

# Help Conan 8 !! Hurry up !!

[English](#)

[Vietnamese](#)

Given a sequence of  $n$  numbers (initially all is equal to 0) and  $m$  queries of two kinds:

**U**  $i$   $j$   $v$  increase all numbers from position  $i$  to position  $j$  by  $v$  ( $v$  may be negative)

**Q**  $i$   $j$  query  $\max\{a_p+a_{p+1}+\dots+a_q \mid i \leq p \leq q \leq j\}$  as in problem GSS1 and GSS3

You have to process these queries and print out the answer for each query of type **Q**.

The time limit for this problem is 2s.

## Input

- First line:  $n, m$  ( $1 \leq n \leq 20000, 1 \leq m \leq 20000$ )

- In each line of the next  $m$  lines there is a query of one of the two forms above.

## Output

For each query of type **Q**, print out the corresponding answer.

## Example

Input:

4 2

U 1 3 2

Q 1 4

Output:

6