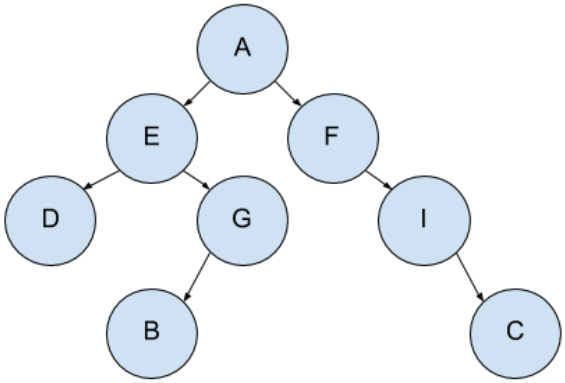
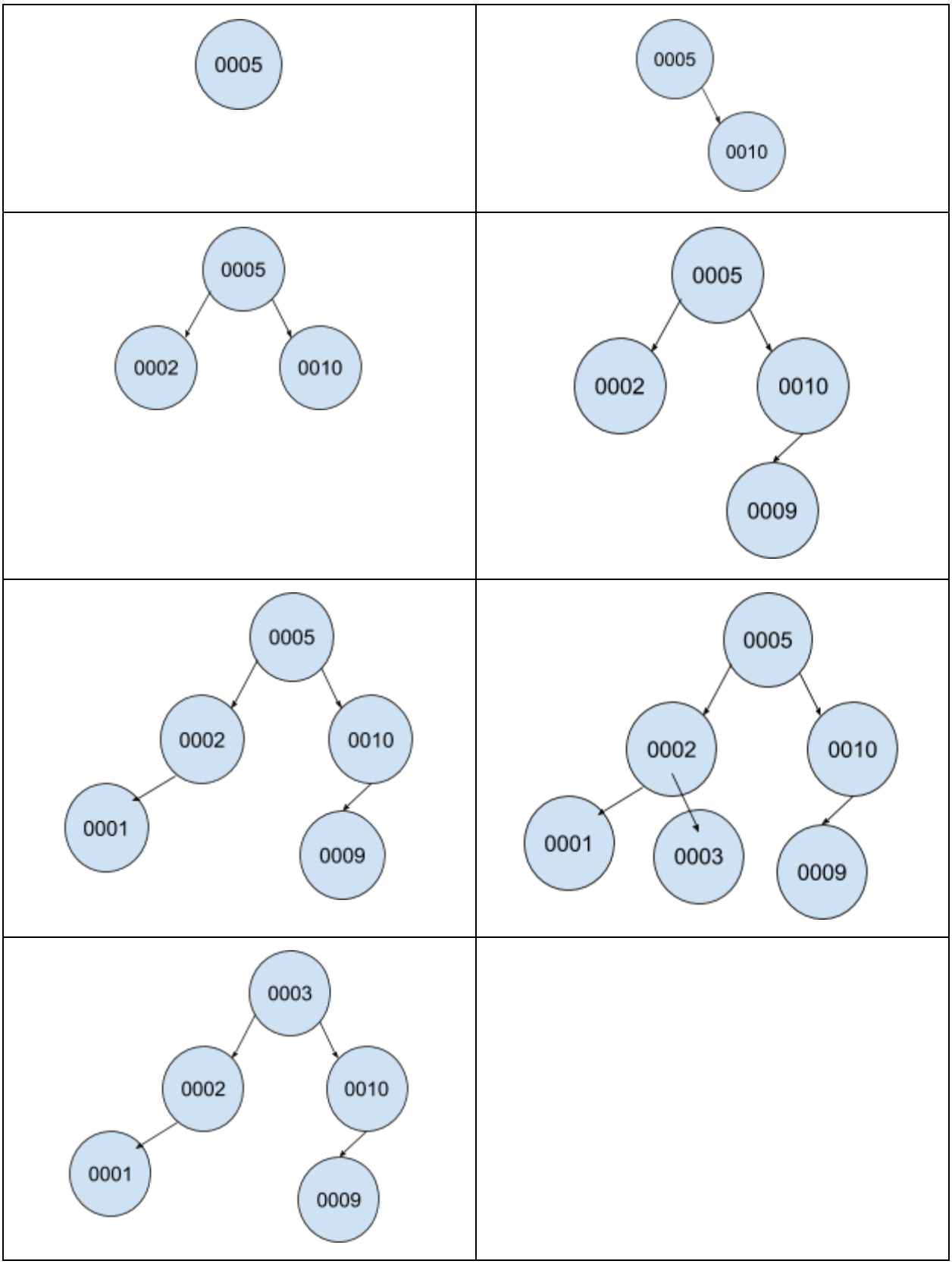
Allison Stansberry
Cpt_S 233
Nadra Guizani
Homework 2
10/15/2020

