Introduction

This lab is to continue to exercise your use of HashSet and HashMap as well as some dynamic programming ideas from the candy game example.

Problems

- 1. Modify the nonsense word generator so that rather than generating a next character based on the preceding one, it uses the preceding two. Of course there will be some issue to deal with at the beginning of the word. In your opinion, how much does this improve the output?
- 2. One problem with the nonsense word generator is that it tends to produce rather longer words than normal since it has no inbuilt mechanism to favour ending a word once a certain length is reached. Suggest one or more approaches that would favour ending words more frequently as the length increased. You don't need to write code to implement your suggestions.
- 3. In the candy game, Louise and Richard's choices were investigated in greedy order, i.e., the first move considered was always the legal one that took the most candies. We saw this tended to be very fast and lead to very few positions considered. Both of them might have other reasons for wanting the game to go on for as long as possible (but still, with the overriding desire to win the game). **Change the move choice investigation so that moves are considered starting with the one that just takes a single candy and then working upwards. How does this affect the performance of the algorithm in terms of number of positions considered and speed?**
- 4. In a variant of the candy game, the score is the number of candies obtained and the winner is the person with the higher score, independent of who took the last candy. Looking at a position, how can the players work out their best move? Write code to analyse this variation. The changes required from the basic variation are not *that* great but in the table of moves we will also need to be able to access the score we'd get from the position we're moving to (with our opponent moving first).

Note that greed is not always good. If the initial position is *ACAECDDDDDDCB* then Louise's greedy first move of taking three candies winds up only getting four total. On the other hand, if she takes just one candy first, she can gather *all* the remaining candies in her next move.