School of Mechanical & Manufacturing Engineering (SMME),

National University of Science and Technology (NUST),

Sector H-12, Islamabad

Program: BE-Aerospace Section: AE-01

Session: Fall 2023 Semester: 1st

Course Title: Fundamentals of Programming (CS-109)

Assignment

“ ”

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1. Write a C++ program, take two strings as input from user and check if both strings
are equal or not. If they are equal make them unequal by rotating string. e.g., Hello
is turned into olleH etc.

```
#include<iostream>
using namespace std;
int main(){
    string string1;
    string string2;
    cout<<"enter string 1 ";
    cin>>string1;
    cout<<"enter string 2 ";
    cin>>string2;

    bool same=true;

    if (string1.length() != string2.length()) {
        same = false;

    }
    else{

    for(int i=0;i < string1.length();i++){


            if(string1[i]!=string2[i]){
                same=false;
                break;
            }
            else{
                same=true;
            }
        }
    }

    if(!same){
```

```
E:\fop question no 1 asiignment.exe
enter string 1 hello
enter string 2 hello
strings are  same
Oposite of string2 is
olleh
--------------------------------
Process exited after 5.245 seconds with return value 0
Press any key to continue . . .
```

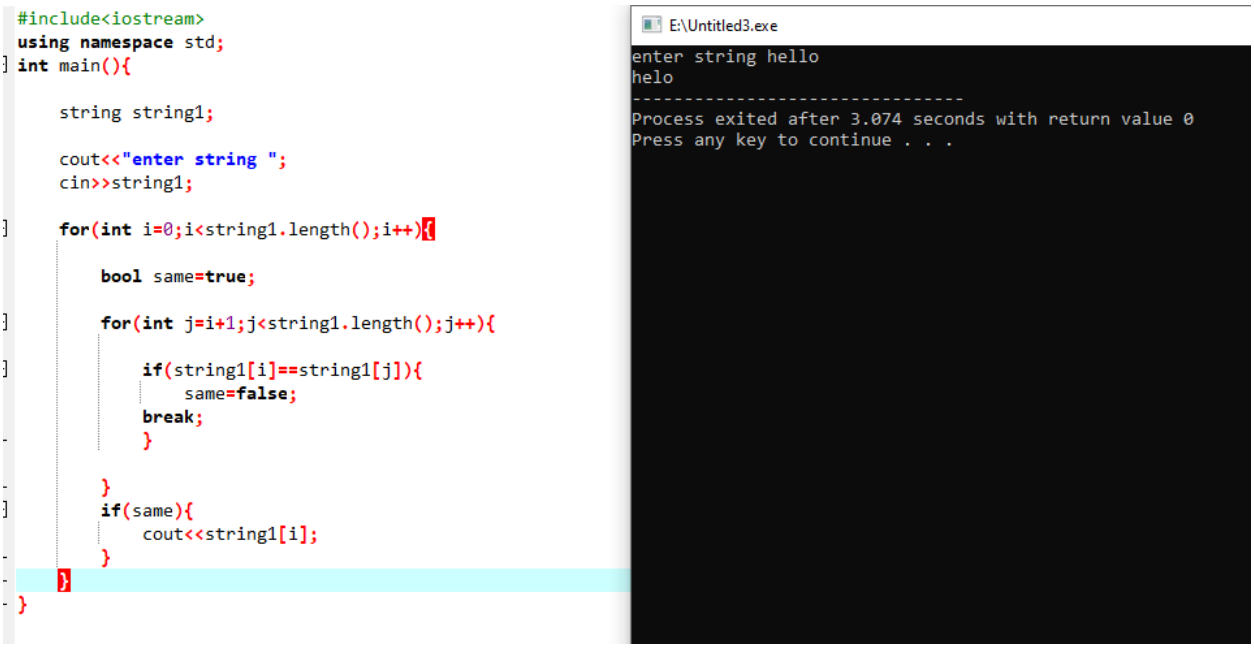
Code of question 1:

```
#include<iostream>

using namespace std;

int main(){

        string string1;

        string string2;

        cout<<"enter string 1 ";

        cin>>string1;

        cout<<"enter string 2 ";
```

```
        cin>>string2;

        bool same=true;

        if (string1.length() != string2.length()) {
    same = false;

}
        else{

        for(int i=0;i < string1.length();i++){


                        if(string1[i]!=string2[i]){
                                same=false;
                                break;
                        }
                        else{
                                same=true;
                        }
                }
        }

        if(!same){
                cout<<"strings are not same"<<endl;
        }
        else{
```

```
        cout<<"strings are  same"<<endl;
        cout<<"Oposite of string2 is "<<endl;

        for(int j=4;j>=0;j--){

                cout<<string2[j];

        }

        }
}
```

