**GraphADT Assignment**

**Total = 35pts**

The objective of this assignment is to learn the application of Graph ADT as stated in the learning outcomes of the course.

*Review the* ***Graph ADT*** *and then design, write a program, test the program, and analyze the program for the following concrete data structures: (1) undirected graph (2) directed graph.*

Write Java programs for the following.

1. Create undirected graphs of sizes of 10, 100, 10000,100000 nodes with the number of edges being 80% of ­nC­2. Example: If the graph has 10 nodes, then the number of edges should be 45 and every node should have at least an edge. The edges can be randomly connected to the nodes. Test the graph that you are created such that every node has an edge. [10+5]
2. Compute the strongly connected components of the graphs that you have created in (1) and record the time for the algorithm to compute it. [10pts]
3. Enumerate the nodes of the graph created in (1) with numbers. Example, take a node, a labeled it with 1 and the node that a has edge with, label it 2. Create bipartite graph where there is a directed edge from an even numbered node to an odd numbered node and vice versa. [10pts]

Upload the well commented code(s) and the graphs that you have generated. Write a README file.