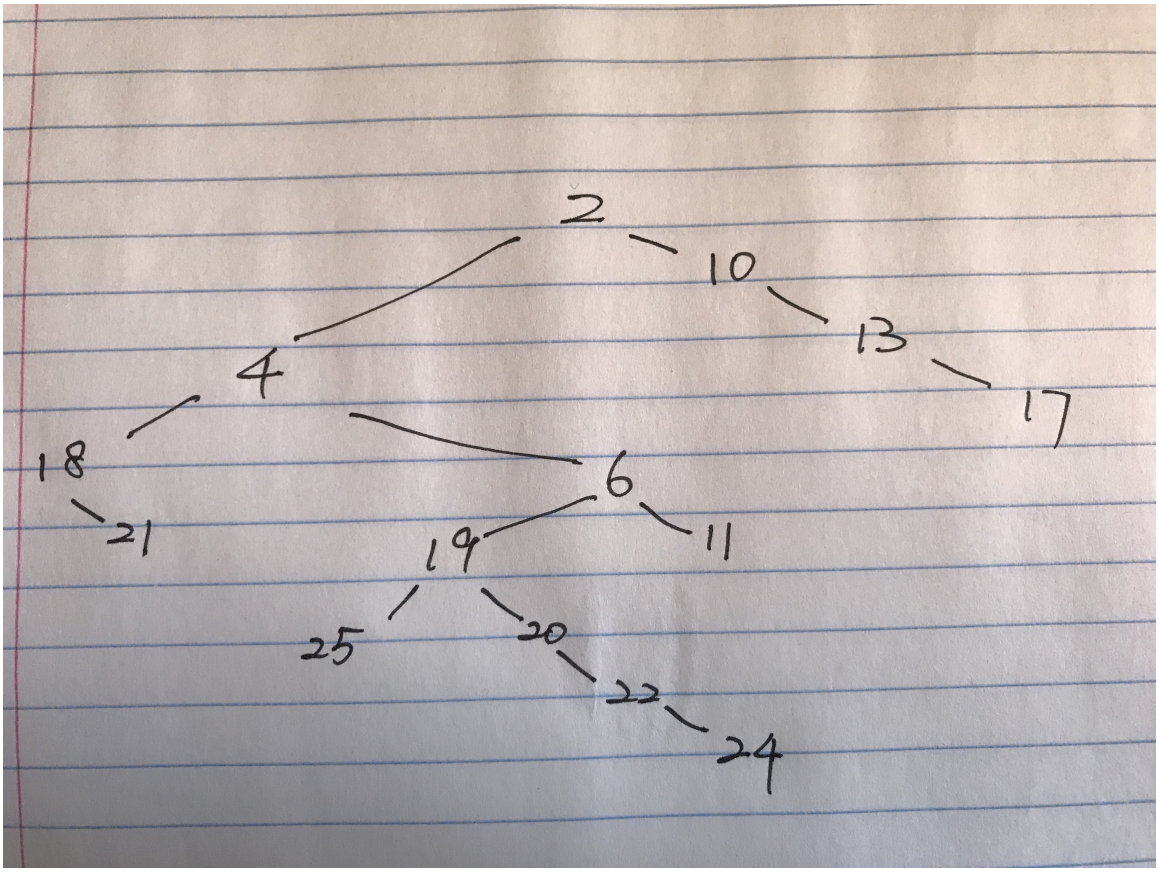
CS 261 - Data Structure **Spring 2017**

HomeWork 6

June 9, 2017 *Liangjian Chen*

Problem 1 **Solution:**



The query between node 24 and node 13.

Problem 2 **Solution:**

$(2,0) \to (4,1) \to (18,2) \to (21,3) \to (18,2) \to (4,1) \to (6,2)$
$\to (19,3) \to (25,4) \to (19,3) \to (20,4) \to (22,5) \to (24,6) \to (22,5)$
$\to (20,4) \to (19,3) \to (6,2) \to (11,3) \to (6,2) \to (4,1) \to (2,0)$
$\to (10,1) \to (13,2) \to (17,3) \to (13,2) \to (10,1) \to (2,0)$

Assume 0-index, positions are 12 and 22.

Problem 3 **Solution:**

$+-+-+$ can not occur in this sequence, because the degree of a node is at most 2, it must go up after going down, going up, going down and going up.

Problem 4 **Solution:**

When $LCA(x, y)$ is not x, first step is to the x's father. In the case of $LCA(x, y) = x$, if $LCA(x\text{'s left son}, y)$ is $x's$ left son, go left son, otherwise right son.

Therefore we make LCA query at most twice.