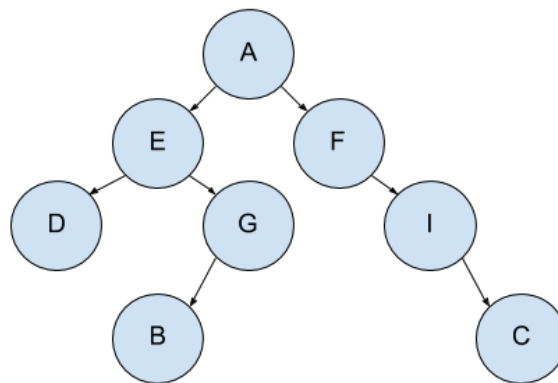


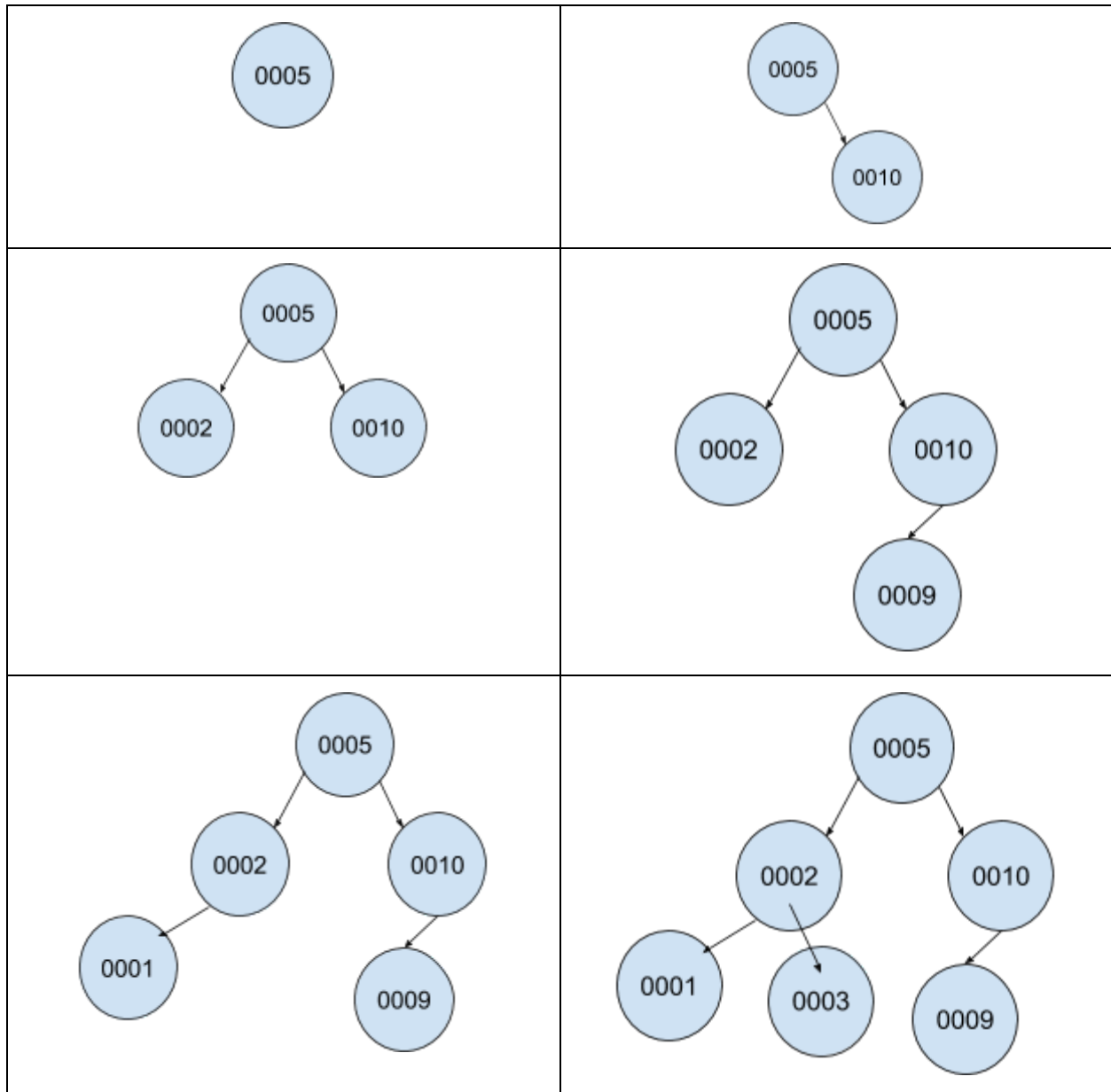
Allison Stansberry
Cpt_S 233
Nadra Guizani
Homework 2
10/15/2020

