

# A06

March 8, 2024

## 1 CS515/Assignment 06

TOPIC: Graph Algorithms

### 1.1 Problem Statement

[Q] (a) **Connected Components** Write a function `connected_components` that takes a directed graph as input and outputs the total number of connected components in the graph.

[Q] (b) **Connected Components** Write a function `connect_components` that takes 2 directed graph and two nodes from each graph as inputs and returns a single graph that is connected through the provided nodes.

[Q] (c) **Directed Acyclic Graphs** Write a function `is_dag` that takes a directed graph as input and returns `True` if the graph is a DAG, otherwise returns `False`.

[Q] (d) **Shortest Path** Write a function `dijkstras` that takes a directed graph and two nodes as inputs (source and sink) as input and returns the shortest path between source and sink using the Dijkstras algorithm.