

William Stolley HW1

5.1)

H/R: See Attached File

Input = {4371, 1323, 6173, 4199, 4344, 9679, 1989}

Separate Chaining)

0	
1	→ [4371]
2	
3	→ [1323] → [6173]
4	→ [4344]
5	
6	
7	
8	
9	→ [4199] → [9679] → [1989]

Linear Probing)

0	9679
1	4371
2	1989
3	1323
4	6173
5	4344
6	
7	
8	
9	4199

Quadratic Probing)

0	9679
1	4371
2	
3	1323
4	6173
5	4344
6	
7	
8	1989
9	4199

Double Hashing)

0	
1	4371
2	9679
3	1323
4	6173
5	1989
6	
7	4344
8	
9	4199

$$h_2(x) = 7 - (x \cdot 7)$$

5.2)

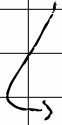
The result of re-hashing the previous table with table size 23 is the same for all k/c there are no collisions

0	
1	4371
2	
3	
4	
5	
6	
7	
8	
9	6173
10	
11	1989
12	1423
13	4199
14	
15	
16	
17	
18	
19	4679
20	4344
21	
22	

5.4)

$$\alpha = \frac{\text{# of elements}}{\text{table size}}$$

Rehash to larger table if $\alpha \geq 2$



Assuming the number of insertions and deletions are similar it would make sense to rehash the table to half size when the load factor is .5 so the new load factor is 1.

$$\alpha = \frac{4}{2} = 2$$

$$\alpha = \frac{1}{2} = .5 \Rightarrow \alpha = \frac{1}{1} = 1$$