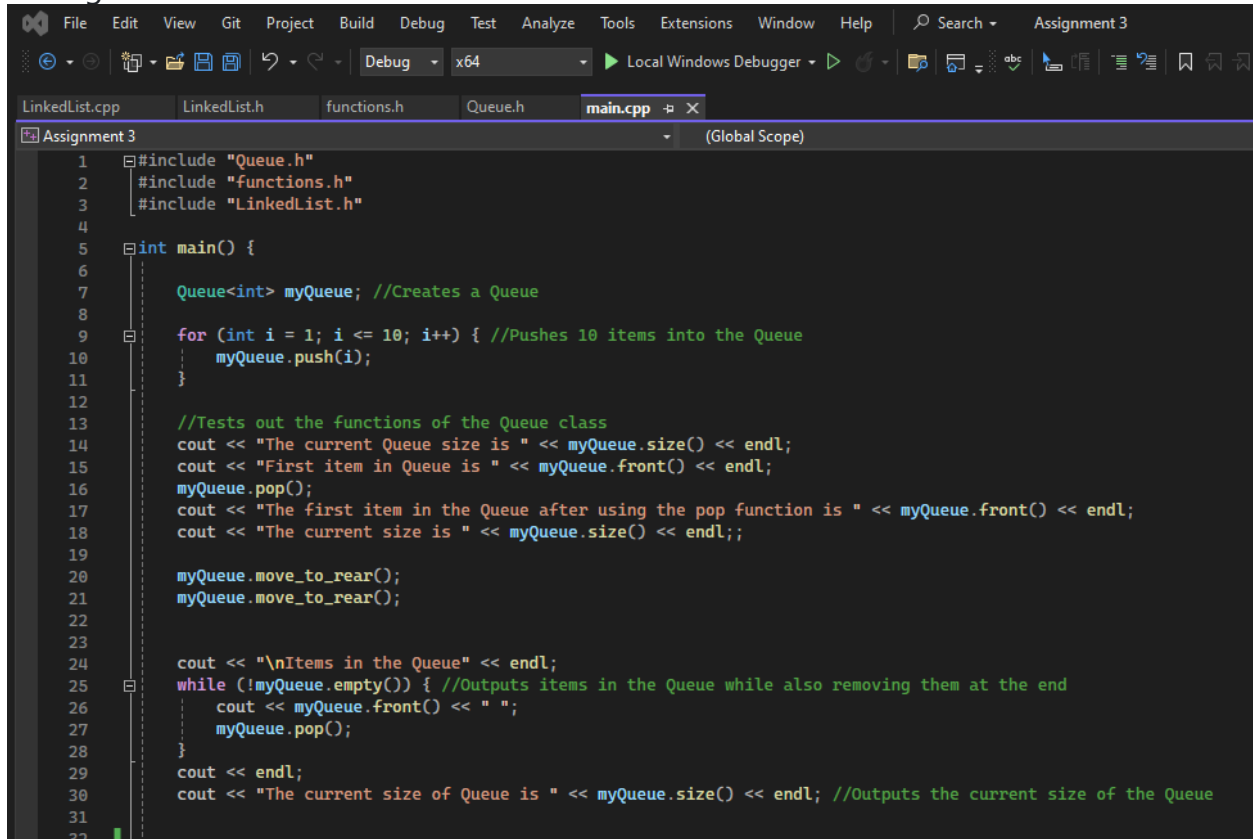


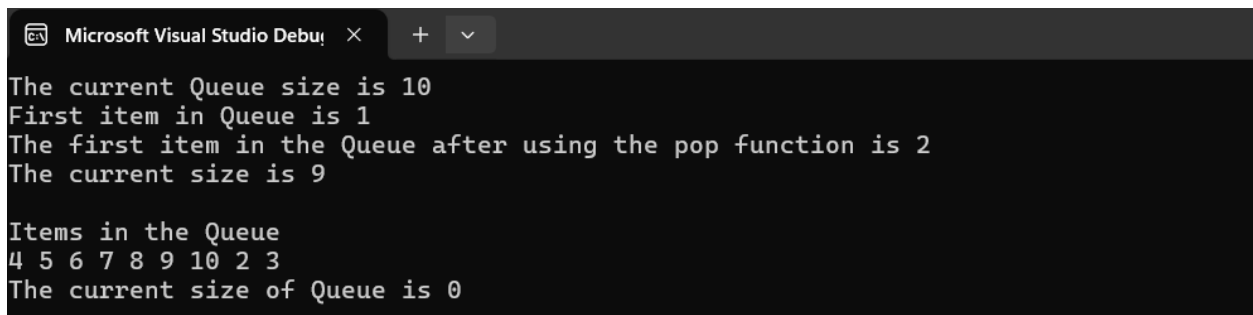
# CS-303-Assignment-3

Contains the output when the code is runned.