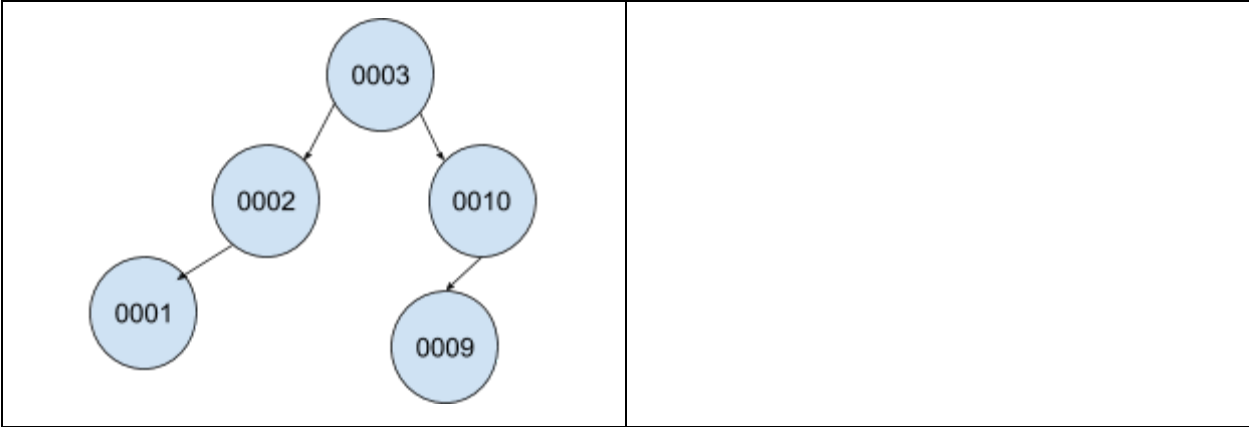
https://github.com/alliecatstanz34/Stansberry_233_HW/tree/HW2

1.

