

CST 370 Design and Analysis of Algorithms

Spring 2020 – Quiz 5

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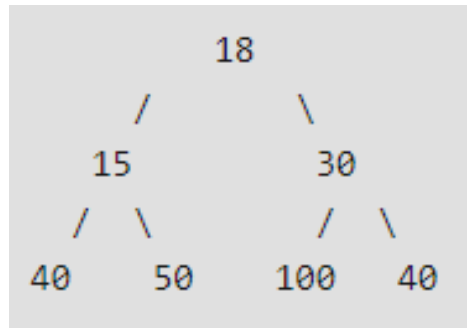
Four-digits ID: _____2020_____

"On my honor, I have neither given nor received unauthorized aid in doing this assignment."

Signature _____

- Do not start until told to do so.
- Look over all the questions and observe their point values before you start.
- Use your time wisely—make sure to answer the questions you know first.
- **Read the questions carefully.**

1. (2 points) Consider the following binary tree. Present the sequences of in-order and post-order traversals.

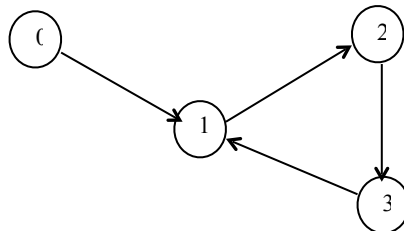


In-order: _____ 40 _____ 15 _____ 50 _____ 18 _____ 100 _____ 30 _____ 40 _____

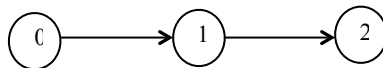
Post-order: 40 _____ 50 _____ 15 _____ 100 _____ 40 _____ 30 _____ 18 _____

2. (1 point) (a) Is the following graph a DAG? (Yes/No)

NO

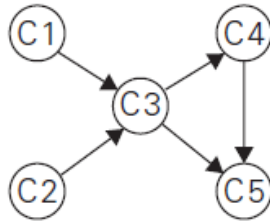


(b) Is the following graph a DAG? (Yes/No)



YES

3. (2 points) For the following graph, you are going to conduct the **topological sorting**.



(a) Present the **starting node(s)** for the topological sorting.

C1

(b) Conduct the topological sorting using the **DFS algorithm**. Then, present the **topological order** as we discussed in the class. For the problem, you have to follow our convention of alphabetical order.

Topological Order: _____ C1 _ C3 _ C4 _ C5 _ C2 _____