

```

1
2 class PrimsMST {
3     public static class Edge{
4         int src;
5         int dst;
6         int weight;
7         Edge(int src,int dst,int weight){
8             this.src = src;
9             this.dst = dst;
10            this.weight = weight;
11        }
12    }
13
14    static int spanningTree(int V, ArrayList<ArrayList<ArrayList<Integer>>> adj) {
15        // store the edges based on thier wait - minheap
16        PriorityQueue<Edge> pq = new PriorityQueue<Edge>(new Comparator<Edge>(){
17            public int compare(Edge e1,Edge e2){
18                return e1.weight-e2.weight;
19            }
20        });
21
22        boolean visited[] = new boolean[V];
23
24        //traverse the graph with starting at vertex 0 considered as our spannig tree.
25        visited[0]=true;
26        addEdges(0,pq,adj,0); // to get next edge with min weight;
27        int consideredEdges = 0;
28        int sumOfWeights=0;
29
30        while(consideredEdges<V-1){
31            Edge edge = pq.poll();
32            if(visited[edge.dst]){
33                //if aready in our spanning tree skip it
34                continue;
35            }
36            visited[edge.dst]=true;
37            addEdges(edge.dst,pq,adj,edge.src);
38            consideredEdges++;
39            sumOfWeights+=edge.weight;
40        }
41
42        return sumOfWeights;
43    }
44
45    public static void addEdges(int vertex,PriorityQueue<Edge>
46    pq,ArrayList<ArrayList<ArrayList<Integer>>> adj,int src){
47        // for optimising we dont add the edge from parent;
48        ArrayList<ArrayList<Integer>> cl = adj.get(vertex);
49        int len = cl.size();
50        for(int i=0;i<len;i++){
51            int dst = cl.get(i).get(0);
52            int weight = cl.get(i).get(1);
53            if(dst==src){continue;}
54            pq.add(new Edge(vertex,dst,weight));
55        }
56    }
57
58 }

```