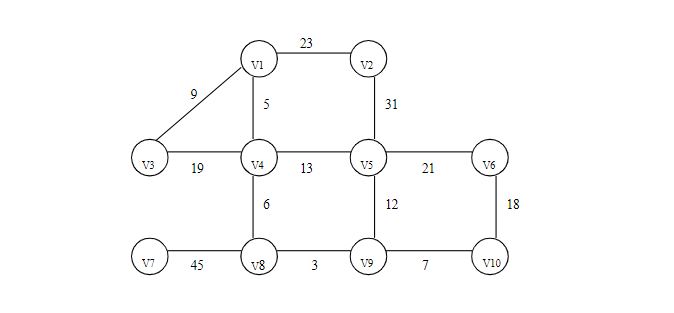
CS.3310 Homework 3

1. Construct Minimum Spanning Tree (MST) using Prim’s algorithm and find the cost of that MST



\*\*\*Notation – v12 = 23 means edge weight from v1 to v2 is 23

Step 1 – Start from v1, add it to the SetMST and compute adjacent edges weight.

V12 = 23; v13 = 9; v14 = 5. Connect v1 and v4

Step 2 – Travel to v4, add it to SetMST, and compute adjacent edges weight.

V12 = 23; v13 = 9; v45 = 13; v48 = 6. Connect v4 and v8

Step 3 – Travel to v8, add it to SetMST and compute adjacent edges weight.

V12 = 23; v13 = 9; v45 = 13; v87 = 45; v89 = 3. Connect v8 and v9

Step 4 – Travel to v9, add it to SetMST and compute adjacent edges weight.

V12 = 23; v13 = 9; v45 = 13; v87 = 45; v95 = 12, v910 = 7. Connect v9 and v10

Step 5 – Travel to v10, add it to SetMST and compute adjacent edges weight.

V12 = 23; v13 = 9; v45 = 13; v87 = 45; v95 = 12, v106 = 18. Connect v1 and v3

Step 6 – Travel to v3, add it to SetMST and compute relevant adjacent edges weight.

V12 = 23; v45 = 13; v87 = 45; v95 = 12, v106 = 18 Connect v9 and v5

Step 7 – Travel to v5, add it to SetMST and compute relevant adjacent edges weight.

V12 = 23; v87 = 45; v106 = 18; v56 = 21. Connect v10 to v6

Step 8 – Add v6 to SetMST and check remaining edges weight.

V12 = 23; v87 = 45. Connect v1 to v2

Step 9 – Add v2 to SetMST and check remaining edges weight.

V87 = 45. Connect v8 to v7. **Completed MST as shown below with 9 edges**

**Total cost/weight** = 23+5+9+6+45+3+12+7+18 = **128**

