Task 1

This problem is the implementation of knowledge of the Disjoint set union. To do so, first find the parent of two nodes, if the parents are different, comparing their set size, connected the small group with the larger one.

Task 2

This problem is called MST or minimum spanning tree. Which can be solved by both prim's and kruskal algorithm. I used kruskals Algorithm. Sorted all the edges based on their cost. Then connect the edges to get full component without connecting the edges which can create cycle. That's how, I got MST.

Task 3

This is a problem like fiboracci, but not actually fiboracci, first value is 1 and second value is 2, then add the previous two value like fiboracci. Used an array to memoize the calculated value to use letter

Task 4

This is the famous coin charge problem, Iteratively calculated how many coins needed for every number until reaches the target value. If the target value remains infinity that means no combination is possible with the given coins. Time complexity is

O(target * no. of coins)