Exercise 5 Kruskal's Algorithm

Description

In this exercise, you are not making a program. Instead, you perform the exercise in your head using Kruskal's Algorithm and writing the results on paper. You also produce appropriate output files, with your computer help.

Input and Output Files

There are following input and output files

Input pdf File	**in23_graph.pdf**	
Input text File	**in2_edges.txt**	**in3_edges.txt**
Output pdf File	**out2_drawing.pdf**	**out3_drawing.pdf**
Output text File	**out2_edges.txt**	**out3_edges.txt**

There is one common input pdf file that contains a drawing depicting an incomplete graph (its edges do not have weights).

There are also two input text files that contain edges and their weights corresponding to the incomplete graph. Each line in the input files specifies an edge as 3 integers separated by whitespaces – the first vertex number, the second vertex number, and the weight.

For each input text file, you are supposed to find some matching minimum spanning tree and produce two output files – one pdf file containing a drawing depicting the tree and another text file containing the tree edges.

The input files have the same edges but slightly different weights. Consequently, the minimal spanning trees and their total weights will be different.

See also see the following files for the input and output examples.

Input pdf File	**inExample_graph.pdf**
Input text File	**inExample_edges.txt**
Output pdf File	**outExample_drawing.pdf**
Output text File	**outExample_edges.txt**

Steps to Perform

For each input file, do the following

1. Print the page (a copy) of the incomplete graph drawing.
2. Take the drawing page and add the weights from the input file to the corresponding edges of the incomplete graph.
3. Use Kruskal's Algorithm to find some minimum spanning tree.
4. Mark the found tree via bold (and some color, if possible) on the drawing page.
5. From the input file, select edges that belong to the found tree and copy such edges to the output text file. At the output file end, add a line describing the found tree total weight.
6. Scan the drawing page to the output pdf file.
7. Submit the output pdf and text files into Assignments/Exercise5 folder

So, at the end, you are supposed to submit four files – two pdf files (drawings depicting the weighted graphs together with their minimum spanning trees) and two matching text files (describing the edges of the trees).

Unacceptable Language Tricks that Lead to Zero Grade

There is no place in this assignment for hashes, maps, associative arrays, or similar data types. All arrays (vectors) have to use integer indexes, so using strings as indexes is not acceptable.

There is no need for text processing. So, no regular expressions, text search, text splitting, text filtering, or similar tricks. No string manipulation, except that strings can be used while printing debug messages.

Note that these issues often happen when copying/pasting code from the Internet.

