

CS 171 Assignment 7, Due on Nov.26th

Write a program to process a weighted undirected graph as follows:

1. **Read** in the number of vertices V and the number of edges E of the graph followed by its E edges, each in the form u, v, w where $1 \leq u, v \leq V$ & $w > 0$ representing an edge (u, v) with weight w .
2. Set up and **print** the adjacency **matrix** representation of the graph.
3. **Determine** how many connected components the graph has and **print** each component in adjacency list representation.
4. Using Prim Algorithm to **find** a minimum spanning tree for each component and **print** the adjacency matrix representation of the minimum spanning forest (the union of the minimum spanning trees of the components).

You should document your program, analyze the complexity of your algorithms, and show the outputs on the sample input data sets.

Submission guidelines:

Attach your **Source code** and **Project report** (pdf format) file to in Canvas. You need briefly describe file names, the program design, data structure, the summary of output of the given sample input (graph1.txt & graph2.txt & graph3.txt) and complexity analysis of the used algorithm.