CSE 373 Section Handout #5

1. Consider inserting data with integer keys **34, 16, 45, 53, 6, 29, 37, 78, and 1** in the given order into a table of size 9 where the hashing function is **h(k) = k % 11**. Show how you would insert these values into the table using Linear Probing, Quadratic Probing, and Separate Chaining:

Linear Probing

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

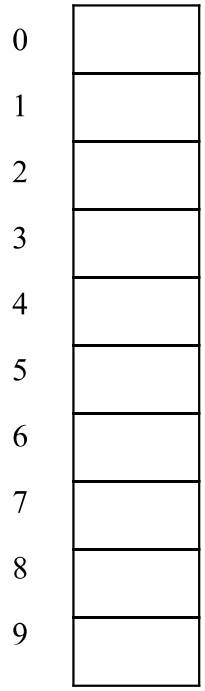
Quadratic Probing

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Separate Chaining

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

2. Consider the following table which inserts values using double-hashing with a primary hash function **h(k) = k % 10**, and a double hash function **g(k) = 7 - (k % 7)**:



a. Insert the following values **21, 36, 26, 11, 6** into the hash table using the above hashing method.

b. Give a single integer that, when we attempt to insert it the table using the above hashing method after inserting the previous values from part a, results in an infinite loop.

c. Is there any way we can avoid double-hashing resulting in an infinite loop? Explain your answer.

3. Write pseudocode for a rehash function for a hash table. The table may not be full when the rehash function is called

4. What effect does the load factor have on the runtime of insert? For each of the following collision resolution schemes, give the worst case asymptotic runtime of insert for the given load factor:

	$\lambda = 0$	$0.5 < \lambda < 1$	$\lambda >= 1$
Linear Probing			
Quadratic probing			
Separate Chaining where chains are linked lists			
Separate Chaining where chains are AVLTrees			