

VE281 Writing Assignment Five

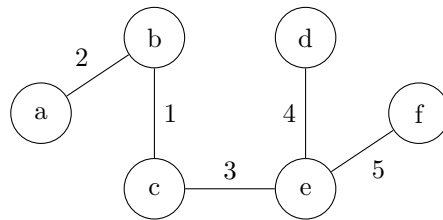
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Ex. 1

In Kruskal's algorithm, we take the shortest edge and connect two nodes if it doesn't form a cycle.

1. Connect b and c
2. Connect a and b
3. Connect c and e
4. Connect e and f
5. Connect e and d

The minimum spanning tree is



Ex. 2

Input:

A directed acyclic graph $G = (V, E)$ with real-valued edge weights

Two distinct nodes s and d

Output:

A longest weighted path from s to d if exists

$L \leftarrow G$ sorted in topological order

Remove nodes located before s or after d from L

Remove node s from L

$s.distance \leftarrow 0$

$s.predecessor \leftarrow NULL$

for node v **in** L **do**

$v.distance \leftarrow -\infty$

$v.predecessor \leftarrow NULL$

for edge (u, v) **in** edges with end node v **do**

if $u.distance + (u, v).weight > v.distance$ **then**

$v.distance \leftarrow u.distance + (u, v).weight$

$v.predecessor \leftarrow u$

end if

end for

end for

if $d.predecessor == NULL$ **then**

 print "No path exists"

else

 print $d.predecessor$ recursively in reverse order

end if

The time complexity is $O(V + E)$.

Ex. 3