PROBLEM SET 3 – Week 3

1. Your network vs. random (50pts)

Retrieve the facebook social network from last week.

a) Compute the average clustering coefficient (Net>Vector>Clustering Coefficients>CC1) and average shortest path (Net>Paths between two vertices > Distribution of distances > From all vertices and look in the report window).

b) Select two of your buddies. Look up the value of their individual clustering coefficient in your network. Highlight their ego-networks (just them and their friends) and explain the clustering coefficient in terms of their number of friends (well, their number of their friends who are also your friends) and the number of edges they have between them.

c) Construct a random network with the same number of nodes and average degree (Net>Random Network>Erdos-Renyi>undirected). Visualize it (*I*). Compute the average clustering coefficient and average shortest path for the corresponding random graph.

d) Describe how the clustering coefficient and average shortest path of your (my) social network compare to its random counterpart. From this conclude whether or not it exhibits small world properties (we'll talk about small worlds on Monday, so you may have to wait a bit before you can answer this question).

2. Prestige and influence in a physician network (50pts)

Complete exercise 9.9 in Chapter 9 of the Pajek book.