

Lab 10-1

```
➤ clang++-7 -pthread -std=c++17 -o main main.cpp pointerDataClass.cpp
➤ ./main
List1:
50 Null Null Null 30 Null Null Null 60 Null
List 2:
50 Null Null Null 30 Null Null Null 60 Null
List1: (after insert 100 at index 4)
50 Null Null Null 100 Null Null Null 60 Null
List 2:
50 Null Null Null 100 Null Null Null 60 Null
➤
```

Demonstrated at 11:03 am on October 21<sup>st</sup>, 2021

**pointerDataClass.h**

```
#ifndef POINTER_DATA_CLASS_H
#define POINTER_DATA_CLASS_H

#include<iostream>

using namespace std;

class pointerDataClass
{
    int maxSize;//variable to store the maximum size of p

    int length;//variable to store the number of elements in p

    int* p;// pointer to an int array

public:
    //Constructor to create an array of the size specified by the parameter size.

    pointerDataClass(int size);

    //Destructor to deallocate the memory space occupied by the array p
```

```

~pointerDataClass();

//the function insertAt inserts num into array p at the position specified by
//index

void insertAt(int index, int num);

//The function displayData displays all the array elements in p

void displayData();
};
#endif

```

### pointerDataClass.cpp

```

#include "pointerDataClass.h"

// using shallow copy
pointerDataClass::pointerDataClass(int size) {
    maxSize = size;
    length = 0;
    p = new int[maxSize];
    for (int i = 0; i < maxSize; i++) {
        *(p + i) = 0;
    }
}

//Destructor to deallocate the memory space occupied by the array p
pointerDataClass::~~pointerDataClass() {
    p = NULL;
    delete[] p;
}

//the function insertAt inserts num into array p at the position specified by
//index
void pointerDataClass::insertAt(int index, int num) {
    *(p + index) = num;
    length++;
}

//The function displayData displays all the array elements in p
void pointerDataClass::displayData() {
    for (int i = 0; i < maxSize; i++) {
        if (*(p + i) == 0) {
            cout << "Null" << " ";

```

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    }
    else {
        cout << *(p + i) << " ";
    }
}
cout << endl;
}

```

### main.cpp

```

#include <iostream>
#include "pointerDataClass.h"

using namespace std;

int main() {
    pointerDataClass list1(10);
    list1.insertAt(0, 50);
    list1.insertAt(4, 30);
    list1.insertAt(8, 60);
    cout << "List1: " << endl;
    list1.displayData();
    cout << "List 2: " << endl;
    pointerDataClass list2(list1);
    list2.displayData();
    list1.insertAt(4, 100);
    cout << "List1: (after insert 100 at index 4) " << endl;
    list1.displayData();
    cout << "List 2: " << endl;
    list2.displayData();
    return 0;
}

```