

# Guessing Polynomials

Would you like to play a game with my computer? Sonya (yes, that's her name) will think of a polynomial and you will have to guess it.

Sonya, who is very loyal and just responds to my commands, has been instructed to listen and respond to a finite set of commands (each command should be followed by the newline, please avoid additional white spaces) that may come from you:

- GETDEGREE: She will answer with an integer number  $1 \leq D \leq 100$ , the degree of the polynomial + 1.
- EVAL N: She will evaluate the polynomial for the integer number  $-100 \leq N \leq 100$  and answer with the result.
- GUESS  $c_0 c_1 \dots c_{D-1}$ : She, depending on the correctness of your guess, will answer 'YES' or 'NO'.
- SURRENDER: You may accept she is smarter than you and forfeit the current challenge.
- QUIT: You may stop playing with her.

Please, notice that:

- You may not EVAL, GUESS or SURRENDER before you GETDEGREE.
- After GETDEGREE, you may not QUIT until GUESSing or SURRENDERing.
- Sonya gets tired sometimes, so she may give you a negative degree. I warn you, you should QUIT immediately or you will lose the game (i.e., your solution will be judged as Wrong Answer).

You may assume all coefficients are non-zero integers lying in range  $[-10, 10]$ .

## Scoring

For each correctly guessed polynomial, you will get  $\text{Max}(\text{Degree} - \text{EvalCommands} + 1, 0)$  points.

The number of points given in the ranking is scaled so that it is equal to 10 for the contestant whose solution has the highest score, and is proportionally less for all solutions with lower scores.

## Example 1

```
You: GETDEGREE
Sonya: 2
You: EVAL 19
Sonya: -63
You: EVAL 84
Sonya: -258
You: GUESS -6 -3
Sonya: YES
You: GETDEGREE
Sonya: 96
You: SURRENDER
You: GETDEGREE
Sonya: 3
```

You: EVAL 0  
Sonya: 2  
You: GUESS 2 3 4  
Sonya: NO  
You: SURRENDER  
You: GETDEGREE  
Sonya: -1  
You: QUIT

For the above example your program scores  $2-2+1=1$  point.

## Example 2

You: GETDEGREE  
Sonya: 100  
You: EVAL -26  
Sonya: 11798651065720264067499767442922933495089861550491775802607783136228117083825041  
76434876472883967901162673180896259770097086737461876133367600  
You: SURRENDER  
You: GETDEGREE  
Sonya: 3  
You: EVAL 0  
Sonya: 7  
You: EVAL 1  
Sonya: 13  
You: EVAL 2  
Sonya: 23  
You: GUESS 7 4 2  
Sonya: YES  
You: GETDEGREE  
Sonya: 2  
You: EVAL 8  
Sonya: 31  
You: EVAL 72  
Sonya: 223  
You: GUESS 7 3  
Sonya: YES  
You: GETDEGREE  
Sonya: 31  
You: SURRENDER  
You: QUIT

For the above example your program scores  $1+1=2$  points ( $3-3+1=1$  i  $2-2+1=1$ ).

**Attention:** the program should clear the output buffer after printing each line. It can be done using `fflush(stdout)` command or by setting the proper type of buffering at the beginning of the execution - `setlinebuf(stdout)`.