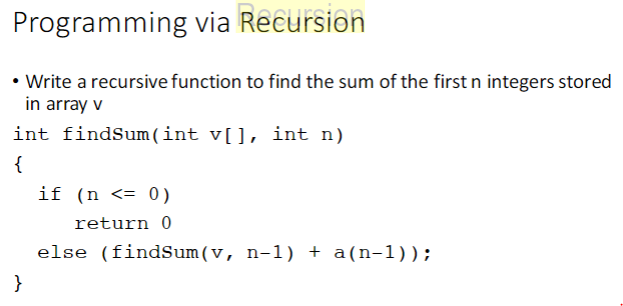
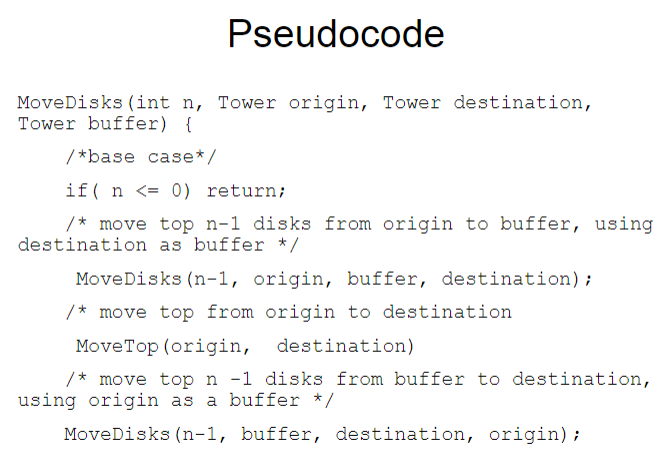
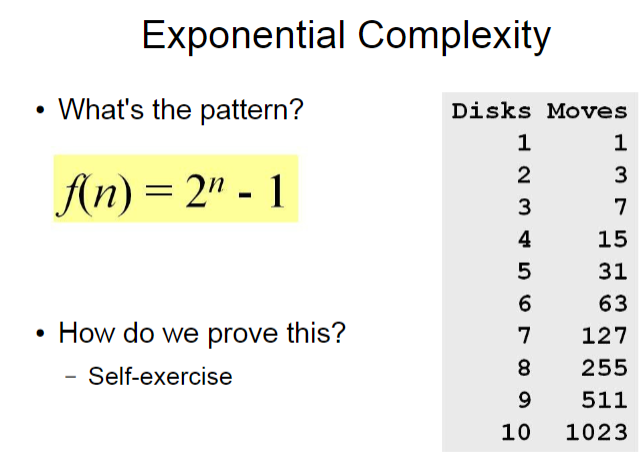
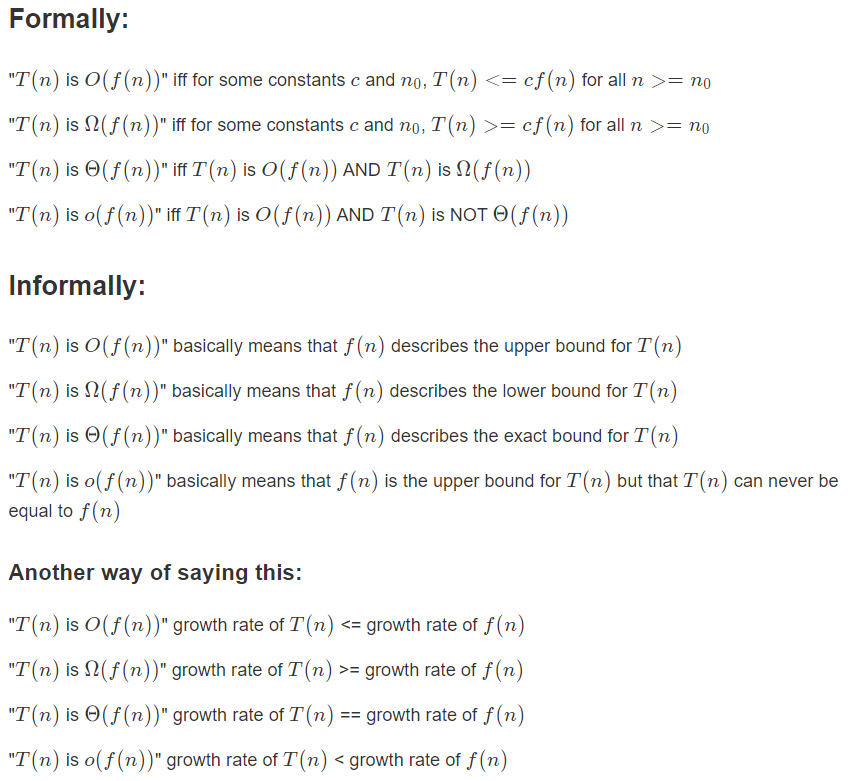
Recursion:

