Lab 8

Comp 11 - Summer Session — Singly Linked List

8.1 Description

The singly linked list is a flexible expanding data structure. The fundamentals of the linked list, are also used to build other powerful data structures. So in this lab, we will solve the problem of iterating (i.e. a forward traversal) of a linked list data structure. As a note, this is yet another common interview question!

Our objectives are the following:

- Create ten nodes in a linked list. Make sure to set the student names to them.
- Link the ten nodes together to form a chain
- Then, in a while loop, iterate through the linked list until a null pointer is found (that is, the tail of the list is found).
- You may use an additional pointer to iterate through the list.
- I recommend just seeing if you can get 3 students to print out, then you will understand the pattern.
8.2 Files

You may use the following code to help get you started.

```cpp
#include <iostream>
#include <string>

struct Student{
    Student* next;
    // Member fields
    std::string name;
};

int main(){
    // (1) Create ten nodes
    // ???. s1 = ???. ???

    // (2) Link them together

    // (3) print out each student name
    // (e.g.) Student* iter = s1;
    // Question, what does iter need to point to next?
    // Draw a picture before asking a question of your linked list.
    //
    // (4) What do we not forget to do when we allocate with new?
    // Do that here.

    return 0;
}
```

Listing 8.1: Starter Code

8.3 Refresher

Refer to some of the examples in the slides from the lecture on pointers 1 and 2. It will also be helpful to review our lastest in-class activity.

It will be useful to draw pictures before coding in this lab.

8.4 Submission

```bash
provide comp11 lab8 lab8.cpp README
```

Listing 8.2: Submit Assignment
8.5 Going Further

Did you enjoy this lab? Want to try out some additional commands to go further?

• Build a struct and try passing it around!