

Sample Exam 1 ANSWERS

#1

Red texts are col and row numbers to help with reading.

a)

	0	1	2	3	4
0	0	13	7	0	25
1	0	0	0	15	0
2	0	0	0	12	0
3	0	0	0	0	0
4	0	6	0	0	0

b)

5

0 1 13

0 2 7

0 4 25

1 3 15

2 3 12

4 1 6

2)

a)

	0	1	2
0	0	8	10
B	5	0	0
2	0	9	0

b) Skipped.

3)

- a) $\text{inDeg}(4) = 1$
- b) $\text{outDeg}(4) = 0$
- c) $\text{maxInDeg} = 3$

4)

4a)

head -> [1,]-> [3,]-> [5,]->[7,null] ORIGINAL

head -> [1,]-> [5,]->[7,null] MODIFIED made [1] skip over [3]

the node [3] was removed

4b) Both head and curr pt to last node

5) the list looks like this

5a) head -> [3,-] -> [1,-] -> [2,-]-> [0,null]

The output is: ~~3 2 0 1~~ 3 1 2 0

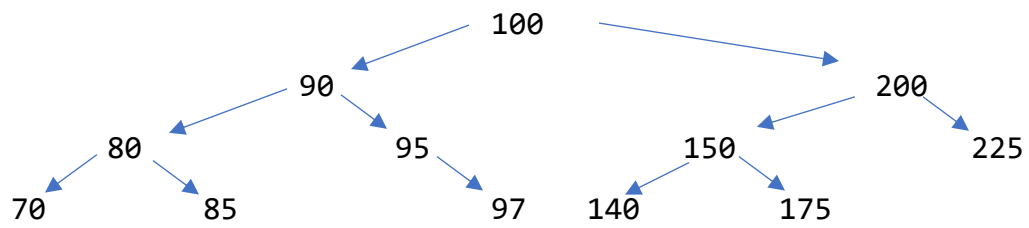
5b) The output is: 1 2 3 4 5 6 7 8 9

6)

- a) $\text{inDeg}(4) = 3$
- b) $\text{outDeg}(4) = 4$
- c) $\text{maxInDeg} = 3$

7)

7a)



7b)

Pre-order print: 100 90 80 70 85 95 97 200 150 140 175 225

7c)

In-order print: 70 80 85 90 95 97 100 140 150 175 200 225

7d)

Post-order print: 70 85 80 97 95 90 140 175 150 225 200 100

8)

8a)

The tree looks like a linkedlist.

```
0
1
2
3
4
5
6
7
```

8b)

8 levels. Level 0 - 7.