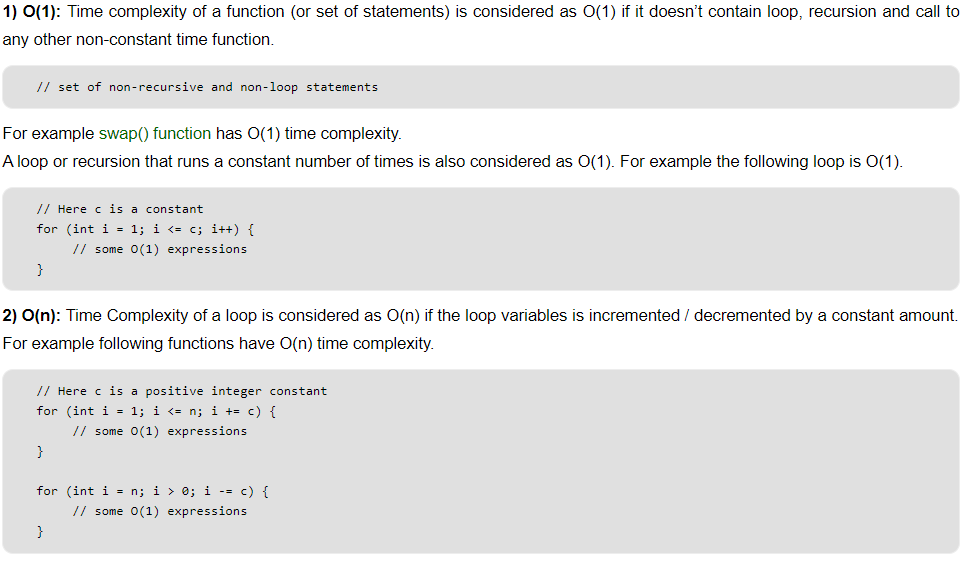


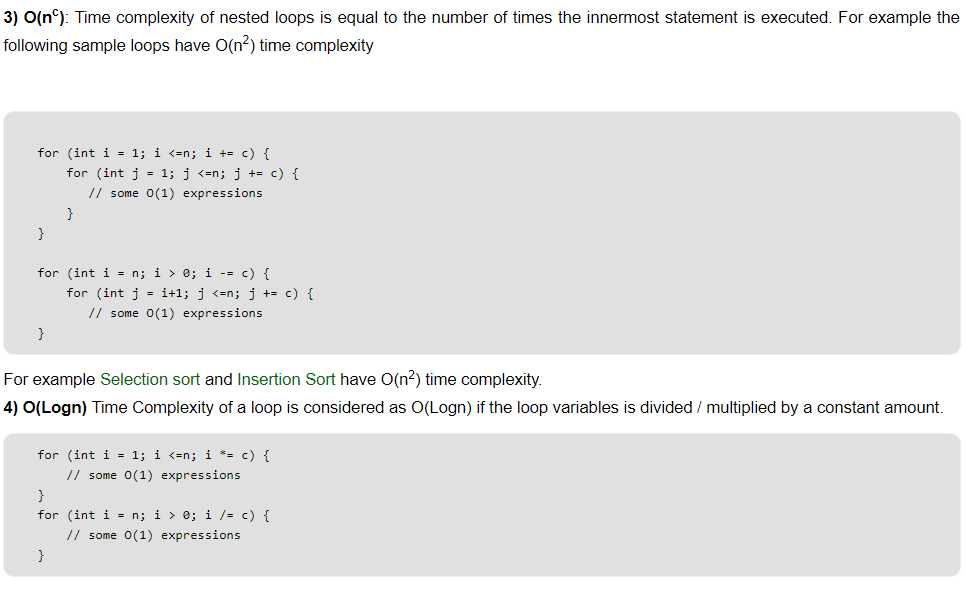
Towers of Hanoi:

