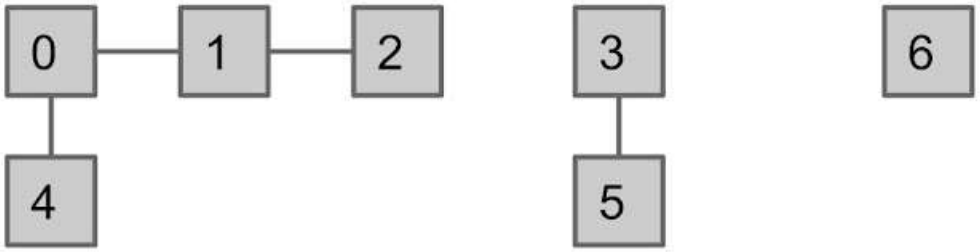
Given the current state of a disjoint set below, we make the following calls: * 1 point

**connect(4, 6);**

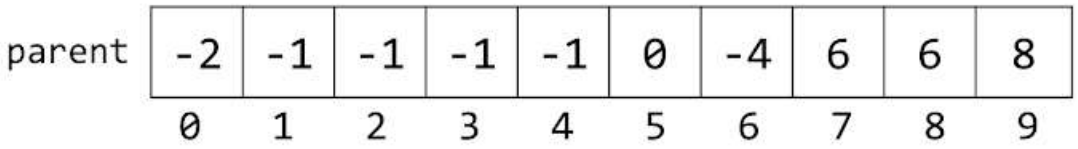
**connect(2, 3);**

What is the output of **isConnected(4, 5)** after these calls?




- ◯ True
- ◯ False

In the **weighted quick union** representation below, do "7" and "9" have the same root? * 1 point




- ◯ Yes
- ◯ No

Which of the following statements accurately describes the asymptotic advantage of weighted quick union compared to standard quick union in the context of disjoint set operations (i.e. connect and isConnected)? * 3 points

- [ ] Weighted quick union has a better best-case runtime for the disjoint set operations.
- [ ] Weighted quick union ensures that the maximum height of any tree in the disjoint set is logarithmic with respect to the number of elements.
- [ ] Weighted quick union improves the worst-case time runtime of disjoint set operations to O(log(N)).

A copy of your responses will be emailed to yiyunchen@berkeley.edu.

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