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***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)

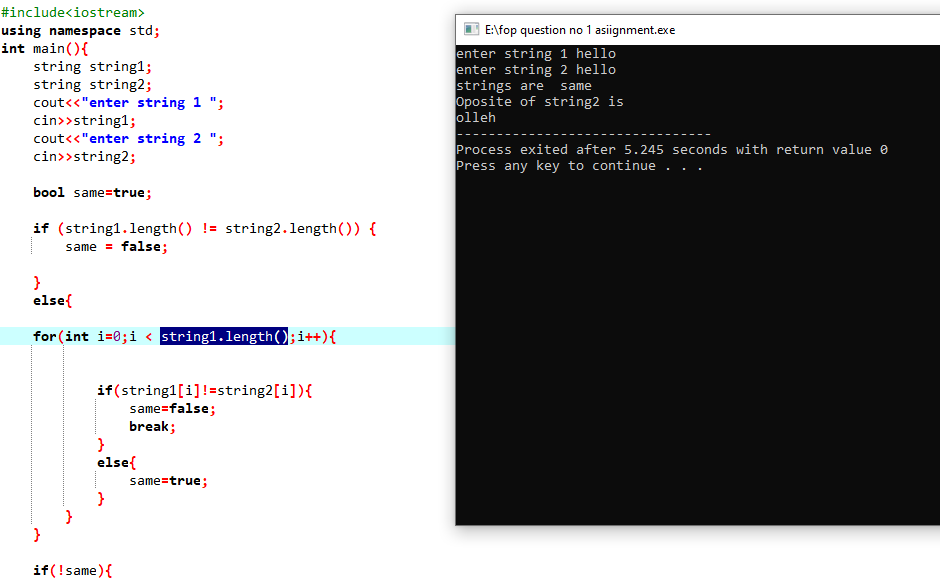
***“FOP Lab Assignment”***

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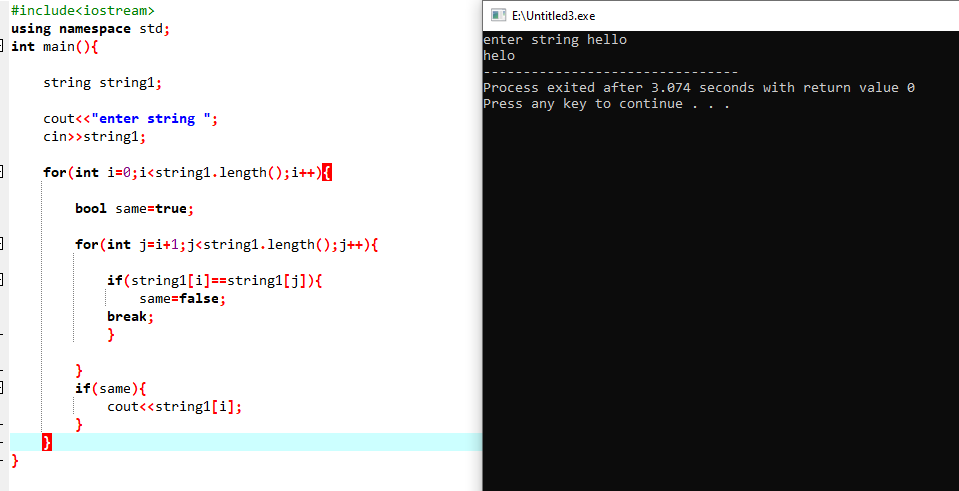
Q.1) Write a C++ program, take two strings as input from user and check if both strings are equal or not. If they are equal make them unequal by rotating string. e.g., Hello is turned into olleH etc.

