Problem session 3

Dibran Dokter 1047390

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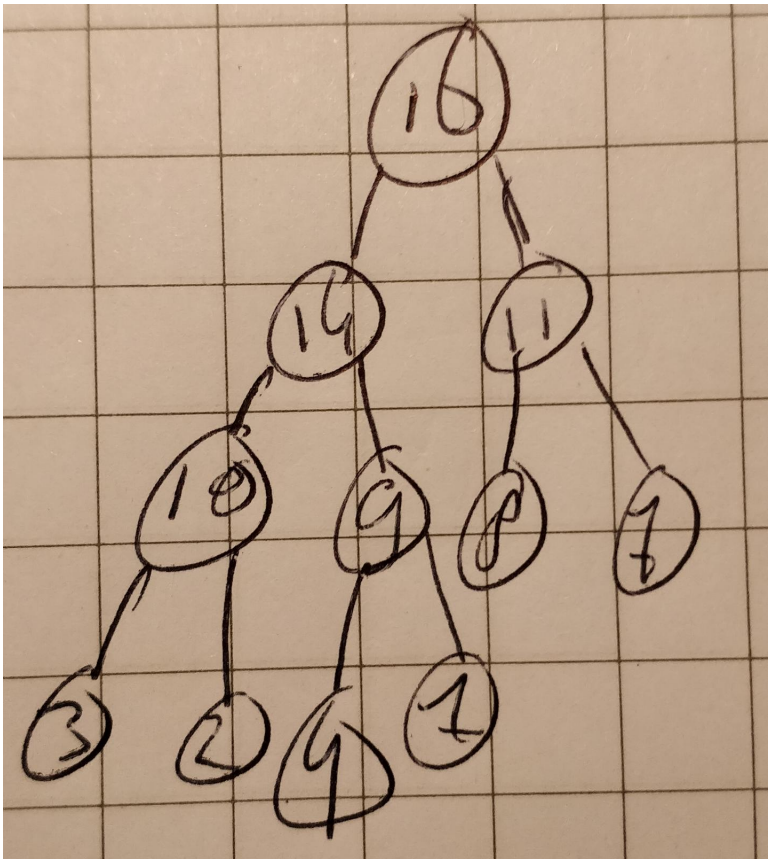
4

4.1

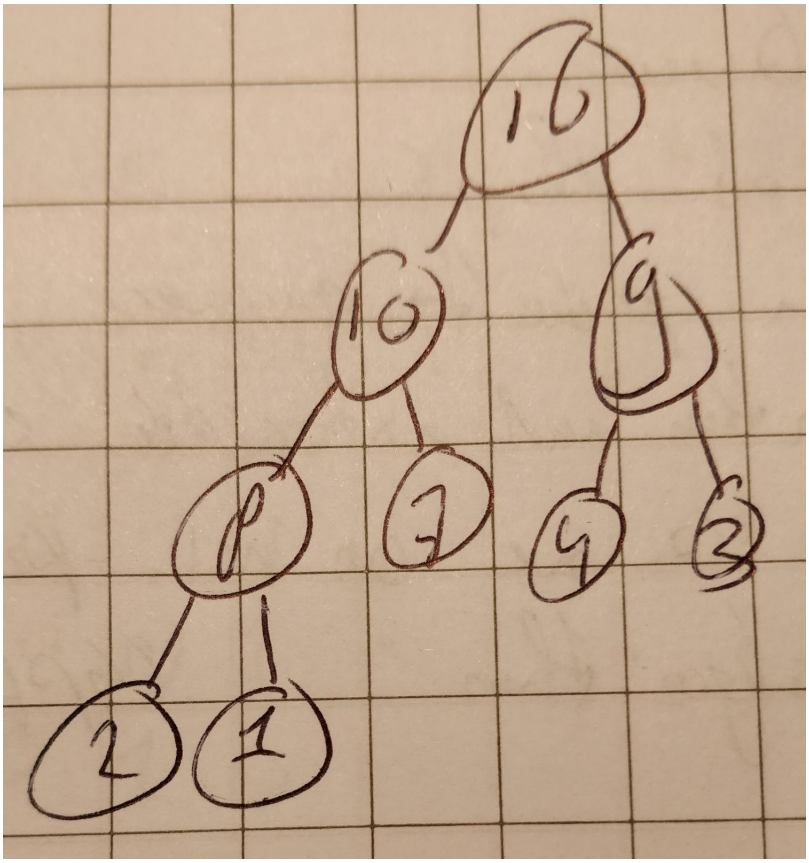
To sort the array in a way such that we get the Min-heap we first take the root (first element in the array) and put that at the end of our new array. So that the highest value is at the end.
Then for all children of the child of the first node we check which is the highest and we append that at the front of the array.
We do this for all the children of the original array.

4.2

1)



2)

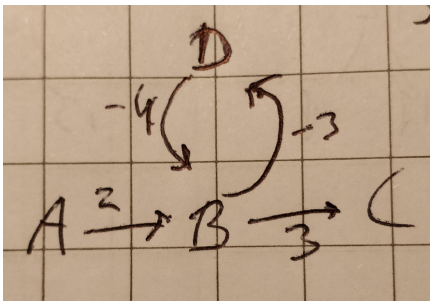


4.3

Q:	0	1	2	3	4	5
	0	30	40	∞	∞	∞
			40	50	80	∞
				50	70	∞
					70	110

4.4

The following graph will not find the shortest path since the theoretical shortest path is $-\infty$.
This is caused by the loop from B -> D that has a negative weight. In this case it will try to find the shortest path by looping through this loop infinitely many times.



4.5

In this case we can create a Graph with the airports as vertices and the distance between them as weights for the edges.
When we have obtained this graph we can run dijkstra's algorithm to get the shortest path from our source vertex s to all other vertices in the graph.
In this case this also gives the values for *easiest*.

4.6

4.7