

# Minimum spanning tree assignment

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The goal of this assignment is to compute the weight of a Minimum Spanning Tree as quickly as possible, given a graph. We have provided test input on CodeJudge, and there is an associated scoreboard to see whose code runs fastest. Our intention is for even a relatively simple implementation to pass the time requirements on CodeJudge. However, we have included a variety of inputs, and we encourage you to tune your algorithm (or your choice of algorithm) to the input structure. There are three types of graphs used on CodeJudge: complete graphs, grid graphs and a couple of real world graphs.

## 1 Input format

Your program must take two parameters on the command line: the number of edges of the graph, and a filename containing the graph itself. Such a file will be in the following format

```
s_1 d_1 w_1
s_2 d_2 w_2
s_3 d_3 w_3
...
s_i d_i w_i
```

Each line represents an edge using three integers: the identifiers of the two ends, and the weight of the edge. You can assume that the identifiers of the vertices range from 0 to  $n$ , where  $n$  is the number of vertices in the graph. The weights range between 1 and  $10^6$ , so pay attention when summing them: they might overflow. Use an integer type that can hold the sum without overflowing (`longs` should be enough).

## 2 Output

Your program should output just a single number, that is the weight of the minimum spanning tree of the given graph. Note that this way you can avoid explicitly storing the tree itself in your program.