1

There is an integer n, and you need to find three positive integers x, y, z, so that $n = x + y + z$, $x|n, y|n, z|n$ and xyz is maximum. If there is no such integers just output -1 instead. $n \leq 10^9$

Sample Input

3
1
2
3

Sample Output

-1
-1
1

2

There is $3n$ points in 2d-space, and there is no three points are collinear. You need to construct n disjoint triangles from these $3n$ points. $n \leq 10^4, |x_i|, |y_i| \leq 10^9$

Sample Input

1
1
1 2
2 3
3 5

Sample Output

1 2 3

3

There are n strings $s_1, s_2, \ldots, s_n$ consisting of (and). You can order them and concatenate them to get a new string t so that the length of the longest balanced subsequence of t is maximum. $n \leq 10^5, len(s_i) \leq 10^5$

Sample Input

2
1
)()(()(
2
)
)(

Sample Output

4
2

4

There are n rows pyramid contains with one 0, two 1, … and $(n-1)$ n. Two integers in the pyramid are considered adjacent if and only if they are not in the same row and share parts of their edges. For example, if we denote the cell which is at i-th row and j-th position from the left as (i,j), then the cell (2,1) is adjacent to the cells (1,0), (1,1), (3,1), (3,2). You can swap the 0 with an adjacent integer, which costs one step. And, you need to sort out this pyramid as line i contains only the integers I (for each $0 \leq i < n$). If the step you need is more than 20, output 'too difficult'. $n \leq 10$

Sample Input

1

1

2 0

2 1 2

3 3 3 3

4 4 4 4 4

5 5 5 5 5 5

Sample Output

3

5

There are n integers $a_1, a_2, \ldots, a_n$, and you need to pay x for every inversion in the sequence. You can play some tricks at start, which means you can pay y to swap any two adjacent elements. What is the minimum amount of money you need to spend? (read till the EOF) $n \leq 10^5, x, y \leq 10^5, |a_i| \leq 10^9$

Sample Input

3 233 666

1 2 3

3 1 666

3 2 1

Sample Output

0

3

6

You should construct n positive integers lexicographically minimal and for every two elements a_i and a_j $(l_k < i < j < r_k)$ holds $a_i \neq a_j$ for each $k = 1, \ldots, K$. $n \leq 10^5, K \leq 10^5$

Sample Input

3

2 1

1 2

4 2
1 2
3 4
5 2
1 3
2 4

Sample Output

1 2
1 2 1 2
1 2 3 1 1

7

There are two sequence a,b of length n. b is a static permutation of 1 to n. a are zeros at the beginning. There are q operations with two types: $add\ l\ r$ to add one for each element in $a_{l\ldots r}$, or $query\ l\ r$ to ask for the value of $\sum_{i=l}^{r}\left[\frac{a_i}{b_i}\right]$. $n,q \leq 10^5$

Sample Input

5 12
1 5 2 4 3
add 1 4
query 1 4
add 2 5
query 2 5
add 3 5
query 1 5
add 2 4
query 1 4
add 2 5
query 2 5
add 2 2
query 1 5

Sample Output

1
1
2
4
4
6

8

You need to construct a $n \times n$ matrix which contains $0,1$ and the number of 1 is more than 85000 with $n \leq 2000$. And, the matrix you construct should satisfy that there is no sub-matrix with 1 filled in all 4 corners.

Sample Input

(nothing here)

Sample Output

3
010
000
000

(it is not correct, and just for showing the format)