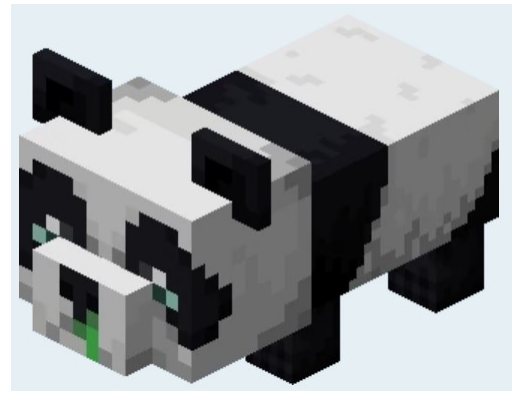


Baby Panda

Problem ID: babypanda



a sneezing baby panda

Alex is taking care of a baby panda who seems to be unusually sniffly. Every day, the baby panda may sneeze out zero or one slime(s) into its enclosure; every night, all slimes present in the enclosure split, so that the number of slimes doubles overnight. Alex places the baby panda into a clean enclosure with 0 slimes at the beginning of day 1 and observes that at the end of night n , there are m slimes in the baby panda's enclosure. She is worried about the baby panda and wants to know the number of times the baby panda sneezed out a slime over these n days.

Input

The only line of input contains the space-separated integers n, m ($1 \leq n \leq 10^{18}, 0 \leq m \leq 10^{18}, m$ is even), where n is the number of days and m is the number of slimes present after night n .

Output

On a single line, output the number of times that the baby panda sneezed out a slime.

Sample Input 1	Sample Output 1
10 10	2
Sample Input 2	Sample Output 2
10 128	1
Sample Input 3	Sample Output 3
13 500	6
Sample Input 4	Sample Output 4
10000000000000000000 576460752303423488	1