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Assignment #6 Written Questions

Give an example of two words that would hash to the same value using stringHash1() but would not using stringHash2().

“car” and “arc”

Why does the above make stringHash2() superior to stringHash1()?

Because the order matters with stringHash2(), whereas the order of the letter with words does not matter with stringHash1().

When you run your program on the same input file but one run using stringHash1() and on the other run using stringHash2(). Is it possible for your size() function to return different values?

It is not possible for your size() function to return different values, because the hash functions don’t increment the count.

When you run your program on the same input file using stringHash1() on one run and using stringHash2() on another, is it possible for your tableLoad() function to return different values?

It is not possible for your tableLoad() function to return different values, because the same amount of links and resizes are added to the array.

When you run your program on the same input file with one run using stringHash1() and the other run using stringHash2(), is it possible for your emptyBuckets() function to return different values?

It is possible for your emptyBuckets() function to return different values, because with stringHash1() there can be more possible collisions than with stringHash2() so the number of collisions can vary.

Is there any difference in the number of 'empty buckets' when you change the table size from an even number, like 1000 to a prime like 997?

Yes, because of random distribution.

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Using the timing code provided to you, run your code on different size hash tables. How does changing the hash table size affect your performance? Please show results as a graph for various table sizes. For this test, remove the "resize" capability of the table. Be sure to use a large text file. You can find many online (e.g. http://norvig.com/big.txt)

(1, 41.330002)

(2, 6.53)

(3, 1.82)

(4, .8)

(5, .39)

(6, .23)

(7, .13)

(8, .07)

(9, .05)

(10, .04)

(11, .03)

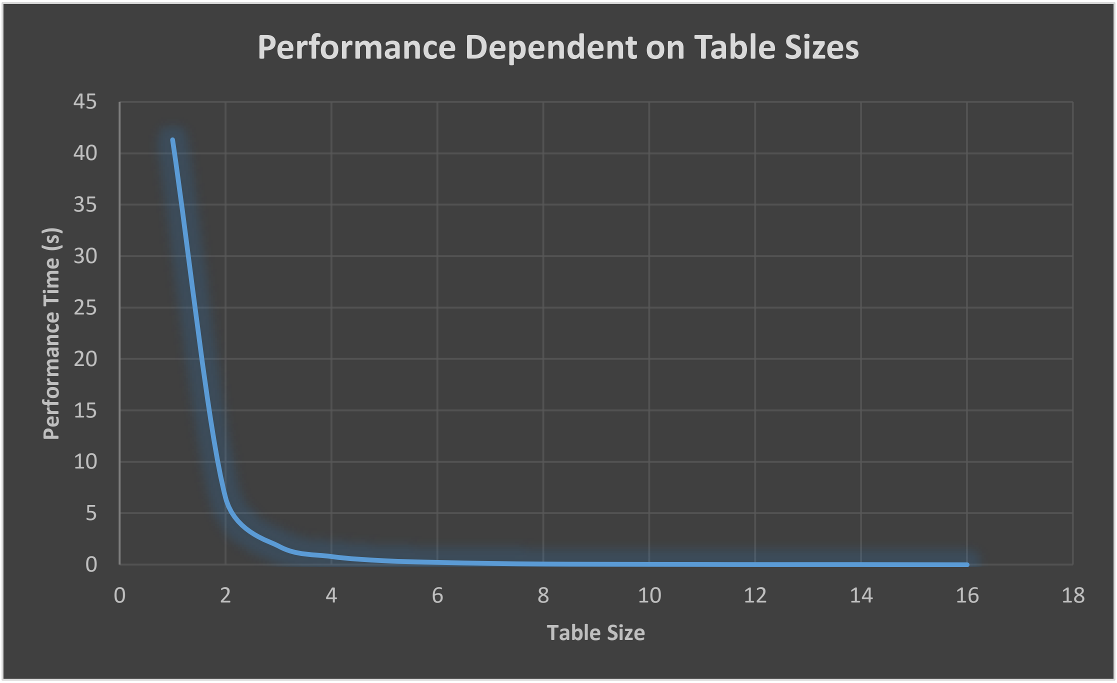
(12, .02)

(13, .02)

(14, .02)

(15, .01)

(16, .00)


Performance Dependent on Table Sizes
Performance Time (s)
Table Size