

Winter Bonus Task

Task 1

Solve the following tasks.

- (a) Compute $15 \cdot 13$ using the algorithm of Karatsuba.
- (b) Compute the same product with Karatsuba, where 15 and 13 are given in base 2.
Hint: For example, 12 (base 10) is 1100 in base 2.
- (c) How many more products do you need to compute for case (b) compared to case (a)?

Task 2

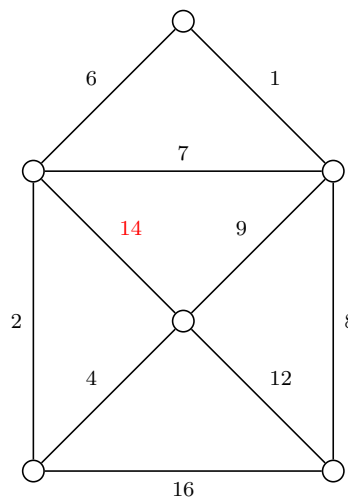
Sort the array

[912, 442, 345, 842, 159, 126, 875, 970]

using Radixsort and Mergesort.

Task 3

Compute a maximal spanning tree using Kruskal's algorithm for the following graph:



How does the spanning tree look like, if you change the red value to 1?