CISC 235 2015W
Brianna Rubin

I confirm that this submission is my own work and is consistent with the Queen's regulations on Academic Integrity.

My results were perfectly aligned with the hypothesis. As I decreased my table sizes, the average probe sequence lengths increased for both types of collision handling. However, with quadratic probing, these increases were far more significant. While keeping this value under 4, I was able to limit my table size for double hashing down as low as 2053. For all 3 combinations of hash functions, this value remained fairly consistent, ranging from 3.8 to 3.9. However, at this table size, the average probe sequence length for quadratic probing, when c1 and c2 were set to 2, was 12. In order to achieve the required efficiency for quadratic probing, I had to increase my table size to 4695. With this large table size, when cc1 and c2 were set to 1, the average probe sequence length was extremely low at 1.3. Although regardless of this very low result, the amount of memory required to store the keys makes quadratic probing an extremely inefficient method for handing collisions.

It is likely that secondary clustering is much more common in quadratic probing, because the addresses that are hit are less regular. In quadratic probing, if two keys are initially inserted at the same point, they will hit all the same addresses. Further, more keys being inserted at the same starting address will result in a longer chain of addresses hit. Also, in quadratic probing, the difference between the addresses being hit each time a collision occurs is much larger than that of double hashing. This explains the larger table size required for quadratic probing.