3. [4] For our running hash table, you'll need to decide if you need to rehash. You just inserted a new item into the table, bringing your data count up to 53491 entries. The table's vector is currently sized at 106963 buckets.

- Calculate the load factor (λ):

$$LF = \frac{53491}{106963} = .5 \text{ entries per bucket}$$

- Given a linear probing collision function should we rehash? Why?

Probably yes. Because the LF is already at .5 the time performacing will start increasing per probe and between 50% - 80% is a good time to reshash

- Given a separate chaining collision function should we rehash? Why?

NO. From my understanding it should only be rehashed when the loadfactor gets to around .75. Since each bucket/has a sample index with a list of entries. Giving the time complexity of finding a bucket a constant plus time for list operations

4. [4] What is the Big-O of these actions for a well designed and properly loaded hash table with N elements?

Function	Big-O complexity
Insert(x) *once thru*	$O(1)$
Rehash()	$O(n)$
Remove(x) *once thru*	$O(1)$
Contains(x) *once thru*	$O(1)$

needs to copy to a new hash table