PRIMS ALGORITHM: Like Kruskal's algorithm, Prim's algorithm is a special case of the generic minimum-spanning-tree method. Prim's algorithm operates much like Dijkstra's algorithm for finding shortest paths in a graph. Prim's algorithm has the property that the edges in the set A always form a single tree.

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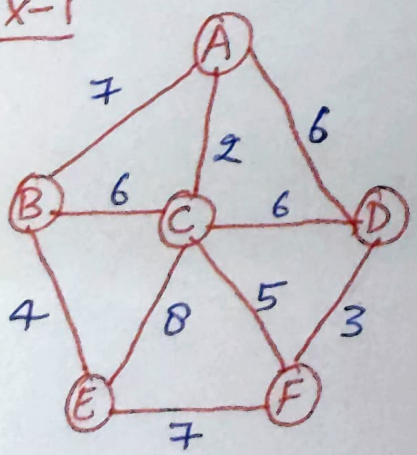
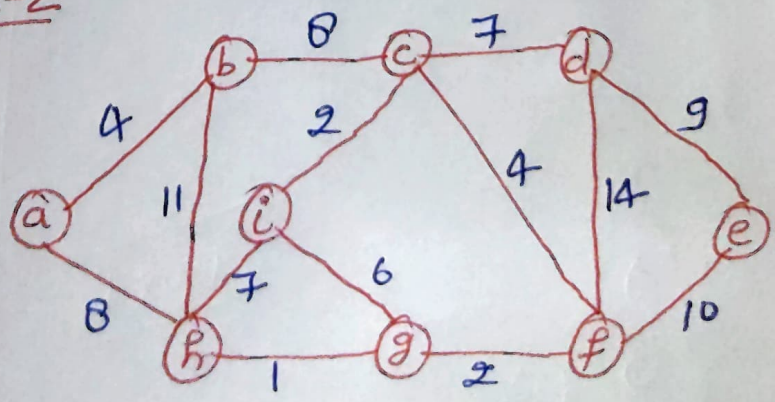
MST-PRIM(G, w, r)
1. For each u ∈ G.V
2.     u.key = ∞
3.     u.π = NIL
4.     r.key = 0
5.     Q = G.V
6.  while Q ≠ ϕ
7.     u = Extract-MIN(Q)
8.  For each v ∈ G.Adj[u]
9.  if v ∈ Q and w(u,v) < v.key
10.        v.π = u
11.        v.key = w(u,v)
```

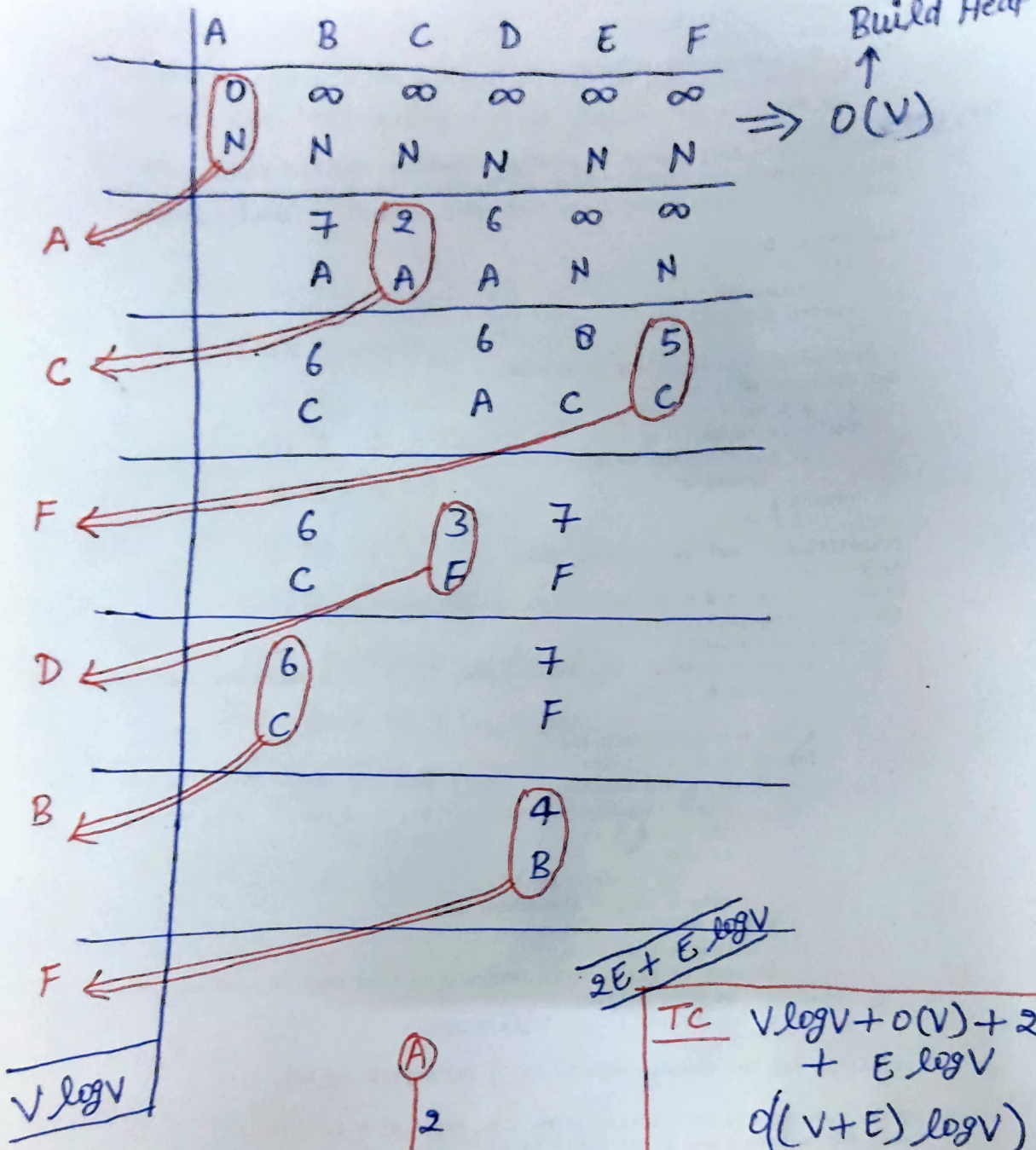
EX-1

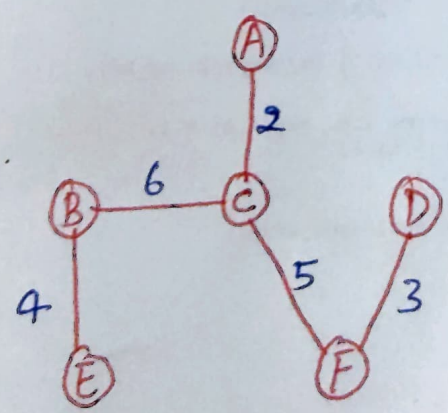


EX-2



Solution Ex-1





Total cost = 20

TC $V \log V + O(V) + 2E + E \log V$

$O((V+E) \log V)$

Using Binary min heap