

16.8

Summary

Take away Points

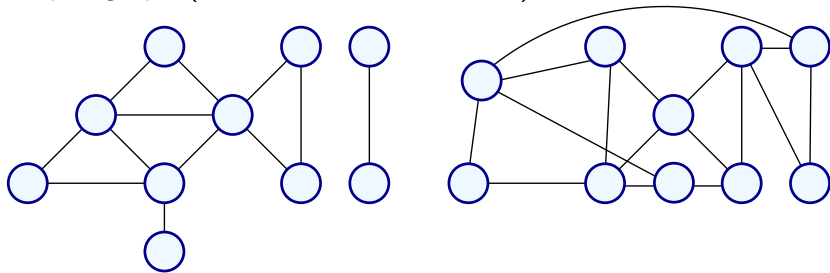
1. **DAGs**
2. Topological orderings.
3. **DFS**: pre/post numbering.
4. Given a directed graph G , its **SCCs** and the associated acyclic meta-graph G^{SCC} give a structural decomposition of G that should be kept in mind.
5. There is a **DFS** based linear time algorithm to compute all the **SCCs** and the meta-graph. Properties of **DFS** crucial for the algorithm.
6. **DAGs** arise in many application and topological sort is a key property in algorithm design. Linear time algorithms to compute a topological sort (there can be many possible orderings so not unique).

16.9

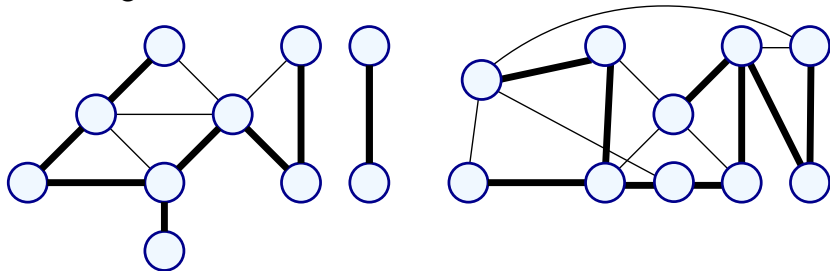
An example of DFS forests

Example: Undirected **DFS** forest

The input graph (disconnected in this case):

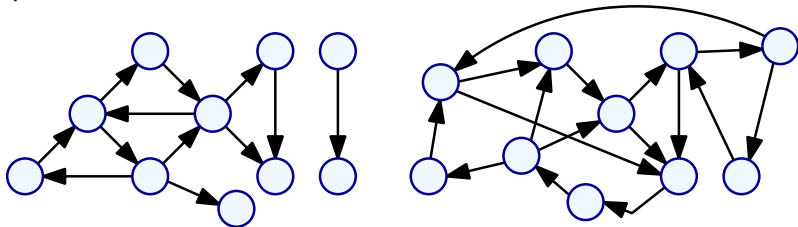


The resulting **DFS** forest:



Example: Directed DFS forest

The input graph:



The resulting DFS forest (numbers indicate the order of DFS):