2. Write a C++program for a string which may contain lowercase and uppercase
characters. The task is to remove all duplicate characters from the string and find
the resultant string.



```
#include<iostream>
using namespace std;
int main(){

    string string1;

    cout<<"enter string ";
    cin>>string1;

    for(int i=0;i<string1.length();i++){

        bool same=true;

        for(int j=i+1;j<string1.length();j++){

            if(string1[i]==string1[j]){
                same=false;
            break;
            }

        }
        if(same){
            cout<<string1[i];
        }
    }
}
```

```
E:\Untitled3.exe
enter string hello
helo
--------------------------------
Process exited after 3.074 seconds with return value 0
Press any key to continue . . .
```

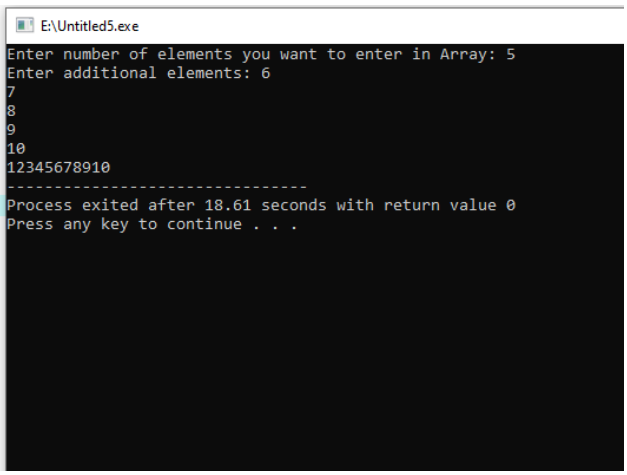
Code of Question 2:

```
#include<iostream>

using namespace std;

int main(){


        string string1;


        cout<<"enter string ";

        cin>>string1;


        for(int i=0;i<string1.length();i++){


                bool same=true;


                for(int j=i+1;j<string1.length();j++){
```

```
                    if(string1[i]==string1[j]){
                        same=false;
                    break;
                    }

                }
                if(same){
                    cout<<string1[i];
                }
        }
}
```

3. Suppose an integer array a[5] = {1,2,3,4,5}. Add more elements to it and display
them in C++.

```
#include<iostream>
using namespace std;
int main(){
    int n;
    cout<<"Enter number of elements you want to enter in Array: ";
    cin>>n;

    int array[5+n]={1,2,3,4,5};
    cout<<"Enter additional elements: ";
    for(int i=5;i<n+5;i++){
        cin>>array[i];


    }
    for(int k=0;k<5+n;k++){
        cout<<array[k];
    }
}
```



Code of question 3:

```
#include<iostream>
using namespace std;
int main(){
	int n;
	cout<<"Enter number of elements you want to enter in Array: ";
	cin>>n;

	int array[5+n]={1,2,3,4,5};
	cout<<"Enter additional elements: ";
	for(int i=5;i<n+5;i++){
		cin>>array[i];



	}
	for(int k=0;k<5+n;k++){
		cout<<array[k];
	}
}
```

4. Write a C++ program that uses a while loop to find the largest prime number less
than a given positive integer N. Your program should take the value of N as input

from the user and then find the largest prime number less than or equal to N. You
are not allowed to use any library or pre-existing functions to check for prime
numbers.

```cpp
#include<iostream>
using namespace std;
int main(){

    int max=0;
    int i=6;
    int n;
    cout<<"Enter number upto which you want to find the prime number: ";
    cin>>n;
    cout<<"Prime numbers upto "<<n<<" are"<<endl;
    while(i<=n){
        if(i%2!=0 && i%3!=0 && i%5!=0){
            cout<<i<<endl;
            if(max<i){max=i;
            }
            i++;
        }
        i++;
    }
    cout<<"Max no is "<<max;
}
```

