Advanced Problem

Disease Management

14 March 2009

Source File	`disease.{java,c,cc}`
Input File	`disease.in`
Output File	*standard output*

Alas! An epidemic of D diseases is plaguing Farmer Joanna's dairy. She would like to milk as many of her N cows as possible. But, if the combined milk contains too many diseases, then the entire batch will have to be discarded. Please help Farmer Joanna determine the largest population of cows she can safely milk.

Fortunately, there are no more that 15 diseases afflicting the at most 1000 cows in the dairy.

Input

The input consists of a sequence of scenarios to determine the maximum number of cows that can be milked. Each scenario begins with a line containing three space-separated integers

$$N\ D\ K$$

followed by N lines describing each cow. Each cow description line begins with an integer d_i ($i \in \{1, \ldots, N\}$) declaring how many diseases the cow in question suffers from, followed (on the same line) by d_i disease numbers $n_{i,j}$ ($j \in \{1, \ldots d_i\}$).

The terminating scenario contains no cows: $N = 0$.

Output

For each scenario, print out one line containing M, the maximum number of cows which can be safely milked.

Output is emitted to standard output, with no leading or trailing spaces.

C, C++	`stdout`
C++	`cout`
Java	`System.out`

Example

Sample input and output are given in figures 1 and 2, respectively.

```
6␣3␣2
0
1␣1
1␣2
1␣3
2␣2␣1
2␣2␣1
4␣5␣1
2␣1␣2
2␣1␣3
2␣1␣4
2␣1␣5
4␣5␣2
2␣1␣2
2␣1␣3
2␣1␣4
2␣1␣5
0␣0␣0
```

Figure 1: Input

```
5
0
1
```

Figure 2: Output