

## Homework 1 (Due Feb. 13<sup>th</sup>)

1. Write two random graph generators, one for  $G(n,p)$  and another for  $G(n,m)$ .  $n,m,p$  are parameters.
2. Write a program which can take a massive graph, and do the following analysis:
  - a) Generate the degree distribution (Bonus: try to use normal distribution to fit your degree distribution).
  - b) Search for all the connected components
  - c) Search for the diameters of each connected components
  - d) Calculate the clustering coefficient.
3. a) Run your program to analyze random graphs which you generate with different parameters.  
b) Run your program on the Internet graphs and co-authorship graphs. (Posted at course websites).

I would recommend the following graph format for your program:

```
1 2 1
1 3 1
1 4 1
1 5 1
3 4 1
```