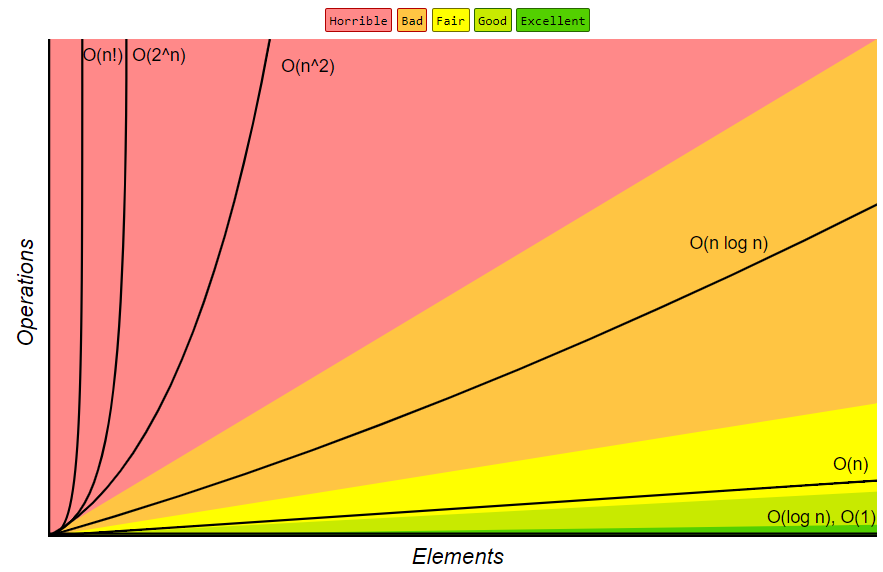








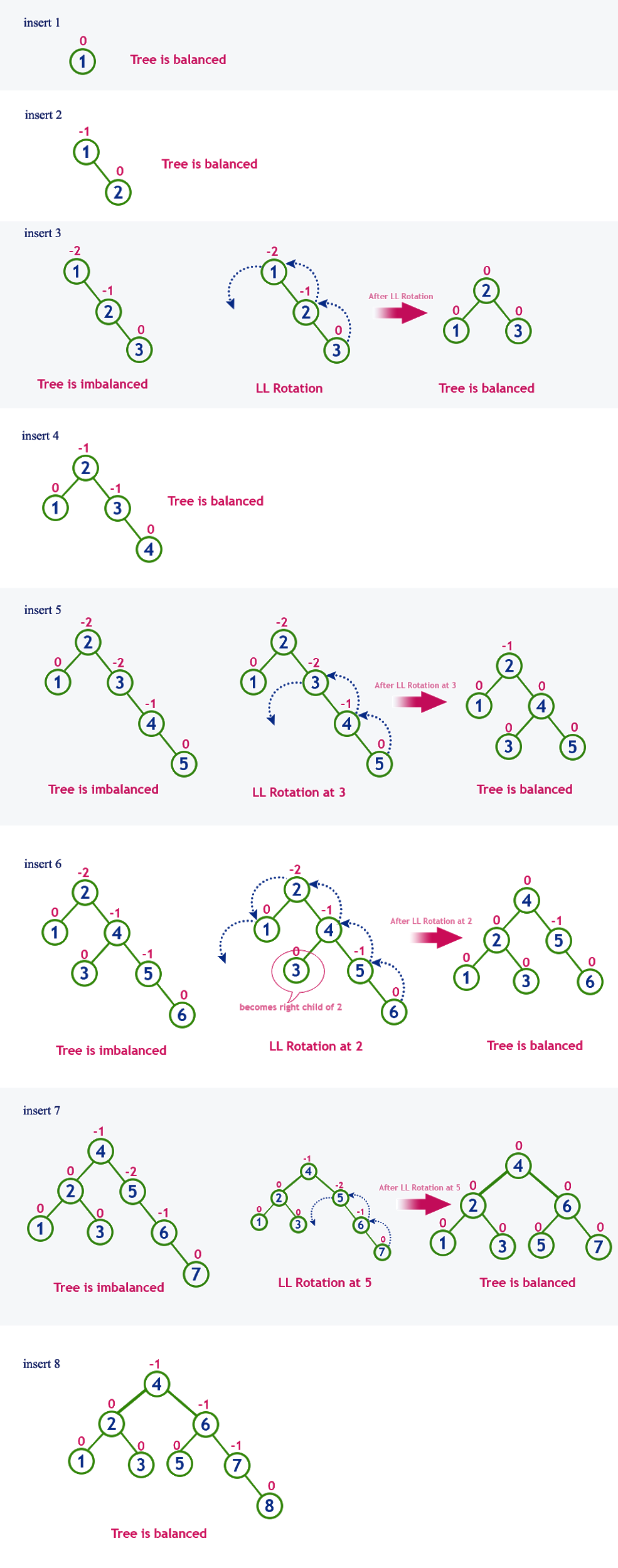


