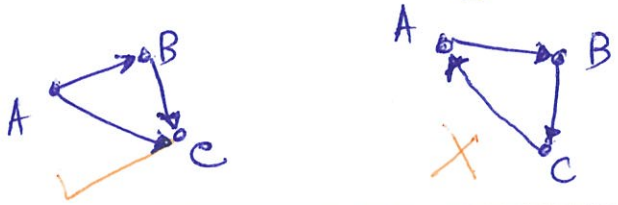
Oct 1

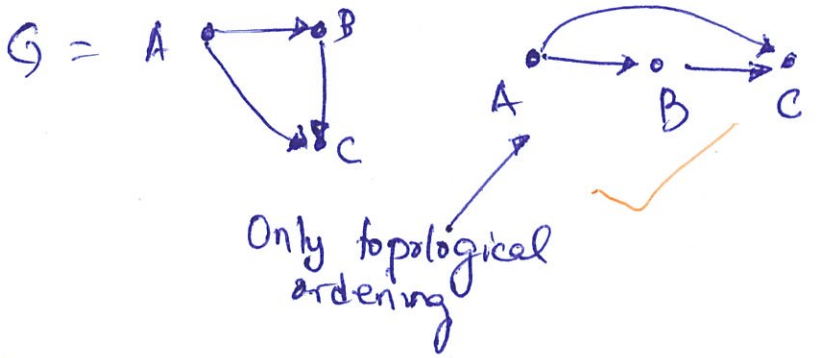
Directed Acyclic Graphs (DAGs)

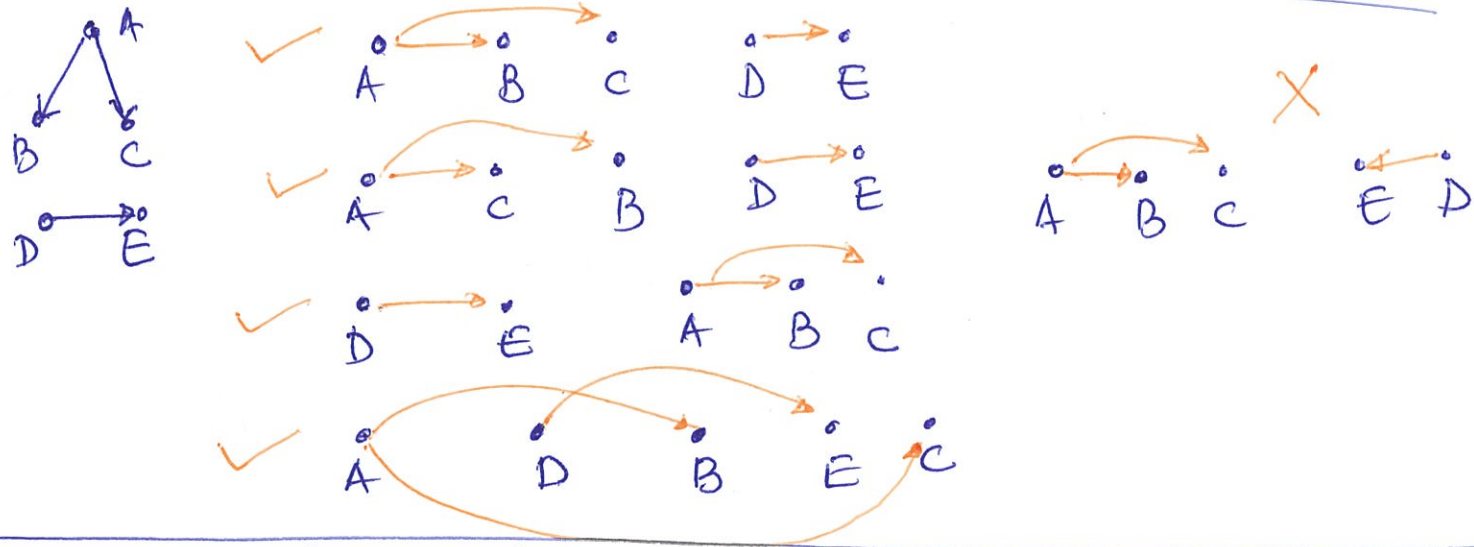
Def: A directed graph G is a DAG if G has no (directed) cycle.



Def: A topological ordering (sorting) of a directed graph $G=(V,E)$ is an ordering of the vertices $u_1, \ldots, u_n$ s.t

$(u_i, u_j) \in E \iff i<j$





Input: A directed $G=(V,E)$

Output: A topological ordering if one exists

Lemma 1: If G has a topological ordering $\Rightarrow$ G is a DAG.

Thm: If G is a DAG $\Rightarrow$ G has a topological ordering.