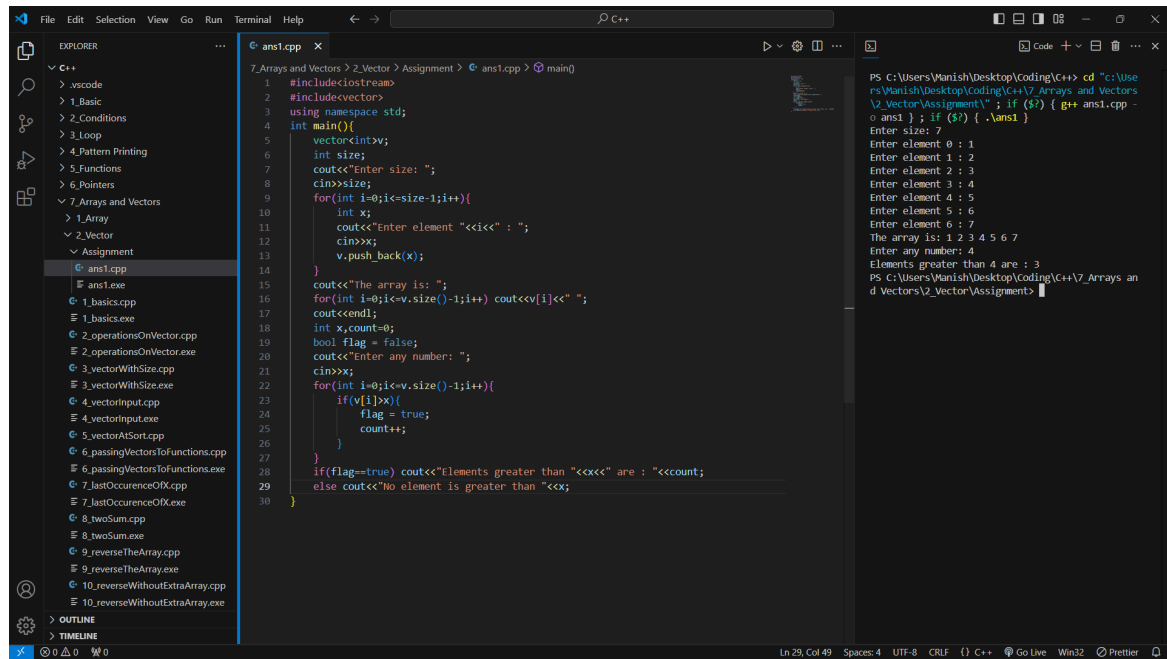


Assignment (Arrays-2)

Q1. Count the number of elements strictly greater than x.

Answer:

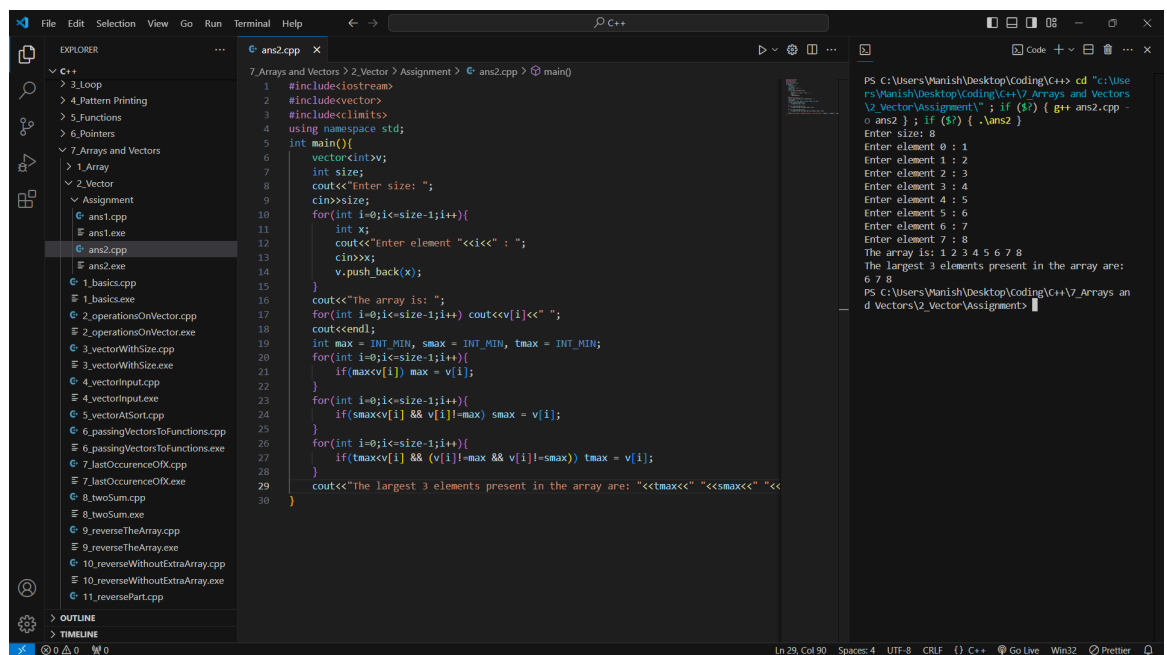


```
1 #include<iostream>
2 #include<vector>
3 using namespace std;
4 int main(){
5     vector<int>v;
6     int size;
7     cout<<"Enter size: ";
8     cin>>size;
9     for(int i=0;i<size-1;i++){
10         int x;
11         cout<<"Enter element "<<i<<" : ";
12         cin>>x;
13         v.push_back(x);
14     }
15     cout<<"The array is: ";
16     for(int i=0;i<v.size()-1;i++) cout<<v[i]<<" ";
17     cout<<endl;
18     int x;count=0;
19     bool flag = false;
20     cout<<"Enter any number: ";
21     cin>>x;
22     for(int i=0;i<v.size()-1;i++){
23         if(v[i]>x){
24             flag = true;
25             count++;
26         }
27     }
28     if(flag==true) cout<<"Elements greater than "<<x<<" are : "<<count;
29     else cout<<"No element is greater than "<<x;
30 }
```

