CSE225L – Data Structures and Algorithms Lab Lab 04 Unsorted List (array based)

In today's lab we will design and implement the List ADT where the items in the list are unsorted.

```
unsortedtype.h
                                                 template <class ItemType>
                                                 void
#ifndef UNSORTEDTYPE H INCLUDED
                                                 UnsortedType<ItemType>::RetrieveItem(ItemType&
#define UNSORTEDTYPE H INCLUDED
                                                 item, bool &found)
const int MAX ITEMS = 5;
                                                     int location = 0;
                                                     bool moreToSearch = (location < length);</pre>
template <class ItemType>
                                                     found = false;
class UnsortedType
                                                     while (moreToSearch && !found)
{
    public :
                                                         if(item == info[location])
        UnsortedType();
                                                             found = true;
        void MakeEmpty();
       bool IsFull();
                                                             item = info[location];
       int LengthIs();
                                                         }
        void InsertItem(ItemType);
                                                         else
        void DeleteItem(ItemType);
                                                         {
        void RetrieveItem(ItemType&, bool&);
                                                             location++;
                                                             moreToSearch = (location < length);</pre>
        void ResetList();
        void GetNextItem(ItemType&);
                                                     }
    private:
        int length;
        ItemType info[MAX ITEMS];
                                                 template <class ItemType>
        int currentPos;
                                                 void UnsortedType<ItemType>::InsertItem(ItemType
                                                 item)
};
#endif // UNSORTEDTYPE H INCLUDED
                                                 {
                                                     info[length] = item;
                                                     length++;
unsortedtype.cpp
#include "UnsortedType.h"
                                                 template <class ItemType>
                                                 void UnsortedType<ItemType>::DeleteItem(ItemType
template <class ItemType>
                                                 item)
UnsortedType<ItemType>::UnsortedType()
                                                 {
                                                     int location = 0;
{
                                                     while (item != info[location])
    length = 0;
    currentPos = -1;
                                                         location++;
                                                     info[location] = info[length - 1];
                                                     length--;
template <class ItemType>
void UnsortedType<ItemType>::MakeEmpty()
      length = 0;
template <class ItemType>
bool UnsortedType<ItemType>::IsFull()
{
    return (length == MAX ITEMS);
template <class ItemType>
int UnsortedType<ItemType>::LengthIs()
    return length;
template <class ItemType>
void UnsortedType<ItemType>::ResetList()
{
    currentPos = -1;
template <class ItemType>
UnsortedType<ItemType>::GetNextItem(ItemType&
item)
    currentPos++;
    item = info [currentPos] ;
```

Generate the **driver file (main.cpp)** where you perform the following tasks. Note that you cannot make any change to the header file or the source file.

Operat	ion to Be Tested and Description of Action	Input Values	Expected Output
•	Create a list of integers		
•	Insert four items	5 7 6 9	
•	Print the list		5769
•	Print the length of the list		4
•	Insert one item	1	
•	Print the list		57691
•	Retrieve 4 and print whether found or not		Item is not found
•	Retrieve 5 and print whether found or not		Item is found
•	Retrieve 9 and print whether found or not		Item is found
•	Retrieve 10 and print whether found or not		Item is not found
•	Print if the list is full or not		List is full
•	Delete 5		
•	Print if the list is full or not		List is not full
•	Delete 1		
•	Print the list		7 6 9
•	Delete 6		
•	Print the list		7 9
•	Write a class studentInfo that represents a student record. It must have variables to store the student ID, student's name and student's CGPA. It also must have a function to print all the values. You will also need to overload a few operators.		
•	Create a list of objects of class studentInfo.		ii i
•	Insert 5 student records	15234 Jon 2.6 13732 Tyrion 3.9 13569 Sandor 1.2 15467 Ramsey 2 3.1 16285 Arya 3.1	
•	Delete the record with ID 15467		
•	Retrieve the record with ID 13569 and print whether found or not along with the entire record		Item is found 13569, Sandor, 1.2
•	Print the list		15234, Jon, 26 13732, Tyrion, 3.9 13569, Sandor, 1.2 16285, Arya, 3.1