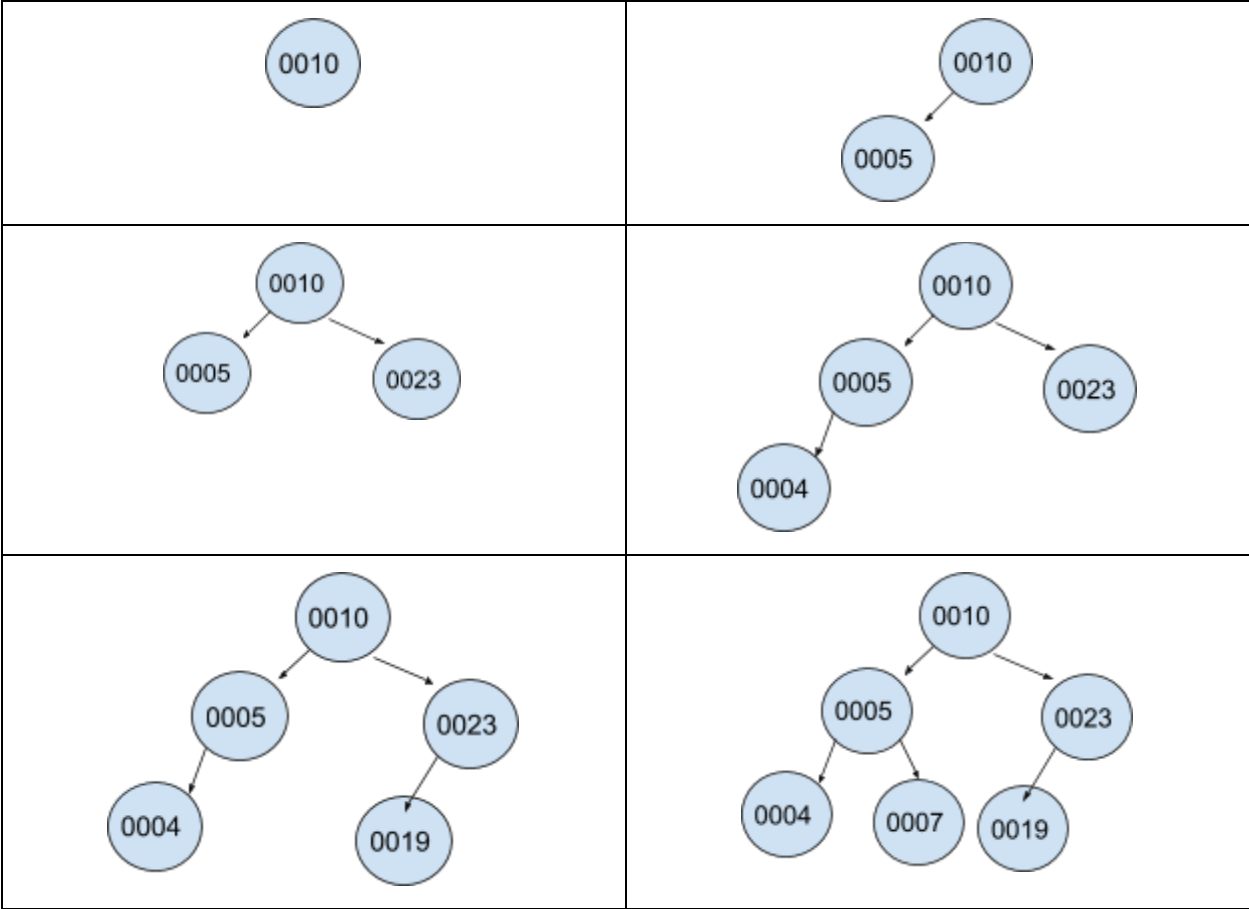


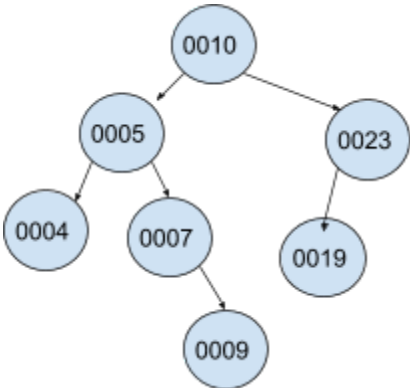
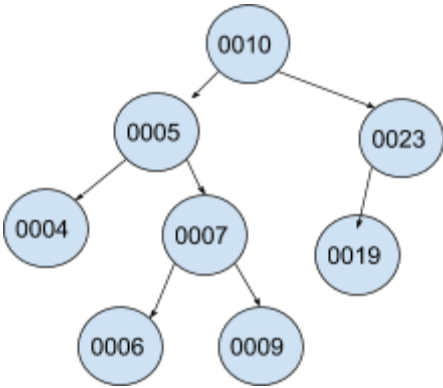
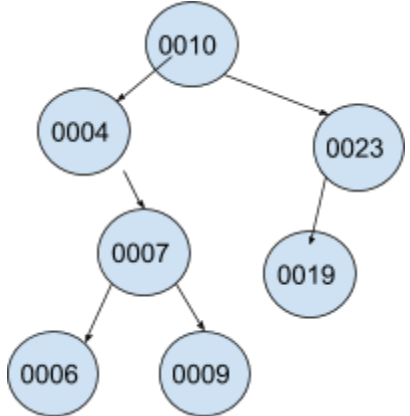
2. To be read from left to right





3.

