

Student: Zili Luo
Student#: 20001744

CISC 235
Assignment 3
Data Analyze

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

Part1.

For convert string of lower characters to integer, I convert every character in string to their ASCII and then minus 67 to ensure every character will be converted to two digits (ie. "a" -> 30). And put them together (ie. "abc" -> 303132)

Part2 and Part3.
See code part.

Part4.

Run result:

```
table size for quadratic probing when c1=1 , c2=1 (average probe length <=5):  
2529  
table size for quadratic probing when c1=2 , c2=0.5 (average probe length <=5):  
2529  
table size for quadratic probing when c1=0.5 , c2=2 (average probe length <=5):  
2526  
table size for double hashing when h(k)' = k % m , h(k)'' = k^2 (average probe length <=5):  
2531  
table size for double hashing when h(k)' = "sum of all digits of k" , h(k)'' = k^2 (average probe length <=5):  
2563  
table size for double hashing when h(k)' = k % m , h(k)'' = "sum of all digits of k" (average probe length <=5):  
2521
```

From the result, the average table sizes for double hashing (2538.3) are about 0.4% larger than quadratic probing (2528). So, the result **does not** support the hypothesis that Double Hashing allows us to use smaller tables than Quadratic Probing does, when trying to achieve a particular level of performance.