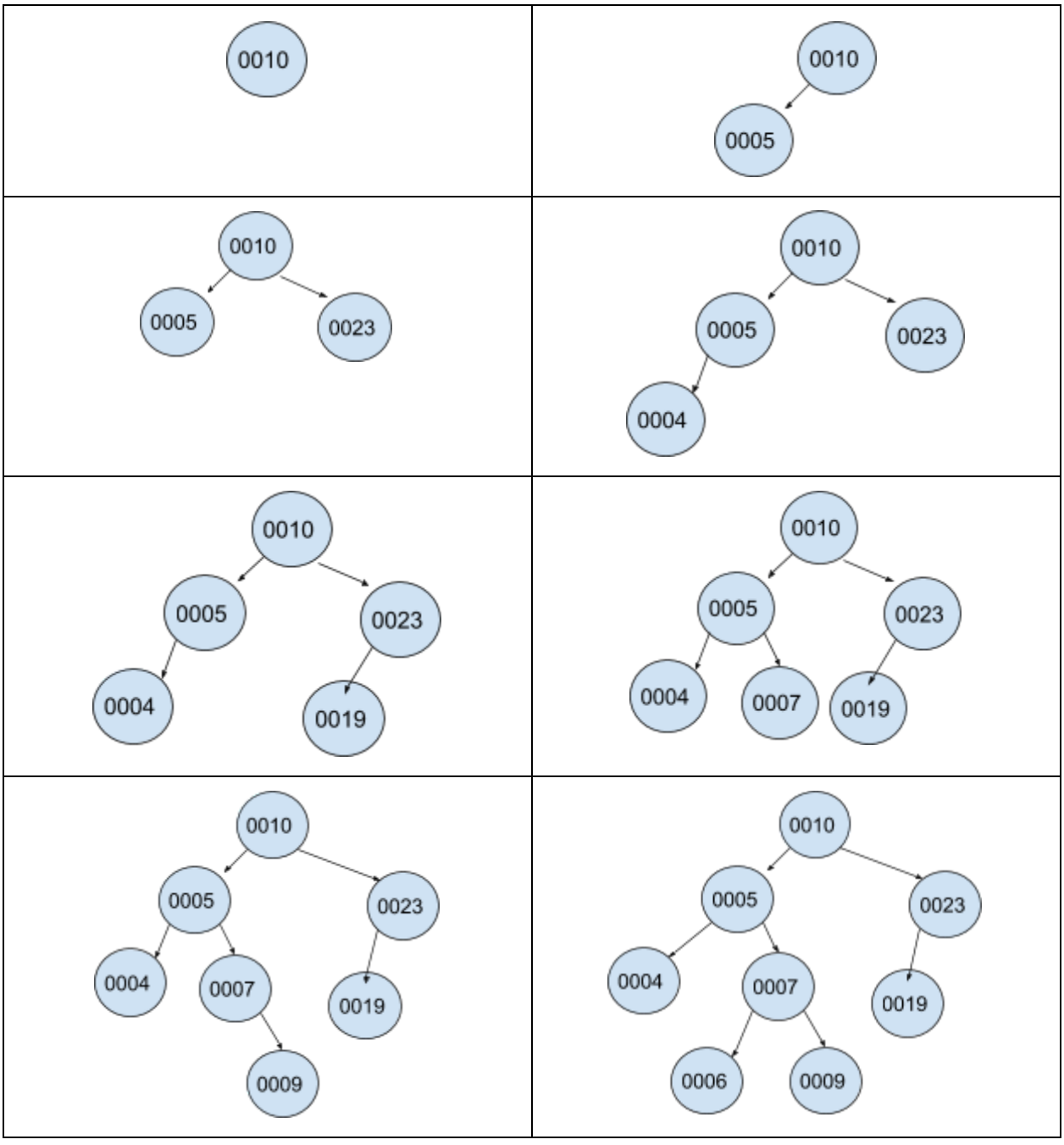
1.



