

Construct Arrays (constarr)

Mihnea is in some serious trouble! He forgot to turn in his homework which is crucial to his final grade. He was tasked to find an array of length N , such that $L \leq a_i \leq R$ for every element in the array, and the *sum of all elements* in the array **modulo** M is equal to K ($0 \leq K < M$).



Figure 1: Mihnea writing all possible arrays.

After he bargains with the teacher, in order for him to pass he is now tasked to find *the number of different arrays* that satisfy this property, since this value can be too big output it modulo $10^9 + 7$.

Because of his laziness, he asked you to solve this problem for him.

📎 Among the attachments of this task you may find a template file `constarr.*` with a sample incomplete implementation.

Input

The input contains a single line with five integers: N , M , L , R and K .

Output

You need to write a single line with an integer: the number of array that satisfy the initial task modulo $10^9 + 7$.








📎 The *modulo* operation ($a \bmod m$) can be written in C/C++/Python as `(a % m)` and in Pascal as `(a mod m)`. To avoid the *integer overflow* error, remember to reduce all partial results through the modulus, and not just the final result!
Notice that if $x < 10^9 + 7$, then $2x$ fits into a C/C++ `int` and Pascal `longint`.

Constraints

- $1 \leq N \leq 10^{18}$.
- $1 \leq M \leq 1\,000$.
- $1 \leq L \leq R \leq 2 \cdot 10^9$.
- $0 \leq K < M$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

- **Subtask 1** (0 points) Examples.

- **Subtask 2** (20 points) $N \leq 6,$ $M \leq 10,$ $L, R \leq M$.

- **Subtask 3** (15 points) $N \leq 10\,000,$ $M \leq 10,$ $L, R \leq M$.

- **Subtask 4** (25 points) $N \leq 10\,000,$ $M \leq 10$.

- **Subtask 5** (10 points) $N \leq 500,$ $M \leq 500$.

- **Subtask 6** (20 points) $M \leq 100$.

- **Subtask 7** (10 points) No additional limitations.


Examples

input	output
2 7 1 7 0	7
3 7 27 29 3	1
100 17 55 123 7	56460584

Explanation

In the **first sample case**, the possible arrays are: $[1, 6]$, $[2, 5]$, $[3, 4]$, $[4, 3]$, $[5, 2]$, $[6, 1]$ and $[7, 7]$.
In the **second sample case**, the only possible array is: $[29, 29, 29]$.