PS C:\Users\Manish\Desktop\coding\C++> cd "C:\Users\Manish\Desktop\coding\C++\7_Arrays and Vectors\2_Vector\Assignment\"; if (\$?) { g++ ans1.cpp -o ans1 }; if (\$?) { .\ans1 }
Enter size: 7
Enter element 0 : 1
Enter element 1 : 2
Enter element 2 : 3
Enter element 3 : 4
Enter element 4 : 5
Enter element 5 : 6
Enter element 6 : 7
The array is: 1 2 3 4 5 6 7
Enter any number: 4
Elements greater than 4 are : 3
PS C:\Users\Manish\Desktop\coding\C++\7_Arrays and Vectors\2_Vector\Assignment>

Q2. WAP to find the largest three elements in the array.

Answer:

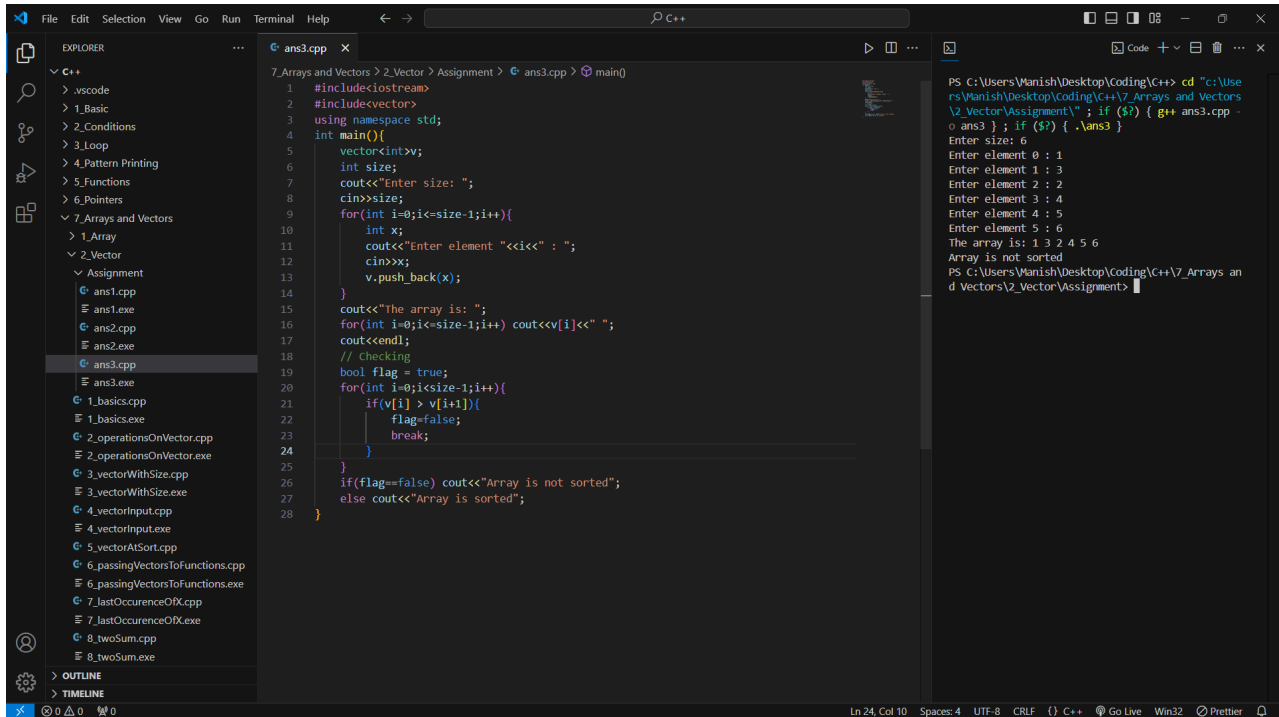


```
1 #include<iostream>
2 #include<vector>
3 #include<limits>
4 using namespace std;
5 int main(){
6     vector<int>v;
7     int size;
8     cout<<"Enter size: ";
9     cin>>size;
10    for(int i=0;i<size-1;i++){
11        int x;
12        cout<<"Enter element "<<i<<" : ";
13        cin>>x;
14        v.push_back(x);
15    }
16    cout<<"The array is: ";
17    for(int i=0;i<size-1;i++) cout<<v[i]<<" ";
18    cout<<endl;
19    int max = INT_MIN, smax = INT_MIN, tmax = INT_MIN;
20    for(int i=0;i<size-1;i++){
21        if(max<v[i]) max = v[i];
22    }
23    for(int i=0;i<size-1;i++){
24        if(smax<v[i] && v[i]!=max) smax = v[i];
25    }
26    for(int i=0;i<size-1;i++){
27        if(tmax<v[i] && (v[i]!=max && v[i]!=smax)) tmax = v[i];
28    }
29    cout<<"The largest 3 elements present in the array are: "<<tmax<<" "<<smax<<" "<<max;
30 }
```

