Problem E. Rikka with Data Structures

Input file: `standard input`
Output file: `standard output`

As we know, Rikka is poor at data structures. Yuta is worrying about this situation, so he gives Rikka some tasks about data structures to practice. Here is one of them:

Yuta has an array A with n numbers, denoted by $A[1], A[2], \cdots, A[n]$. Then he makes m operations on it.

There are three types of operations:

- `1 l r k`: for each index i in $[l, r]$, change the value of $A[i]$ into $(A[i] + k)$;
- `2 l r k`: for each index i in $[l, r]$, change the value of $A[i]$ into k;
- `3 l r x`: Yuta wants Rikka to count the number of different indices y with $l \leq y \leq r$ such that $\max\{A[\min\{x, y\}], A[\min\{x, y\} + 1], \cdots, A[\max\{x, y\}]\} = \max\{A[x], A[y]\}$.

It is too difficult for Rikka. Can you help her?

Input

The input contains several test cases, and the first line contains a single integer T ($1 \leq T \leq 200$), the number of test cases.

For each test case, the first line contains two integers n ($1 \leq n \leq 10^5$) and m ($1 \leq m \leq 10^5$).

The second line contains n integers $A[1], A[2], \cdots, A[n]$ ($1 \leq A[i] \leq 10^9$).

Then m lines follow, each line of which describes an operation, containing four integers as mentioned above, satisfying $1 \leq l \leq r \leq n$, $1 \leq k \leq 10^9$ and $1 \leq x \leq n$.

The input guarantees that there are at most 10 test cases with $n > 10^3$ or $m > 10^3$.

Output

For each query, an operation of type 3, output a single line with a single integer, the answer to this query.

Example

standard input	standard output
1 10 10 1 3 2 5 2 3 1 6 4 5 3 5 7 8 3 5 7 4 1 1 5 2 3 1 10 4 3 1 10 8 2 8 8 8 3 1 10 8 3 1 10 4 2 4 8 1 3 1 2 10	3 3 10 7 10 8 2

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