ITCS 2214 Data Structures
Assignment 4

Download the assignment from Moodle. Change the name of the folder to your first-name underscore last-name underscore assign4 (FirstName_LastName_Assign4). Your implementation will be in Main.java. In the Read Me file, write a description of your implementation. Upload a zip folder to Moodle before the deadline.

In this assignment, you will implement your ***perfect hash function***. The input will consist of a list of 28, 500 words. The words are in the words.txt file. Read the file into your program and hash the words to a location in your hash table. You need to implement an open addressing resolution algorithm – find another location in the hash table that is available. Keep trying to insert the word until an available location is found. The goal is to distribute the words/keys as evenly as possible while minimizing collisions. You will use an array with 50, 000 buckets. You need to keep track of the total collisions.
You can use other variables and methods in your implementation. You can also store and shuffle the words once you read them into the program. The objective is to get the least amount of collisions.

The pseudo-code should be as follows:
1. Read the words from the file
2. Hash the words to an index position using your hash function.
3. If a collision is detected increment the total collision count
4. Continue trying to find an available bucket for the word, each time incrementing the total collisions if there is a collision.

You should write a detailed description of your hash function in the Read Me file. You will be graded relative to your classmate. The best hash function/least collisions will be scored the highest, followed by the second highest and so on. Do NOT use Java's built-in hash function (hashCode).

LET THE GAMES BEGIN!!!

NB: your insertion has to be inside of a loop. This loop continues until an available bucket is located. Every time there is a collision, the total collision count is incremented.

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