Given an unlimited supply of 5, 4, and 1 cent stamps, we can find the solution of minimum stamps to hit a postage of N cents. By filling up the highest stamp first, we can create a solution. x denotes the number of 5 cent stamps, y denotes the number of 4 cent stamps, and z denotes the number of 1 cent stamps.

Total Number of Stamps is equal to (x + y + z).

x = N / 5

y = (x % 5) / 4

z = (x % 5) % 4

or to use non-modular equations

x = N / 5

y = (N – N / 5) / 4

z = (N – N / 5 – N / 4)

Assume this greedy algorithm is not optimal, and there is an optimal solution.

If we had 1 coin, z = 1 would clearly be the answer.

Let’s take the case of 12. The greedy algorithm would take x = 2 and z = 2

However, an optimal solution would be y = 3, which is less stamps than the greedy algorithm.

Therefore, this greedy algorithm is not optimal.