Quiz 5 - Tuesday

7 points

Nov 26, 2024

Name:

Student Number:

Create a Hash Table saving data (`insert()`), searching for a key and **returning** the corresponding value (`search()`).

Example:

```c
#define TABLE_SIZE 10

unsigned long hashFunction(char *str){
 unsigned long hash = 5381;
 int c;
 while ((c = *str++)){
  hash = ((hash << 5) + hash) + c; // hash << 5 = hash * 2^5
 }
 return hash % TABLE_SIZE;
}

int main(){
 HashEntry **hashTable = calloc(TABLE_SIZE, sizeof(HashEntry*));

 insert(hashTable, "apple", 0.3);
 insert(hashTable, "banana", 1.1);
 insert(hashTable, "orange", 0.9);

 printf("Protein in 'orange': %0.1lf\n", search(hashTable, "orange"));
 printf("Protein in 'cherry': %0.1lf\n", search(hashTable, "cherry"));

 freeTable(hashTable);
}
```

- **Input**: `"apple"`, `"banana"`, and `"orange"` are the **keys**, while `0.3`, `1.1`, and `0.9` are their corresponding values.
- **Explanation**: The output of the above code:

```
Protein in 'orange': 0.9
Protein in 'cherry': -1.0
```

IMPORTANT NOTES:

- The Hash Function is already given and there is no need to deallocate the memory.