CSE221

Fall 2023

Lab Assignment 5

Explanation

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task 1 (b)

The code created a graph ~~and~~ of courses and their prerequisites. It uses a BFS method to perform topsort. The algorithm finds the order in which courses can be completed. Outputs the ~~course~~ course completion order or "Impossible" if no valid sequence exists.

task 1 (a)

This code reads a directed graph from an input file, finds a topological sorting using DFS, writes the sorted nodes to an output file if possible, otherwise writes "IMPOSSIBLE" if a topological ordering doesn't exist due to cycle in the graph

task 2

This code performs a lexicographically smallest topsort using BFS. on a directed graph read from an input file. It writes the sorted course order to an output file or "IMPOSSIBLE" if a valid ordering doesn't exist due to cycles in the graph.

Task 3

This code implements Kosaraju's algorithm to identify and retrieve SCC in the given graph. Defines functions for handling a directed graph, including edge addition, DFS and transposing the graph for further processing.