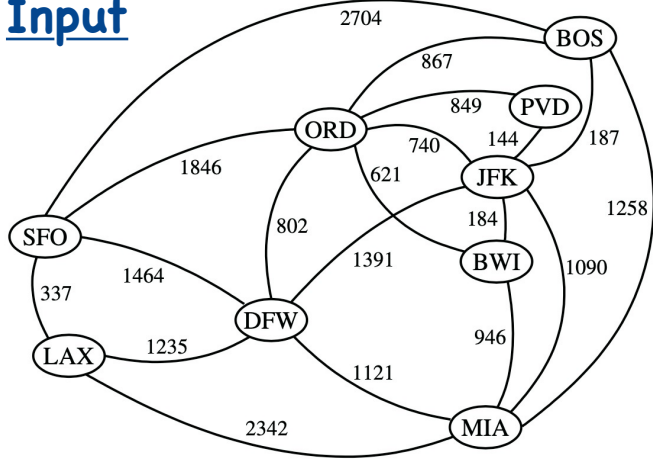


Topological Sort on a DAG: BFS?

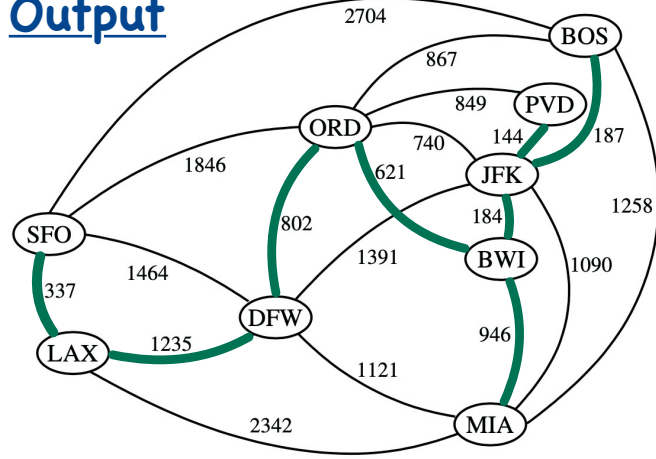
Consider: $g = (\{S, A, B\}, \{(S, A), (S, B), (B, A)\})$

Minimum Spanning Tree (MST) Problem

Input



Output



MST Problem: Greedy Method

MST Problem: Kruskal's Algorithm

```
1  ALGORITHM: Find-MST-Kruskal
2  INPUT: Simple, Undirected, Weighted, Connected  $G = (V, E)$ 
3  OUTPUT: A minimum spanning tree  $T$  of  $G$ 
4  PROCEDURE:
5  for  $v \in V$ :  $C(v) := \{v\}$  -- build  $|V|$  elementary clusters
6  Initialize a priority queue  $Q$  containing  $E$  -- keyed by weights
7   $T := \emptyset$ 
8  while  $|T| \leq n - 1$ :
9     $(u, v) := Q.removeMin()$ 
10   let  $C(u)$  be the cluster containing  $u$ 
11   let  $C(v)$  be the cluster containing  $v$ 
12   if  $C(u) \neq C(v)$  then
13      $T := T \cup \{(u, v)\}$ 
14     Merge  $C(u)$  and  $C(v)$  into one cluster
```