PS C:\Users\Manish\Desktop\coding\C++> cd "C:\Users\Manish\Desktop\coding\C++\7_Arrays and Vectors\2_Vector\Assignment\"; if (\$?) { g++ ans2.cpp -o ans2 }; if (\$?) { .\ans2 }
Enter size: 8
Enter element 0 : 1
Enter element 1 : 2
Enter element 2 : 3
Enter element 3 : 4
Enter element 4 : 5
Enter element 5 : 6
Enter element 6 : 7
Enter element 7 : 8
The array is: 1 2 3 4 5 6 7 8
The largest 3 elements present in the array are: 6 7 8
PS C:\Users\Manish\Desktop\coding\C++\7_Arrays and Vectors\2_Vector\Assignment>

Q3. Check if the given array is sorted or not.

Answer:



The screenshot shows a Visual Studio Code editor with a C++ file named `ans3.cpp`. The code defines a `vector<int>` `v`, takes an input `size`, and then takes `size` elements from the user. It then checks if the array is sorted by iterating through the vector and comparing adjacent elements. If the array is not sorted, it prints "Array is not sorted"; otherwise, it prints "Array is sorted".

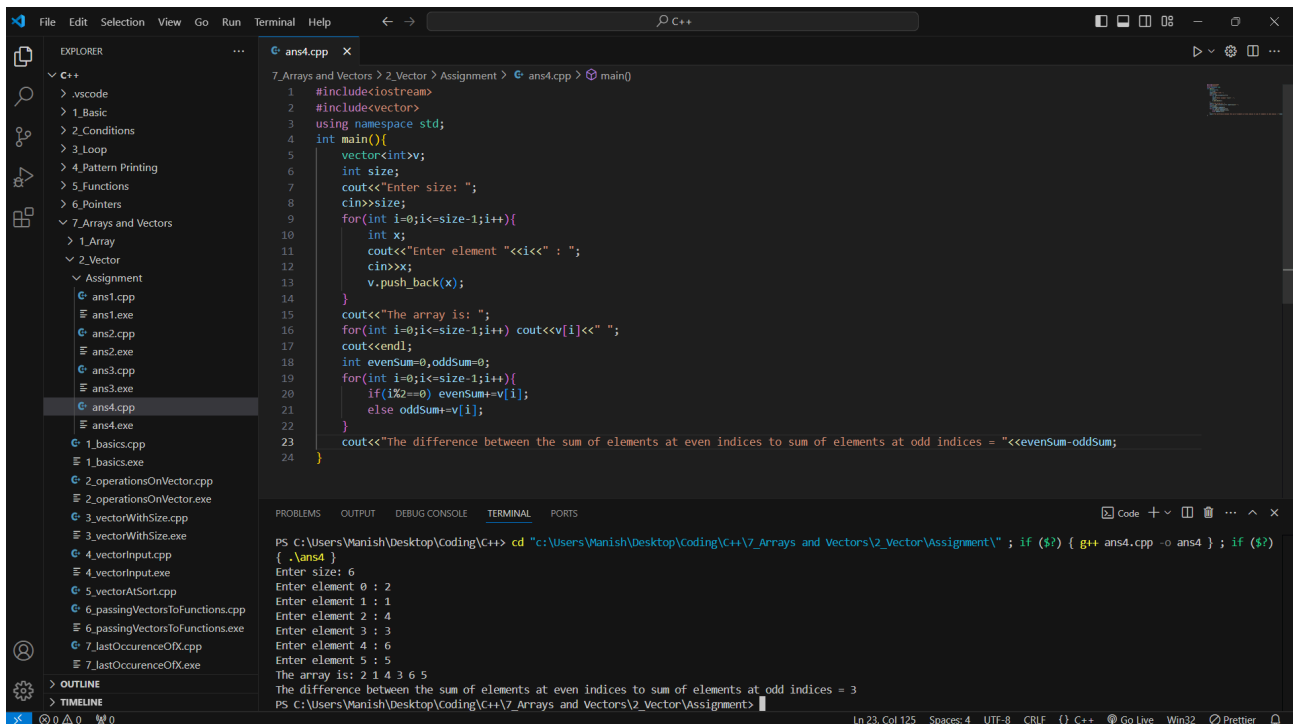
```
1 #include<iostream>
2 #include<vector>
3 using namespace std;
4 int main()
5 {
6     vector<int>v;
7     int size;
8     cout<<"Enter size: ";
9     cin>>size;
10    for(int i=0;i<size-1;i++){
11        int x;
12        cout<<"Enter element "<<i<<" : ";
13        cin>>x;
14        v.push_back(x);
15    }
16    cout<<"The array is: ";
17    for(int i=0;i<size-1;i++) cout<<v[i]<<" ";
18    cout<<endl;
19    // checking
20    bool flag = true;
21    for(int i=0;i<size-1;i++){
22        if(v[i] > v[i+1]){
23            flag=false;
24            break;
25        }
26    }
27    if(flag==false) cout<<"Array is not sorted";
28    else cout<<"Array is sorted";
29 }
```