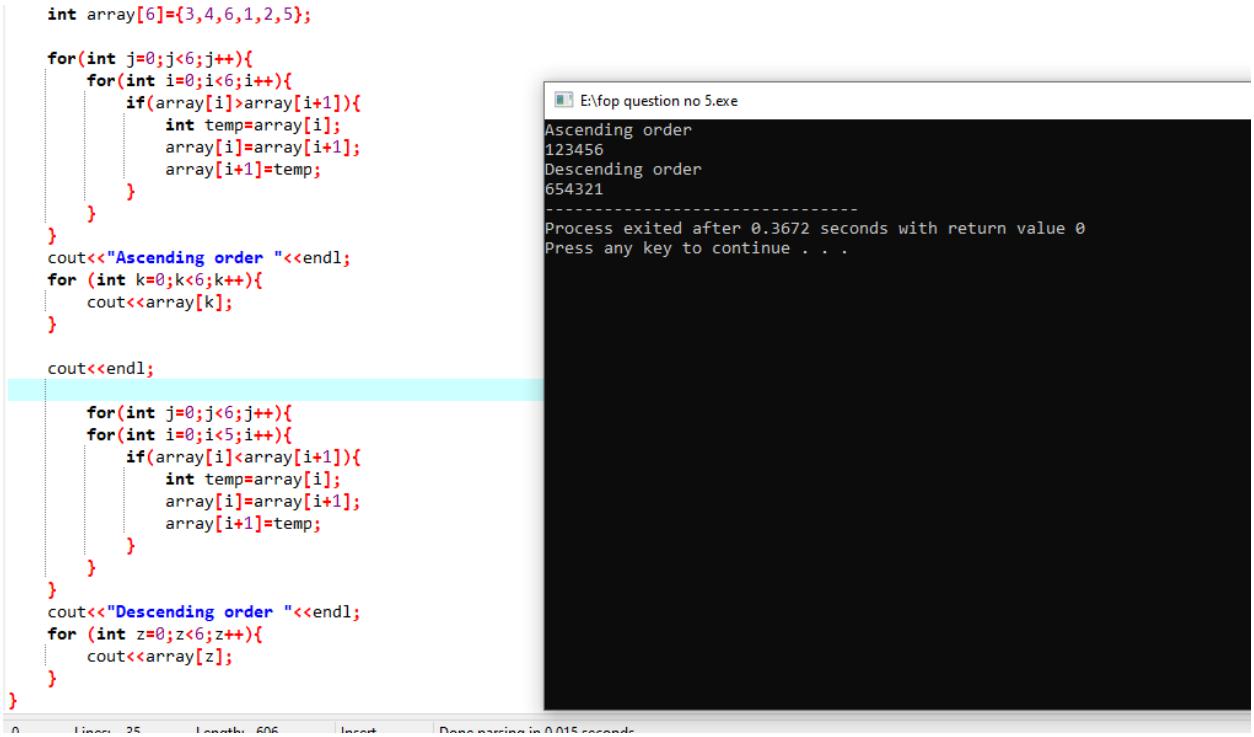
```
Enter number upto which you want to find the prime number: 100
Prime numbers upto 100 are
7
11
13
17
19
23
29
31
37
41
43
47
49
53
59
61
67
71
73
77
79
83
89
91
97
Max no is 97
--------------------------------
```

Code of question 4:

```
#include<iostream>

using namespace std;

int main(){


        int max=0;

        int i=6;

        int n;

        cout<<"Enter number upto which you want to find the prime number: ";

        cin>>n;

        cout<<"Prime numbers upto "<<n<<" are"<<endl;

        while(i<=n){
```

```
            if(i%2!=0 && i%3!=0 && i%5!=0){
                cout<<i<<endl;
                if(max<i){max=i;
                }
                i++;
            }
            i++;
        }
        cout<<"Max no is "<<max;
}
```

