CSE 373 Lecture 12 In-Class Worksheet — Fall 2018

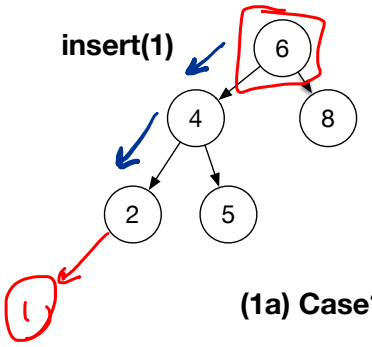
Name: _____ Date: _____

UW Student #: _____ UW Email address: _____

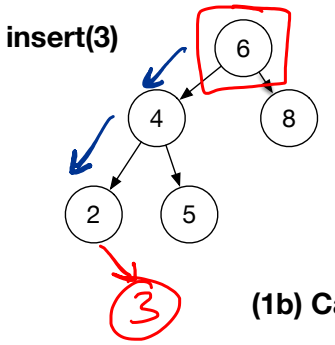
Partner name(s) for this activity: _____

Will you want to pick up your worksheet later? Circle one: Yes / No

(Q1) Insert the specified keys in the following AVL trees. The resulting tree would be an unbalanced AVL tree. Identify the unbalanced node and indicate whether the unbalance is a "line" case or a "kink" case.

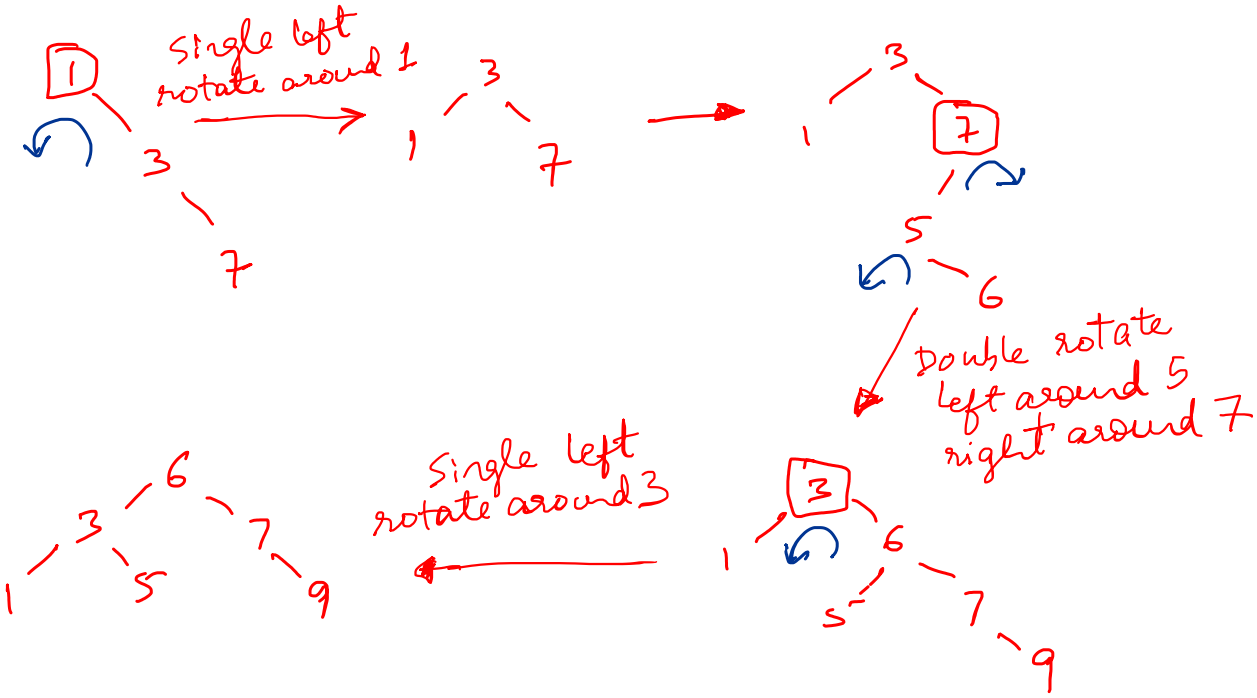


(1a) Case? Line or Kink

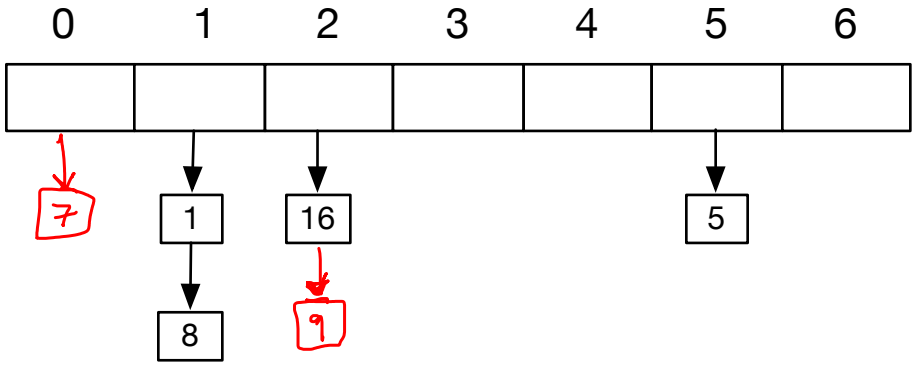


(1b) Case? Line or Kink

(Q2) Draw the AVL tree that results from inserting the keys 1, 3, 7, 5, 6, 9 in that order into an initially empty AVL tree. (*Hint:* Drawing intermediate trees as you insert each key can help.)



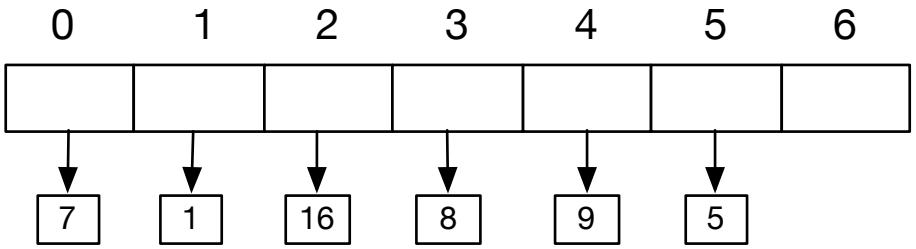
(Q3) The following hash table uses the hash function h(x) = x % 7 and separate chaining to avoid collisions. The following table shows the resulting hash table after inserting keys 1, 16, 8, and 5. Now suppose **we insert keys 7 and 9** in the hash table. What would the hash table look like (show where the keys would be inserted).



(Q4) What is the load factor of the resulting hash table in (Q3)

$$\lambda = \frac{\text{num of entries}}{\text{array capacity}} = \frac{n}{c} = \frac{6}{7}$$

(Q5) What is the load factor of the following hash table?



$$\lambda = \frac{n}{c} = \frac{7}{6}$$