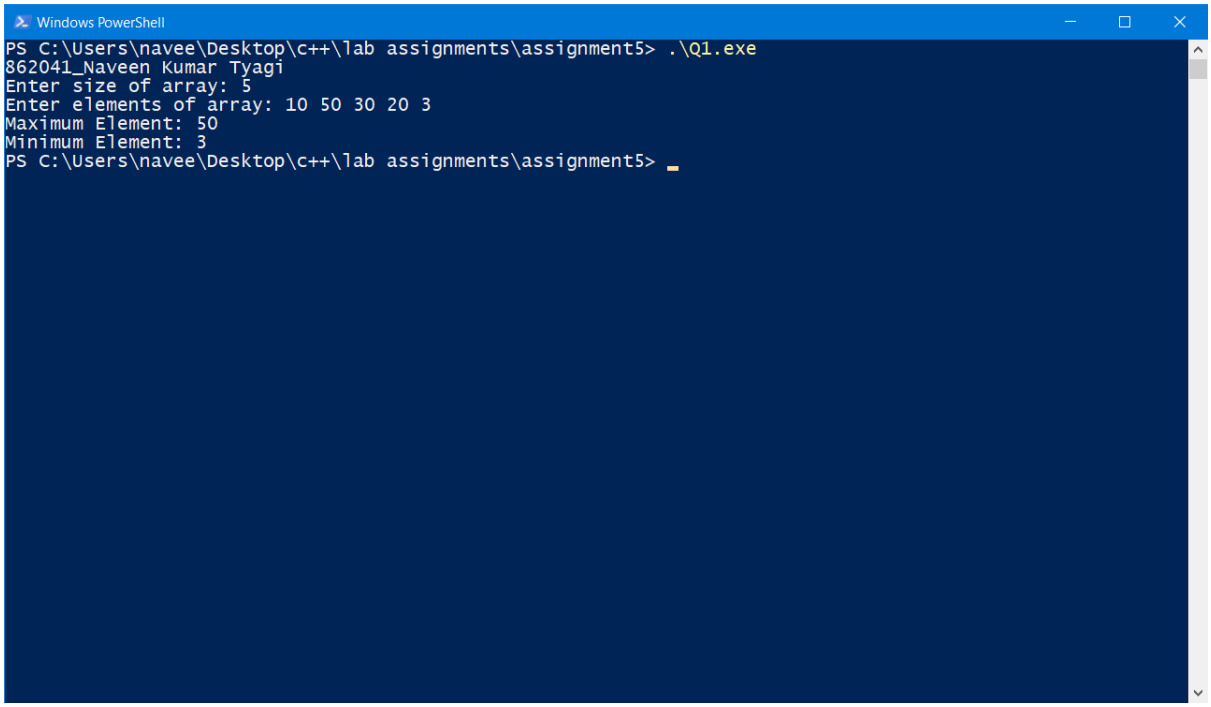
1. Write a C++ program to find the largest and smallest element of a given array of integers.

Code:

```
//862041_Naveen Kumar Tyagi_Section F
#include<iostream>
using namespace std;
int main(){
   cout<<"862041_Naveen Kumar Tyagi\n";
   int n;                    //n is to store size of array
   cout<<"Enter size of array: ";
   cin>>n;
   int arr[n];               //declaration of arr array
   cout<<"Enter elements of array: ";
   //to store elements in array arr
   for(int i=0;i<n;i++){
      cin>>arr[i];
   }
   int max=arr[0],min=arr[0];   /*assuming first element of array be maximum and
minimum*/

   //to find the greatest and smallest number in array
   for(int i=1;i<n;i++){
       /*compare each element with the max and if element is greater then it store to max
       . Then the max will compare to rest elements*/
      if(max<arr[i]){
         max=arr[i];
      }
      /*compare each element with the min and if element is smaller then it store to min
       . Then the min will compare to rest elements*/
```

```
        if(min>arr[i]){
            min=arr[i];
        }
    }
    cout<<"Maximum Element: "<<max<<"\n"
    <<"Minimum Element: "<<min;
    return 0;
}
```