The terminal output shows the execution of the program:

```
PS C:\Users\Manish\Desktop\Coding\C++> cd "C:\Users\Manish\Desktop\Coding\C++\7_Arrays and Vectors\2_Vector\Assignment\"; if ($?) { g++ ans3.cpp -o ans3 }; if ($?) { .\ans3 }
Enter size: 6
Enter element 0 : 1
Enter element 1 : 3
Enter element 2 : 2
Enter element 3 : 4
Enter element 4 : 5
Enter element 5 : 6
The array is: 1 3 2 4 5 6
Array is not sorted
PS C:\Users\Manish\Desktop\Coding\C++\7_Arrays and Vectors\2_Vector\Assignment>
```

Q4. Find the difference between the sum of elements at even indices to the sum of elements at odd indices.

Answer:



The screenshot shows a Visual Studio Code editor with a C++ file named `ans4.cpp`. The code defines a `vector<int>` `v`, takes an input `size`, and then takes `size` elements from the user. It then calculates the sum of elements at even indices (`evenSum`) and the sum of elements at odd indices (`oddSum`). Finally, it prints the difference between the two sums: `evenSum - oddSum`.

```
1 #include<iostream>
2 #include<vector>
3 using namespace std;
4 int main()
5 {
6     vector<int>v;
7     int size;
8     cout<<"Enter size: ";
9     cin>>size;
10    for(int i=0;i<size-1;i++){
11        int x;
12        cout<<"Enter element "<<i<<" : ";
13        cin>>x;
14        v.push_back(x);
15    }
16    cout<<"The array is: ";
17    for(int i=0;i<size-1;i++) cout<<v[i]<<" ";
18    cout<<endl;
19    int evenSum=0, oddSum=0;
20    for(int i=0;i<size-1;i++){
21        if(i%2==0) evenSum+=v[i];
22        else oddSum+=v[i];
23    }
24    cout<<"The difference between the sum of elements at even indices to sum of elements at odd indices = "<<evenSum-oddSum;
25 }
```

