Programming Assignment #1 – IT328 Spring 2014

Kevin Castor & Travis Sauder

*Unix Account User:* kmcasto

*Password:* otsacmk

**Program Info**

The program can be run on Kevin’s unix account: user – kmcasto, pass - otsacmk. The programs are divided into three mains. Clique, IndependentSet, and CnfToGraph which output their results to the console.

**Program Report**

While conceptually straightforward, our actual implementation of this assignment took a surprisingly long time. Mostly our issues stemmed from troubleshooting the recursive maximum clique finding method and general bug hunting. Our first attempts at building the max clique (and by extension independent set calculation) resulted in finding a maximal clique instead of a maximum clique. After a lot of troubleshooting, we decided to rewrite the maximum clique method to make it more readable, and in the process made it correctly output the maximum clique.

For the 3CNF part INSERT STUFF HERE

An early design decision to put the reader functions entirely in the main resulted in kind of messy code, but for our purposes it works well enough. If we were to rewrite it we would separate out the code in methods. A couple off-by-one errors with the reader and the writer for the graph also caused some headaches.

**Functionality**

For the clique and independent set parts of the program, the specific file needed is first opened and read in by line. It first identifies if the line is a size by determining if it is a single integer and then setting the graph size. Subsequently the graph is read in line by line and put in the graph matrix class variable by splitting on spaces. Upon finding a new graph the reader knows that it has finished reading the current graph and then runs the max clique (or independent set) finder. This function recursively searches for the maximal clique (or independent set). It then returns an arraylist of the clique which is appropriately output to the console.