Output:

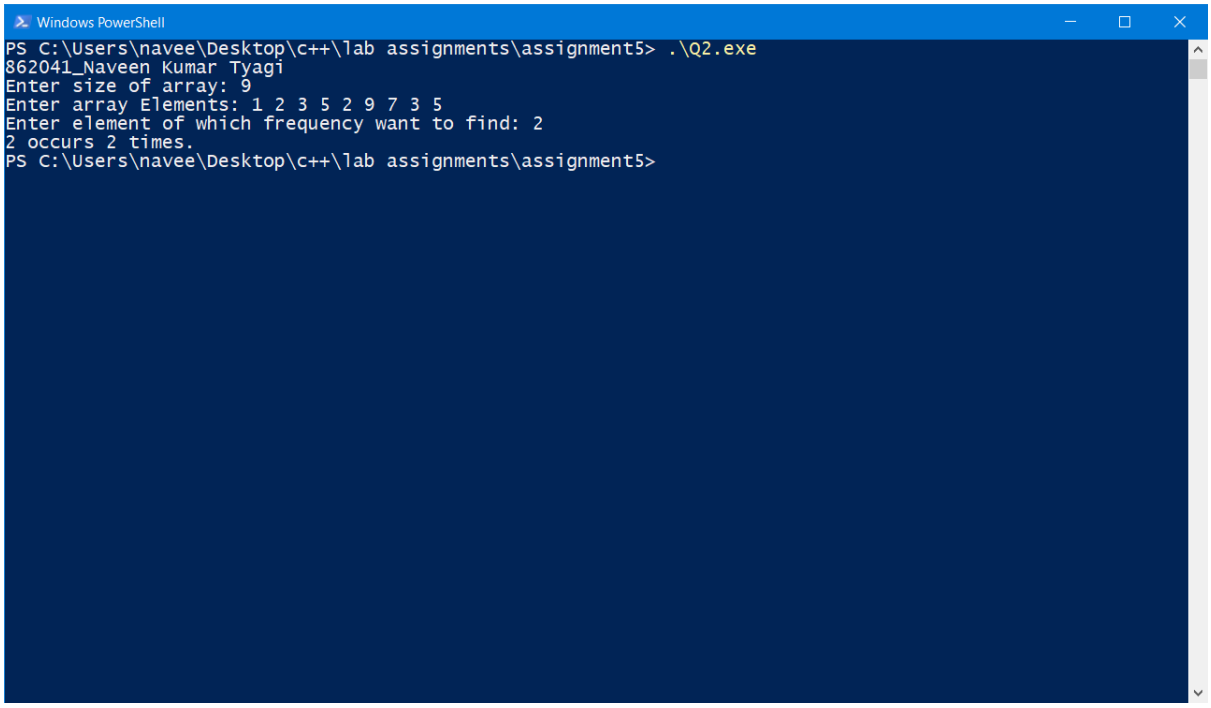


2. Write a program to find the frequency of a element in an array

Code:

```
//862041_Naveen Kumar Tyagi_Section F
#include<iostream>
using namespace std;
int main(){
   cout<<"862041_Naveen Kumar Tyagi\n";
   int n,k,counter=0;
   cout<<"Enter size of array: ";
   cin>>n;        //n stores size of array
   int arr[n];    //declaration of array
   cout<<"Enter array Elements: ";

   //to store elements of array
   for(int i=0;i<n;i++){
      cin>>arr[i];
   }
   cout<<"Enter element of which frequency want to find: ";
   cin>>k;    //element ,of which frequency we want to find
   //for loop to count the frequency of k
   for(int i=0;i<n;i++){
      if(arr[i]==k){  //increase counter by one if k found
         counter++;
      }
   }
   cout<<k<<" occurs "<<counter<<" times.";
   return 0;
}
```

