

# Problem I

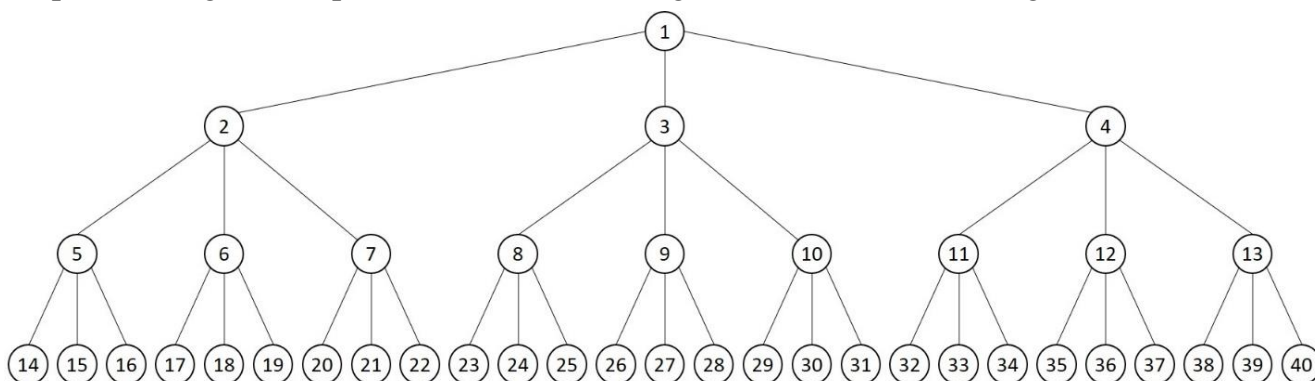
## Impressive Tree

Time Limit: 1 second

Max has just learned about ternary tree. His lecturer gave him an assignment that requires him to traverse through a complete ternary tree by coloring its nodes.

Max really wants to impress his friend, Ollie, who is a great abstract artist. So he defined a way to color the tree so that whichever node Ollie asks, he could tell its color code right away (which is cool!).

Consider a complete ternary tree with infinite nodes (each node has exactly 3 child nodes, or no child node). The nodes are named from 1 starting from the root and keep increasing from top to bottom and left to right, as illustrated in the figure below:



At first, Max colored the root with a given  $RGB$  color. He defined a rule so that if a node has a  $(R, G, B)$  color, its child nodes will be colored as follows:

- The left child node will be colored  $(R + G, B, G)$ .
- The middle child node will be colored  $(B, G + B, R)$ .
- The right child node will be colored  $(G, R, B + R)$ .

Given 3 integers  $R, G, B$  which indicate the color of root node, your task is to find the color of the  $n^{th}$  node on the tree.

### Input

The input contains one line with 4 integers  $R, G, B, n$  ( $1 \leq R, G, B \leq 10^5$ ;  $1 \leq n \leq 10^{14}$ ).

### Output

Output 3 integers  $R, G, B$  – the color of the  $n^{th}$  node.

#### Sample Input

3 4 5 4

#### Sample Output

4 3 8