1. Sally is building a self-checkout machine for grocery stores. This machine, when given money, needs to return the correct amount of change to the buyer. For example, if I buy \$18.45 worth of food and pay with a 20 dollar bill, I should get \$1.55 back in change. The easiest way to do this would just be to dump out 155 pennies! But that's really annoying!

   Write a **greedy algorithm** that takes as input the amount of change, and outputs the number and type of coins to dispense. The algorithm should return the smallest number of coins possible. The denominations of the coins are: 1, 5, 10, 25, and 100. So in the above example, your algorithm should return $\{100, 25, 25, 5\}$.

2. What if the denominations for our coins were $\{1, 3, 4\}$ instead of $\{1, 5, 10, 25, 100\}$? Does your greedy algorithm still give the correct solution?

3. Write a dynamic progamming algorithm that gives the correct solution regardless of the coin's denominations.