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CSE13s Fall 2020
Assignment 6: Down the Rabbit Hole and Through the Looking
Glass: Bloom Filters, Hashing, and the Red Queen's Decrees
Design Document

What happens when you vary the size of a hash table?

As the size of the hash table gets smaller there would be less non null indices of the hash table and each non null index (meaning that there is a linked list or at least one list node there) would be longer. Longer linked lists mean that it takes longer to traverse and search them on average. A smaller hash table reduces the space taken up by a very small amount (because there would be less null indices) but the trade off would be longer time complexity for searching for a specific node in the hash table and vice versa.

What happens when you vary the Bloom filter size?

As the size of the Bloom filter gets smaller there would be more collisions which would cause a greater chance for there to be a false positive when using the Bloom filter, however I suppose the space the Bloom filter takes up would be slightly reduced at the cost of a less useful Bloom filter. The opposite is true for increasing the size of a Bloom filter.

Do you really need the move to front rule?

You do not need the move to front rule to successfully work with a linked list in this project. However, when the move to front rule is on it reduces the average seek length because when a node is moved to the front (AKA head) of the linked list, the next time it is searched we won't have to traverse as many nodes in the linked list to find the node we found before. This is also proven when comparing the statistics output of our program with and without the move to front rule.