Assignment-06

Tasks Explaination

Task-1

The code implements Dijkstra's algorithm to find the shortest path in a graph. The graph is represented as an adjacency list, and a priority queue is used to select the next vertex to visit. The shortest ~~pard~~path to each vertex is stored in a list. If a vertex is unreachable, its shortest path is marked as -1.

Task-2

The code implements Dijkstra's algorithm twice to find the shortest paths from two different source vertices to all other vertices in a graph. It then identifies the vertex where both sources can meet in the shortest possible time.

Task-3

The code uses the Union-Find algorithm to track and merge friend circles. It reads pairs of friends from an input file, merges their circles, and writes the size of the merged circle to an output file. The merging process uses path compression for efficiency. The code handles multiple queries.

Task-4

The code implements Kruskal's algorithm to find the minimum spanning of a tree of a graph. It reads the graph from an input file, calculates the total weight of the minimum spanning tree, and writes the result to an output file.