All Girls Team Selection Contest, 2025

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Problem A

Na Parle Bia Hobe Na

problem Statement:

In the Kingdom of Numbers, there is a treasure map that marks the positions of hidden treasures. Each treasure is marked by a two-digit number. Your task is to find the sum of the digits of each treasure number to help the adventurers collect the treasure.

Given a number, the adventurers want to know the sum of the digits of the number to unlock the treasure.

Input:

The first line contains an integer t ($1 \leq t \leq 90$) — the number of test cases.

The only line of each test case contains a single two-digit positive integer n ($10 \leq n \leq 99$).

Output:

For each test case, output a single integer — the sum of the digits of n.

Examples:

Input	copy	Output	copy
8 77 21 40 34 19 84 10 99		14 3 4 7 10 12 1 18	

Problem B

Breakup With Array

problem Statement:

You have N cards placed in front of you on the table, where the i^{th} card has the number A_i written on it. Your goal is to determine the minimum number of moves required to ensure that all the remaining cards on the table have the same number.

In one move, you can **remove** any one card from the remaining cards on the table.

Input:

- The first line contains a single integer T — the number of test cases. Then the test cases follow.
  For each test case:
- The first line contains an integer N — the number of cards.
- The second line contains N space-separated integers $A_1, A_2, \ldots, A_N$ where $A_i A_i Ai$ is the number written on the i^{th} card.

Output:

For each test case, output the **minimum** number of moves required so that all the cards remaining on the table have the same number written on them.

Constraints:

- $1 \leq T \leq 100$
- $1 \leq N \leq 100$
- $1 \leq A_i \leq 10$

Example:

Input	copy	Output	copy
3 5 1 1 2 2 3 4 8 8 8 8 6 5 6 7 8 9 10		3 0 5	

Problem C

Maruf and His Beauty

problem Statement:

Maruf's_Beauty and Maruf are playing a game with a collection of magic coins. Each coin has a certain number of sparkles, represented as a positive integer. They line up the coins, with each coin having a sparkle value: $a_1, a_2, \ldots, a_n$.

Maruf, always up for a challenge, dares Maruf's Beauty to use her magical abilities to control the sparkle levels of the coins. Maruf's Beauty has a special spell that allows her to choose any three distinct coins at positions `i`, `j`, and `k` (where `i ≠ j`; `i ≠ k`; `j ≠ k`). She can then combine the sparkles of coins `j` and `k`, and assign their sum to the coin at position `i`. In other words, after casting the spell, the `i`-th coin's sparkles become $a_i = a_j + a_k$.

Now, Maruf challenges Her to make sure that the sparkles of every coin are less than or equal to a certain number, `d`, using her spell any number of times (or even not at all).

Can She rise to the challenge and make every coin's sparkles less than or equal to `d`?

Input:

The first line contains a single integer t ($1 \le t \le 2000$) — the number of test cases.

The first line of each test case contains two integers n and d ($3 \le n \le 100$; $1 \le d \le 100$) — the number of elements in the array a and the value d.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 100$) — the array a.

Output:

For each test case, print `YES`, if it's possible to make all elements a_i less or equal than d using the operation above. Otherwise, print `NO`.

You may print each letter in any case (for example, `YES`, `Yes`, `yes`, `yEs` will all be recognized as positive answer).

Example:

Input	copy	Output	copy
3 5 3 2 3 2 5 4 3 4 2 4 4 5 4 2 1 5 3 6		NO YES YES	

Note:

In the first test case, we can prove that we can't make all $a_i \leq 3$.

In the second test case, all a_i are already less or equal than $d = 4$.

In the third test case, we can, for example, choose $i = 5$, $j = 1$, $k = 2$ and make $a_5 = a_1 + a_2 = 2 + 1 = 3$. Array a will become $[2, 1, 5, 3, 3]$.

After that we can make $a_3 = a_5 + a_2 = 3 + 1 = 4$. Array will become $[2, 1, 4, 3, 3]$ and all elements are less or equal than $d = 4$.

Problem D

Proof, U R a CTF girl

problem Statement:

In the `ROT-K` cipher, each character in the string is shifted a fixed number of positions **down** the alphabet. The value of `K` represents the number of positions to shift. For instance, in `ROT-2`, each character is shifted 2 positions. The `ROT-2` cipher of the string `code` is `eqfg`.

