Whirligig number

By removing all digits left of the rightmost digit one in the binary representation of some integer, we get what is called the "whirligig" of that number. For example, the whirligig of 6 i.e. $(110)_2$ is 2 i.e. $(10)_2$, and the whirligigof 40 i.e. $(101000)_2$ is 8 i.e. $(1000)_2$. Write a program that will calculate the sum of the whirligig of all numbers between two given numbers A and B (inclusive).

Input

First and only line of input contains two integers A and B, $1 \le A \le B \le 10^{15}$.

Output

First and only line of output should contain the sum from the problem statement.

Note: the result will fit into the 64-bit signed integer type.

Sample

input
176 177

output
17

input
5 9

output
13

input
25 28

output
8