cheaper.

Thus, Elise should buy three of machine 4 and two of machine 5 and build the machine 1 from those, for a total price of 35 units.

Grading. In test cases worth 20 points in total, only the machine K can be built. There are no additional constraints in the remaining test cases.