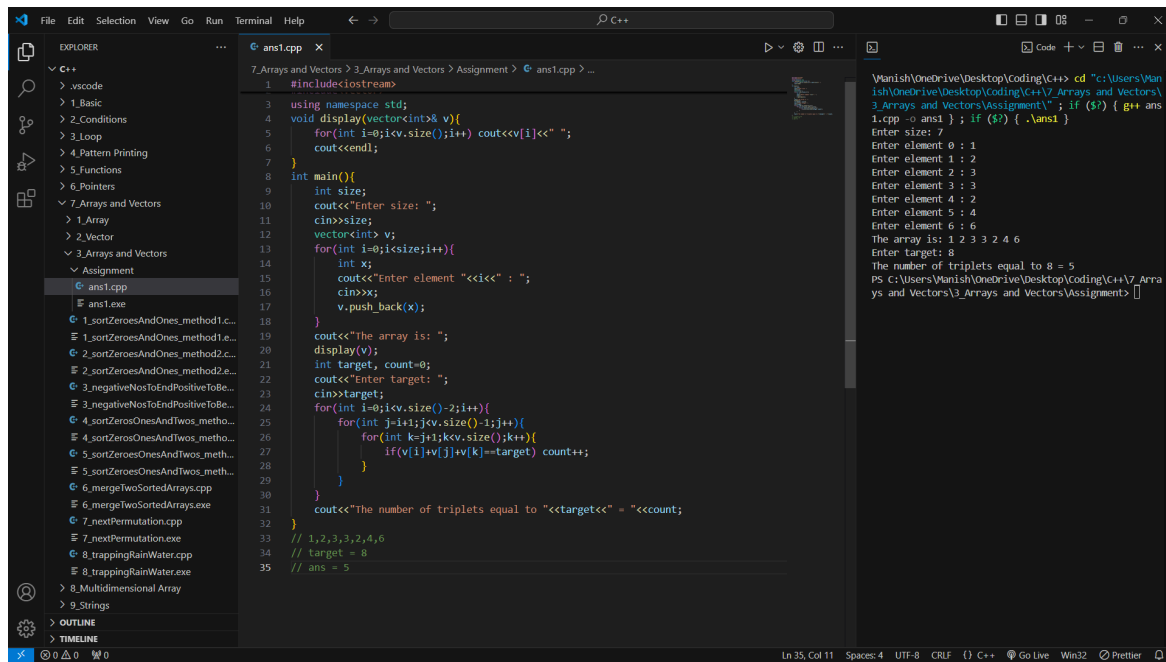


Assignment (Arrays-3)

Q1. Count the number of triplets whose sum is equal to the given value x.

