APS Homework 3: Greedy Method and Iterative Improvement

Problem 1: Making change

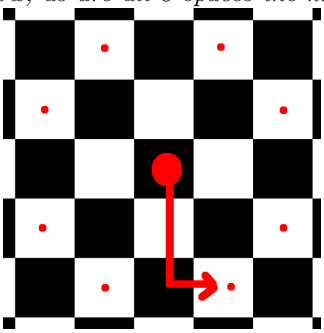
You need to pay n cents using only pennies, nickels, dimes, and quarters. Describe an algorithm that finds a *smallest* set of coins of value exactly n.

Yes this is the same problem as last week only with different denominations. Your solution however should not be the same: there's a simpler algorithm this time.

Problem 2: Efficient Knight

A knight starts at the upper left of a 100×100 chessboard. What is the fewest number of moves needed to reach the bottom right corner?

Chess rules reminder: a knight moves in an L shape. One such L is shown below, as are all 8 spaces the knight can move to.



Problem 3: Parliament Pacification

In a parliament, each member has at most three enemies. (We assume that enmity is always mutual.) Describe an algorithm which divides the parliament into two chambers so that no parliamentarian has more than one enemy in their chamber.