

# Assignment 1

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## **Part 4 Response**

1. A greedy algorithm is an algorithm used in optimization problems. In order to optimize in the most effective way possible, the algorithm always chooses the most immediate solution it comes upon.

2. Another way to solve the problem would be to use 'if' statements instead of using a while loop to run through the 4 different coin values. So, you would begin with your initial amount of change to return, and subtract '.25' from that value until it is no longer possible to. If that is no longer possible, then you would begin to subtract a lesser value, '.10' from the value. If that is not possible then you move on to the coin of lesser value and so on and so forth. Each time you subtracted from the initial value, you would add one to an accumulator variable so you can return that variable. This would be the number of coins returned to the customer.

3. Greedy algorithms can be used to successfully to do things like Huffman encoding for data compression or Dijkstra's algorithm to find the quickest path through a graph.

Citation: <https://brilliant.org/wiki/greedy-algorithm/>