The algorithm divides the coins into four groups, 3 main groups and 1 group that carries the remaining elements that couldn’t be divided among the three groups.

Firstly, It checks if all the groups are equal, that means that the fake coin is in “remaining\_coins”. If that is the case, it checks how many elements is in the remaining coins, and since it will always be the last 1 or 2 elements in the array and we know that the rest of the array is all the same, we check if the weight of the coin is smaller or larger by examining it against the first coin in the array, If there are two elements in “remaining\_coins”, we check for each coin the same way.

Then we measure the 3 groups against each others, we find the two groups that are the same weight and cross-examine it vs the other group to check if the coin is heavier or lighter.

This algorithm has a time complexity of O(N) since we have to go through the array in order to separate the coins into groups. If that is already provided to the function, this function is an 0(1).