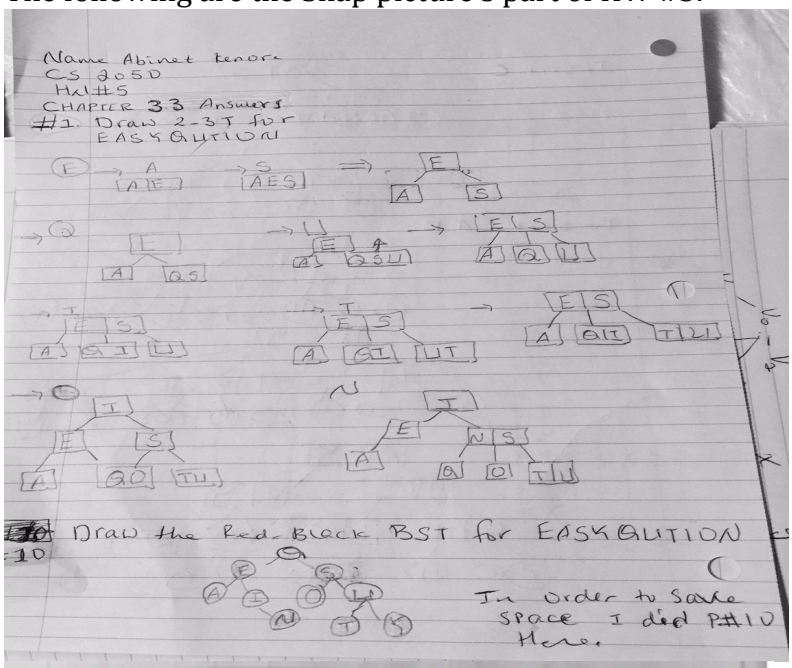
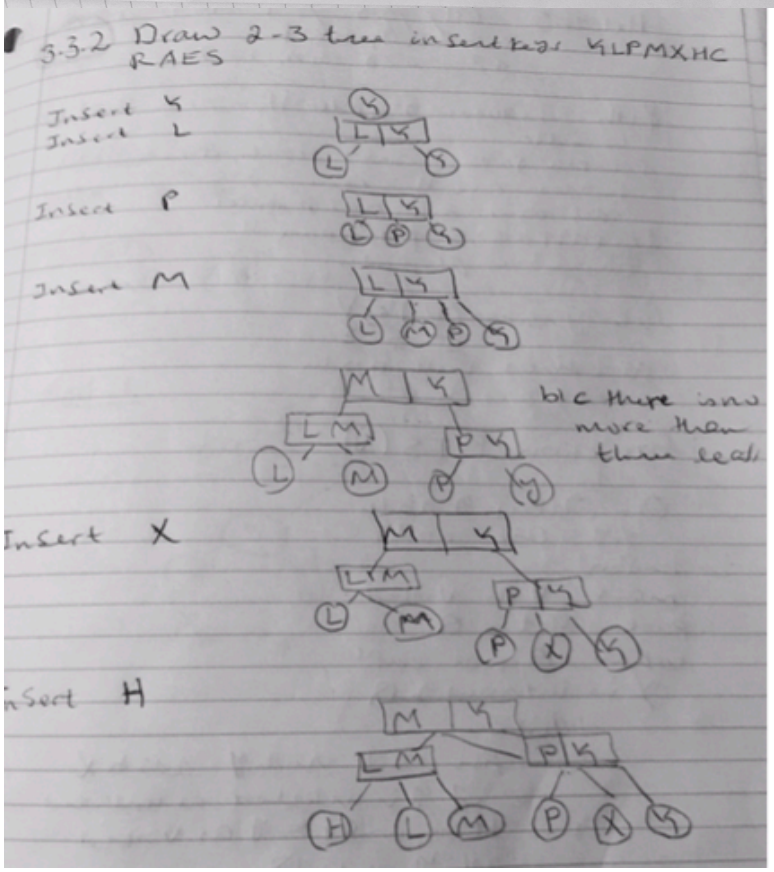
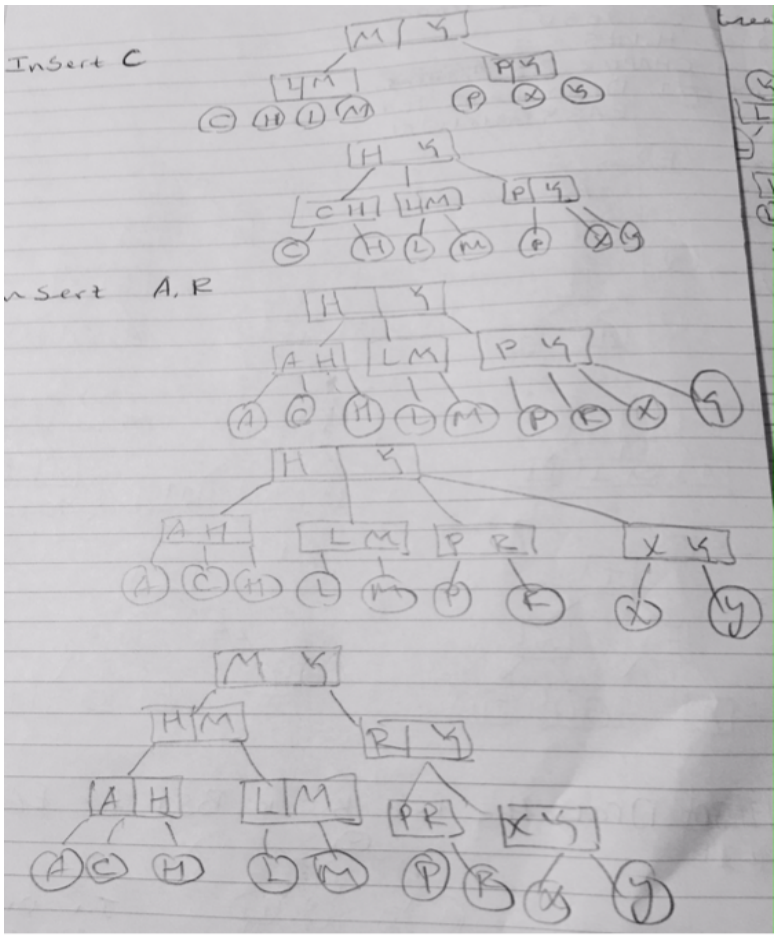
Name Abinet Kenore
CS 2050
HW #5