Note that the rotation is performed in a **circular** manner, meaning that if the character `z` is shifted by one position, we obtain the character `a`.

You are given strings S, T, and U, each of length N, such that the `ROT-K` cipher of string S is string T.
Find the `ROT-K` cipher of string U.

Input:

- The first line of input will contain a single integer Q, denoting the number of queries.
- Each query consists of multiple lines of input.
    - The first line of each query contains N — the length of the strings.
    - The second line contains the string S.
    - The third line contains the string T.
    - The fourth line contains the string U.

Output:

For each query, output on a new line, the `ROT-K` cipher of string U.

Constraints:

- $1 \leq Q \leq 100$
- $1 \leq N \leq 1000$
- S, T, and U contain lowercase english alphabets only.

Example:

Input	copy	Output	copy
3 3 abc bcd cde 2 bd zb dd 4 code xjyz chef		def bb xcza	

Note:

Query 1: Given $S =$ `abc`, and $T =$ `bcd`, we can observe that each character has been shifted by 1 position. Thus, the `ROT-1` cipher of string `cde` would be `def`.

Query 2: Given $S =$ `bd`, and $T =$ `zb`, we can observe that each character has been shifted by 24 positions. Thus, the `ROT-24` cipher of string `dd` would be `bb`. Note that since the shift is cyclic, `dd` becomes `zz` after 22 shifts and `bb` after the remaining 2 shifts.

Problem E

Cow Flies in the sky

problem Statement:

Don't we all have annoying cousins who just can't stop asking silly questions?!

Well, maybe not everyone. But unfortunately you are not so fortunate at all! You have this cousin who is sweet but annoying, goes by the name Newton. Newton is a curious little b.... boy, curious little boy!

He will not stop asking questions until you die out of exhaustion... just kidding! Hahahaha!

One day Newton was struck on the head by an array of length ***n***. He became quite curious(*Oh no...*) and asked you what will be the sum of values in the range $[a, b]$. He will not let you have a nap until you answer all his ***q*** queries.

Input:

The first input line has two integers n and q: the number of values and queries.

The second line has n integers $x_1, x_2, \ldots, x_n$: the array values.

Finally, there are q lines describing the queries. Each line has two integers a and b: what is the sum of values in range $[a, b]$?

Output:

Print the result of each query.

Constraints:

- $1 \leq n, q \leq 2 \cdot 10^5$
- $1 \leq x_i \leq 10^9$
- $1 \leq a \leq b \leq n$

Example:

Input	copy	Output	copy
8 4 3 2 4 5 1 1 5 3 2 4 5 6 1 8 3 3		11 2 24 4	

Problem F:

Search With Harican

problem Statement:

You are given the first N terms $A_1, A_2, \ldots, A_N$ of an infinite sequence $A = (A_1, A_2, A_3, \ldots)$ that has period N.

Determine if there exists a non-empty contiguous subsequence of this infinite sequence whose sum is S.

Here, an infinite sequence A has period N when $A_i = A_{i-N}$ for every integer $i > N$.

Input:

The input is given from Standard Input in the following format:

N S
A_1 A_2 $\ldots$ A_N

Constraints:

- $1 \leq N \leq 2 \times 10^5$
- $1 \leq A_i \leq 10^9$
- $1 \leq S \leq 10^{18}$
- All input values are integers.

Output:

If there exists a contiguous subsequence $(A_l, A_{l+1}, \ldots, A_r)$ of A for which $A_l + A_{l+1} + \cdots + A_r = S$, print `Yes`. Otherwise, print `No`.

Example:

Sample 1

Input	copy	Output	copy
3 42 3 8 4		Yes	

The sequence A is $(3, 8, 4, 3, 8, 4, 3, 8, 4, \ldots)$.

For the subsequence $(A_2, A_3, A_4, A_5, A_6, A_7, A_8, A_9) = (8, 4, 3, 8, 4, 3, 8, 4)$, we have $8 + 4 + 3 + 8 + 4 + 3 + 8 + 4 = 42$, so print `Yes`.

Sample 2

Input	copy	Output	copy
3 1 3 8 4		No	

All elements of A are at least 3, so the sum of any non-empty contiguous subsequence is at least 3.

Thus, there is no subsequence with sum 1, so print `No`.