CSCE146 – Practice Exam (Midterm 2)

CSCE146 F2017 SI | Midterm #2 | JJ Shepphard's class

Asymptotics

1. Sort the Big O times in Bounding order.

$O(n)$ $O(n^2)$ $O(n^2lg(n))$ $O(n^3)$ $O(1)$ $O(n!)$ $O(n^n)$ $O(lg(n))$ $O(2^n)$

2. List the Big O times (Worst-case) of the following algorithms

Binary search, Merge Sort, Quick Sort, Insertion Sort, Bubble Sort, Selection Sort, Binary Search Tree Insertion, Tower of Hanoi, Travelling Sales Person

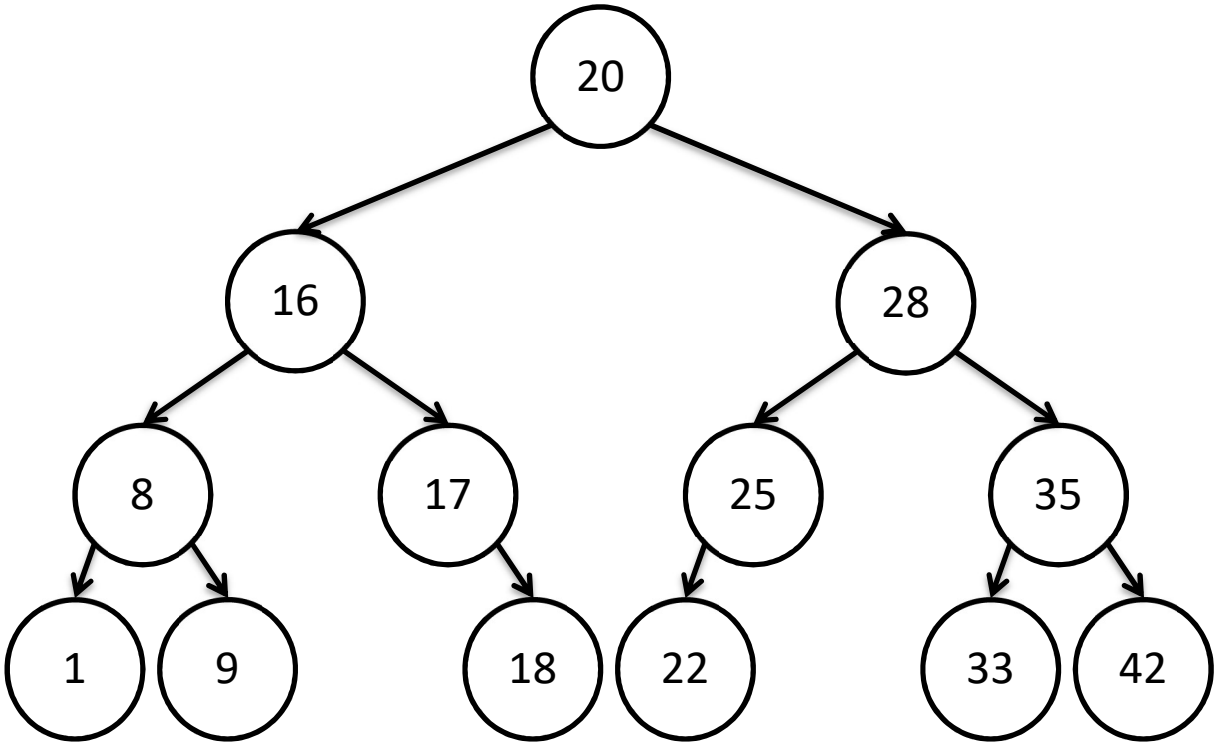
Java Code

3. Write a Method for Binary Search

```
