Assignment 1

1. Generate the network (with 12 nodes) with the given edge set, complete the corresponding analysis and visualization tasks.

   Edge set:
   1 and 2, 1 and 3, 1 and 4, 1 and 8, 1 and 10, 1 and 11, 1 and 12;
   2 and 3, 2 and 4, 2 and 5, 2 and 6;
   3 and 5, 3 and 6;
   4 and 7, 4 and 9, 4 and 10, 4 and 12;
   5 and 9, 5 and 11;
   6 and 12;
   7 and 11;
   8 and 12;
   9 and 10;
   11 and 12;

   1) Report the adjacency matrix, and plot this network with labels.

   2) Find the node(s) with maximum degree, what's the maximum degree value? And find the node(s) with maximum betweenness, what's the maximum betweenness value?

2. Import the friendship network in a class represented by an adjacency matrix "class" into R:
   1) What is the highest page rank value among nodes?
   2) What is the size of the largest component in this network?
   3) What is the global clustering coefficient and assortivity of outdegree in this network?