Assignment_DSA_ LAB_ 02

Kashan Shahid

53686

CS 3-1

Q1. Program to find the largest age from an array of 10 students:

Code:

```
#include <iostream>
using namespace std;

int main() {
    int ages[10];
    int maxAge = 0;



    for (int i = 0; i < 10; i++) {
        cout << "Enter age of student " << i + 1 << ": ";
        cin >> ages[i];
    }



    for (int i = 0; i < 10; i++) {
        if (ages[i] > maxAge) {
            maxAge = ages[i];
        }
    }
```

```
    cout << "The largest age is: " << maxAge << endl;

    return 0;
}
```

Output:

```
/tmp/q0cH2VRXFi.o
Enter age of student 1: 10
Enter age of student 2: 18
Enter age of student 3: 25
Enter age of student 4: 20
Enter age of student 5: 21
Enter age of student 6: 8
Enter age of student 7: 15
Enter age of student 8: 17
Enter age of student 9: 19
Enter age of student 10: 23
The largest age is: 25


=== Code Execution Successful ===
```

Q2. Program to add three arrays and store the result in another array using dynamic arrays:

Code:

```
#include <iostream>

using namespace std;


int main() {
```

```
int n;
cout << "Enter the size of the arrays: ";
cin >> n;


int *arr1 = new int[n];
int *arr2 = new int[n];
int *arr3 = new int[n];
int *result = new int[n];


cout << "Enter elements of array 1: ";
for (int i = 0; i < n; i++) {
    cin >> arr1[i];
}


cout << "Enter elements of array 2: ";
for (int i = 0; i < n; i++) {
    cin >> arr2[i];
}


cout << "Enter elements of array 3: ";
for (int i = 0; i < n; i++) {
```

```
        cin >> arr3[i];
    }


    for (int i = 0; i < n; i++) {
        result[i] = arr1[i] + arr2[i] + arr3[i];
    }


    cout << "Resultant array after addition: ";
    for (int i = 0; i < n; i++) {
        cout << result[i] << " ";
    }
    cout << endl;


    delete[] arr1;
    delete[] arr2;
    delete[] arr3;
    delete[] result;

    return 0;
}
```

Output:

```
Enter the size of the arrays: 3
Enter elements of array 1: 0
1
2
Enter elements of array 2: 3
4
5
Enter elements of array 3: 6
7
8
Resultant array after addition: 9 12 15


=== Code Execution Successful ===
```

Q3. Program for linear search using dynamic arrays with handling for item not found:

Code:

```
#include <iostream>

using namespace std;


int main() {
    int n, target, index = -1;


    cout << "Enter the size of the array: ";
    cin >> n;



    int *arr = new int[n];



    cout << "Enter elements of the array: ";
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }
```

```
    cout << "Enter the item to search: ";
    cin >> target;

    // Linear search algorithm
    for (int i = 0; i < n; i++) {
        if (arr[i] == target) {
            index = i;
            break;
        }
    }


    if (index != -1) {
        cout << "Item found at index: " << index << endl;
    } else {
        cout << "Item not found in the list." << endl;
    }
    delete[] arr;

    return 0;
}
```

Output:

```
Enter the size of the array: 4
Enter elements of the array: 1
4
6
8
Enter the item to search: 6
Item found at index: 2


=== Code Execution Successful ===
```