Ans.1)



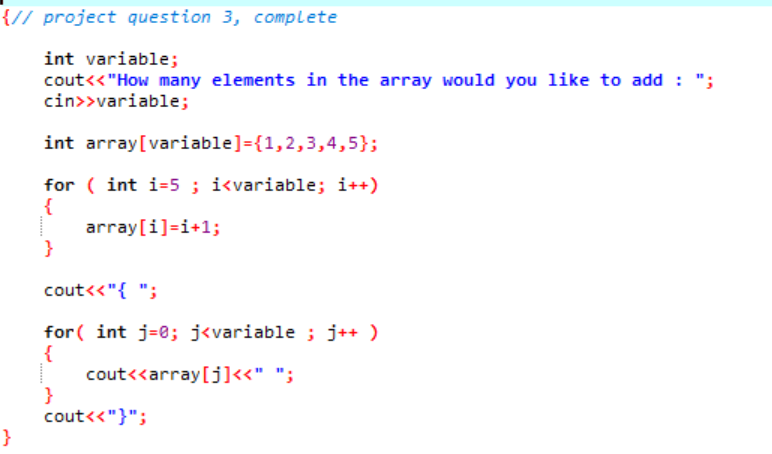
Q.2) Write a C++program for a string which may contain lowercase and uppercase characters. The task is to remove all duplicate characters from the string and find the resultant string.

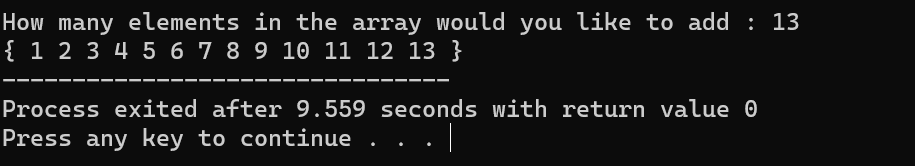
Ans.1)



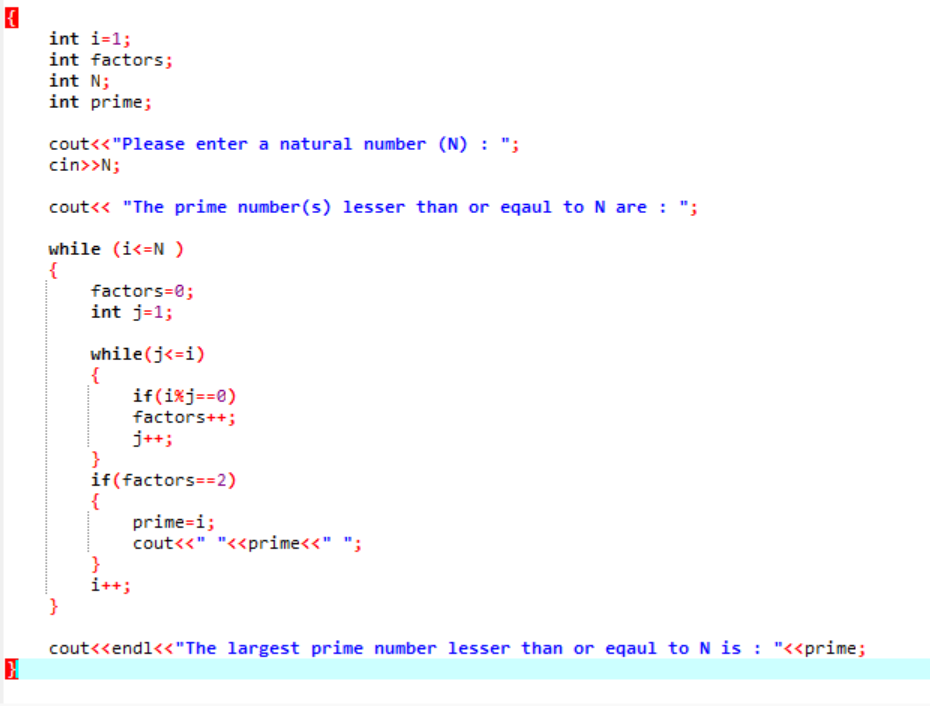
Q.3) Suppose an integer array a[5] = {1,2,3,4,5}. Add more elements to it and display them in C++.