Output:


Windows PowerShell
PS C:\Users\navee\Desktop\c++\lab assignments\assignment5> .\Q2.exe
862041_Naveen Kumar Tyagi
Enter size of array: 9
Enter array Elements: 1 2 3 5 2 9 7 3 5
Enter element of which frequency want to find: 2
2 occurs 2 times.
PS C:\Users\navee\Desktop\c++\lab assignments\assignment5>

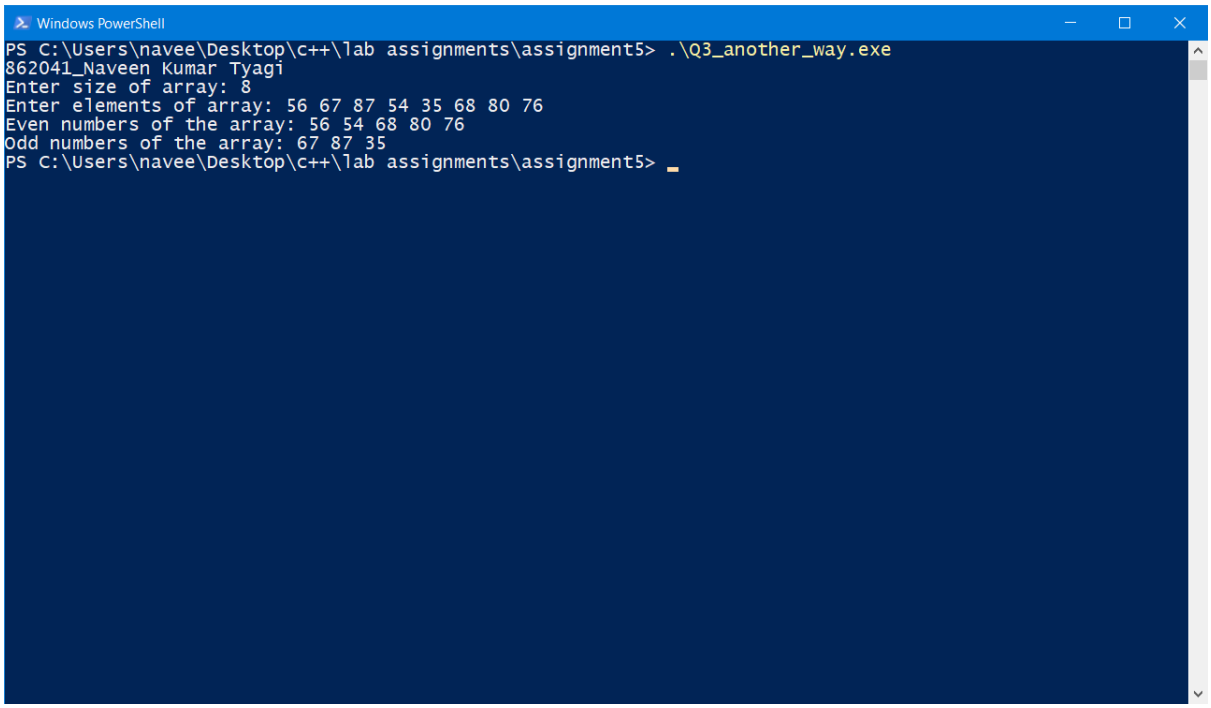
3. Write a C++ program to separate even and odd numbers of an array of integers. Put all even numbers first, and then odd numbers.

