Lab Assignment 5

Task-1

(a) We have to take course B before after doing something is required to do. So, if we run dfs and the last last element would be the last of the topological sort. So we will push at the end of the dfs. If there is cycle, there can not be a topsequence and this. So, we have to also detect cycle.

(b) As we can take a course if its in-degree is zero. Therefore, we will take every course, whose in-degree is zero at first. Then we will reduce the in-degree of every vertex is connected to it. If we find every vertex then there is no cycle. Otherwise it has cycle.

Task-2

We have to run topological sort. While dequeuing we have to dequeue minimum value from the queue. Then we can find lexicographically sorted.

Task-3

The source vertex of a reverse graph is the sink vertex of the main graph. If we run dfs from the sink vertex and every node found in one recursions of recursion calls is strongly connected components.