Project: Hash Table Documentation

This project is a hash table that allows the user to do various functions. The main point of the project is to create a blank hash table that the user can then insert and find nodes on. The user can also choose to run a premade list of commands for a premade hash table. This allows the user to customize the table and then test to see if it works. There is also a menu that allows the user to chose what option that they want to take.

The program starts off with the customary visual studio opening includes of iostream and using namespace std, along with including the header with the hash table entry class and table class in it. In the header it makes a node that encases the key and value functions. After that is a hashtable class that has the table size under private. In the public of the hash table it has multiple functions. The first makes allows the table size to be changed by the user. The next is a void that takes the key and value that has been input and then runs it through a hashing function to implement into the hash table in its place based on the hashed value. The next function takes the key input and hashes that key then looks through the table till the key matches the table value. After that it displays that key value. Another is the show function that goes through the list/array and displays all keys and values stored inside.

The insert function has a collision case that when it is trying to create a new place in an already filled place it looks at the data implemented. If the data is the same as the one trying to be implemented, it ends the insertion due to the node already being in the array. Otherwise the array will override the current value with the new inserted value and then chain the old value and the key as a nextHash in a list at the array node for future reference.

The cpp section is the main function that has variables for inputted data and a new hash table for the user. It also welcomes the user and asks for them to input a new table size has a checkpoint that can be looped back to. It then calls the user command function that gives the choices in the main menu. After that it asks for a number input and then asks for input/runs a function depending on the number given. Choices are insert key and value to table, search for a key in the table, run the automated test function or exit from the system. The other main function is the test function that runs through a set if predetermined functions and values.