2. To be read from left to right



3.


0010
0010
0005
0010
0005
0023
0010
0005
0023
0004
0010
0005
0023
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0019
0010
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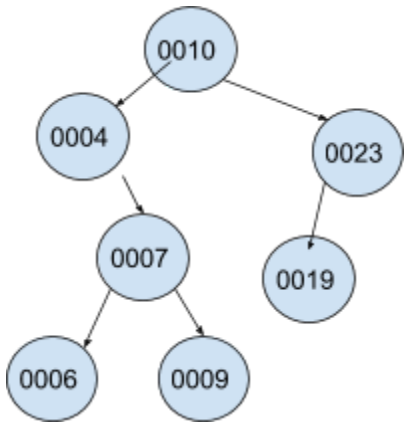
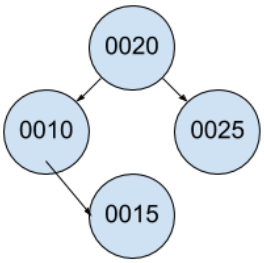
0009

	I tried to get it to fit on one page. I'm sorry :,(

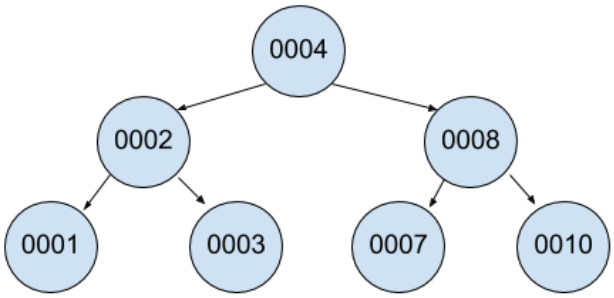
4.

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

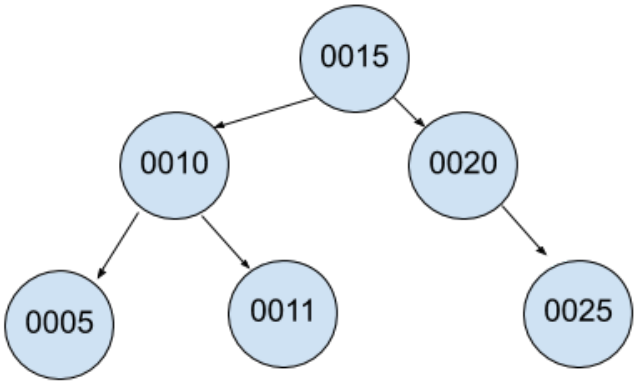
5.



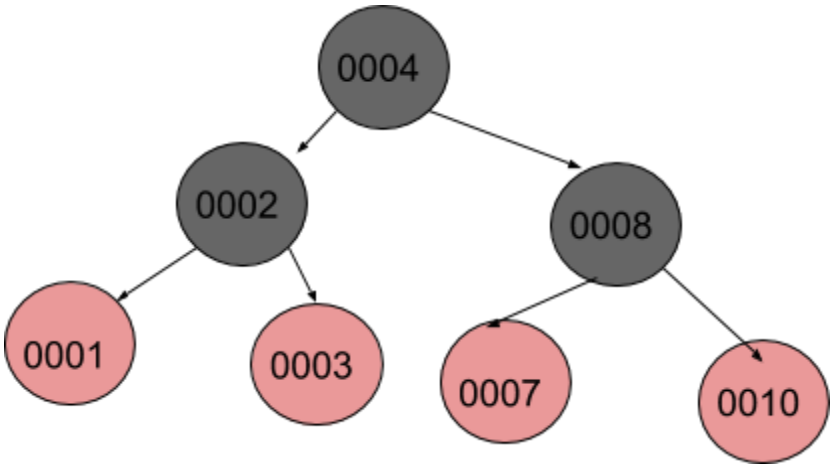
6.



