

In the first morning of every summer, when the first ray of sunlight breaks into the oak forest, Jayjay, the flying squirrel, quickly climbs to the top of an oak tree in the forest. From there, he starts his descent to the ground, and tries to gather as many acorns from the trees on his way down. Being a flying squirrel, Jayjay can choose, at any moment, to climb down the tree trunk or to fly from one tree to any other tree on his descending journey. However, he loses  $f$  feet of height every time he flies from one tree to another.

Suppose the forest has  $t$  oak trees, and all the trees have the same height of  $h$  feet. Given the height of every acorn on each tree, write a program to compute the maximal possible number of acorns Jayjay can collect by choosing a tree to climb and descend as described.

Figure 2 shows an example of  $t = 3$  oak trees with three, six, and five acorns, respectively. The white circles and grey line indicate a path for Jayjay to collect the maximal possible number of eight acorns, assuming that the height he loses for each flight is  $f = 2$ .

Input

The input consists of a line containing the number  $c$  of datasets, followed by  $c$  datasets, followed by a line containing the number '0'.

The first line of each dataset contains three integers,  $t$ ,  $h$ ,  $f$ , separated by a blank. The first integer  $t$  is the number of oak trees in the forest. The second integer  $h$  is the height (in feet) of all the oak trees. The third integer,  $f$ , is the height (in feet) that Jayjay loses every time he flies from one tree to another. You may assume that  $1 \leq t, h \leq 2000$ , and  $1 \leq f \leq 500$ .

The first line of each dataset is followed by  $t$  lines. The  $i$ -th line specifies the height of every acorn on the  $i$ -th tree. The line begins with a non-negative integer  $a$  that specifies how many acorns the  $i$ -th tree has. Each of the following  $a$  integers  $n$  indicates that an acorn is at height  $n$  on the  $i$ -th tree. The positive integers in each line are sorted in ascending order, and repetitions are allowed. Thus, there can be more than one acorn at the same height on the same tree. You can assume that  $0 \leq a \leq 2000$ , for each  $i$ .

Output

The output consists of one line for each dataset. The  $c$ -th line contains one single integer, which is the maximal possible number of acorns Jayjay can collect in one single descent for dataset  $c$ .

**Note:** The dataset below and Jayjay's path to collect the maximal number of 8 acorns are shown in Figure 2.

Sample Input

```
1
3 10 2
3 1 4 10
6 3 5 7 8 9 9
5 3 4 5 6 9
0
```

Sample Output

8

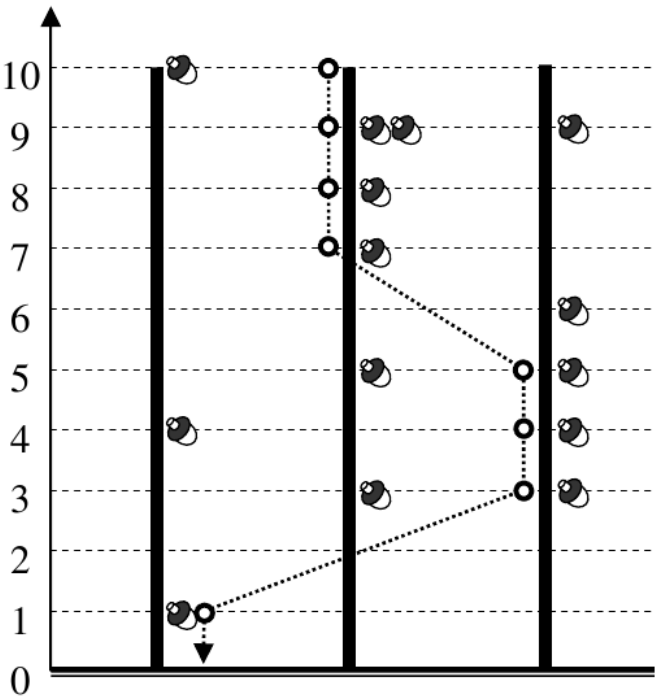


Figure 2: Example of oak trees with acorns.