

Consider an ordered set of data $\{a_1 \leq a_2 \leq \dots \leq a_N\}$ stored in a binary search tree. A binary tree is called balanced, if for each node p $|L(p) - R(p)| \leq 1$ holds, where $L(p)$ is the number of nodes in the left subtree of p and $R(p)$ is the number of nodes in the right subtree of p .

Task

Your task is to write a program which computes a balanced binary search tree for the input set of data of N elements.

Input

The first and only line of the standard input contains one integer N ($1 \leq N \leq 20000$) the number of the nodes of the binary tree. The nodes of the binary tree are identified by the numbers $1, \dots, N$.

Output

The standard output must contain exactly N lines, each containing three integers separated by space. The i th line contains the data of the i th node of the balanced binary tree. The first number is the index of the data stored in the node. The second number is the identifier of the left sun of the none and the third number is the identifier of the right sun of the none. 0 indicates if there is no (left or right) sun. The identifier of the root node is 1. If there are multiple solutions, your program should output only one; it does not matter which one.

Sample

Input	Output
10	5 7 2
	8 5 3
	9 0 4
	10 0 0
	0 6 0
	6 7 0
	0 2 10
	8 3 0
	9 4 0
	1 0 0

Limits

Time limit: 0.1 mp.

Memory limit: 32 MiB

