Take Home Test 7
CSCI 3394 – Advanced Algorithms

This test is a bit different from the other ones. I want you to design an algorithm to solve a simple problem that I have been thinking of. You should then implement your algorithm and run it. What you turn in will be a description of the algorithm and that answer that you get when you run it.

The problem – My younger daughter has a toy where you can put in 3 letters and it will read the word (assuming it is a word) or sound out the letters if you don't have a word. This got me to thinking of a type of problem I remember doing in school and that my older daughter does occasionally. The the grade school problem you are given a starting word and an ending word and a number of steps to get from one to the other. At each step you can only change one letter and you have to produce a real word. For example, I could give you the words cat and hop and for the intermediates you could give cot and hot. The question I started to wonder is, can you get from every 3 letter English word to every other 3 letter English word using this approach? If not, how many distinct groups are there?

I will provide a link to a file with all English words in it on the links page for the class. You must design an algorithm to answer to question above, describe it, and then tell me what the answer is. You should only consider words with 3 letters.