

Guessing Game

Problem ID: a03p10guessinggame

Time to play a guessing game. I will pick a number between 1 and 1 000, inclusive, and you write a program which guesses what it is. I will then tell your program whether the guess was correct, too low or too high. If I get bored, I might quit.

Your program should use a method known as binary search, halving the range of possible solutions each time I say the guess is too low or too high. Using this method, your program is guaranteed to guess correctly using at most 10 guesses!

When the game begins, the solution must lie somewhere between 1 and 1 000. To divide the solution space in half, pick a guess that is exactly in the middle. Pick the lower one in case of ties, which is $500 = \lfloor \frac{1+1000}{2} \rfloor$.

Imagine that the guess is too high. Then the solution must lie between 1 and 499. The next guess will therefore be $250 = \lfloor \frac{1+499}{2} \rfloor$.

Imagine that the guess is too low. Then the solution must lie between 251 and 499 so the next guess will therefore be $375 = \lfloor \frac{251+499}{2} \rfloor$.

By repeating this process up to 10 times, you are guaranteed to find the correct answer. If not, then I must be cheating!

Your program should always pick a guess that is in the middle of the range of possible solutions, rounded down (floored) to the nearest integer.

Input

For each guess your program makes, the input will contain a line with the following:

- l if the guess is too low,
- h if the guess is too high,
- c if the guess is correct,
- q if the program should quit early.

Output

Your program should start by writing the initial guess. Then it should keep guessing according to the input given, until the guess is correct or until the signal to quit early is given. In case the signal to quit early is given, your program should output `Quitter` and then exit. After guessing correctly your program should output `I AM VICTORIOUS` and then exit. The program should detect if cheating has occurred, in which case it should output `Tsk, tsk, don't try to cheat me` and then exit.

Sample Input 1	Sample Output 1
c	500 I AM VICTORIOUS
Sample Input 2	Sample Output 2
h q	500 250 Quitter

Sample Input 3

h
h
h
h
h
c

Sample Output 3

500
250
125
62
31
15
I AM VICTORIOUS

Sample Input 4

l
l
l
l
l
l
l
l
l
l
c

Sample Output 4

500
750
875
938
969
985
993
997
999
I AM VICTORIOUS

Sample Input 5

h
l
h
l
h
l
h
l
h
l

Sample Output 5

500
250
375
312
343
327
335
331
333
332
Tsk, tsk, don't try to cheat me

Sample Input 6

l
h
l
l
h
c

Sample Output 6

500
750
625
687
718
702
I AM VICTORIOUS