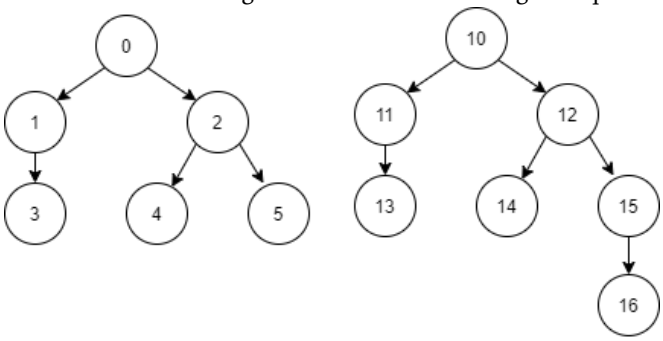
# QuickCheck 07: Disjointed Topological Topics

Due: 8:00 am on Thursday, Feb 27, 2020

**QuickChecks must be scanned and submitted online via Gradescope**. If you have a smartphone, you can follow these steps to scan using an app: https://www.gradescope.com/help#help-center-item-student-scanning. Otherwise, there are scanners located at various libraries on campus which can be found here: https://finance.uw.edu/c2/printing-copying/dawg-prints-copy-locations. Make sure that the gray border around the edge of this page is visible in your scanned document.

## 1. Disjoint sets

Consider the following trees. Use both the weighted quick union by size and path compression optimizations.




(a) How many children would the following nodes have after calling find(5)?

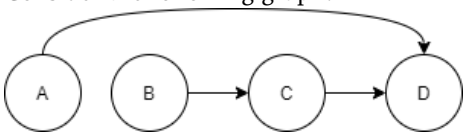
Node 0: _____ Node 2: _____

(b) How many children would the following nodes have after calling union(0, 10), ignoring find(5)?

Node 0: _____ Node 10: _____

## 2. Topo Sort!

Consider the following graph:




(a) Give a valid topological sort for this graph: _____ _____ _____ _____

(b) How many topological sorts are there for this graph? 1 ◯ 2 ◯ 3 ◯ 4 ◯

(c) Name a directed edge, which, when added, makes the graph impossible to sort topologically. From _____ To _____