
Pseudo-dichotomic search

P60373_en

Dinovè Concurs de Programació de la UPC - Semifinal (2021-06-23)

Consider a hidden vector V with n integer numbers in strictly increasing order. Given an integer x that belongs to V , you will play a game to guess the position j where $V[j] = x$. You have to use a “black box” B , with parameters x and a position i inside V . If there is a $j \in \{i - 1, i, i + 1\}$ such that $V[j] = x$, you win the game. Otherwise, B will tell you whether $x < V[i - 1]$ or $x > V[i + 1]$.

Given n , what is the minimum number of calls to B to win the game?

Input

Input consists of several cases, each one with an n between 1 and 10^{18} .

Output

For every n , print the worst-case number of calls to B to win the game, assuming a strategy that minimizes that worst-case cost.

Sample input

```
1
2
4
9
10
10000000000000000
```

Sample output

```
1
1
2
2
3
49
```

Problem information

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