The following are the Snap picture's part of HW #5.







19) Consider each color as a node

The minimum amount of the nodes a tree can have is n and the maximum is 2^n-1, 4,5,6… 15 comes under the level 4.
That means 2^4-1 =15 It requires 15 bits for the given color with a binary tree.

EXERECISE 3.4 (Solutions)

3.4.4) Source Code in Java.

3.4.10)

(a) Give the contents of the hash table that results when keys E_1 A S_1 Y Q U E_2 S_2 T I O N are inserted in that order into an initially empty 13-item hash table using linear probing (use $h(k) = k$ mod 13 for the hash function for the k-th letter of the alphabeth).

Solution In linear probing, we place an element into $h(k)$th slot or the first slot available after it (if $H[h(k)]$ is already full).

First, a small helper table for the English alphabeth:

Key	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Letter	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
mod 13	0	1	2	3	4	5	6	7	8	9	10	11	12	0	1	2	3	4	5	6	7	8	9	10	11	12

Probes listing:

E	A	S	Y	Q	U	E	S	T	I	O	N
4	0	5	11	3	7	4	5	6	8	1	0
						5	6	7	9		1
						6	7	8	10		2
							8	9			

So the hashtable ends up being:

0	1	2	3	4	5	6	7	8	9	10	11	12
A	O	N	Q	E_1	S_1	E_2	U	S_2	T	I	Y	