Code:

```
//862041_Naveen Kumar Tyagi_Section F
#include<iostream>
using namespace std;
int main(){
   cout<<"862041_Naveen Kumar Tyagi\n";
   int n;
   cout<<"Enter size of array: ";
   cin>>n;       //n store size of array

   int arr[n];
   cout<<"Enter elements of array: ";
   //to take input from user
   for(int i=0;i<n;i++){
      cin>>arr[i];
   }
   cout<<"Even numbers of the array: ";
   //for loop to print out even numbers
   for(int i=0;i<n;i++){
      if(arr[i]%2==0){
         cout<<arr[i]<<" ";
      }
   }
   cout<<"\nOdd numbers of the array: ";
   //for loop to print out odd numbrs
   for(int i=0;i<n;i++){
```

```
        if(arr[i]%2==1){
            cout<<arr[i]<<" ";
        }
    }
    return 0;
}
```

Output:



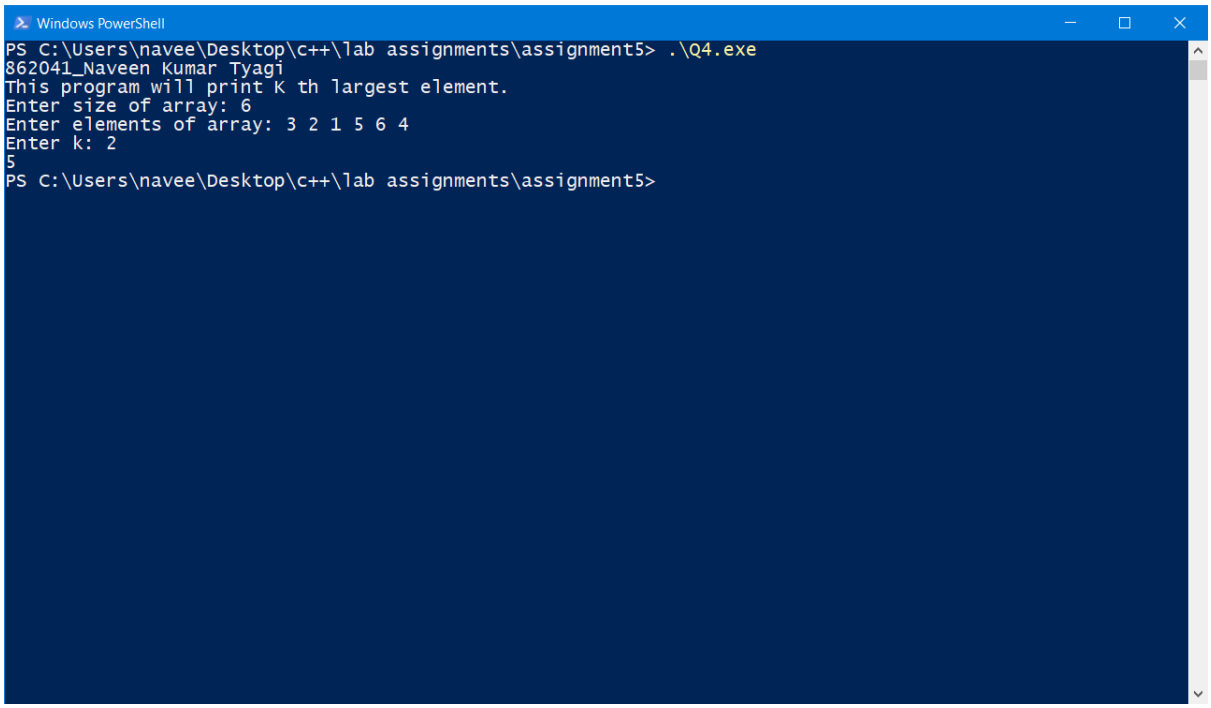
4. Write a C++ program to find kth largest elements in a given array of integers.