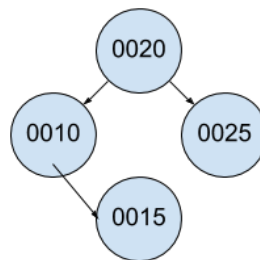


| | |
|--|--|
|  |  |
|  | <p>I tried to get it to fit on one page. I'm sorry :,(</p> |

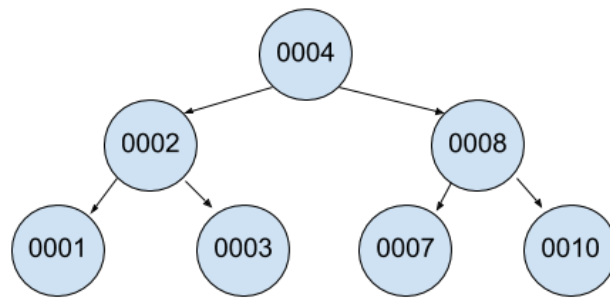
4.

- a. The height of the tree is 4
- b. The depth of node 90 is 1 because it is one level above a leaf
- c. The height of node 90 is 3
- d. Pre: 0100, 0050, 0003, 0001, 0020, 0080, 0052, 0090, 0083, 0099, 0150, 0125, 0152
In: 0001, 0003, 0020, 0050, 0052, 0080, 0083, 0090, 0099, 0100, 0125, 0150, 0152
Post: 0001, 0020, 0003, 0052, 0083, 0099, 0090, 0080, 0050, 0125, 0152, 0150, 0100

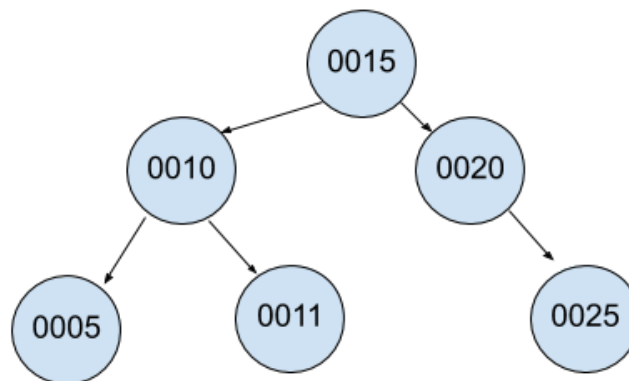
5.



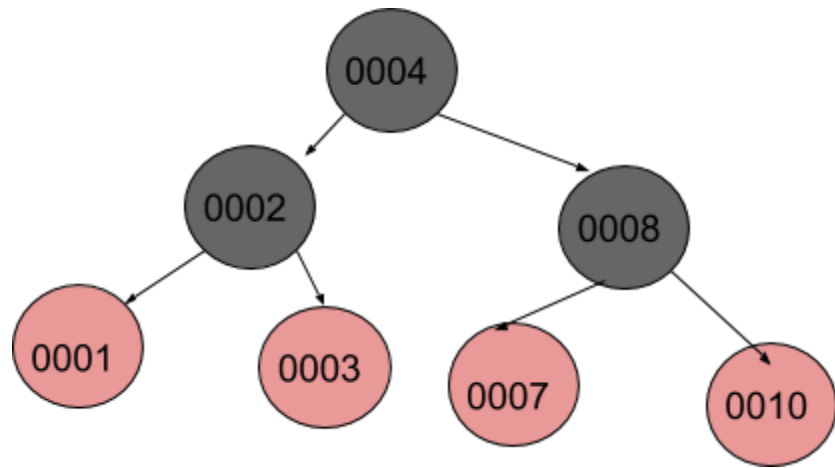
6.



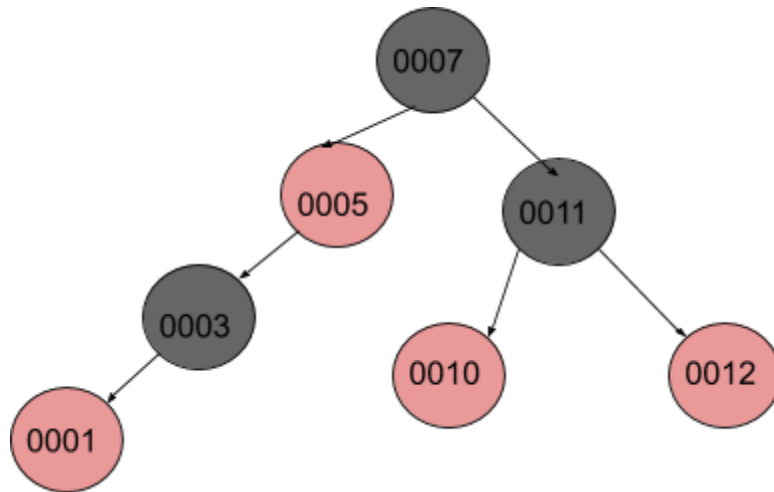
7.



