International Collegiate Programming Contest
The 2026 ITI Placement Test Collegiate Programming Contest
Online
February 2026

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Sponsored by ICPC Foundation

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(Practice Problems)

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Problem A. Odd Day Out

Input file:	`standard input`
Output file:	`standard output`
Balloon Color:	`Orange`

Two mischievous sisters, Sara and Rania, created a fun rule to decide if they should go outside.

Every day, Sara picks a number X and Rania picks another number Y. They add them together and declare:

"If the sum is odd, we go out to play! Otherwise, we stay inside."

Today, they picked their numbers again.

Will they be shouting `YES` or `NO`?

Input

Two integers X and Y ($1 \leq X, Y \leq 100$) — the numbers chosen by Sara and Rania.

Output

Print `YES` if the sum $X + Y$ is odd, otherwise print `NO`.

Examples

standard input	standard output
1 2	YES
100 20	NO

Problem B. The Lanterns of El Djem

Input file:	`standard input`
Output file:	`standard output`
Balloon Color:	`Blue`

In the heart of El Djem, preparations are underway for the Festival of Lights. At each station around the amphitheater, lantern chains must be built using three glowing colors: ***`Red (R)`****,* ***`Green (G)`****, and* ***`Blue (B)`****.*

Each chain must have exactly n lanterns, arranged so that no two consecutive ones share the same color. Moreover, every station requests at least a red, b green, and c blue lanterns in its chain.

Your task is to decide whether it's possible to build such a chain. If so, provide any valid one.

Input

The first line contains an integer t ($1 \le t \le 10^5$) — the number of stations.

Each of the next t lines contains four integers n, a, b, and c ($1 \le n \le 10^5$; $0 \le a, b, c \le n$).

It is guaranteed that the total sum of n across all test cases does not exceed 10^5.

Output

For each station, output a valid sequence of n characters using only `'R'`, `'G'`, and `'B'`, with no identical adjacent characters and each color used at least the given number of times.

If no such sequence exists, output `-1`.

Example

standard input	standard output
2 2 2 0 0 4 2 1 1	-1 RGRB

Note

- **First Case:** Cannot place two red lanterns in a row, so the answer is `-1`.
- **Second Case:** `"RGRB"` is a valid chain.

Problem C. Pizza Pricing Tradition

Input file:	`standard input`
Output file:	`standard output`
Balloon Color:	`Gray`

In the sunny alleys of Sfax, a small pizza bakery is known for its perfectly round pizzas and perfectly round prices. The owner sells a pizza of radius r that costs exactly x dinars to bake.

Now, a new pizza size with radius s is being introduced. However, there's one strict rule: all prices must be a multiple of 10 dinars.

The cost of baking a pizza is directly proportional to its area. To avoid losses, the new pizza must be sold at a price that is not less than its baking cost, and the price must follow the round-number tradition.

Determine the minimum valid price the bakery can charge for the new pizza, while following the rules and avoiding a loss.

Input

The first line contains an integer t ($1 \le t \le 10^5$) — the number of test cases.

Each of the next t lines contains three integers r, s, and x ($1 \le r, s, x \le 10^4$) — the radius of the original pizza, the radius of the new pizza, and the cost to bake the original pizza.

Output

For each test case, print a single line containing the minimum price (a multiple of 10) at which the new pizza can be sold without making a loss.

Example

standard input	standard output
3 1 2 1 2 3 2 3 2 30	10 10 20

Problem D. Mashup Moments

Input file:	`standard input`
Output file:	`standard output`
Balloon Color:	`Purple`

In the scenic village of Sidi Bou Said, friends gather during a long storytelling session that lasts for m minutes. The session is divided into n themed parts, each starting at a specific time. Anyone can join or restart the session at special checkpoint minutes. Curious about the stories, friends often ask: "If I begin listening from this minute, which theme will I hear?".

The storytelling session is split into n segments, where each segment starts at a known minute. These start times are given in a list sorted in increasing order, and the first segment always begins at minute 0.

Each segment has a unique theme. You're given q queries — each query is a minute a friend picks to restart the session. For each query, determine which theme will be active at that minute.

Input

The first line contains three integers n, q, and m ($1 \le n, q \le 10^5$, $1 \le m \le 10^{18}$, $n \le m$) — the number of segments, the number of queries, and the total length of the session.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($0 \le a_i \le m, a_1 = 0, a_i < a_{i+1}$) — the starting minutes of the segments.

The third line contains n strings — the name of the theme for each segment. All theme names are unique, consist of lowercase English letters, and are at most 20 characters long.

