Three Buckets

Problem description

There are three buckets filled with water. In one move you are allowed to pour water from bucket A into bucket B if A contains at least as much water as B. You pour as much water *until the content of B has doubled.* Performing pourings like that it is always possible to arrive at a state where one bucket is completely empty.

For an amount of l liters we define $p(a, b, c)$ to be the minimal number of pourings if the buckets contain initially a, b, and c liters of water. The *pouring number* $P(l)$ is the maximum over all $p(a, b, c)$ where $a + b + c = l$ for all non-negative integers a, b, c. The pouring number tells us how many pourings you need in the worst case to empty some bucket if they contain l liters together.

The input to your program consists of a single number $0 \leq n \leq 300$. Your program should output $n + 1$ lines containing i and $p(i)$ for $i = 0, \ldots, n$.

Sample input/output

Input	Output
7	0 0 1 0 2 0 3 1 4 1 5 1 6 2 7 2