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Assignment 6 Answers

1. Give an example of two words that would hash to the same value using hashFunction1 but would not using hashFunction2.

eat and tea should return the same hashing value because they have the same letters but are just in different orders.

2. Why does the above observation make hashFunction2 superior to hashFunction1?

hashFunction2 is superior to hashFunction1 because it takes into account letter position. HashFunction1 just takes into account whether the letter is in the word.

3. When you run your program on the same input file once with hashFunction1 and once with hashFunction2, is it possible for your hashMapSize function to return different values?

No it is not. This is because each work is a hashLink and can also be a bucket.

4. When you run your program on the same input file once with hashFunction1 and once with hashFunction2, is it possible for your hashMapTableLoad function to return different values?

No, the table load doesn't change how the links are implemented and distributed throughout the map.

5. When you run your program on the same input file once with hashFunction1 and once with hashFunction2, is it possible for your hashMapEmptyBuckets function to return different values?

Yes, each function distribute files differently, so there could be more empty buckets in one hash compared to the other.

6. 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, there are fewer empty buckets. If the number of buckets is prime, the links will be more evenly distributed. This makes adding, removing, and searching for keys more efficient.