

Spring 2024

## CS 412 (Algorithms: Design and Analysis)

### Weekly Challenge 06: Graph Algorithms

Announced: Friday, February 23, 2024.

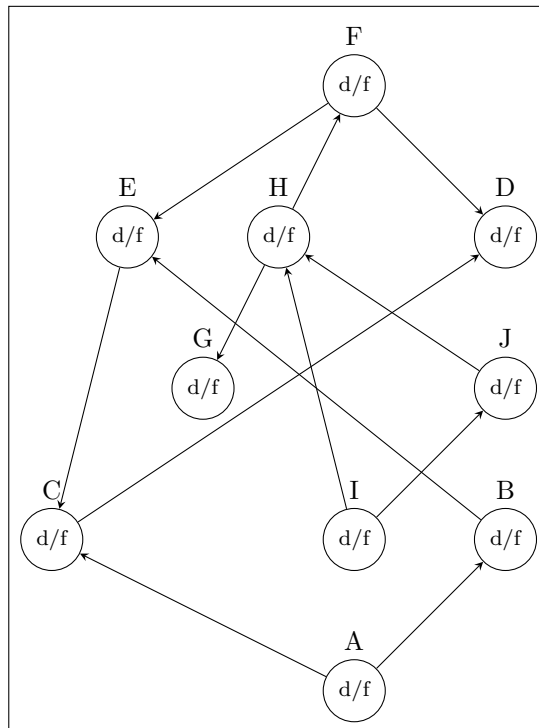
Deadline: Friday, March 1, 2024 (11:59 pm PKT).

Total marks: 1.

**Instructions:** Submit **individually** your solution as a PDF with the file name as your *studentID.pdf*; typeset in LaTeX. You must submit your solution on Canvas.

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1. (1 point) Consider the graph,  $\mathcal{G}$ , below with 10 nodes and 13 edges.

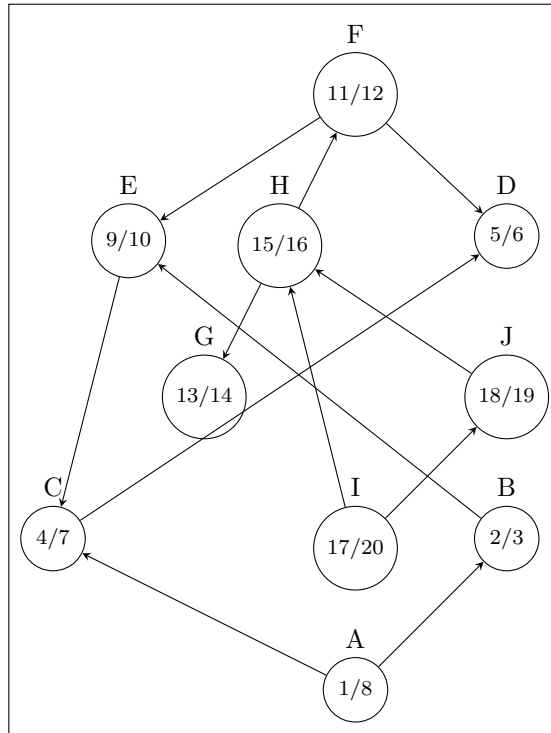


The procedure,  $\text{DFS}(\mathcal{G})$ , is executed on the graph such that ties are resolved in alphabetical order.

- Redraw the graph below such that each node,  $n$ , contains  $n.d/n.f$ , where  $n.d$  and  $n.f$  are the node's discovery and finalization times respectively. Mention your starting nodes/nodes under the graph.
- Draw below the corresponding DFS-forest.

**Solution:**

- Starting the DFS from node  $A$ , and after that, we begin by node  $I$



(b) The below DFS-forest correspond to part(a)