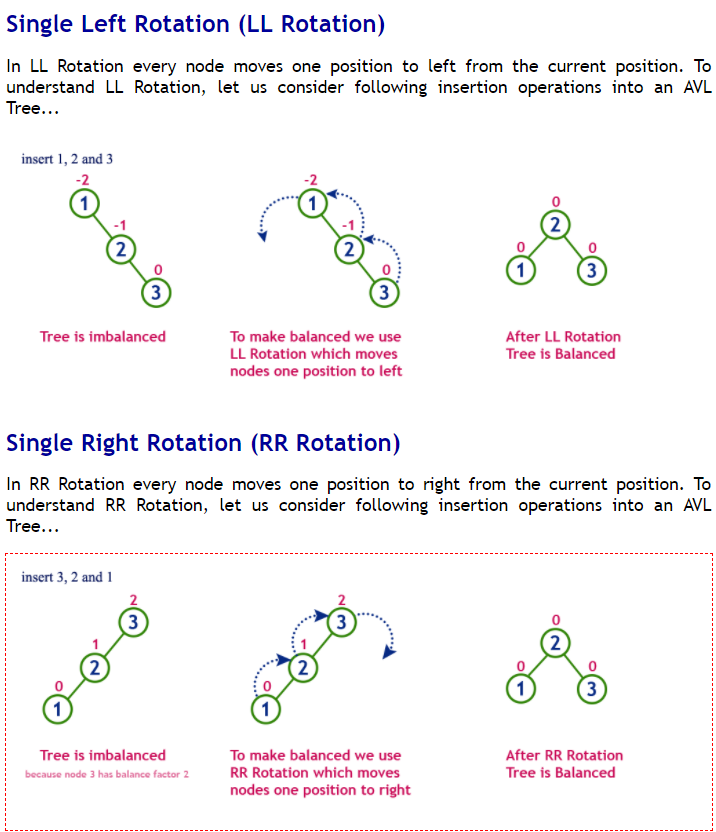


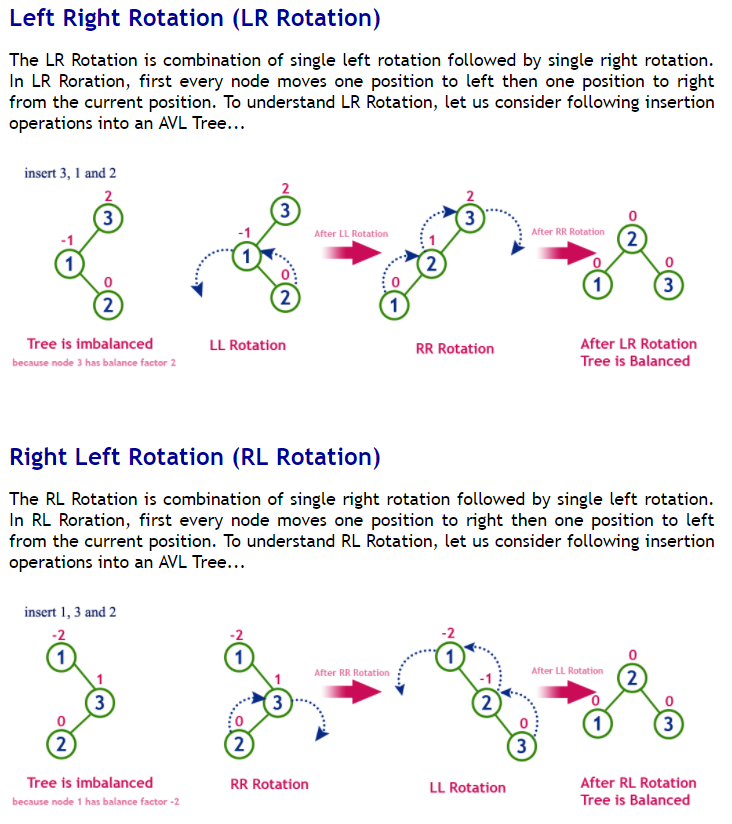
Trees:

