

CS 385  
Homework Assignment 4  
Due Oct 27, 1:00pm (UPDATED) Strongly  
suggested to submit by Oct 24, 1:00pm

Prof. Dietrich

## Assignment

Use the file `word4.dat`, construct the adjacency lists for a graph  $W = (V, E)$ , in which the vertices are the words, and in which there is an edge between two words if they differ in exactly one position, as for example, `black` and `blank`. Your program should identify the word on line `i` with the integer `i`, and should write the array of lists of integers to a file called **`graph.dat`**, so that the two files, `word4.dat` and `graph.dat` can be read in order to play the word game (the next assignment).

## Submit

- The source code of your program, included in a script with the execution of the program, as usual.
- A clear description of the algorithm for finding the adjacency lists.
- The adjacency list for the integer corresponding to the word `'black'`.
- Use BFS (Breadth First Search) to find the **number of connected components** in the graph, and the **size** of each connected component. Recall that a connected component of an (undirected) graph is a set of vertices such that for any two points in the set, there is a path between them; and for any point in the set and any point not in the set, there is no path between them.