CS 6103D Software Systems Laboratory

PROBLEM 1D

The objective is to learn the following:

- representation of directed graph using adjacency list
- implement different topological sort algorithms
- programming in Java (optional)

Submission date: on or before 14.09.2022 Wednesday11.59 pm
Submission: a single .tar file named as per the format
$P1D\_<FIRSTNAME>\_<ROLLNO>.tar$

The problem is to represent the course prerequisite information. A course can have one or more other courses as prerequisites. A student can register for a course only if he/she has completed all the prerequisite courses for that particular course. Indicate the course prerequisite information using a Directed Acyclic Graph (DAG). Each course is to be represented using a vertex in the graph. If course c_i is a prerequisite for course c_j, that information is represented by a directed edge from c_i to c_j. Represent the graph using adjacency list representation, preferably with Java HashSet and HashMap. Give a topological sort order of the DAG by

1. implementing the algorithm given in section 22.4 of CLRS
2. using the method given in problem 22.4-5 of CLRS

Reference: T. H. Cormen, C. E. Lieserson, R. L. Rivest, C. Stein. *Introduction to Algorithms*, PHI Learning, 3rd edition, 2010.