The terminal output shows the execution of the program:

```
PS C:\Users\Manish\Desktop\Coding\C++> cd "C:\Users\Manish\Desktop\Coding\C++\7_Arrays and Vectors\2_Vector\Assignment\"; if ($?) { g++ ans4.cpp -o ans4 }; if ($?) { .\ans4 }
Enter size: 6
Enter element 0 : 2
Enter element 1 : 1
Enter element 2 : 4
Enter element 3 : 3
Enter element 4 : 6
Enter element 5 : 5
The array is: 2 1 4 3 6 5
The difference between the sum of elements at even indices to sum of elements at odd indices = 3
PS C:\Users\Manish\Desktop\Coding\C++\7_Arrays and Vectors\2_Vector\Assignment>
```

Q5. Given an array of integers, change the value of all odd indexed elements to its second multiple and increment all even indexed values by 10.

Answer:

```
1 #include<iostream>
2 #include<vector>
3 using namespace std;
4 void display(vector<int>v){
5     for(int i=0;i<v.size()-1;i++) cout<<v[i]<<" ";
6     cout<<endl;
7 }
8 int main(){
9     vector<int>v;
10    int size;
11    cout<<"Enter size: ";
12    cin>>size;
13    for(int i=0;i<size-1;i++){
14        int x;
15        cout<<"Enter element "<<i<<" : ";
16        cin>>x;
17        v.push_back(x);
18    }
19    cout<<"The array is: ";
20    display(v);
21    for(int i=0;i<size-1;i++){
22        if(i%2!=0) v[i]*=2;
23        else v[i]+=10;
24    }
25    cout<<"The new array is: ";
26    display(v);
27 }
```

PS C:\Users\Vanish\Desktop\Coding\C++> cd "c:\Users\Vanish\Desktop\Coding\C++\7_Arrays and Vectors\2_Vector\Assignment\"; if (\$?) { g++ ans5.cpp -o ans5 }; if (\$?) { .\ans5 }
Enter size: 5
Enter element 0 : 1
Enter element 1 : 2
Enter element 2 : 3
Enter element 3 : 4
Enter element 4 : 5
The array is: 1 2 3 4 5
The new array is: 11 4 13 8 15
PS C:\Users\Vanish\Desktop\Coding\C++\7_Arrays and Vectors\2_Vector\Assignment>

Q6: Find the unique number in a given Array where all the elements are being repeated twice with one value being unique.

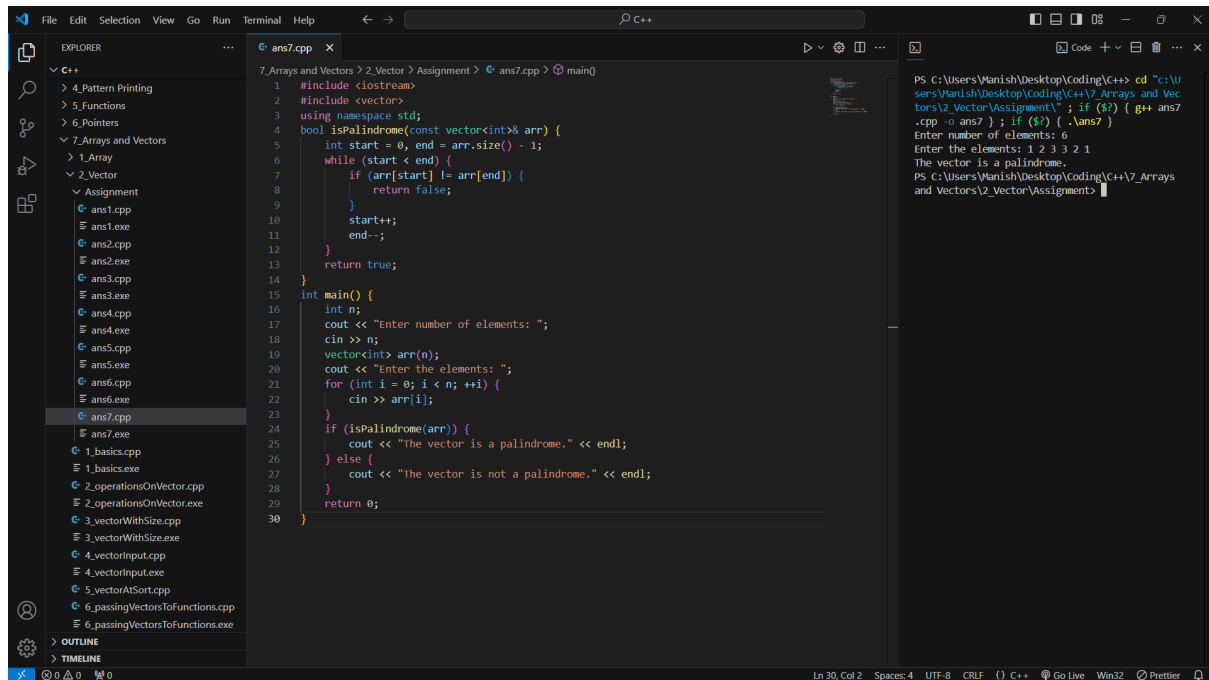
Answer:

```
1 #include<iostream>
2 #include<vector>
3 using namespace std;
4 int main() {
5     vector<int> v;
6     int size;
7     cout<<"Enter size: ";
8     cin>>size;
9     for(int i = 0; i < size; i++) {
10        int x;
11        cout << "Enter element " << i << " : ";
12        cin >> x;
13        v.push_back(x);
14    }
15    cout << "The array is: ";
16    for(int i = 0; i < size; i++)
17        cout << v[i] << " ";
18    cout << endl;
19    int unique = 0;
20    for(int i = 0; i < size; i++) {
21        unique ^= v[i]; // XOR-ing all elements
22    }
23    cout << "The unique element is: " << unique << endl;
24 }
25
```