5. Implement Bubble Sort on an array of 6 integers.

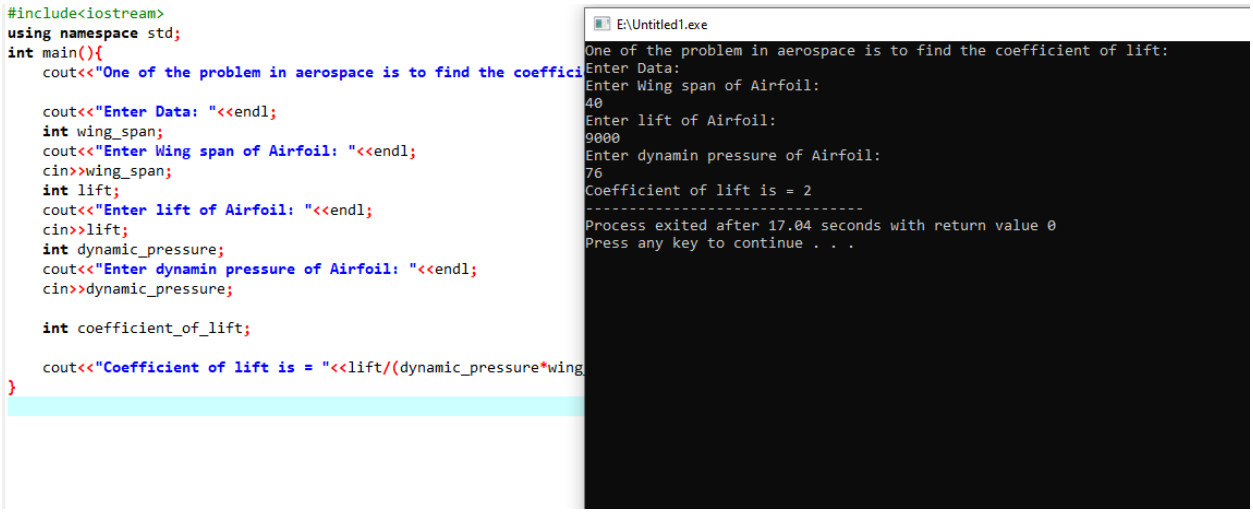


Code of question 5:

```
#include<iostream>

using namespace std;

int main(){

        int array[6]={3,4,6,1,2,5};


        for(int j=0;j<6;j++){

                for(int i=0;i<6;i++){

                        if(array[i]>array[i+1]){

                                int temp=array[i];

                                array[i]=array[i+1];

                                array[i+1]=temp;

                        }

                }
```

```
        }
        cout<<"Ascending order "<<endl;
        for (int k=0;k<6;k++){
                cout<<array[k];
        }

        cout<<endl;

                for(int j=0;j<6;j++){
                for(int i=0;i<5;i++){
                        if(array[i]<array[i+1]){
                                int temp=array[i];
                                array[i]=array[i+1];
                                array[i+1]=temp;
                        }
                }
        }
        cout<<"Descending order "<<endl;
        for (int z=0;z<6;z++){
                cout<<array[z];
        }
}
```

6. Solve any Aerospace/Real Life Problem using C++ Programming.



```
#include<iostream>
using namespace std;
int main(){
    cout<<"One of the problem in aerospace is to find the coeffici

    cout<<"Enter Data: "<<endl;
    int wing_span;
    cout<<"Enter Wing span of Airfoil: "<<endl;
    cin>>wing_span;
    int lift;
    cout<<"Enter lift of Airfoil: "<<endl;
    cin>>lift;
    int dynamic_pressure;
    cout<<"Enter dynamin pressure of Airfoil: "<<endl;
    cin>>dynamic_pressure;

    int coefficient_of_lift;

    cout<<"Coefficient of lift is = "<<lift/(dynamic_pressure*wing
}
```

```
E:\Untitled1.exe
One of the problem in aerospace is to find the coefficient of lift:
Enter Data:
Enter Wing span of Airfoil:
40
Enter lift of Airfoil:
9000
Enter dynamin pressure of Airfoil:
76
Coefficient of lift is = 2
--------------------------------
Process exited after 17.04 seconds with return value 0
Press any key to continue . . .
```

Code of question 6:

```
#include<iostream>

using namespace std;

int main(){

        cout<<"One of the problem in aerospace is to find the coefficient of lift: "<<endl;


        cout<<"Enter Data: "<<endl;

        int wing_span;

        cout<<"Enter Wing span of Airfoil: "<<endl;

        cin>>wing_span;

        int lift;

        cout<<"Enter lift of Airfoil: "<<endl;

        cin>>lift;

        int dynamic_pressure;

        cout<<"Enter dynamin pressure of Airfoil: "<<endl;

        cin>>dynamic_pressure;
```

```
        int coefficient_of_lift;


        cout<<"Coefficient of lift is = "<<lift/(dynamic_pressure*wing_span);
}
```