Task 1b:

pseudocode for Kruskal's algorithm:

```
sort edges by ascending order of weight values          O(ElogE)
initialize connected components                         O(V)
while-loop that iterates through edges:                 O(VlogV) <= O(ElogE)
    if adding the edge would not introduce a cycle:
        add vertex to the tree
        update connected components
```

Since |E| >= |V| - 1, the theoretical runtime is O(ElogE). The upper bound is caused by the sorting algorithm.