PS C:\Users\Vanish\Desktop\Coding\C++> cd "c:\Users\Vanish\Desktop\Coding\C++\7_Arrays and Vectors\2_Vector\Assignment\"; if (\$?) { g++ ans6.cpp -o ans6 }; if (\$?) { .\ans6 }
Enter size: 7
Enter element 0: 1
Enter element 1: 2
Enter element 2: 3
Enter element 3: 1
Enter element 4: 2
Enter element 5: 4
Enter element 6: 4
The array is: 1 2 3 1 2 4 4
The unique element is: 3
PS C:\Users\Vanish\Desktop\Coding\C++\7_Arrays and Vectors\2_Vector\Assignment>

Q7: If an array arr contains n elements, then check if the given array is a palindrome or not .

Answer:



The screenshot shows a C++ IDE with a file explorer on the left, a code editor in the center, and a terminal on the right. The file explorer shows a project structure with folders for '4. Pattern Printing', '5. Functions', '6. Pointers', '7. Arrays and Vectors', and '2. Vector'. The code editor displays the following C++ code:

```
1 #include <iostream>
2 #include <vector>
3 using namespace std;
4 bool isPalindrome(const vector<int>& arr) {
5     int start = 0, end = arr.size() - 1;
6     while (start < end) {
7         if (arr[start] != arr[end]) {
8             return false;
9         }
10        start++;
11        end--;
12    }
13    return true;
14 }
15 int main() {
16     int n;
17     cout << "Enter number of elements: ";
18     cin >> n;
19     vector<int> arr(n);
20     cout << "Enter the elements: ";
21     for (int i = 0; i < n; ++i) {
22         cin >> arr[i];
23     }
24     if (isPalindrome(arr)) {
25         cout << "The vector is a palindrome." << endl;
26     } else {
27         cout << "The vector is not a palindrome." << endl;
28     }
29     return 0;
30 }
```

The terminal on the right shows the output of the program:

```
PS C:\Users\Manish\Desktop\Coding\C++> cd "C:\Users\Manish\Desktop\Coding\C++\7 Arrays and Vectors\2 Vector\Assignment\"; if ($?) { g++ ans7.cpp -o ans7.exe; if ($?) { .\ans7.exe } }
Enter number of elements: 6
Enter the elements: 1 2 3 3 2 1
The vector is a palindrome.
PS C:\Users\Manish\Desktop\Coding\C++\7 Arrays and Vectors\2 Vector\Assignment>
```

Q8: Find the error.

```
double getAverage(int arr[], int size);
int main () {
int balance[5] = {1000, 2, 3, 17, 50};
double avg;
avg = getAverage( balance[0], 5 ) ;
cout << "Average value is: " << avg << endl;
return 0;
}
```

Answer: in parameters of function call of “getAverage” “balance[0]” is given which is wrong because it is trying to convert ‘int’ to ‘int*’. Only “balance” should be passed. Also inside the function definition there is no code present to find the average of array values.