Practice Problem PD
Shortsighted

While practicing for The 2019 ICPC Asia Jakarta Regional Contest, Budi stumbled upon an interesting problem on data structure topic. Unfortunately, he misread the problem, but he argues that the problem he thinks of is much more interesting than the original one, thus, this problem.

Let function $f(L, R)$ on an array of integers $A_{1..N}$ be defined as incrementing every element in the subarray $A_{i..j}$ each by 1 for all $L \leq i \leq j \leq R$. In other words, function $f(L, R)$ can be written as follows (in pseudocode).

```
function f(L, R):
  FOR i from L to R
    FOR j from i to R
      FOR k from i to j
        A_k = A_k + 1
```

Given an array A of N elements (initially $A_i = 0$ for all $i = 1..N$), your task is to perform Q queries on A of the following types.

- 1 L R — perform $f(L, R)$ on A.
- 2 L R — output the sum of all A_i where $L \leq i \leq R$.

Input

Input begins with a line containing two integers: N Q ($1 \leq N, Q \leq 100\,000$) representing the size of A and the number of queries, respectively. The next Q lines each contains a query of the following types.

- 1 L R ($1 \leq L \leq R \leq N$)
- 2 L R ($1 \leq L \leq R \leq N$)

There is at least one query of the second type.

Output

For each query of the second type in the same order as input, output in a line an integer representing the sum of all A_i where $L \leq i \leq R$. As this output can be large, you need to modulo the output by $1\,000\,000\,007$.

Sample Input #1

```
9 7
1 2 5
1 4 9
2 2 7
1 3 3
2 2 7
1 1 5
2 1 9
```

Sample Output #1

```
60
61
112
```

Explanation for the sample input/output #1

```
       index : 1   2   3   4   5   6   7   8   9
     initial : 0   0   0   0   0   0   0   0   0
Query 1 2 5  : 0   4   6   6   4   0   0   0   0
Query 1 4 9  : 0   4   6  12  14  12  12  10   6
Query 2 2 7  :     *   *   *   *   *   *           sum A[2..7] = 60
Query 1 3 3  : 0   4   7  12  14  12  12  10   6
Query 2 2 7  :     *   *   *   *   *   *           sum A[2..7] = 61
Query 1 1 5  : 5  12  16  20  19  12  12  10   6
Query 2 1 9  : *   *   *   *   *   *   *   *   *   sum A[1..9] = 112
```