TASK-1

Here we run dijkstra on the graph. In the dijkstra function we check weight. If the given weight is less than the existing weight we replace it. And if any vertices remain unvisited we replace the infinity with -1. Before the dijkstra function we create a list with a length of vertices and append infinity to all the index except the source. We keep the source index 0.

TASK-2

Here we run dijkstra two times for the two sources. After we check if the both sources have traveled any way. If they dont travel any way we write ‘impossible'. else we find the shortest time and the node.

TASK-3

Here we use the DSU method. First we initialize each vertex the parent of their own and rank with value1. Then we find the connections between the vertices.

TASK-4

Here we use the DSU method. First we initialize each vertex the parent of their own. We use the kruskal algorithm. We sort the edges with the help of weight. We create a MST using the shortest path to find the minimum cost.