public static Boolean binarySearch(int[] a, int value
```

Binary Search Trees

4. Remove 28 from this BST. Show end result.



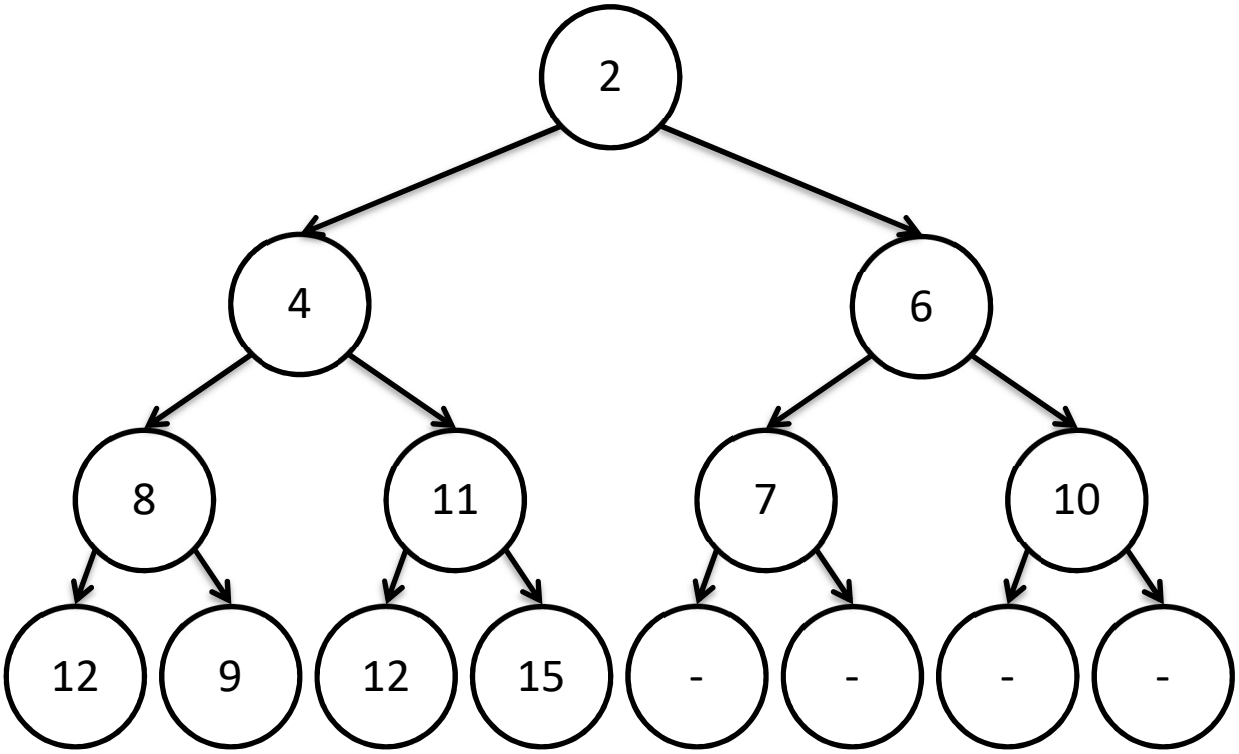
5. Show Pre-order, In-order, post-order and breadth-order traversals of this tree

Heaps

6. Write insert method for a heap

```
public void insert(int a) {
```

7. Remove from the Min Heap and show end result.



8. Using the array implementation of a min heap, show the array after inserting 7

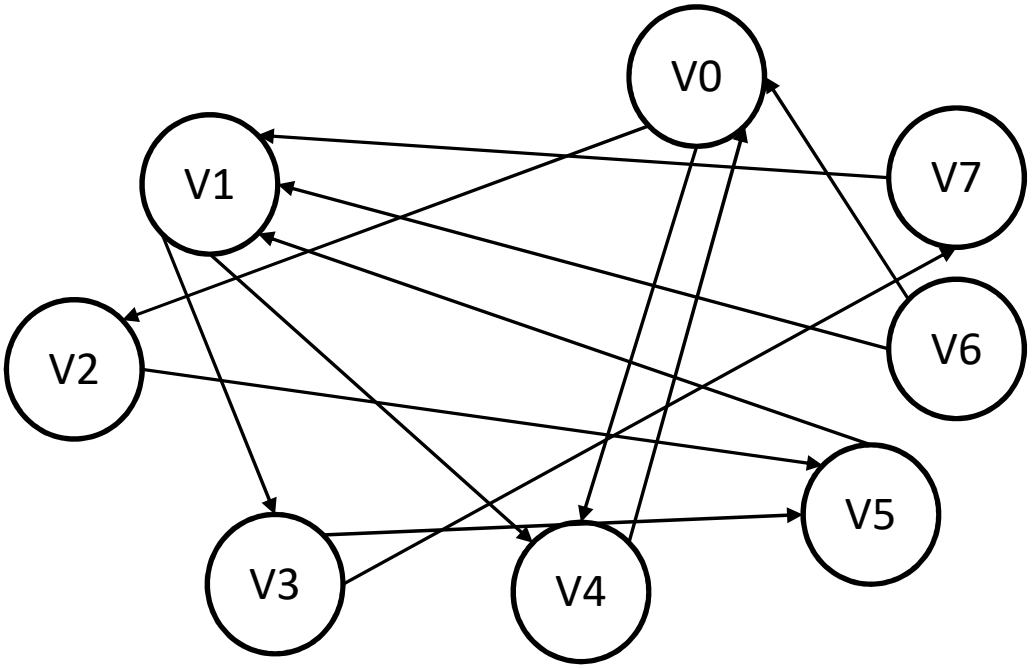
Index	0	1	2	3	4	5	6
Value	5	4	11	8	6	16	20

