# Lazy Segment Tree

Time Limit: 2 Second
Memory Limit: 2048 MB

You are given an array $A$ with $n$ elements ($1 \leq n \leq 5 \times 10^5$), and all of its elements are initially 0. Write a program that supports the following three operations:

1. `Add` $l$ $r$ $v$ - add $v$ to all elements in $A[l \dots r]$
2. `Max` $l$ $r$ - find the maximum element of $A[l \dots r]$.
3. `Sum` $l$ $r$ - find the sum of element of $A[l \dots r]$.

## Input

The first line contains two integers $n$ and $q$ ($1 \leq n, q \leq 5 \times 10^5$) - the number of elements in array $A$ and the number of operations.

The next $q$ lines describe the sequence of operations. Each line starts with one of `Add`, `Max`, or `Sum`. If the operation is `Add`, three integers $l$, $r$, and $v$ ($1 \leq l \leq r \leq n, 1 \leq v \leq 10^5$) follow. Otherwise two integers $l$ and $r$ ($1 \leq l \leq r \leq n$) follow.

## Output

For each operation of type `Max` or `Sum`, output a single integer denoting value of the maximum element in the given range.

## Sample Inputs

```
3 4
Add 1 2 5
Add 2 3 6
Max 1 2
Sum 1 3
```

## Sample Outputs

```
11
22
```