Abstraction
Team TXSU has worked on four programming projects relating to network planning over the course of two semesters, with each project focusing on different aspects of routing and maximizing efficiency while minimizing cost.

Introduction
In the Fall 2019 Semester, Team TXSU worked on:
• Project 1 – The Terminal Concentrator Assignment Project
• Project 2 – The Unconstrained Minimum Spanning Tree Algorithm
In the Spring 2020 Semester, Team TXSU worked on:
• Project 3 – The Constrained Minimum Spanning Tree Algorithm
• Project 4 – The Ford Fulkerson Algorithm
• Project 2 GUI – Graphical User Interface for the Unconstrained Minimum Spanning Tree Algorithm

Terminal Concentrator
The Terminal Concentrator Project, Project 1, determines the minimum total cost of interconnections between the terminal(s) and concentrator given terminals (row concentrators (columns) and interconnection costs (element)) This program will ask the user to input the size of the matrix and a constraint number. After these initial inputs the program will output the matrix values with selected entries in parentheses.

Unconstrained Minimum Spanning Tree UMST
The purpose of this program is to connect nodes in a way such that the cost of the connections formed is as small as possible and does not form any loops. This program will take in the size of the vertices followed by node positions to fulfill the size of the vertices. The output will be the edges that are formed to make the optimal connections.

Constrained Minimum Spanning Tree CMST
The goal of this project is to connect nodes optimally by selecting the smallest cost connections while keeping in mind of the maximum possible number connections that a node can make. This works by taking in the size of the vertices, constraint value, and node positions in order to output optimal connections of edges.

Ford Fulkerson Algorithm
The purpose of this project is to calculate the maximum flow rate from arbitration sink and source nodes of a given graph. This program works by taking in node positions and edge values to output the maximum flow into the sink node.

Glossary
• Terminal - A user end device connected to a network
• Concentrator – Devices used to connect user to the network
• Edge – Line/Connection formed by a pair of nodes/vertices
• Minimum Spanning Tree – Subset of a graph where all vertices are connected with the least amount of edges possible
• Node – A point at which lines intersect
• Telecommunication – Communication through electric signals or electromagnetic waves

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