Lab 5

1. For the random graph having 10,000 nodes determine the average path length, diameter, average clustering coefficient, node and edge betweenness and their distribution. Write your observations. Note that the probability values should vary in a interval of 0.1 such that you have to generate a graph with probability of connection to hubs as 0.05, another graph with p=0.15 and so on i.e. graphs {0.05,0.15,0.25,0.35,0.45,…,0.95}. If you have the csv file of the old code that you have generated into Lab 3, you may reload it. I have no objection with it. Note that if you will generate the network in this manner two times, their properties would differ as both of them are a type of random graphs. Hence, we cannot be able to get any insight with respect to the generation of graph in only one iteration. Hence, you should generate each of these graph with respect to each p 10 times. You have to also the probability distribution of clustering coefficient of each node in only iteration in the second question.
2. A real-world network is being observed as a small world such that the average path length is logarithmic of number of nodes in the graphs and hence there is a popular terminology for networks as six degrees of separation. You have to investigate this phenomenon into the networks generated above.