

```
1  #ifndef SYMBOLTABLE_H
2  #define SYMBOLTABLE_H
3
4  #include<iostream>
5  #include<string>
6  #include<stack>
7  #include<fstream>
8
9  using namespace std;
10
11 //simple node class with variable for if a node is to be seen
12 //all seen variables are true, if false needed, a function will be added later
13 struct Data
14 {
15     string type;
16     string name;
17     int address;
18 };
19
20 class Node
21 {
22 public:
23     Node() : data({ "int", "", 5 }), scope(0), ptrToNext(NULL) {}
24     Node(const Data& theData, int scopeVar, Node *newPtrToNext) : data(theData),
25         scope(scopeVar), ptrToNext(newPtrToNext) {}
26     Node *getNext() const { return ptrToNext; }
27     Data getData() { return data; }
28     int getScope() { return scope; }
29     void setData(const Data& theData) { data = theData; }
30     void setNext(Node *newPtrToNext) { ptrToNext = newPtrToNext; }
31     void setScope(int scopeVar) { scope = scopeVar; }
32     ~Node() {}
33 private:
34     Data data;
35     int scope;
36     Node *ptrToNext;
37 };
38
39
40 class LinkedList
41 {
42 public:
43     //Default Constructor for a linked list
44     LinkedList();
45
46     //set modifier
47     void insert(const Data& insertedData, int scope);
48
49     //tests if the list is empty (used for the hashtable class)
50     bool empty();
51
```

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52     //prints the list
53     void print() const;
54
55     //deletes all variables in the given scope from the hash table and puts them ↗
56     //into a stack to be inputted into a larger stack
57     void del(int scope);
58
59     void remove() { tempStack.pop(); }
60
61     //returns the layer to insert the new variable
62     Node *search(const string& searchTerm);
63
64     //outputs the stack
65     stack<Data> getStack() { return tempStack; }
66
67     //destructor
68     ~LinkedList() {}
69 private:
70     Node *ptrToFirst;
71     stack<Data> tempStack;
72 };
73
74 class HashTable
75 {
76 public:
77     //Default Constructor for a Hash Table
78     HashTable();
79
80     //Converts a String to a key for sorting
81     int convertString(const string& strToConvert);
82
83     //inserts the string in the position designated by the key
84     //if a string is already in the same scope, the variable doesn't get inserted ↗
85     // (error code needs to be written)
86     void insert(const Data& data);
87
88     //I'm not sure why you want two different functions for find local vs. find ↗
89     //all
90     //This 'find' just finds the first available instance of the variable and ↗
91     //ignores the rest
92     Data* find(const string& searchString);
93
94     //initiates a new scope and indexes the localScope level
95     void newScope();
96
97     //deletes all of the variables in the closed scope from the hash table and ↗
98     //puts them in a stack
99     //closes the scope and decrements the scope counter
100    //instructions: decrement the scope counter anytime you are closing a scope
101    //does not need to be decremented if a new scope is opened inside an existing ↗
102    scope
```

```
98     void closeScope();
99
100     //closes all scopes and removes all variables from the hash table
101     //prints all variables in the stack
102     void print();
103
104     //destructor
105     ~HashTable() {}
106
107 private:
108     LinkedList *table[23];
109     int counter;
110     int localScope;
111     stack<Data> obsoleteVariables;
112 };
113
114 #endif
```