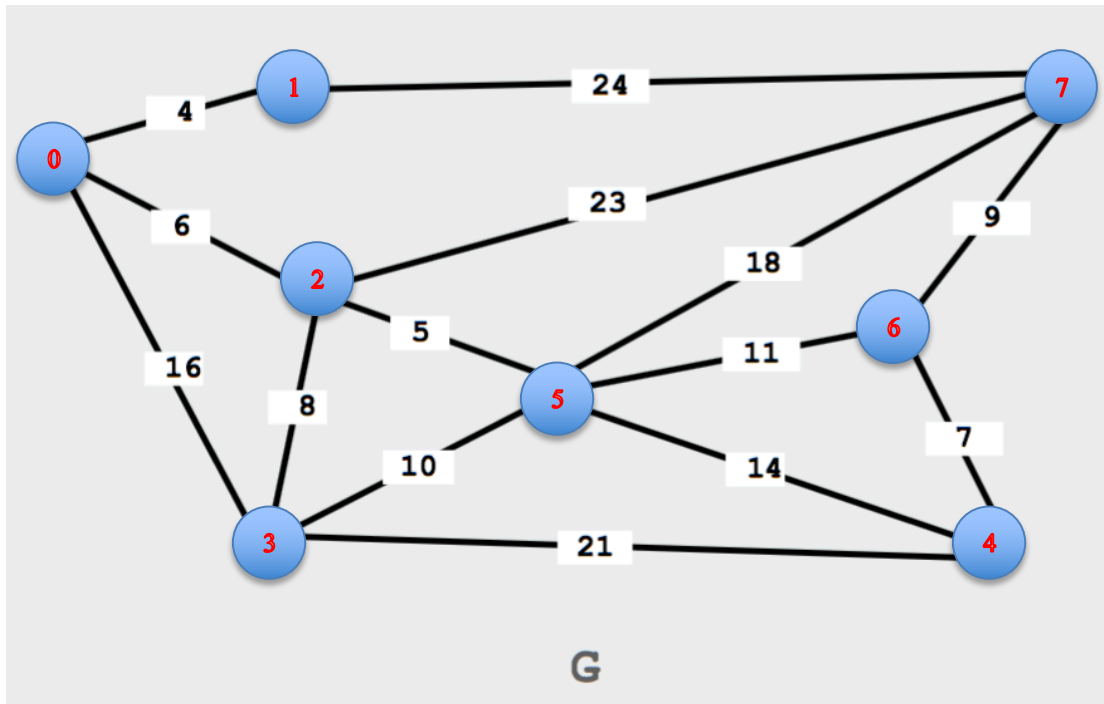


## HW CSCD320

**To turn in:** please wrap up all your java source files into a zip file, then turn in the single zip file on the **EWU Canvas** by going to CSCD320-01 course page on Canvas, then clicking Assignments→HW7->submit. Please name your zip file with your last name, followed by the first initial of your first name, followed by hw7. For example, if you are John Smith, name you file as smithjhw7.zip

### Specifics

**Give an input weighted and undirected graph as shown in the diagram below, with the weight being labeled on each edge.**



- 1) Please implement the **Adjacency List** representation to construct the graph in the main memory of your computer, as we did in the previous homework.
- 2) Please implement the Kruskal's algorithm to compute the Minimum Spanning Tree(MST) for the graph above, as we learned in classroom. You are allowed to use any Java build-in classes or data structures, such as HashSet, PriorityQueue or TreeMap.
- 3) Please implement the idea that uses the union-find(UF) data structure to check if adding an edge to MST would create a cycle, as we have already discussed in the classroom.
- 4) Please invoke the method of your Kruskal's algorithm implementation on the input graph above in a separate java file **Tester.java**.
- 5) When running your program, please print out on the **standard output** explicitly the Minimum Spanning Tree that your program finds in the input graph. Please follow the output as shown in the below.

*The MST contains the following edge (The order of the edges displayed below can be different.):*

$0 \rightarrow 1$

$0 \rightarrow 2$

$2 \rightarrow 5$

$2 \rightarrow 3$

$5 \rightarrow 6$

$4 \rightarrow 6$

$6 \rightarrow 7$

- 6) Please organize your source code so that I can compile **all** your source files in **one** folder using command, **javac \*.java**, and run your program using command on command line, **java Tester**.
- 7) **You can have your own design for any details that have NOT been specified in this document.**
- 8) **Please finish this homework independently, since all logic ideas have been conveyed in classroom in details.**