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Assignment 2

Aim: Implement Prim's/Kruskal algorithm for any application.

Code:

```
class Mst{
    int V=5;
    void getMst(int[][] graph) {
        int parent[]=new int[V];
        int key[]=new int[V];
        boolean mstSet[]=new boolean[V];

        for (int i = 0; i < V; i++) {
            parent[i]=-1;
            key[i]=100000000;
            mstSet[i]=false;
        }

        key[0]=0;

        for (int i = 0; i < V-1; i++) {
            int min_index=minIndex(key,mstSet);
            mstSet[min_index]=true;

            for(int j=0;j<V;j++){
                if(graph[min_index][j]!=0 && mstSet[j]==false &&
graph[min_index][j]<key[j]){
                    key[j]=graph[min_index][j];
                    parent[j]=min_index;
                }
            }
        }
        printMST(parent,graph);
    }
    private int minIndex(int[] key, boolean[] mstSet) {
        int min_index=-1;
        int min=100000000;
        for(int i=0;i<V;i++){
            if(mstSet[i]==false){
                if(min>key[i]){
                    min=key[i];
```

```
                    min_index=i;
                }

            }
        }
        return min_index;
    }

    void printMST(int parent[], int graph[][])
    {
        System.out.println("Edge \tWeight");
        int total=0;
        for (int i = 1; i < V; i++){
            System.out.println(parent[i] + " - " + i + "\t" +
graph[i][parent[i]]);
            total+=graph[i][parent[i]];
        }
        System.out.println("MST = "+total);
    }
}

public class Main {
    public static void main(String[] args) {
        Mst mst =new Mst();

        int graph[][] = new int[][] { { 0, 7, 0, 2, 0 },
                                      { 7, 0, 3, 8, 5 },
                                      { 0, 3, 0, 0, 7 },
                                      { 2, 8, 0, 0, 9 },
                                      { 0, 5, 7, 9, 0 } };
        mst.getMst(graph);
    }
}
```

Output:

```
Edge    Weight
0 - 1   7
1 - 2   3
0 - 3   2
1 - 4   5
MST = 17


...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion: Thus, we successfully implemented Prims Algorithm to implement Minimum Spanning Tree.