CodersCup Sophomore Round A

QUESTION #1:

Simple Equations

Given three integers A, B and C find three other distinct integers x, y and z such that

X+Y+Z = A

X * Y * Z = B

$X^2 + Y^2 + Z^2$ = C.

Input

The first line of the input file gives the number of test cases N (N < 20). Each of the following N lines gives the values of A, B and C ($1 \leq$ A, B, C $\leq$ 10000).

Output

For each test case, output the corresponding values of x, y and z.

If there are many possible answers, choose the one with the least value of x.

If there is a tie, output the one with the least value of y.

If there is no solution, output the line 'No solution.' instead.

Constraints

- ($1 \leq$ A, B, C $\leq$ 10000).

Input

```
2
1 2 3
6 6 14
```

Output

No solution.

1 2 3

QUESTION #2:

Amir and Array

Amir has an array a = a1, a2, ..., an and m operations. Each operation looks as: li, ri, di, $(1 \le li \le ri \le n)$. To apply operation i to the array means to increase all array elements with numbers li, li + 1, ..., ri by value di.

Amir wrote down k queries on a piece of paper. Each query has the following form: xi, yi, $(1 \le xi \le yi \le m)$. That means that one should apply operations with numbers xi, xi + 1, ..., yi to the array.

Now Amir is wondering, what the array a will be after all the queries are executed. Help Amir.

Constraints

- $(1 \le n, m, k \le 10^5)$.
- $(1 \le li \le ri \le n)$, $(0 \le di \le 10^5)$.
- $(1 \le xi \le yi \le m)$

Input

The first line contains integers n, m, k $(1 \le n, m, k \le 10^5)$. The second line contains n integers: a1, a2, ..., an $(0 \le ai \le 10^5)$ — the initial array.

Next m lines contain operations, the operation number i is written as three integers:

li, ri, di, $(1 \le li \le ri \le n)$, $(0 \le di \le 10^5)$.

Next k lines contain the queries, the query number i is written as two integers: xi, yi, $(1 \le xi \le yi \le m)$.

The numbers in the lines are separated by single spaces.

Output

On a single line print n integers a1, a2, ..., an — the array after executing all the queries. Separate the printed numbers by spaces.

Please, do not use the %lld specifier to read or write 64-bit integers in C++. It is preferred to use the cin, cout streams of the %I64d specifier.

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Input

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

Output

9 18 17

QUESTION #3:

GETTING AN A

Translator's note: in Russia's most widespread grading system, there are four grades: 5, 4, 3, 2, the higher the better, roughly corresponding to A, B, C and F respectively in American grading system.

The term is coming to an end and students start thinking about their grades. Today, a professor told his students that the grades for his course would be given out automatically — he would calculate the simple average (arithmetic mean) of all grades given out for lab works this term and round to the nearest integer. The rounding would be done in favour of the student — 4.5 would be rounded up to 5 (as in example 3), but 4.4 would be rounded down to 4.

This does not bode well for Vasya who didn't think those lab works would influence anything, so he may receive a grade worse than 5 (maybe even the dreaded 2). However, the professor allowed him to redo some of his works of Vasya's choosing to increase his average grade. Vasya wants to redo as as few lab works as possible in order to get 5 for the course. Of course, Vasya will get 5 for the lab works he chooses to redo.

Help Vasya — calculate the minimum amount of lab works Vasya has to redo.

Input

The first line contains a single integer n — the number of Vasya's grades (1≤n≤100).The second line contains n integers from 2 to 5 — Vasya's grades for his lab works.

Output

Output a single integer — the minimum amount of lab works that Vasya has to redo. It can be shown that Vasya can always redo enough lab works to get a 5.

Input

3

4 4 4

Output
2

Note

In the first sample, it is enough to redo two lab works to make two 4s into 5s.

QUESTION #4:

Left Rotation

A left rotation operation on an array of size **n** shifts each of the array's elements **1** unit to the left. For example, if **2** left rotations are performed on array **[1, 2, 3, 4, 5]**, then the array would become **[3, 4, 5, 1, 2].**

Given an array of **n** integers and a number **d**, perform **d** left rotations on the array. Then print the updated array as a single line of space-separated integers.

Input

The first line contains two space-separated integers denoting the respective values of **n** (the number of integers) and **d** (the number of left rotations you must perform).

The second line contains **n** space-separated integers describing the respective elements of the array's initial state.

Output

Print a single line of **n** space-separated integers denoting the final state of the array after performing **d** left rotations.

Constraints

- $(1 \leq n \leq 10^5)$.
- $(1 \leq d \leq n)$
- $(1 \leq arr[i] \leq 10^6)$

Example

Input:
5 4
1 2 3 4 5

Output:
5 1 2 3 4