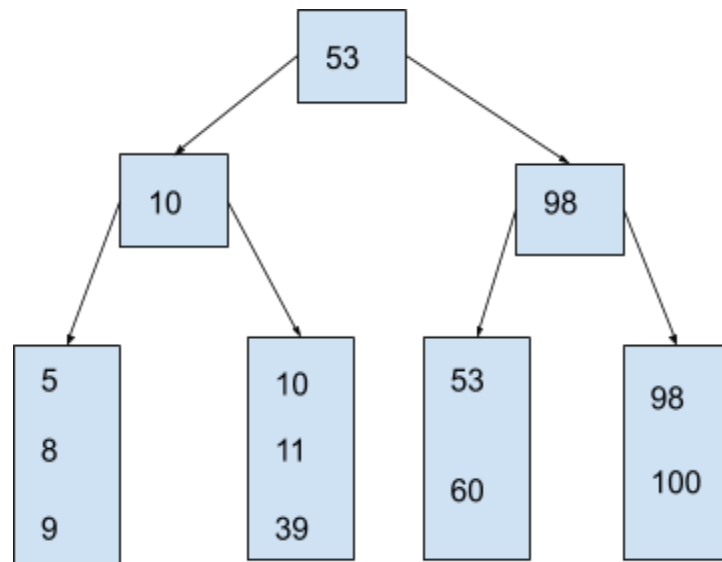
8.

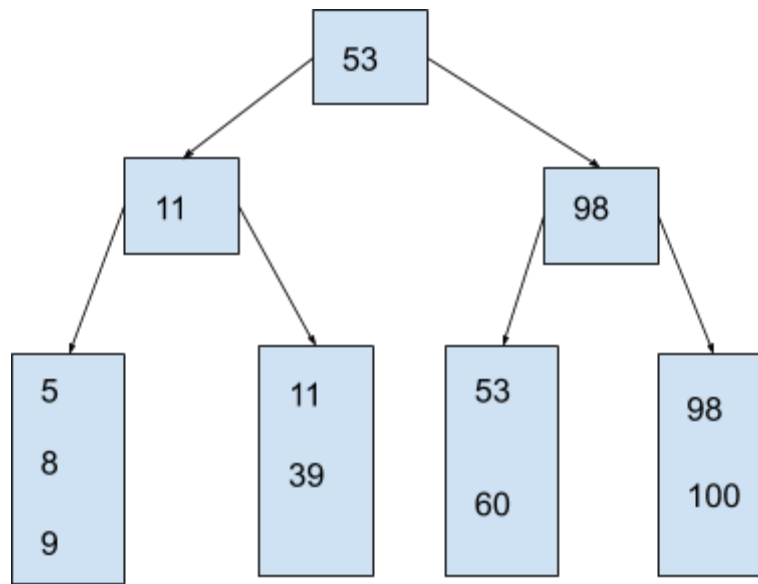


9.



10.





11. $4096 \text{ bytes} * 8 = 32768 \text{ bits}$
 $32768/128 = 256 \text{ M}$

$$4096 - 8(\text{pointer bytes}) = 4088$$

$$4088 / (16(\text{uuid}) + 64(\text{name}) + 8(\text{ytd})) = 48 \text{ L}$$

Worst case is all nodes before leaves are half full and each leaf only has one customer record. Best case all nodes before leaves are full and each leaf contains the max number of records.

$$(\log_{128}(N) + \log_{256}(N))/2 \quad \text{---> worst case + best case divided by 2 for average case}$$

Height for 30000 records $\rightarrow 2$
 Height for 2500000 records $\rightarrow 3$