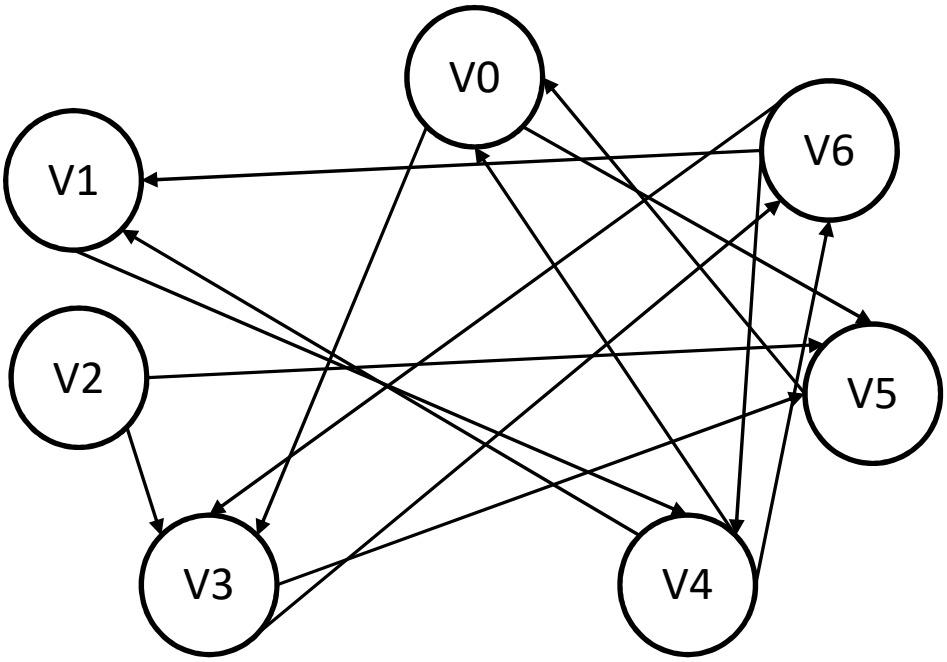
Index	0	1	2	3	4	5	6
Value							

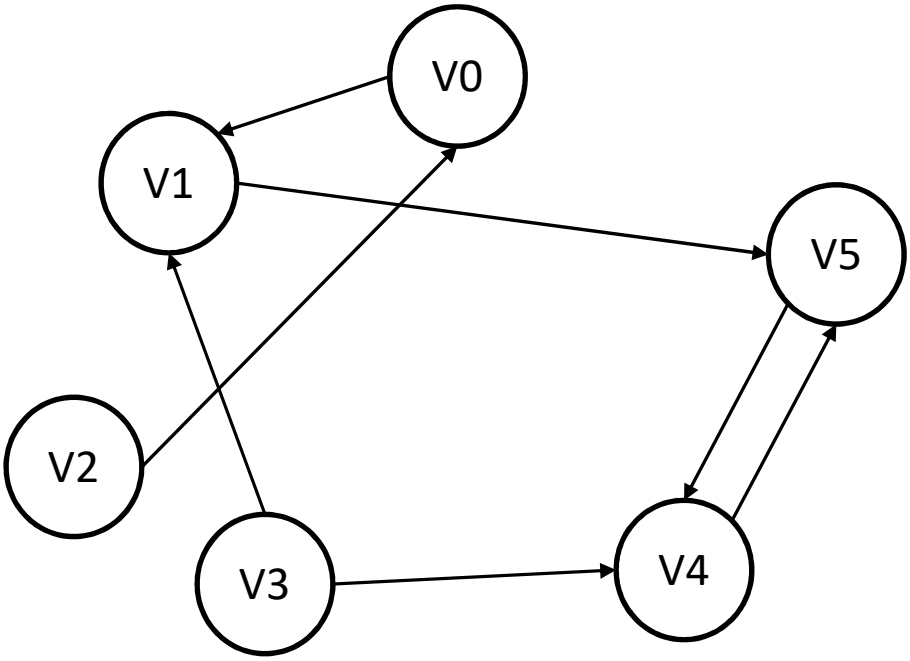
9. Mention Heapsort

Graphs

10. Talk about if Graphs are trees
11. For the Following Graphs:
    - Show an Adjacency Matrix (Row is From, Column is To)
    - Show the DFS and BFS Traversals




V0
V1
V6
V2
V5
V3
V4


V0
V1
V5
V2
V3
V4