

// Kruskal's algorithm in Java

```
import java.util.*;
class Graph {
    class Edge implements Comparable<Edge> {
        int src, dest, weight;
        public int compareTo(Edge compareEdge) {
            return this.weight - compareEdge.weight;
        }
    };
    // Union
    class subset {
        int parent, rank;
    };
    int vertices, edges;
    Edge edge[];
    // Graph creation
    Graph(int v, int e) {
        vertices = v;
        edges = e;
        edge = new Edge[edges];
        for (int i = 0; i < e; ++i)
            edge[i] = new Edge();
    }
    int find(subset subsets[], int i) {
        if (subsets[i].parent != i)
            subsets[i].parent = find(subsets, subsets[i].parent);
        return subsets[i].parent;
    }
    void Union(subset subsets[], int x, int y) {
        int xroot = find(subsets, x);
        int yroot = find(subsets, y);
        if (subsets[xroot].rank < subsets[yroot].rank)
            subsets[xroot].parent = yroot;
        else if (subsets[xroot].rank > subsets[yroot].rank)
            subsets[yroot].parent = xroot;
        else {
            subsets[yroot].parent = xroot;
            subsets[xroot].rank++;
        }
    }
    // Applying Krushkal Algorithm
    void KruskalAlgo() {
        Edge result[] = new Edge[vertices];
        int e = 0;
        int i = 0;
        for (i = 0; i < vertices; ++i)
            result[i] = new Edge();
        // Sorting the edges
        Arrays.sort(edge);
    }
}
```

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subset subsets[] = new subset[vertices];
for (i = 0; i < vertices; ++i)
    subsets[i] = new subset();
for (int v = 0; v < vertices; ++v) {
    subsets[v].parent = v;
    subsets[v].rank = 0;
}
i = 0;
while (e < vertices - 1) {
    Edge next_edge = new Edge();
    next_edge = edge[i++];
    int x = find(subsets, next_edge.src);
    int y = find(subsets, next_edge.dest);
    if (x != y) {
        result[e++] = next_edge;
        Union(subsets, x, y);
    }
}
for (i = 0; i < e; ++i)
    System.out.println(result[i].src + " - " + result[i].dest +
": " + result[i].weight);
}
public static void main(String[] args) {
    int vertices = 6; // Number of vertices
    int edges = 8; // Number of edges
    Graph G = new Graph(vertices, edges);

    G.edge[0].src = 0; G.edge[0].dest = 1; G.edge[0].weight = 4;
    G.edge[1].src = 0; G.edge[1].dest = 2; G.edge[1].weight = 4;
    G.edge[2].src = 1; G.edge[2].dest = 2; G.edge[2].weight = 2;
    G.edge[3].src = 2; G.edge[3].dest = 3; G.edge[3].weight = 3;
    G.edge[4].src = 2; G.edge[4].dest = 5; G.edge[4].weight = 2;
    G.edge[5].src = 2; G.edge[5].dest = 4; G.edge[5].weight = 4;
    G.edge[6].src = 3; G.edge[6].dest = 4; G.edge[6].weight = 3;
    G.edge[7].src = 5; G.edge[7].dest = 4; G.edge[7].weight = 3;

    G.KruskalAlgo();
}
}

```

Output:

```

1 - 2: 2
2 - 5: 2
2 - 3: 3
3 - 4: 3
0 - 1: 4

```