Prim’s algorithm to compute a minimum spanning tree from a starting vertex in a graph.

Time complexity => O((|V| + |E|) log |V|) = O(|E| log |V|)

The algorithm uses Dikjstra’s algorithm with the distance condition relaxed to dw= min(dw,cv,w)

The algorithm doesn’t work for very large datasets.

Prims(Graph graph, start\_vertex)= returnVector=vector<list<pair<unsigned long, double>>>

returnVector = <list<pair<v\_0,w\_0>,pair<v\_1,w\_1>,…,pair<v\_n,w\_n>>,list<pair<v\_1,w\_1>, pair<v\_2,w\_2>>>

Each list in the vector contains a list of pairs which represent a vertex and its adjacent vertices. The pairs of v\_i and w\_i represent the vertex and the weight along an edge in the path leading to it. The first pair is the starting vertex and the other ones are its connecting vertices.

The weight is the weight from the previous vertex to the current vertex.