

Task 1

Given is a set of integers and then a sequence of queries. A query gives you a number and asks to find a sum of two distinct numbers from the set, which is closest to the query number.

Input

Input contains multiple cases.

Each case starts with an integer n ($1 < n \leq 10000$), which indicates, how many numbers are in the set of integer. Next n lines contain n numbers. Of course there is only one number in a single line. The next line contains a positive integer m giving the number of queries, $0 < m < 250000$. The next m lines contain an integer of the query, one per line.

Input is terminated by a case whose $n=0$. Surely, this case needs no processing.

Output

Output should be organized as in the sample below. For each query output one line giving the query value and the closest sum in the format as in the sample. Inputs will be such that no ties will occur.

Input	Output
5 3 12 17 33 34 3 1 51 30 2 100000 100001 1 1 3 1 2 3 3 4 5 6 5 1 3 7 10 12 6 3 4 5 6 10 12 0	Case 1: Closest sum to 1 is 15. Closest sum to 51 is 51. Closest sum to 30 is 29. Case 2: Closest sum to 1 is 200001. Case 3: Closest sum to 4 is 4. Closest sum to 5 is 5. Closest sum to 6 is 5. Case 4: Closest sum to 3 is 4. Closest sum to 4 is 4. Closest sum to 5 is 4. Closest sum to 6 is 4. Closest sum to 10 is 10. Closest sum to 12 is 11.

Task 2

Think the contest score boards are wrong? Here's your chance to come up with the right rankings. Contestants are ranked first by the number of problems solved (the more the better), then by decreasing amounts of penalty time. If two or more contestants are tied in both problems solved and penalty time, they are displayed in order of increasing team numbers.

A problem is considered solved by a contestant if any of the submissions for that problem was judged correct. Penalty time is computed as the number of minutes it took for the first correct submission for a problem to be received plus 20 minutes for each incorrect submission received prior to the correct solution. Unsolved problems incur no time penalties.

Input:

The input begins with a single positive integer on a line by itself indicating the number of the cases following, each of them as described below. This line is followed by a blank line, and there is also a blank line between two consecutive inputs.

Input consists of a snapshot of the judging queue, containing entries from some or all of contestants 1 through 100 solving problems 1 through 9. Each line of input will consist of three numbers and a letter in the format

Contestant Problem Time L

where *L* can be C, I, R, U or E. These stand for Correct, Incorrect, clarification Request, Unjudged and Erroneous submission. The last three cases do not affect scoring.

Lines of input are in the order in which submissions were received.

Output:

For each test case, the output must follow the description below. The outputs of two consecutive cases will be separated by a blank line.

Output will consist of a scoreboard sorted as previously described. Each line of output will contain a contestant number, the number of problems solved by the contestant and the time penalty accumulated by the contestant. Since not all of contestants 1-100 are actually participating, display only the contestants that have made a submission.

Sample Input

Output for Sample Input

5	1 1 20
1 2 10 I	1 2 66
1 3 20 C	3 1 11
1 3 30 I	
1 2 10 I	2 2 65
3 1 11 C	1 2 66
1 2 19 R	3 1 11
1 2 21 C	
1 1 25 C	1 1 60
	2 1 60
1 2 10 I	
3 1 11 C	
1 2 19 R	24 1 999
1 2 21 C	21 0 0
1 1 25 C	22 0 0
2 2 10 I	23 0 0
2 2 20 C	
2 1 25 C	
1 4 20 I	
2 5 70 I	
1 4 40 C	
2 3 60 C	
21 2 20 R	
22 2 20 U	
23 2 20 E	
24 2 999 C	

Task 3

Implement Radix Sort algorithm for numbers. (After solving task 1 & 2)