Code:

```
//862041_Naveen Kumar Tyagi_Section F
#include<iostream>
using namespace std;
int main(){
   cout<<"862041_Naveen Kumar Tyagi\n";
   int n,k;
   cout<<"This program will print K th largest element.\n";
   cout<<"Enter size of array: ";
   cin>>n;     // n store size of array
   int arr[n];
   cout<<"Enter elements of array: ";
   //for loop to take input from user
   for(int i=0;i<n;i++){
      cin>>arr[i];
   }
   cout<<"Enter k: ";
   cin>>k;
   //selection sort to sort the array
   for(int i=0;i<n-1;i++){
      int min=arr[i];
      int loc=i;
      for(int j=i+1;j<n;j++){
         if(min>arr[j]){
            min=arr[j];
            loc=j;
         }
```

```
        }
        //swapping minimum term with the first of unsorted subarray
        int temp=arr[i];
        arr[i]=arr[loc];
        arr[loc]=temp;
    }
    //printing k largest
    cout<<arr[n-k];

    return 0;
}
```

Output:



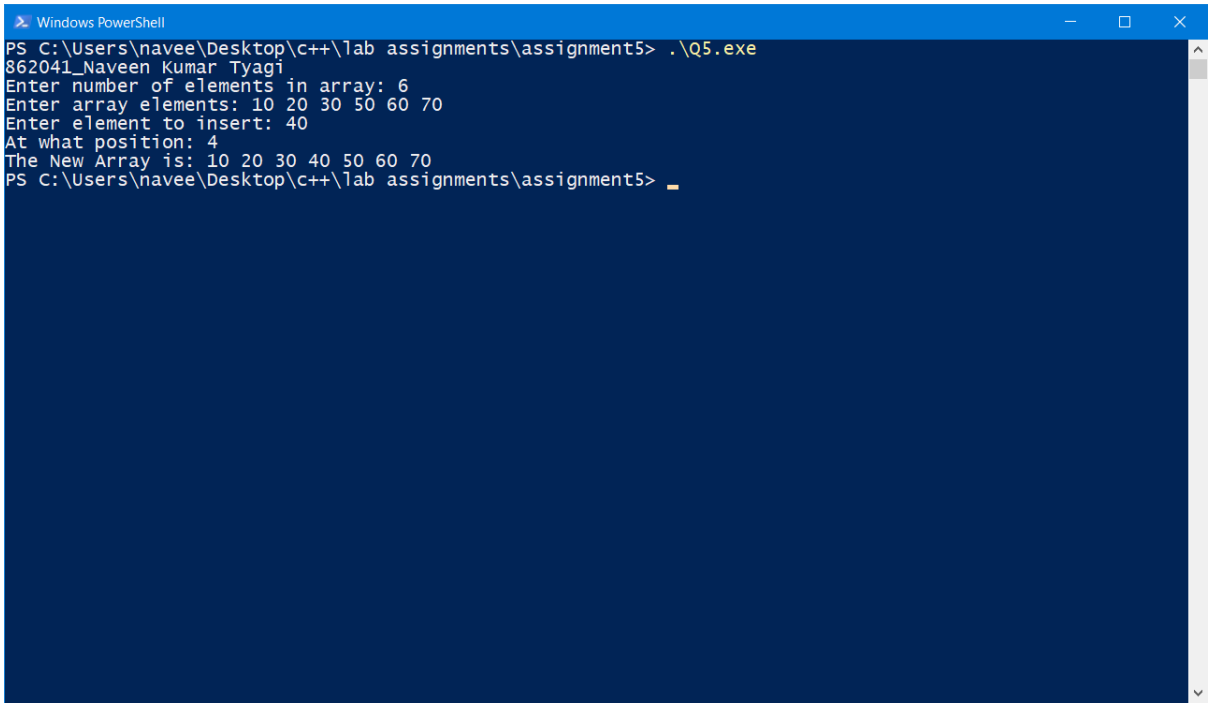
5. Write a c++ Program to Insert an Element in an Array

