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CSE 221 Explanation
Lab - 05

Task-1 (a)

Here in this task I made a adjacend list and it is the main graph. Then I used iscyclic function if there in a cycle in the graph by DFS. If I find I Print Impossible else go to the DFS topo or topological sort. Here when ever a node is fully visited and there is no way to go I append it on a stack and then POP them reverly to get the output

Task 1 (b)

In this task I used khans algo with. I take a indegree array for the finding the parent and child nodes. Then I store them in a queue. If the length of graph and length of topological order is not same then there will be a cycle present. which prints impossible.

If Ponible then I pop the queue and store it in order and thus by Printing id I get my output

Task - 2

Same as task 1(b). I just modified Khan's algorithm. I just used a new priority queue to implement and Print lexicographically Smallest Sequence.

Task - 3

In this task I used Kosaraju's Algorithm. Firstly we do dfs on the graph then transpose the graph and do dfs on that transposed graph. Then I store the values in a stack running dfs in the transpose graph and return whenever dfs stops that is one SCC.