COT 6405 - Graph Algorithms Project

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Course: COT 6405 - Intro to Theory of Algorithms

Term: Spring 2023

Due Date: April 24, 11:59 PM

Language: Python

Dataset: imdb\_network.csv

Project Overview

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This project involves implementing classical graph algorithms using a real-world dataset from IMDb.

You will build a graph network of actors and directors, construct two dictionaries, and implement

algorithms such as BFS, DFS, Dijkstra’s, and Kosaraju’s strongly connected components.

File Structure

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1. graph\_creation.py

- Builds:

\* Title Dictionary: {nconst: [primaryTitles]}

\* Profession Dictionary: {nconst: profession}

\* Graph with proper node and edge rules

- Contains MovieNetwork class with:

\* add\_node()

\* add\_edge()

\* create\_graph()

2. graph\_algorithms.py

- Implements:

\* bfs(graph, start\_node, search\_node=None)

\* dfs(graph, start\_node, visited=set(), path=[], search\_node=None)

\* dijkstra(graph, start\_node, end\_node)

\* kosaraju(graph)

3. graph\_testcases.py

- Provided test script (Do not modify)

- Use this to check correctness of your