

Binary

Problem Description

If I were to torture people, I would torture them with unsolvable math problems like a gentleman.

- Kraw the Krow, 2015

Kraw the Krow is trapped in National Service and is extremely bored with life there. Marching endlessly from sunrise to sunset and whizzing around mindlessly in tanks just isn't mentally satisfying for Kraw the Krow. Bored, he proceeds to ammunition to conspire with Rar the Cat on how to *gentlemanly* punish the tender minds of the young and innocent at the upcoming NOI 2016.

Bored with their evil plot, Rar the Cat decides to play a game with Kraw the Krow. Rar the Cat writes a binary string **S** of length 1000 on a piece of paper, without Kraw the Krow looking. (Recall that a *binary string* is a string made up of '1's and '0's). Then, Kraw the Krow writes another binary string **T** also of length 1000 on a piece of paper, and passes his string **T** to Rar the Cat. Rar the Cat compares **S** and **T** and responds to Kraw the Krow in one of these three ways:

- Correct: **S** and **T** are identical. Kraw the Krow wins.
- Half-Correct: *Exactly* half of the bits in **T** are identical to **S**.
- Incorrect: If Rar the Cat does not respond with either 'Correct' or 'Half-Correct'.

How would such a simple game be of any difficulty to Kraw the Krow? Scheming, Rar the Cat and Kraw the Krow capture you and they challenge you to this game. Your only hope of seeing the light of day again is by succeeding in this challenge.

Your Task

You are to attempt to guess Rar the Cat and Kraw the Krow's binary string **S**.

You should submit a file implementing the function `guess_binary()`, as follows:

Your Function: `guess_binary`

```
void guess_binary();
```

This function should determine the binary string **S**.

This function should call the grader function, `make_guess()`.

Grader Function: `make_guess()`

```
int make_guess(std::string T);
```

Your function, `guess_binary()`, should call the this function to make guesses.

This function accepts one parameter, **T**, a binary string of length 1000.

This function returns 1 if **T** is Half-Correct, 0 if **T** is Incorrect, and exits the program if **T** is correct.

Subtasks

Subtask	Points	Additional Constraints
1	30	<code>make_guess()</code> may be called at most 2000 times.
2	70	<code>make_guess()</code> may be called at most 1500 times.

Testing

You may use the attached sample grader, `grader.cpp`, to test your program.

The attached sample grader accepts input in the following format:

Line 1: Subtask number, either 1 or 2.

Line 2: A binary string of length 1000.