Lab Assignment 04

Task 1: Write a program to generate a random connected graph on V vertices by generating random pairs of integers between 1 and V. You estimate how many edges are needed to produce a connected graph as a function of V.

Task 2: Implement DFS algorithm to perform the traversal a graph to generate the DFS tree. Display the finishing and discovery time of each vertex. Perform the classification of each edge of the graph. Determine whether in there exists any cycle in the taken graph not.

Task 3: Implement an algorithm to determine the Strongly Connected Components of a given graph G(V,E). Display the finishing and discovery time of each vertex as well as the transpose of the graph G along with strongly connected components graph.

Task 4: Implement the procedure to determine whether the given graph is bi-connected or not? Determine all the articulation points of the the graph.

Note: Create the program profile and analyze the running time of each implemented algorithms. Compile your code for doing the performance evaluation by using gprof.