Then follow q lines, each containing a single integer m_i ($0 \le m_i \le m$) — the minute a friend wants to begin from.

Output

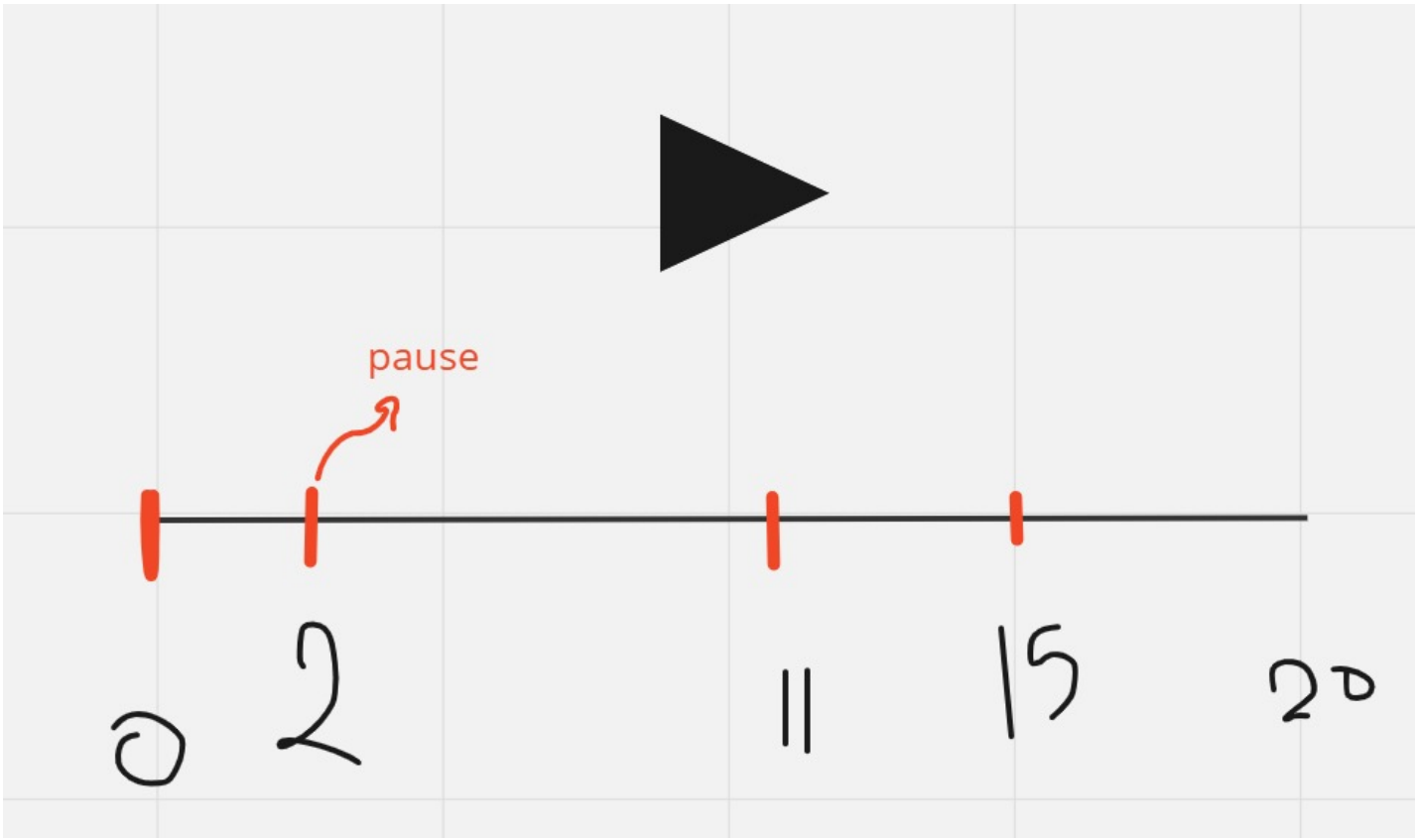
For each query, print a single line containing the theme that will be active at the chosen minute.

Example

standard input	standard output
4 5 20 0 2 11 15 pop countryside rock techno 0 2 3 11 18	pop countryside countryside rock techno

Note

For the first test case its illustrated using the following image


pause
0
2
11
15
20

Problem E. String Queries

Input file:	`standard input`
Output file:	`standard output`
Balloon Color:	`White`

Under the starlit skies atop the hill of Byrsa in ancient Carthage, scribes maintain a ledger of enchanted strings. Each update creates a new version of their manuscript, and they often query past versions for secret patterns.