Main.cpp Queue  
testing:



```
1 #include "Queue.h"
2 #include "functions.h"
3 #include "LinkedList.h"
4
5 int main() {
6     Queue<int> myQueue; //Creates a Queue
7
8     for (int i = 1; i <= 10; i++) { //Pushes 10 items into the Queue
9         myQueue.push(i);
10    }
11
12    //Tests out the functions of the Queue class
13    cout << "The current Queue size is " << myQueue.size() << endl;
14    cout << "First item in Queue is " << myQueue.front() << endl;
15    myQueue.pop();
16    cout << "The first item in the Queue after using the pop function is " << myQueue.front() << endl;
17    cout << "The current size is " << myQueue.size() << endl;;
18
19    myQueue.move_to_rear();
20    myQueue.move_to_rear();
21
22    cout << "\nItems in the Queue" << endl;
23    while (!myQueue.empty()) { //Outputs items in the Queue while also removing them at the end
24        cout << myQueue.front() << " ";
25        myQueue.pop();
26    }
27    cout << endl;
28    cout << "The current size of Queue is " << myQueue.size() << endl; //Outputs the current size of the Queue
29
30
31
32 }
```



```
Microsoft Visual Studio Debug Console
The current Queue size is 10
First item in Queue is 1
The first item in the Queue after using the pop function is 2
The current size is 9

Items in the Queue
4 5 6 7 8 9 10 2 3
The current size of Queue is 0
```

Main.cpp linear\_search recursive function  
testing:

```

33     vector<int> arr = { 2, 5, 3, 7, 51, 3, 8, 33 }; //Creates vector
34
35
36     int target = 3; //What will be looked for in the vector
37     int last_occurence_index = linear_search(arr, target); //Stores the index if found
38
39
40     if (last_occurence_index != -1) { //If found in the list, outputs the last occurrence
41
42         cout << "\nThe last occurrence of " << target << " is at Index: " << last_occurence_index << endl;
43     }
44
45     else { //If not found in the list, outputs it was not found in the vector
46
47         cout << "\nThe Target " << target << " is not found in the vector." << endl;
48     }
49
50
51     //Repeats of previous code to show functionality
52     target = 1;
53     last_occurence_index = linear_search(arr, target);
54     if (last_occurence_index != -1) {
55         cout << "\nThe last occurrence of " << target << " is at Index: " << last_occurence_index << endl;
56     }
57     else {
58         cout << "\nThe Target " << target << " is not found in the vecotr." << endl;
59     }
60

```

The last occurence of 3 is at Index: 5

The Target 1 is not found in the vecotr.

Main.cpp LinkedList insertion\_sort function testing:

```

61     //Creates a linked list to be used
62     LinkedList linkedList;
63
64     //Adds integers in the linked list
65     linkedList.insert(14);
66     linkedList.insert(3);
67     linkedList.insert(9);
68     linkedList.insert(1);
69     linkedList.insert(5);
70     linkedList.insert(8);
71
72     //Displays the original list
73     cout << "\nOriginal Linked list: ";
74     linkedList.printLinkedList();
75
76     //Displays the sorted list
77     cout << "Sorted Linked list: ";
78     linkedList.insertion_sort(); //Performs insertion_sort
79     linkedList.printLinkedList();
80
81     //Inserts more integers to the list to be sorted later
82     linkedList.insert(1);
83     linkedList.insert(24);
84     linkedList.insert(4);
85     linkedList.insert(50);
86
87     //Sorts the list again and displays the new sorted list
88     cout << "Sorted Linked list: ";
89     linkedList.insertion_sort();
90     linkedList.printLinkedList();
91
92
93
94     return 0;
95

```

```
Original Linked list: 8 5 1 9 3 14
Sorted Linked list: 1 3 5 8 9 14
Sorted Linked list: 1 1 3 4 5 8 9 14 24 50

C:\Users\viger\OneDrive\UMKC 2024 Spring Semester\CS-303\Assignment 3\x64\Debug\Assignment 3.exe (process 17016) exited
with code 0.
Press any key to close this window . . .
```

Whole  
Output:

```
Microsoft Visual Studio Debug Console
The current Queue size is 10
First item in Queue is 1
The first item in the Queue after using the pop function is 2
The current size is 9

Items in the Queue
4 5 6 7 8 9 10 2 3
The current size of Queue is 0

The last occurrence of 3 is at Index: 5

The Target 1 is not found in the vecotr.

Original Linked list: 8 5 1 9 3 14
Sorted Linked list: 1 3 5 8 9 14
Sorted Linked list: 1 1 3 4 5 8 9 14 24 50

C:\Users\viger\OneDrive\UMKC 2024 Spring Semester\CS-303\Assignment 3\x64\Debug\Assignment 3.exe (process 17016) exited
with code 0.
Press any key to close this window . . .
```