

Activity 10

Comp 11 - Summer Session — Pointer to Pointers

With a partner(or two), discuss the following code sample and answer the questions below. The instructor and teaching assistants will let you discuss and then be around to answer questions. ¹

10.1 Description

In order to prepare for lab, we are going to take a look at a singly linked-list. That is, a struct that has pointers in it that points to another piece of data of the same type.

```
1 #include <iostream>
2 #include <string>
3
4 struct Student{
5     // Stores a pointer to the next student
6     Student* next;
7     // Our regular member variables
8     std::string name;
9     int age;
10 };
11
12 int main(){
13     Student* mike = new Student;
14     Student* susan = new Student;
15     Student* nick = new Student;
16
17     mike->next = susan;
18     susan->next = nick;
19     nick->next = NULL;
20
21     return 0;
```

¹Activities do not need to be returned to instructors, they are for your benefit.

10.2 Questions

1. What does **new** do? Where does it allocate memory (heap or stack?)
2. When do we use **delete** versus **delete[]**?
3. Draw a linked-list for the above data structure (on a piece of paper or on the chalk board). That is, draw a few nodes, and then also draw a NULL node.
4. When this program ends, will it create a memory leak?