You are given an initial string s of lowercase English letters (version 0). You must process q operations, creating new versions or answering queries on existing ones. Versions are numbered starting from 0; each update increases the current version by one.

There are two types of operations:

1. **Update:** `1 i x`
   Replace the i-th character of the current string with character x, creating a new version.
2. **Query:** `2 v L R k c d`
   Let s_v be string of version v ($0 \le v \le$ current version). Consider the substring $s_v[L \dots R]$. Count the number of ways to split it into two non-empty parts

   $$s_v[L \dots L+i] \quad \text{and} \quad s_v[L+i+1 \dots R]$$

   such that the first part contains exactly k occurrences of character c, and the second part contains at least k occurrences of character d.

Input

The first line contains the initial string s ($1 \le |s| \le 3 \cdot 10^5$). The second line contains an integer q ($1 \le q \le 3 \cdot 10^5$), the number of operations. Each of the next q lines describes an operation in one of the following formats:

- `1 i x` ($1 \le i \le |s|$, x is a lowercase letter) — update operation.
- `2 v L R k c d` ($0 \le v \le$ current version, $1 \le L < R \le |s|$, $0 \le k \le R-L$, c, d are lowercase letters) — query operation.

It is guaranteed that all parameters are valid.

Output

For each query operation, print a single integer — the number of valid partitions for the given version and parameters.

Example

standard input	standard output
abacaba 4 2 0 1 7 2 a a 1 3 b 2 1 2 6 1 b a 2 1 1 4 1 a b	2 1 2

Problem F. Who's Beside Fouad?

Input file:	`standard input`
Output file:	`standard output`
Balloon Color:	`Green`

Mohamed Fouad, the Executive Director of the ACPC, stands proudly before the ancient Ribat of Sousse in Tunisia, preparing for a grand team photograph. He invites his three friends — Amr, Radwan, and Abdelaleem — to line up beside him: one on the left, one on the right, and the shortest friend must stand directly next to Mohamed Fouad in the middle.

Can you help arrange the shot by determining which friend is the shortest?

Input

Three integers A, B, and C ($150 \leq A, B, C \leq 250$) — the heights of Amr, Radwan, and Abdelaleem in centimeters.

Output

Print a single integer — the height of the shortest friend.

Example

standard input	standard output
187 175 170	170

Problem G. Kindergarten

Input file:	`standard input`
Output file:	`standard output`
Balloon Color:	`Light Cyan`

Once, there was a teacher in a kindergarten, while she was watching the kids during the break she found out that they had made a game!

All the kids stand in a line and each has a position from 1 to n (n is the number of the kids). first kid's position is 1 and so on..

Each kid has a piece of paper that has a unique number a_i written on it ($1 \leq a_i \leq n$)

Also, each kid has some friends and they can swap their papers whenever they want any number of times.

The teacher was a former competitive programmer and she thought for a moment: "can the kids get the numbers on the papers equal to their position's number by swapping the papers with their friends?".

help her to find out!

Input

the first line contains an integer t, ($1 \leq t \leq 10^4$) equal to number of test cases.

each test case has:

the first line contains two integers n ($2 \leq n \leq 10^5$), m ($1 \leq m \leq 10^5$) equal to the number of kids and the number of friendships respectively.

the next line:

consists of n integers ($1 \leq a_i \leq n$) the number that the kid on position i has on his piece of paper.

in the next m lines in each line:

two numbers x_i and y_i, $i \in \{1, ..., m\}$ indicating that the kid x_i is a friend of the kid y_i and vice versa.

the sum of n, m over all test cases won't exceed $5 \cdot 10^5$

Output

For each test case, print ‘‘`YES`’’ if they can; otherwise, print ‘‘`NO`’’.

You can output each letter in any case (lowercase or uppercase). For example, the strings “`yEs`”, “`yes`”, “`Yes`”, and “`YES`” will be accepted as a positive answer.

Examples

standard input	standard output
1 5 6 3 1 2 5 4 1 3 3 5 5 2 2 4 2 4 4 2	YES
1 5 2 3 1 2 5 4 1 3 3 5	NO

Problem H. Cars

Input file:	standard input
Output file:	standard output
Balloon Color:	Pink

Moamen has n cars, and he needs to buy an extra m cars, but before he buys the extra ones, he will sell x cars.

Can you tell Moamen the total number of cars that he will have?

Input

One line contains three numbers n,m,x ($1 \leq x \leq n, m \leq 100$)

Output

Print one integer representing the answer.

Examples

standard input	standard output
5 3 1	7
3 3 3	3