tournament2 • EN

Chess Tournament II (tournament2)

You want to organize a chess tournament in your town! Given the recent developments in the chess world, you want to use some extra measures to make sure that everyone there is playing fairly.

Towards this aim, you came up with a system to decide the *strength* of each move played by each player. In order to decide whether a player cheated or not, you compute the average move strength, concluding that a player cheated if it exceeds the player's initial chess *rating* by a certain *threshold*.

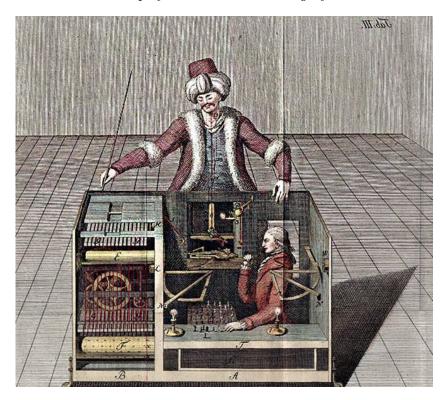


Figure 1: Cutting-edge techniques for chess cheating.

More formally, you are given the data from K chess players. For each chess player you know the number of moves N they made during the contest, the strength S_i (i < N) of each of them, and the rating R and threshold T you are going to use. Decide whether each player cheated or not!

Among the attachments of this task you may find a template file tournament2.* with a sample incomplete implementation.

Input

The first line contains the only integer K. Then, K pairs of lines follow.

The first line of each pair contains the three integers N, R and T. The second line of each pair contains the N integers S_i .

Output

You need to write for each player a message: "Cheater" if the player cheated or "Innocent" otherwise (without the quoting marks).

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Constraints

- $1 \le K \le 100$.
- $1 \le N \le 1000$ for each player.
- $1 \le R \le 3500$ for each player.
- $1 \le T \le 1000$ for each player.
- $1 \le S_i \le 5000$ for each player and $i = 0 \dots N 1$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

Subtask 1 (0 points) Examples.
Subtask 2 (100 points) No additional limitations.

Examples

input	output
3 5 800 400 900 1000 1500 1300 1400 8 1000 200 950 800 1000 1100 1200 845 100 924 6 2500 400 1900 2100 950 2500 2000 3000	Cheater Innocent Innocent

Explanation

In the first sample case, the first player's average move strength is 6100/5 = 1220, which is greater than 800 + 400 = 1200, the maximum threshold allowed.

The other two players have not cheated, thus they are innocent.

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