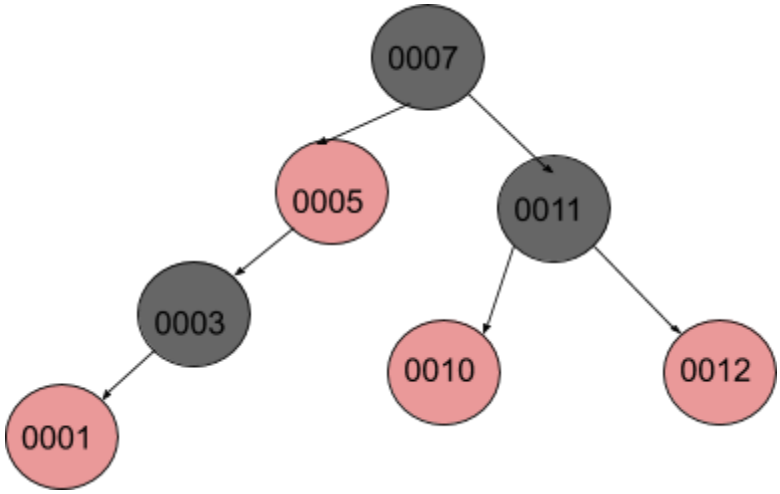
7.


0015
0010
0020
0005
0011
0025

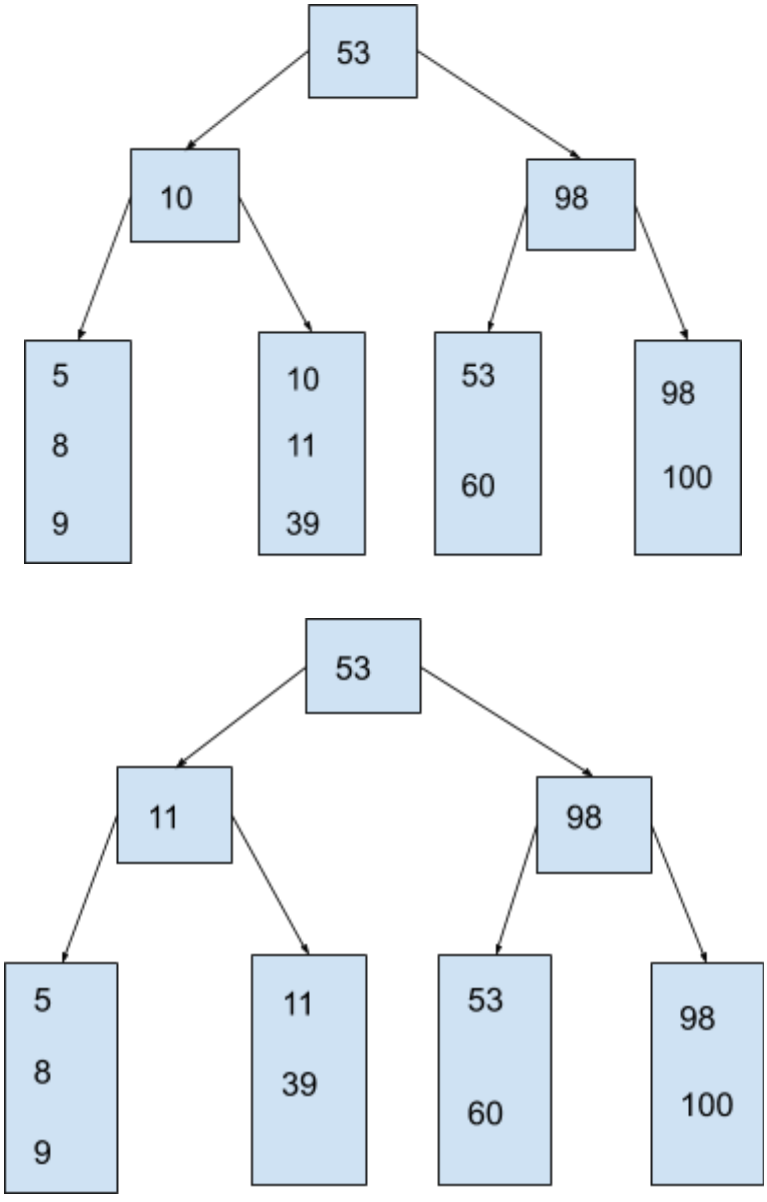
8.


0004
0002
0008
0001
0003
0007
0010

9.


0007
0005
0011
0003
0010
0012
0001

10.



11. 4096 bytes * 8 = 32768 bits
32768/128 = 256 M

4096-8(pointer bytes) = 4088
4088/(16(uuid)+64(name)+8(ytd)) = 48 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.

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

Height for 30000 records → 2
Height for 2500000 records → 3