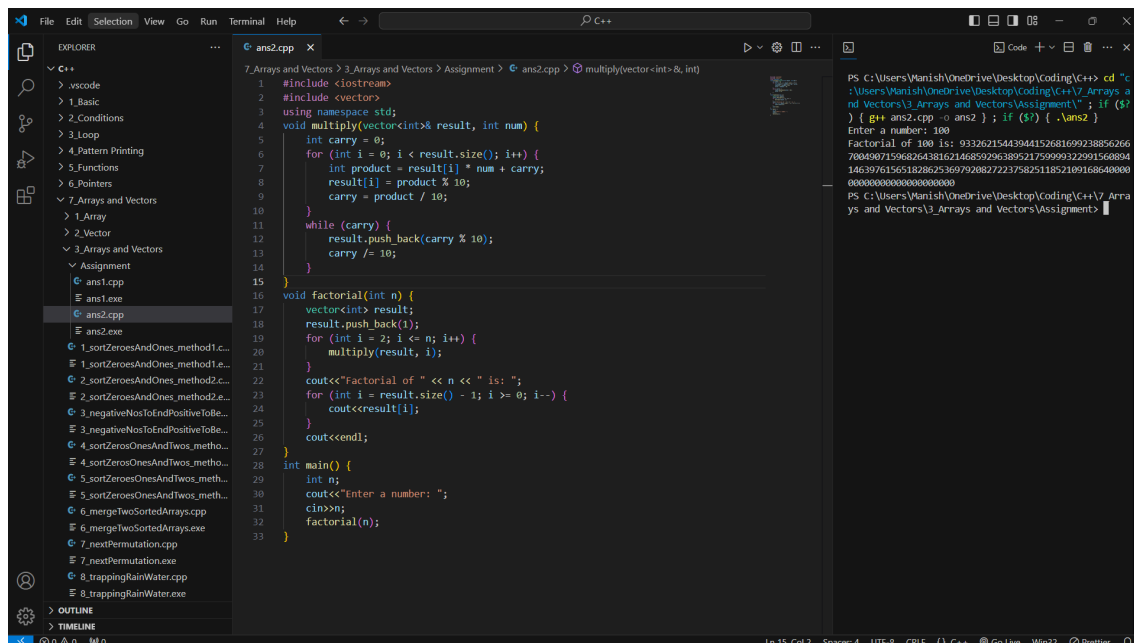
Answer:



```
1 #include<iostream>
2
3 using namespace std;
4 void display(vector<int>& v){
5     for(int i=0;i<v.size();i++) cout<<v[i]<<" ";
6     cout<<endl;
7 }
8
9 int main(){
10     int size;
11     cout<<"Enter size: ";
12     cin>>size;
13     vector<int> v;
14     for(int i=0;i<size;i++){
15         int x;
16         cout<<"Enter element "<<i<<" : ";
17         cin>>x;
18         v.push_back(x);
19     }
20     cout<<"The array is: ";
21     display(v);
22     int target, count=0;
23     cout<<"Enter target: ";
24     cin>>target;
25     for(int i=0;i<v.size()-2;i++){
26         for(int j=i+1;j<v.size()-1;j++){
27             for(int k=j+1;k<v.size();k++){
28                 if(v[i]+v[j]+v[k]==target) count++;
29             }
30         }
31     }
32     cout<<"The number of triplets equal to "<<target<<" = "<<count;
33
34 // 1,2,3,3,2,4,6
35 // target = 8
36 // ans = 5
```

Q2. Find the factorial of a large number.

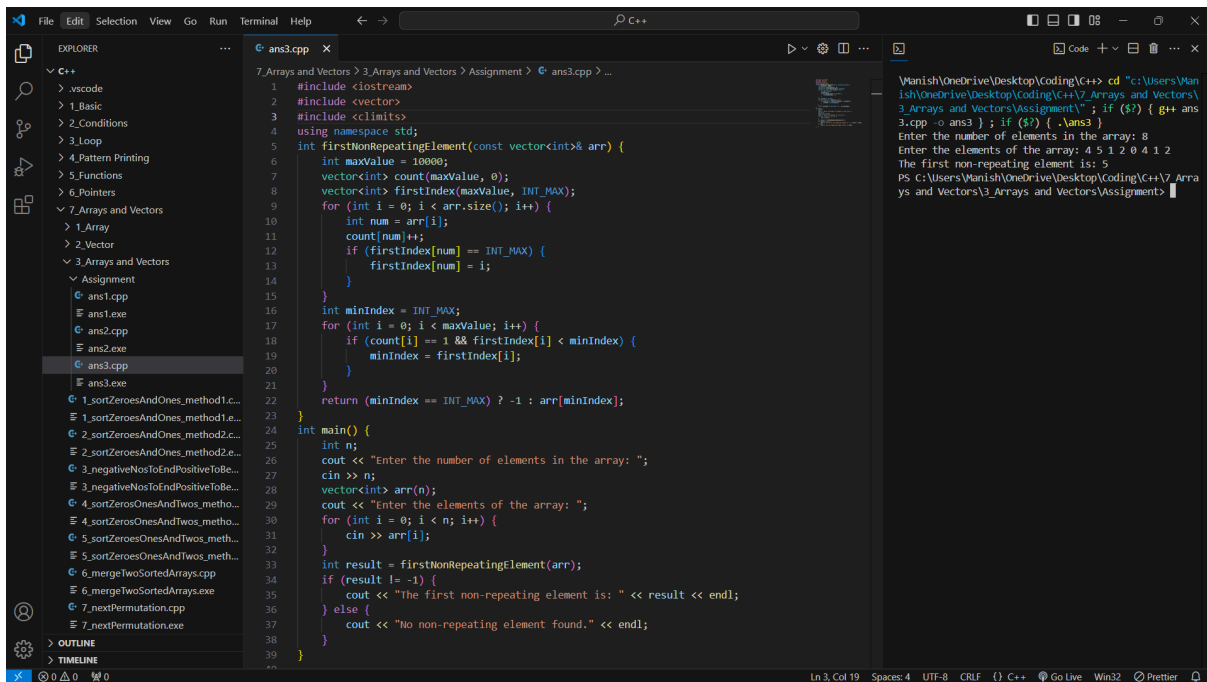
Answer:



```
1 #include <iostream>
2 #include <vector>
3 using namespace std;
4 void multiply(vector<int>& result, int num) {
5     int carry = 0;
6     for (int i = 0; i < result.size(); i++) {
7         int product = result[i] * num + carry;
8         result[i] = product % 10;
9         carry = product / 10;
10    }
11    while (carry) {
12        result.push_back(carry % 10);
13        carry /= 10;
14    }
15
16    void factorial(int n) {
17        vector<int> result;
18        result.push_back(1);
19        for (int i = 2; i <= n; i++) {
20            multiply(result, i);
21        }
22        cout<<"Factorial of " << n <<" is: ";
23        for (int i = result.size() - 1; i >= 0; i--) {
24            cout<<result[i];
25        }
26        cout<<endl;
27    }
28
29    int main() {
30        int n;
31        cout<<"Enter a number: ";
32        cin>>n;
33        factorial(n);
34    }
```

