PR4a: Network models

Simulate your network using a model of random graph (Erdős and Rényi)

a) Calculate the average degree $\bar{k}$ of your network. Compute the probability using $p = \bar{k}/(n-1)$
b) Generate and plot the random graph using p
c) Calculate the degree distribution of the generated graph and your own network. Compare them using a plot with log-log scale
d) Calculate the clustering coefficient of the generated graph. Compare it with the average clustering coefficient of all nodes with the same degree of your network (on a plot with log-log scale)
e) Analyse and discuss in terms of wiring, degree distribution, and clustering coefficient. Does your network have a Poisson distribution? According to the criteria of the evolution of random graphs, does your network have a giant component? Is your network fully connected? How representative of your network is the generated graph?