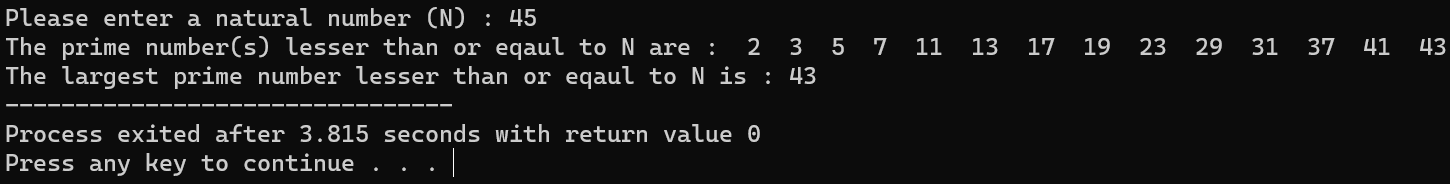
Ans.3)





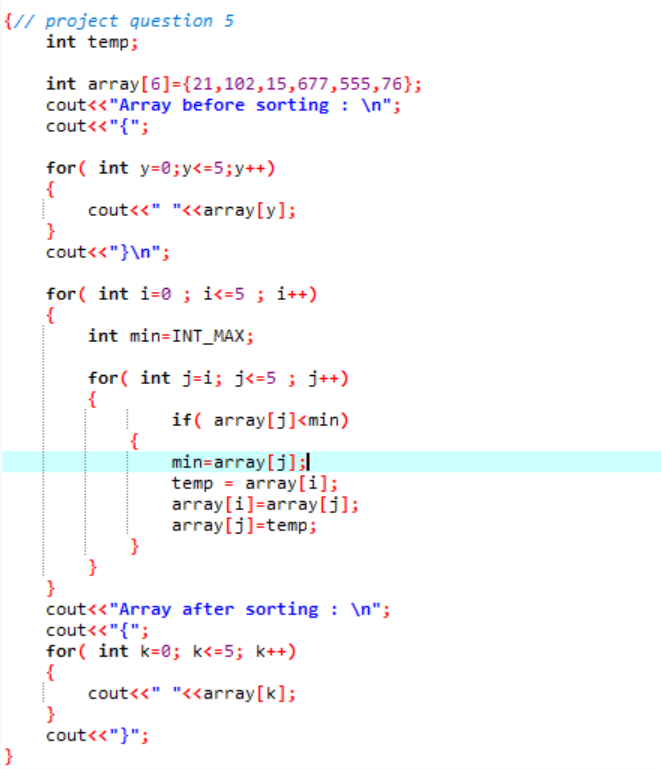
Q.4) Write a C++ program that uses a while loop to find the largest prime number less than a given positive integer N. Your program should take the value of N as input from the user and then find the largest prime number less than or equal to N. You are not allowed to use any library or pre-existing functions to check for prime numbers.

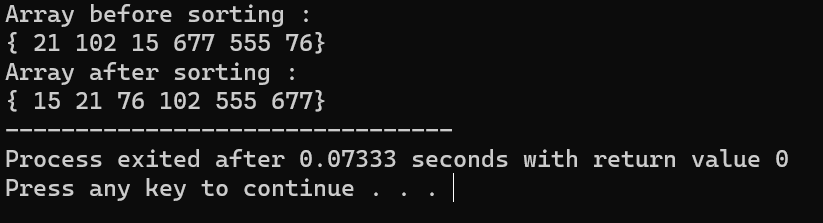
Ans.4)