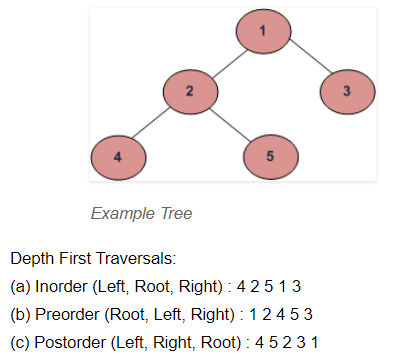
Problems with BSTs:

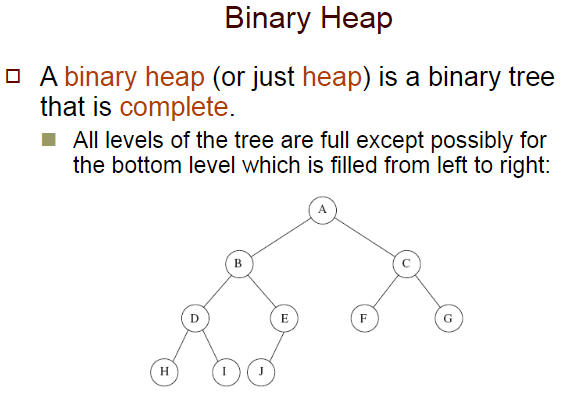
Unbalanced quickly turns run time into O(n)