Q3. Find the first non-repeating element in the array.

Answer:

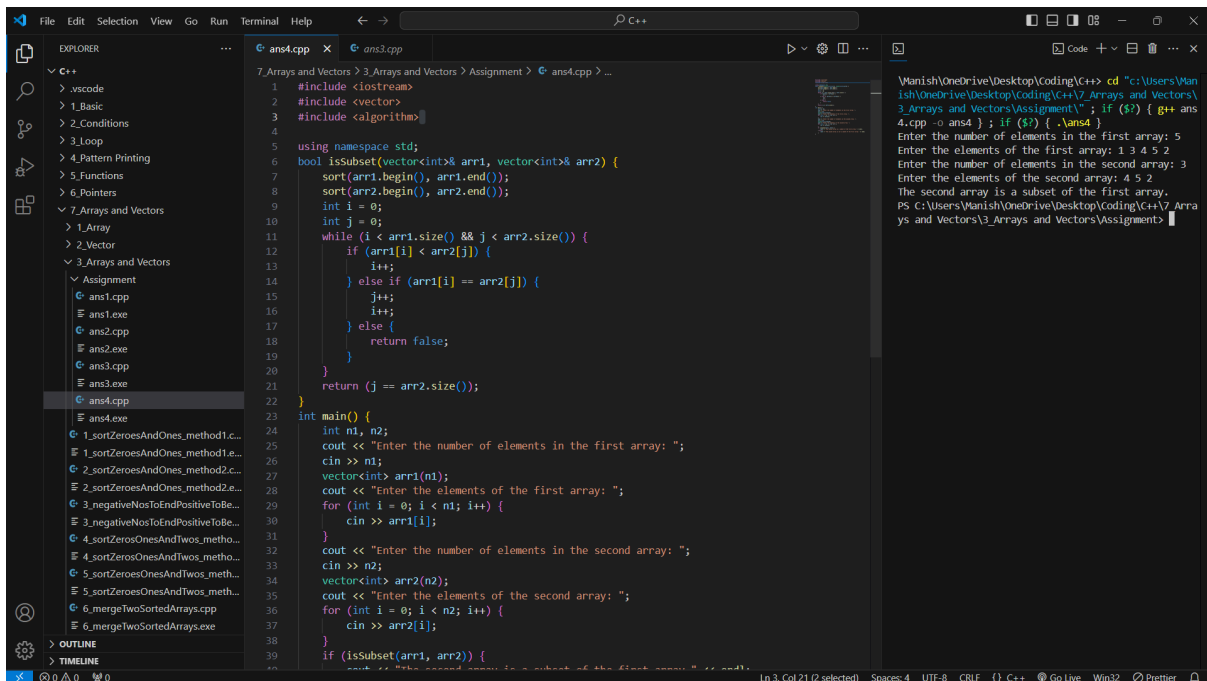


```
1 #include <iostream>
2 #include <vector>
3 #include <limits>
4 using namespace std;
5 int firstNonRepeatingElement(const vector<int>& arr) {
6     int maxValue = 10000;
7     vector<int> count(maxValue, 0);
8     vector<int> firstIndex(maxValue, INT_MAX);
9     for (int i = 0; i < arr.size(); i++) {
10         int num = arr[i];
11         count[num]++;
12         if (firstIndex[num] == INT_MAX) {
13             firstIndex[num] = i;
14         }
15     }
16     int minIndex = INT_MAX;
17     for (int i = 0; i < maxValue; i++) {
18         if (count[i] == 1 && firstIndex[i] < minIndex) {
19             minIndex = firstIndex[i];
20         }
21     }
22     return (minIndex == INT_MAX) ? -1 : arr[minIndex];
23 }
24
25 int main() {
26     int n;
27     cout << "Enter the number of elements in the array: ";
28     cin >> n;
29     vector<int> arr(n);
30     cout << "Enter the elements of the array: ";
31     for (int i = 0; i < n; i++) {
32         cin >> arr[i];
33     }
34     int result = firstNonRepeatingElement(arr);
35     if (result != -1) {
36         cout << "The first non-repeating element is: " << result << endl;
37     } else {
38         cout << "No non-repeating element found." << endl;
39     }
40 }
```

