Construct Arrays

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	64 megabytes

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 a_i ($0 \leq i \leq N-1$) in the array, and the sum of all elements in the array **modulo** M is equal to k ($0 \leq k < M$).

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** print the answer **modulo** $10^9 + 7$.

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

Input

The input contains a single line with five integers N ($1 \leq N \leq 10^{18}$), M ($1 \leq M \leq 1000$) L, R ($1 \leq L \leq R \leq 2*10^9$), k ($0 \leq k < M$).

For tests worth 10 points: $N \leq 6$; $M \leq 10$; $L, R \leq M$.

For tests worth 10 more points:. $N \leq 10^4$; $M \leq 10$; $L, R \leq M$.

For tests worth 7 more points: $N \leq 10^4$; $M \leq 10$.

For tests worth 8 more points: $N, M \leq 500$.

For tests worth 25 more points: $M \leq 100$.

Output

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

Examples

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

Note

In the **first sample case**, the possible arrays are: $[1, 6]; [2, 5]; [3, 4]; [4, 3]; [5, 2]; [6, 1]; [7, 7]$.

In the **second sample case**, the only possible array is: $[29, 29, 29]$.