UNITED INTERNATIONAL UNIVERSITY

CSI 227 (ALGORITHMS)

Assignment 1 (Submit by April 20, 2019, 2:00 PM) Total Marks: 15

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1. For a graph $G = (V, E)$, write algorithms that **(2+1)×3 = 9**
   a) finds in-degrees and out-degrees of all vertices of G, when G is *directed* and represented by the *Adjacency Lists* representation;
   b) finds the maximum degree Δ and the minimum degree δ of G, when G is *undirected* and represented by the *Adjacency Matrix* representation;
   c) finds the number of components of G, when G is *undirected.*

   Analyze the running time of the above three algorithms.

2. Suppose you are given a connected weighted undirected graph G and its minimum spanning tree T. Write an algorithm that finds the *second best spanning tree*. Analyze the running time of your algorithm. **4+2=6**