Code:

```
//862041_Naveen Kumar Tyagi_Section F
#include<iostream>
using namespace std;
int main(){
   cout<<"862041_Naveen Kumar Tyagi\n";
   int n,in,pos;
   cout<<"Enter number of elements in array: ";
   cin>>n; //n store number of elements of array the user will enter

   int arr[n+1];  //declaration of array of size one greater than n
              //to insert a element in the array later
   cout<<"Enter array elements: ";
   //for loop to take input and store elements in array
   for(int i=0;i<n;i++){
      cin>>arr[i];
   }
   cout<<"Enter element to insert: ";
   cin>>in;    //in store element which is to be inserted
   cout<<"At what position: ";
   cin>>pos;      //store position at which element is to be inserted

   //for loop to shift those elements to right by one
   //which are at specified position and right of it
   //so that element can be inserted at the required position
   for(int i=n;i>pos-1;i--){
      arr[i]=arr[i-1];
```

```
    }
    //inserting the element in array
    arr[pos-1]=in;

    cout<<"The New Array is: ";
    for(int i=0;i<n+1;i++){
       cout<<arr[i]<<" ";
    }
    return 0;
}
```

Output:



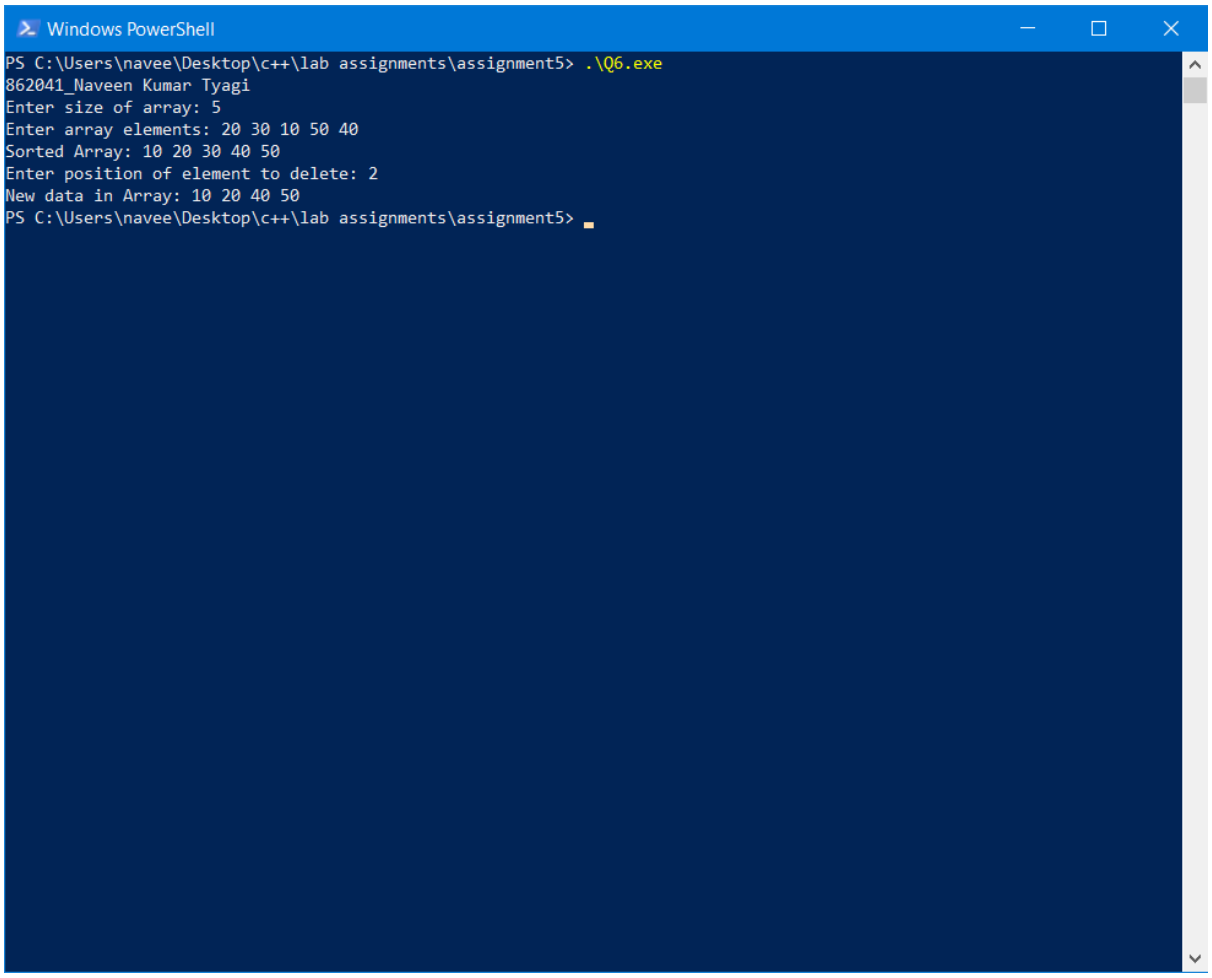
6. Write a C++ program to delete an element from an array

