

H. A polyline

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Input

The input contains two integers a, b ($1 \leq a \leq 10, 0 \leq b \leq 2^{2 \cdot a} - 1$) separated by a single space.

Output

Output two integers separated by a single space.

Examples

input
1 0
output
0 0
input
2 15
output
3 0
input
4 160
output
12 12