Vanish\OneDrive\Desktop\Coding\C++> cd "c:\Users\Vanish\OneDrive\Desktop\Coding\C++\7_Arrays and Vectors\3_Arrays and Vectors\Assignment\"; if (\$?) { g++ ans3.cpp -o ans3 }; if (\$?) { .\ans3 }
Enter the number of elements in the array: 8
Enter the elements of the array: 4 5 1 2 0 4 1 2
The first non-repeating element is: 5
PS C:\Users\Vanish\OneDrive\Desktop\Coding\C++\7_Arrays and Vectors\3_Arrays and Vectors\Assignment>

Q4. Check if an array is a subset of another.

Answer:



```
1 #include <iostream>
2 #include <vector>
3 #include <algorithm>
4
5 using namespace std;
6 bool isSubset(vector<int>& arr1, vector<int>& arr2) {
7     sort(arr1.begin(), arr1.end());
8     sort(arr2.begin(), arr2.end());
9     int i = 0;
10    int j = 0;
11    while (i < arr1.size() && j < arr2.size()) {
12        if (arr1[i] < arr2[j]) {
13            i++;
14        } else if (arr1[i] == arr2[j]) {
15            j++;
16            i++;
17        } else {
18            return false;
19        }
20    }
21    return (j == arr2.size());
22 }
23
24 int main() {
25     int n1, n2;
26     cout << "Enter the number of elements in the first array: ";
27     cin >> n1;
28     vector<int> arr1(n1);
29     cout << "Enter the elements of the first array: ";
30     for (int i = 0; i < n1; i++) {
31         cin >> arr1[i];
32     }
33     cout << "Enter the number of elements in the second array: ";
34     cin >> n2;
35     vector<int> arr2(n2);
36     cout << "Enter the elements of the second array: ";
37     for (int i = 0; i < n2; i++) {
38         cin >> arr2[i];
39     }
40     if (isSubset(arr1, arr2)) {
41         cout << "The second array is a subset of the first array." << endl;
42     } else {
43         cout << "The second array is not a subset of the first array." << endl;
44     }
45 }
```

Vanish\OneDrive\Desktop\Coding\C++> cd "c:\Users\Vanish\OneDrive\Desktop\Coding\C++\7_Arrays and Vectors\3_Arrays and Vectors\Assignment\"; if (\$?) { g++ ans4.cpp -o ans4 }; if (\$?) { .\ans4 }
Enter the number of elements in the first array: 5
Enter the elements of the first array: 1 3 4 5 2
Enter the number of elements in the second array: 3
Enter the elements of the second array: 4 5 2
The second array is a subset of the first array.
PS C:\Users\Vanish\OneDrive\Desktop\Coding\C++\7_Arrays and Vectors\3_Arrays and Vectors\Assignment>