CS1382 Discrete Computational Structures
Spring 2019 Quiz 7

Full points will be awarded for showing all your working.

---

1. Construct a call graph for five friends Alice, Bob, Charlie, Diane and Evan, if there were three calls from Alice to Bob, two calls from Alice to Diane, five calls from Alice to Evan, one call from Bob to Alice, three calls from Charlie to Alice, one call from Charlie to Evan, one call from Diane to Charlie, and one call from Evan to Diane.

2. Suppose G is a graph with vertices a, b, c, d, e, f with adjacency matrix below. The alphabetical order is used to determine the rows and columns of the adjacency matrix.

$$\begin{pmatrix} 0 & 1 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 & 1 & 0 \end{pmatrix}$$

   Find:
   a. The number of vertices in G
   b. The number of edges in G
   c. The degree of each vertex
   d. The number of loops
   e. The length of the longest simple path in G
   f. The number of components in G
   g. The distance between vertex a and vertex c

3. Are these two graphs isomorphic?