1. Observe your output for quadratic probing and double hashing and compare the performance of both techniques for the build and find operations.

**By comparing the data, I collected from the result, between quadratic probing and double hashing. Based on the building time, which is the time took to hash all the data into a hash table, double hashing is faster than quadratic probing. Almost two times slower can be found for hash into a quadratic probing hash table compare with double hashing. However, the data that can be successfully found after build the hash table have 10%~20% difference by using quadratic probing and double hashing, which the success rate for found the data by using quadratic probing is always higher than double hashing.**

1. Which hashing technique performs better when searching and why?

**As I mention above, the data that I collected shows quadratic probing performs better when searching. Because double hashing is a way that we use to extremely reduce collision even both of the hashing functions using the same k value, yet the data could be more separate in the table and makes the search after insertion become hard. Thus, I think the k value is another factor besides the hash function that can make it performs better. Because, in the quadratic probing, if the k value is bigger, then I will have better chance to successfully search the value.**

1. Justify the worst case complexity of each of your experimental profiling results and

compare them to the worst case complexity of the theoretical results for the build times with each of the hashing techniques.

**The worst case of complexity of quadratic probing and double hashing from my experimental profiling results was when the input size is 500001, which is the load factor is over 0.5. But the complexity is still close to O(1), the theoretical results of build times is O(n) which the case we have to use resize, as here I think the collisions are still very rare when the load factor is less or equal to 0.5. As the increasing of data insertion, the building time for both of quadratic probing and double hashing shows a sequentially increase and more close to the O(1).**

**A screenshot of text

Description automatically generated**