Code:

```
//862041_Naveen Kumar Tyagi
#include<iostream>
using namespace std;
int main(){
   cout<<"862041_Naveen Kumar Tyagi\n";
   int n,pos;
   cout<<"Enter size of array: ";
   cin>>n;   // n store size of array
   int arr[n];
   cout<<"Enter array elements: ";
   //for loop to take input from user
   for(int i=0;i<n;i++){
      cin>>arr[i];
   }

   //sorting the array by selection sort
   for(int i=0;i<n-1;i++){
      int min=arr[i];
      int loc;
      //find minimum element in unsorted subarray
      for(int j=i;j<n;j++){
         if(min>arr[j]){
            min=arr[j];
            loc=j;
         }
      }
      //swapping minimum term with the first of unsorted subarray
```

```
      int temp=arr[i];
      arr[i]=arr[loc];
      arr[loc]=temp;
   }
   cout<<"Sorted Array: ";
   //for loop to print out the sorted array
   for(int i=0;i<n;i++){
      cout<<arr[i]<<" ";
   }
   cout<<"\nEnter position of element to delete: ";
   cin>>pos;


   //shifting elements by one to position specified
   //in this way value at specified position by element
   //which is at right of it
   //we lost the value in other words we deleted that
   for(int i=pos;i<n-1;i++){
      arr[i]=arr[i+1];
   }
   //printing out the array
   cout<<"New data in Array: ";
   for(int i=0;i<n-1;i++){
      cout<<arr[i]<<" ";
   }
   return 0;
}
```

Output:

