

CyberFFT

1s

Misdeed is thinking of jumping. Jumping down the stairs.

His staircase has n ($n \leq 10^{18}$) steps, and he's starting at step n . He's thinking of jumping k ($1 \leq k \leq 60$) times in total, each time he can jump an unlimited amount of steps or none at all, as long as he doesn't reach past the end of the staircase – as in, he does not land lower than step 0. Count for Misdeed how many ways can he jump successfully. *Thanks.*

That's the problem statement, at first. However, Misdeed is ugly and prickly.

Call the sequence of jumps a_1, a_2, \dots, a_k . Now, on turn i , Misdeed will jump $a_i * i$ steps, instead. Thus, $a_1 * 1 + a_2 * 2 + \dots + a_k * k \leq n$. Plus, now, $(a_1 \& a_2 \& a_3 \& \dots \& a_k) = x$ ($x \leq 10^{18}$); or else, Misdeed would slip and crack his skull on the edge of a step.

And die.

Count for Misdeed how many jump sequence fits his demands so that he can survive this. *Thanks.*

INPUT

Three numbers n, k, x ($n, x \leq 10^{18}, 1 \leq k \leq 60$), describing the number of steps on Misdeed's staircase, the number of jumps, and the AND condition of his jumps.

OUTPUT

The number of jumping sequences that fits Misdeed's demand modulo $10^9 + 7$. *Thanks.*

Sample Input	Sample Output
11 3 1	4

EXPLANATION

The sequences are: [1, 1, 1], [3, 1, 1], [1, 3, 1], [5, 1, 1]