MO412 – Network Science University of Campinas

# Homework 02

**Assigned on 2020-10-03** **Due on 2020-10-09**

1. Construct an undirected network with $N = 10000$ nodes, and add links $(i, j)$ for $i < j$ to the network with probability $p = 0.0005$. Then compute the number of connected components, the size of the giant component, and the average distance in the giant component.

   In the previous assignment, we asked you to choose any programming language. However, for this one, we strongly suggest you use a programming language that offers a rich network library, otherwise you may spend a vast amount of time developing code for connected components and computing distances. You may want to try the `networkx` package in Python, or analogous packages in R or Octave.

   Using libraries, I expect you to spend no more than 2 hours consulting the documentation and writing the code, and about 10 minutes waiting for the code to run. Doing it on your own, you may find yourself spending 10 hours coding, testing, debugging, and then the same 10 minutes waiting for it to run, once debugged.