

Assignment 1

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Problem 1. a) What is a greedy algorithm - you can look up definitions online but the final response should be in your own words?

Solution A greedy algorithm is an algorithm that divides a given value into the smallest number of possible subdivisions. The size of these subdivisions may be arbitrary or determined by some outside system. The algorithm works by taking the biggest possible subdivision in each iteration, hence the name greedy.

Problem 2. a) How else could you solve the above problem?

Solution American currency is decimal based so a possible solution would be to use dimes and pennies. You would take the change amount and divide it by 0.1. Then, you would return the quotient as the number of dimes and the remainder as the number of pennies. Of course, this method is not as optimized as a greedy algorithm.

Problem 3. a) What other problems are greedy algorithms successfully used for?

Solution You could probably use a greedy algorithm to very accurately approximate the area/volume of an irregular figure/solid. You could probably also use it to find the optimal arrangement of a set of objects within a given space.