

```
Script started on 2024-04-12 16:07:37-05:00 [TERM="xterm-256color" TTY="/dev/pts/0" COLUMNS="308" LINES="65"]
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$ pwd
[?2004l
/home/jovyan/CS2/Lab/Lab_19
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$ ls -la
[?2004l
total 44
drwxr-sr-x  2 jovyan users  4096 Apr 12 16:07 [0m[01;34m.[0m
drwxr-sr-x 20 jovyan users  4096 Apr 12 15:15 [01;34m..[0m
-rw-r--r--  1 jovyan users  1201 Apr 12 16:05 LinkedListV3.cpp
-rw-r--r--  1 jovyan users   666 Apr 12 15:16 LinkedListV3.h
-rw-r--r--  1 jovyan users   824 Apr 12 16:06 ll_test_V3.cpp
-rw-r--r--  1 jovyan users     0 Apr 12 16:07 Sabin_Lab_19.log
-rwxr-xr-x  1 jovyan users 18536 Apr 12 16:05 [01;32mtest[0m
-rw-r--r--  1 jovyan users    39 Apr 12 15:15 testfile.dat
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$ cat -n
LinkedListV3.h
[?2004l
 1 #ifndef _LINKEDLIST_H
 2 #define _LINKEDLIST_H
 3
 4 // A structure defining the node.
 5 struct Node {
 6
 7     int data;    // some data
 8     Node *next; // Pointer to another Node
 9     Node *prev;
10 };
11
12 class LinkedList {
13 private:
14     Node *head; // pointer to first item in list
15     Node *tail;
16
17 public:
18     LinkedList();           // How do I initialize my object?
19     void push_back(int value); // add elements to the end of our LL
20     void print() const;      // print all elements
21     void print_reverse() const; // print all elements
22     bool empty() const;      // function to determine if list is empty
23     ~LinkedList();           // How do I clean up my list
24 };
25
26 #endif[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-
tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$ li[K[Kcat -n LinkedListV3.cpp
[?2004l
 1 #include "LinkedListV3.h"
 2 #include <iostream>
 3
 4 // TODO: Implement the functions below.
 5 LinkedList::LinkedList() {
 6     head = nullptr;
 7     tail = nullptr;
 8 }
 9
10 void LinkedList::print() const {
11     if(empty()){
12         std::cout << "ERROR: empty list...\n";
13         return;
14     }
15     Node *temp = head;
16     while(temp != nullptr){
17         std::cout << temp->data << '\n';
18         temp = temp->next;
19     }
20 }
21
22 void LinkedList::print_reverse() const {
23     if(empty()){
24         std::cout << "ERROR: empty list...\n";
25         return;
26     }
27     Node *temp = tail;
28     while(temp != nullptr){
29         std::cout << temp->data << '\n';
30         temp = temp->prev;
31     }
32 }
33
34 void LinkedList::push_back(int value) {
35     Node *newNode = new Node;
36     newNode->data = value;
37     if(head == nullptr){
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38         head = newNode;
39         tail = newNode;
40         return;
41     }
42     tail->next = newNode;
43     newNode->prev = tail;
44     tail = newNode;
45 }
46
47 bool LinkedList::empty() const {
48     return head == nullptr;
49 }
50
51 LinkedList::~LinkedList() {
52     if(empty()){
53         return;
54     }
55     while(!empty()){
56         Node *curr = tail;
57         tail = curr->prev;
58         delete curr;
59     }
60     head = nullptr;
61     tail = nullptr;
62 }
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$ cat -n
ll_test_V3.cpp
[?2004l
1  #include "LinkedListV3.h"
2  #include <fstream>
3  #include <iostream>
4
5  int main() {
6      std::string filename;
7      std::cout << "Enter a data file: ";
8      std::cin >> filename;
9      std::ifstream datafile;
10     datafile.open(filename);
11     if (!datafile) {
12         std::cout << "ERROR: " << filename << " could not open...\n";
13         return 0;
14     }
15     {
16         // Test for destructing empty
17         LinkedList empty;
18     }
19     {
20         // Test for destructing single item
21         LinkedList single;
22         single.push_back(10);
23     }
24     std::cout << '\n';
25     LinkedList values;
26     int value;
27     values.print();
28     values.print_reverse();
29     datafile >> value;
30     while (datafile) {
31         values.push_back(value);
32         datafile >> value;
33     }
34     datafile.close();
35     std::cout << "Printing Forward:\n";
36     values.print();
37
38     std::cout << "\nPrinting Reversed:\n";
39     values.print_reverse();
40 }[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$
g++ -Wall -Wextra -Werror ll_test_V3.cpp LinkedListV3.cpp -o test
[?2004l
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$ ./test
[?2004l
Enter a data file: testfile.dat
Segmentation fault (core dumped)
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$ ./test
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[?2004l
Enter a data file: testfile.dat
Segmentation fault (core dumped)
[?2004h(base) ]0;jovyan@jupyter-tes4j: ~/CS2/Lab/Lab_19[01;32mjovyan@jupyter-tes4j[00m:[01;34m~/CS2/Lab/Lab_19[00m$ ./testg++

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