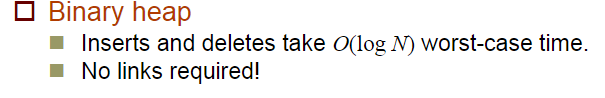


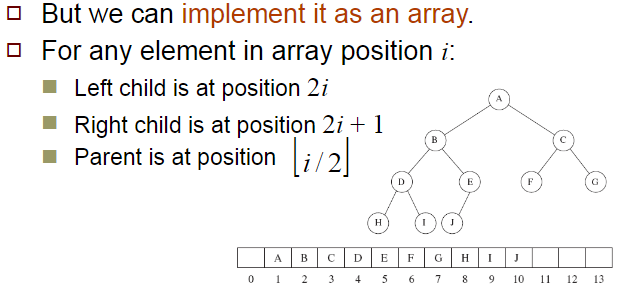


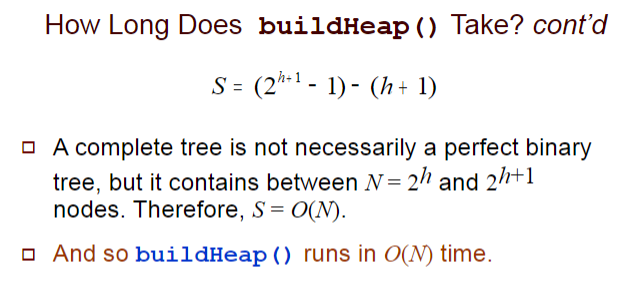


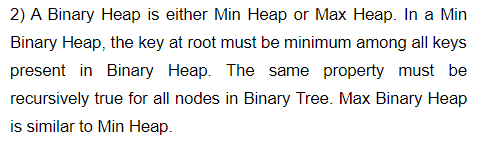


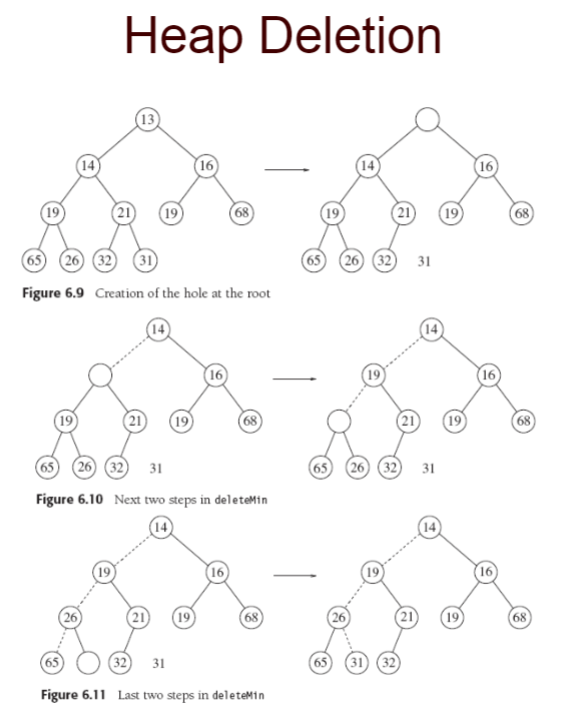




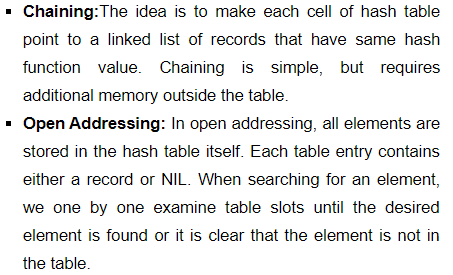




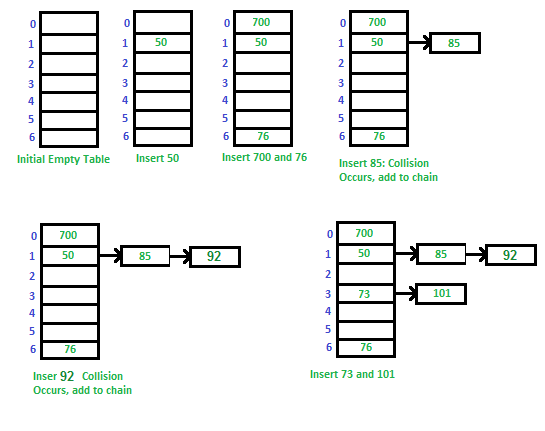


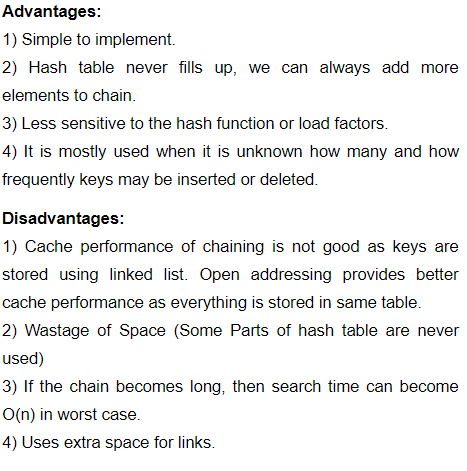


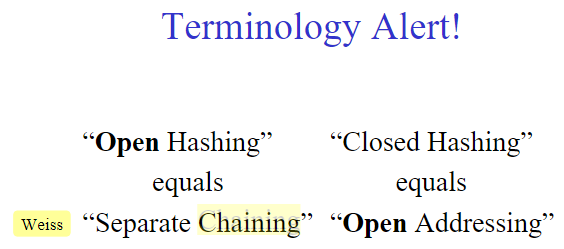
Hashing:

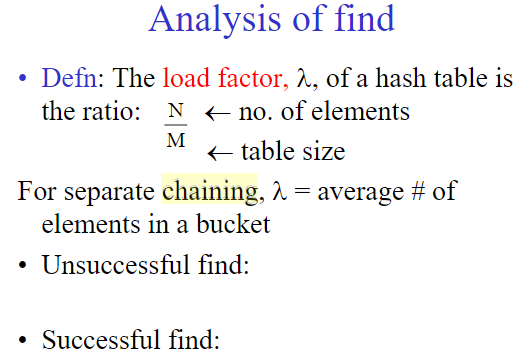


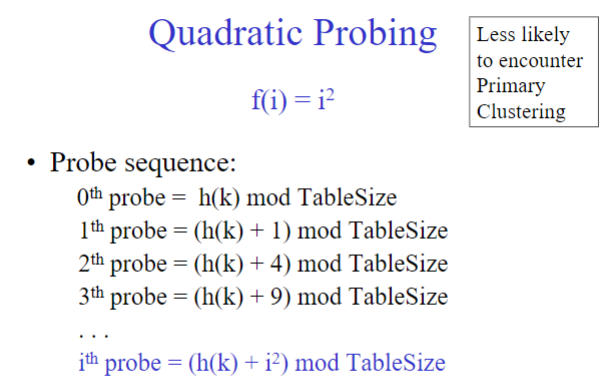
Chaining:

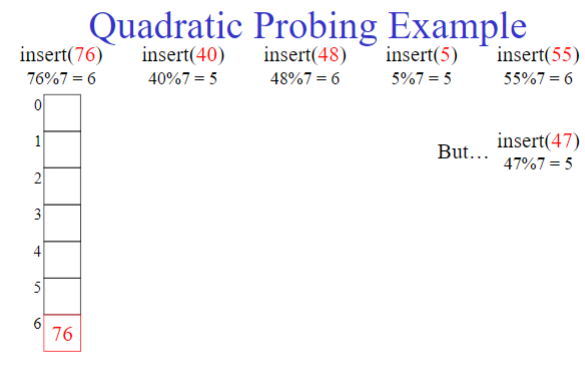


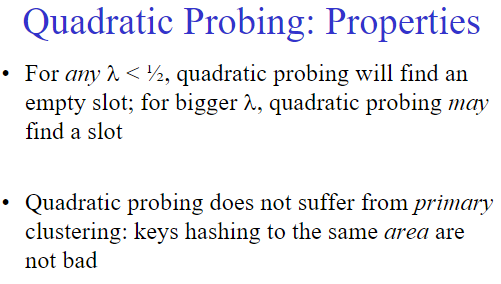


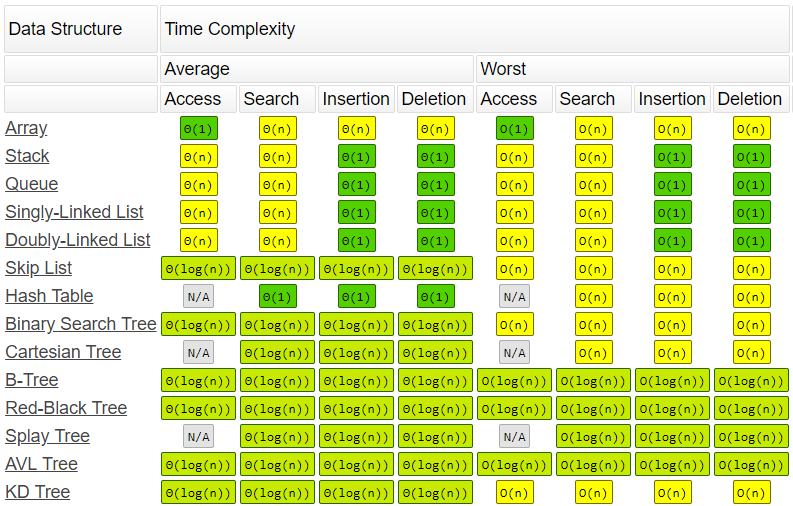












Binary Heap Operations

Question 3.

a. Draw the binary min heap represented by the following array: (5 points)

Index

0 1 2 3 4 5

Value

1 11 13 14 15

b. Show the result of calling deleteMin twice on the heap you drew in part (a). Show the

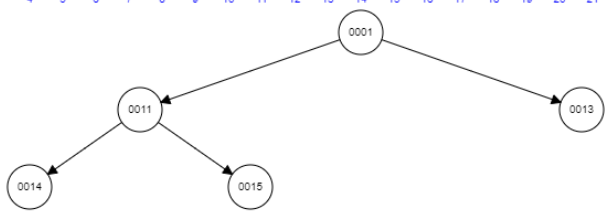
heap after each deleteMin and circle the final heap. (5 points).

c.

Starting with the heap you ended up with in part (b), insert values 0 and 12 in that order.

Draw the heap after each insertion and circle the final heap. (5 points)

a)



b)DeleteMin- The minimum element can be found at the root, which is the first element of the array. We remove the root and replace it with the last element of the heap and then restore the heap property by percolating down. Similar to insertion, the worst-case runtime is O{log n).