



Constraints

- $1 \leq K \leq 100$.
- $1 \leq N \leq 1000$ for each player.
- $1 \leq R \leq 3500$ for each player.
- $1 \leq T \leq 1000$ for each player.
- $1 \leq S_i \leq 5000$ 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.