Please do this quiz using an R script and submit it via Moodle. All questions should be answered using R. Make sure your code is well-organized by each question, commenting the question numbers. Avoid hardcoding.

1. Use the network enron from the igraphdata package.
   1. Do a summary on this network. What is the size and order of this graph?
   2. There are a lot of edges in this graph. This is an email network, so there will be many emails between the same people. Simplify the network using edge weights to indicate the number of connections between pairs of people. You may call this new network en. Create a summary; is there a big difference in the size?
   3. The original network is unnamed (there are names for the vertices, but the attribute is called Name, which is not considered the correct name attribute; recall that R is case-sensitive). Set the names of the vertices in en to the indices of the vertices.
   4. Plot en, changing igraph\_options if needed. Don’t worry if it looks a mess.
   5. Plot the in-degree distribution and the out-degree distribution side-by-side. Explain what is going on here.
   6. Sort the in-degrees in decreasing order, and take all elements between the 50th and 70th element; i.e. if di is the vector containing all in-degrees, do idx=order(di, decreasing =T)[50:70]. Now idx will contain a set of vertex indices; create an induced subgraph from these vertex indices. Call this subgraph ind, and plot it.
   7. Find the strong components of ind, then create the plot again coloring the vertices depending on what component they belong to. Use the rainbow(6) palette.
   8. Create a list with two data frames, one containing the edges and edge attributes of ind, one containing its vertices and vertex attributes.