

Week 8 (Q7-Q9):

- Q7** Execute by hand the Kruskal's algorithm (with the weighted QuickUnion algorithm for Union-Find) for finding minimum spanning tree (MST) on the graph in Figure 2.1. Show the contents of arrays *id* and *sz* at each step when an edge is added to the MST.
- Q8** If the input graph to the Kruskal's algorithm is given in an adjacency matrix, what is the time complexity of the algorithm?
- Q9** Design an algorithm to check whether a given undirected graph $G = (V, E)$ contains a cycle or not. Analyze the complexity of the algorithm in terms of $|V|$ and $|E|$.