

## Array.h

```
#ifndef ARRAY_H
#define ARRAY_H
#include <iostream>
using namespace std;

// Class definition
class Array
{
private:
    int* arr;
    int capacity;
    int size;
    void moveTowardFront(int index);
    void moveTowardEnd(int index);
public:
    Array(int capacity);
    ~Array();
    void insert(int value);
    void remove(int value);
    void print() const;
};
#endif
```

## Array.cpp

```
#include "Array.h"
Array::Array(int cap)
{
    capacity = cap;
    size = 0;
    arr = new int[capacity];
}

Array::~Array() {}

void Array::moveTowardFront(int index) //when delete
{
    for (int i = index; i < size-1; i++) {
        *(arr + i) = *(arr + i + 1);
    }
}

void Array::moveTowardEnd(int index) //when insert
{
    for (int i = size; i >= index; i--) {
        *(arr + i + 1) = *(arr + i);
    }
}

void Array::insert(int value)
{
    int index = 0;
```

```

        for (int i = 0; i < size; i++) {
            if (*(arr + i) < value) {
                index = i;
                break;
            }
            else {
                index = size;
            }
        }
        moveTowardEnd(index);
        *(arr + index) = value;
        size++;
    }

void Array::remove(int value)
{
    int index = 0;
    bool found = false;
    for (int i = 0; i < size; i++) {
        if (*(arr + i) == value) {
            index = i;
            found = true;
            moveTowardFront(index);
            size--;
        }
    }
    if (found == false) {
        cout << "Cannot delete " << value << " because it is not in the array" <<
endl;
    }
}

void Array::print() const
{
    for (int i = 0; i < size; i++) {
        cout << *(arr + i) << " ";
    }
    cout << endl;
}

```

## Main.cpp

```

/*****
 * The application file to test the sorted array class *
 *****/
#include "Array.h"

int main()
{
    // Declaration of any array of capacity 20
    Array array(20);
    // Inserting some elements and printing array
    array.insert(15);
}

```

```

    array.insert(13);
    array.insert(10);
    array.insert(14);
    array.insert(11);
    array.insert(17);
    array.insert(14);
    cout << "Printing array after insertions: " << endl;
    array.print();
    cout << endl;
    // Removing two elements and printing array
    array.remove(13);
    array.remove(11);
    cout << "Printing array after removals: " << endl;
    array.print();
    cout << endl;
    // Inserting two more elements and printing array
    array.insert(8);
    array.insert(22);
    cout << "Printing array after more insertion" << endl;
    array.print();
    cout << endl;
    // Try to remove an element, which is not in the array
    array.remove(31);
    return 0;
}

```

The screenshot shows the Microsoft Visual Studio IDE with the following details:

- Debug Console:** Displays the output of the program. It shows the array after insertions (17 15 14 14 13 11 10), after removals (17 15 14 14 10), and after more insertions (22 17 15 14 14 10 8). It also shows an error message: "[Cannot delete 31 because it is not in the array]".
- Source Explorer:** Shows the file 'main.cpp' with the corresponding code. The code is highlighted in the editor.
- Status Bar:** Indicates 'No issues found'.
- Output Window:** Shows the output of the program, including the array elements and the error message.

Demonstrated at 11:04am on September 16, 2021