A Alternative Encryption

Time limit: 1s **Problem Author:** Thomas Beuman

- This is a multi-pass problem. Your program will be run twice for each test case.
- In the first pass, encrypt $n \leq 1000$ strings with lengths up to 100.
- The encrypted text should have the same number of letters as the original text.
- For all i, the ith letter of the encrypted text should differ from the ith letter of the original text.
- In the second pass, your program will be given the strings as encrypted by the first pass, which it should then decrypt to retrieve the original input.
- Your submission may take up to 1 second for each pass.
- A testing tool is provided to help you develop your solution.

The enigma, an encryption machine that solves this problem.
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Sample Case 1

Sample Input	Pass 1	Sample Output
encrypt 3 plaintext nwerc correct	encrypted delft balloon	

Sample Input	Pass 2	Sample Output
decrypt 3 encrypted delft balloon	plaintext nwerc correct	

B Blackboard

Time limit: 6s **Problem Author:** Takuki Kurokawa

- A blackboard has $n \leq 10\,000$ positive integers with values up to 10^9 written on it.
- One at a time, split a number x into two smaller positive *real* numbers y and z, such that $x = y + z$.
- Output the minimum number of operations required to ensure that the largest value on the blackboard is at most $0 \leq k \leq 100$ percent larger than the smallest value.

Illustration of Sample Input 1.
The 7 can be replaced by 2.4 and 4.6.
The 4.6 can in turn be replaced by 2.6 and 2.
Finally, the 5 can be replaced by 2.3 and 2.7.
After that, the largest value (3) is 50% larger than the smallest value (2).

C Consolidating Windows

Time limit: 1s **Problem Author:** The NWERC 2024 jury

- It is expensive to have many windows, so you want to combine two square windows with side lengths up to 10^9 into a single, larger square window.
- Calculate the side length of a square window that has the same area as two smaller square windows combined.
- For example, when the two smaller windows have side lengths 3 and 4, the combined window with the same area has side length 5.

Bricked-up windows.
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