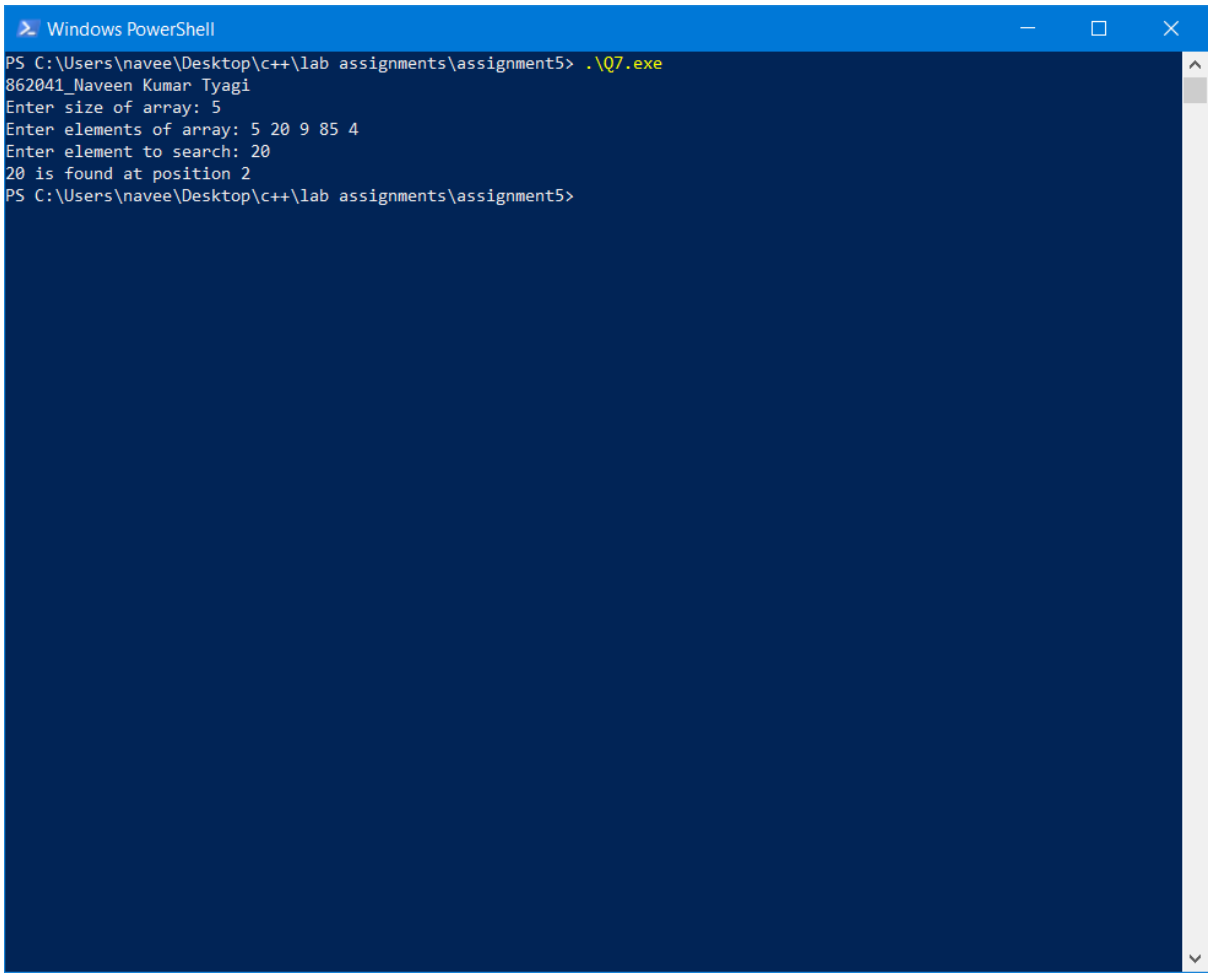

Windows PowerShell
PS C:\Users\navee\Desktop\c++\lab assignments\assignment5> .\Q6.exe
862041_Naveen Kumar Tyagi
Enter size of array: 5
Enter array elements: 20 30 10 50 40
Sorted Array: 10 20 30 40 50
Enter position of element to delete: 2
New data in Array: 10 20 40 50
PS C:\Users\navee\Desktop\c++\lab assignments\assignment5>

7. Write a program to read an Array and Search for an Element in the array and display the position of the element.

Code:

```
//862041_Naveen Kumar Tyagi
#include<iostream>
using namespace std;
int main(){
   cout<<"862041_Naveen Kumar Tyagi\n";
   int n,k;
   cout<<"Enter size of array: ";
   cin>>n;    //store size of array
   int arr[n];
   cout<<"Enter elements of array: ";
   //for loop to take input from user
   for(int i=0;i<n;i++){
      cin>>arr[i];
   }
   cout<<"Enter element to search: ";
   cin>>k; // store element which is to be store
   //for loop to search by linear search method
   for(int i=0;i<n;i++){
      // if element found it will show the index and break the loop
      if(k==arr[i]){
         cout<<k<<" is found at position "<<i+1;
         break;
      }
   }
   return 0;
}
```

Output:


Windows PowerShell
PS C:\Users\navee\Desktop\c++\lab assignments\assignment5> .\Q7.exe
862041_Naveen Kumar Tyagi
Enter size of array: 5
Enter elements of array: 5 20 9 85 4
Enter element to search: 20
20 is found at position 2
PS C:\Users\navee\Desktop\c++\lab assignments\assignment5>