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

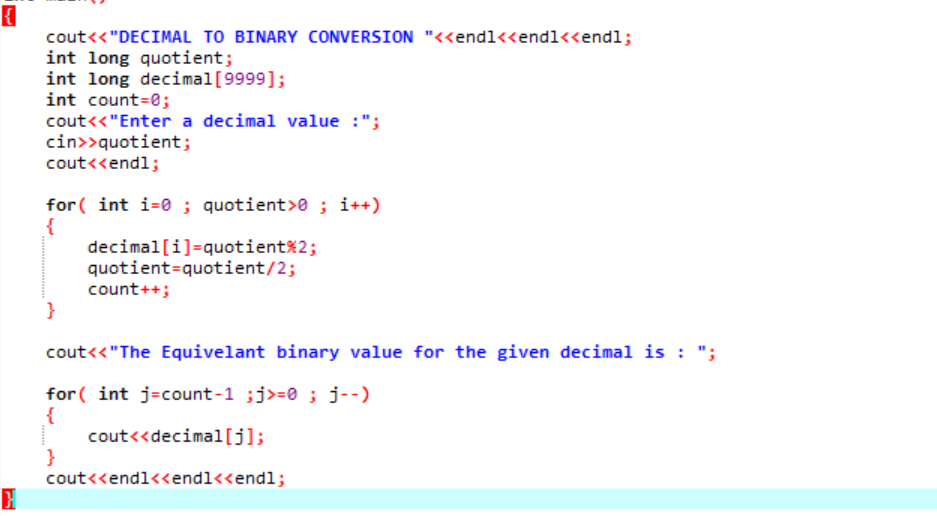
Ans.5)

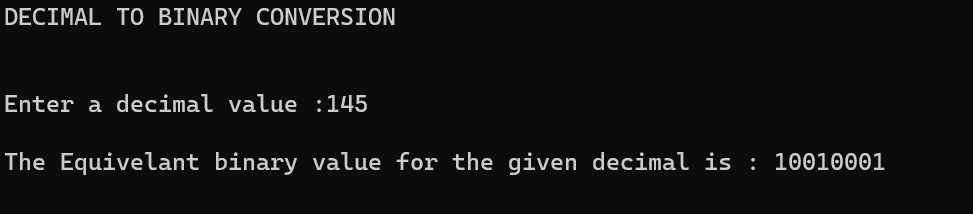




Q.6) . Solve any Aerospace/Real Life Problem using C++ Programming

Ans.6)





# **The copied code for the above questions**

Q.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];

}

}

}

Q.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];

}

}

}

Q.3)

{// project question 3, complete

int variable;

cout<<"How many elements in the array would you like to add : ";

cin>>variable;

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

for ( int i=5 ; i<variable; i++)

{

array[i]=i+1;

}

cout<<"{ ";

for( int j=0; j<variable ; j++ )

{

cout<<array[j]<<" ";

}

cout<<"}";

}

Q.4)

{// question 4

int i=1;

int factors;

int N;

int prime;

cout<<"Please enter a natural number (N) : ";

cin>>N;

cout<< "The prime number(s) lesser than or eqaul to N are : ";

while (i<=N )

{

factors=0;

int j=1;

while(j<=i)

{

if(i%j==0)

factors++;

j++;

}

if(factors==2)

{

prime=i;

cout<<" "<<prime<<" ";

}

i++;

}

cout<<endl<<"The largest prime number lesser than or eqaul to N is : "<<prime;

}

Q.5)

{// project question 5

int temp;

int array[6]={21,102,15,677,555,76};

cout<<"Array before sorting : \n";

cout<<"{";

for( int y=0;y<=5;y++)

{

cout<<" "<<array[y];

}

cout<<"}\n";

for( int i=0 ; i<=5 ; i++)

{

int min=INT\_MAX;

for( int j=i; j<=5 ; j++)

{

if( array[j]<min)

{

min=array[j];

temp = array[i];

array[i]=array[j];

array[j]=temp;

}

}

}

cout<<"Array after sorting : \n";

cout<<"{";

for( int k=0; k<=5; k++)

{

cout<<" "<<array[k];

}

cout<<"}";

}

Q.6)

{ //Question 6

cout<<"DECIMAL TO BINARY CONVERSION "<<endl<<endl<<endl;

int long quotient;

int long decimal[9999];

int count=0;

cout<<"Enter a decimal value :";

cin>>quotient;

cout<<endl;

for( int i=0 ; quotient>0 ; i++)

{

decimal[i]=quotient%2;

quotient=quotient/2;

count++;

}

cout<<"The Equivelant binary value for the given decimal is : ";

for( int j=count-1 ;j>=0 ; j--)

{

cout<<decimal[j];

}

cout<<endl<<endl<<endl;

}