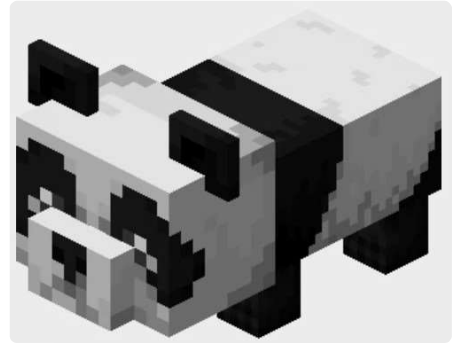


Problem I

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.



a sneezing baby panda

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

10 10

Sample Output 1

2

Sample Input 2

10 128

Sample Output 2

1

Sample Input 3

13 500

Sample Output 3

6

Sample Input 4

10000000000000000000
576460752303423488

Sample Output 4

1

