Data Structures and Algorithms Spring 2023 — Problem Sets

by Nikolai Kudasov

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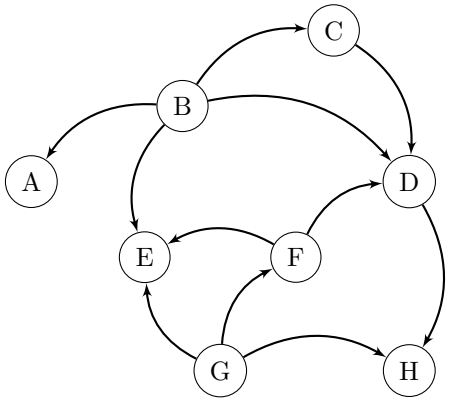
Week 11. Problem set

1. Write down **all** possible topological sortings for the nodes of the following directed graph:



2. Give an example of a directed graph $G = (V, E)$, a source vertex s, and a set of edges $T \subseteq E$ such that

   - T forms a tree and
   - for each vertex $v \in V$, the unique simple path in the graph (V, T) from s to v is a shortest path in G, yet
   - the set of edges T cannot be produced by running BFS on G, no matter how the vertices are ordered in the adjacency lists.