Assignment 4 (Programming): Design and Implementation of a Θ(n) Algorithm to Determine the Most Frequently Occurring Integer in an Array of Integers

Due by: Feb. 25th, 11.59 PM

In this programming assignment, you will design and implement a Θ(n) algorithm to use a hash table to determine the most frequently occurring integer in an array of 'n' integers as well as print the associated largest frequency.

You are given a singly Linked List-based implementation of a Hash table. You could augment this code to do the assignment. The main function is setup to generate an array of random integers (of size *numElements*) in the range [1...*maxValue*]; the hash function is given by *K* mod *hashTableSize* where *K* is an integer data in the array.

Submission (in Canvas):
Submit Items 1 and 3 together as a PDF file and submit item 2 as a .cpp file

1) Explain of your algorithm and justify that its time complexity is Θ(n) for an array of 'n' integers.
2) The complete C++ code, including the augmentation/changes you made to the assigned code.
3) A screenshot of the output obtained by running the code for *numElements* = 50; *maxValue* = 15 and *hashTableSize* = 7.