CS 594/690, Graph Algorithms, Applications and Implementations
Spring 2017, Homework 8

1. Conduct timings on each of the other students' programs from homework 5, where we found cut vertices and bridges in graphs. You may use any test graphs provided so far this semester, or devise test graphs of your own, but limit your tests to graphs with 1000 or fewer vertices. I have placed everyone's source code on the lab machines at

   /home/cphillip/public/CS594-HW5-code/

   You will need to copy all the source files to your own workspace for testing. You should provide a printed report that includes a table with the rankings of the other students' code performance, along with a description of the method you used for determining the rank (e.g. total time, average rank on each test graph, or some other method). Note any code that you cannot not get to work or that produces incorrect results. Do not include such code in your rankings.

2. Write a program to find a cluster editing solution of size *k* or less on a (not necessarily connected) undirected, unweighted graph. Your program should take as command line arguments the name of a graph file and a nonnegative integer *k*. It should output a list of *k* or fewer edge insertions and/or deletions that transform the graph into a cluster graph or a message that the graph has no solution for the given *k*. The output should look very similar to the following.

```
>./clusteredit graph8.txt 3
insert (0,2)
insert (3,5)
delete (2,7)
>

>./clusteredit graph8.txt 2
no solution
>
```

The following apply as usual.

- You may choose any programming language you wish, as long as your program compiles and runs when invoked from the Linux command line on the EECS Linux machines, using only software currently installed. I will test your code on one of the Hydra Lab machines.
- Do not use any library routines specifically designed for graphs (e.g. Boost).
- Include an example how to compile and/or invoke your program in a README.txt file.

Submit your program by emailing all files necessary to compile and run your code to cphill25@utk.edu prior to the beginning of class next Wednesday, February 8. Bring a printed

copy of your report from question 1 to class. If you have any questions, please do not hesitate to email me or drop by during office hours.