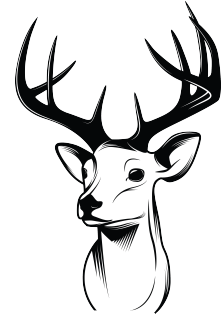




## Task Sob

It was a dark and dreary Christmas Eve when our hero pondered, weak and weary, over a quaint and curious COCI task. When he nodded, nearly napping, suddenly he heard a tapping, tapping and a mighty roar. A giant reindeer broke through his chamber door, merely this and nothing more. While our hero's heart slightly fluttered, the beast simply uttered: *"I won't leave until you solve this problem"*.



In the problem you were given two integers  $N$  and  $M$  and you were supposed to perfectly match the numbers from sets  $A = \{0, 1, 2, \dots, N - 1\}$  and  $B = \{M, \dots, M + N - 1\}$  into  $N$  pairs, such that for the matched numbers  $x \in A$  and  $y \in B$  it holds  $x \& y = x$ , where  $\&$  denotes a bitwise AND operation.

### Input

The first line contains two integers  $N$  and  $M$  ( $1 \leq N \leq M, N + M \leq 10^6$ ) from the task description.

### Output

You should output  $N$  lines and in each line you should output two integers  $x$  and  $y$ , where  $x$  belongs to set  $A$  and  $y$  belongs to set  $B$ . Numbers in each line should correspond to one of the matched pairs from task description.

It is possible to prove that the solution always exists.

### Scoring

Subtask	Score	Constraints
1	10	$N$ is a power of 2
2	29	$N + M$ is a power of 2
3	39	$N + M \leq 1000$
4	32	No additional constraints.

### Examples

**input**

1 3

**output**

0 3

**input**

3 5

**output**

0 5

1 7

2 6

**input**

5 10

**output**

0 12

1 13

2 10

3 11

4 14