

Homework 5, due February 12th, 11:59pm

February 6, 2020

1. Download the file `words5.txt` from Canvas. It contains a list of five letter words in English. We will use this file to work on the word ladder problem.

- a) Construct the adjacency graph of the word ladder problem. How many nodes are isolated (i.e. have no connections)? (2 points)
- b) What is the largest degree in the graph? What words have this degree? (2 points)
- c) Use the union-find data structure to find the connected components of the graph. How many connected components are in the graph? Plot the size of the connected components sorted in descending order. (2 points)
- d) Construct the breadth first search graph starting from the word `study`. What is the largest distance from the starting node? What words are at this distance? (2 points)
- e) Construct the depth first search graph starting from the word `study`. What is the largest distance from the starting node? What words are at this distance? (2 points)