CS-114 - Fundamental of Programing

Assignment 1

Submitted To: Engr Muhammad Affan

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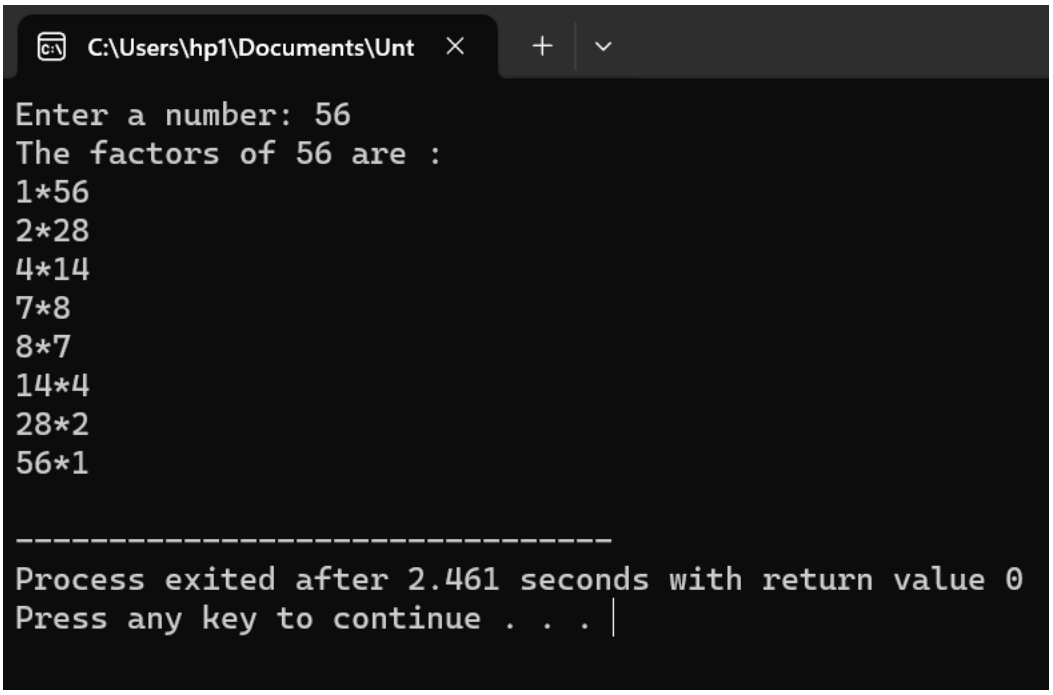
Section: B

1) Write a C++ program to display factors of a number using for loops.

```
#include <iostream>
using namespace std;
int main(){
   int a;
   cout << "Enter a number: ";
   cin >> a;
   cout << "The factors of "<<a<<" are :"<<endl;
   for(int i=1;i<=a;i++){
          if (a % i == 0){
                 cout << i << "*" << a/i << endl;
          }
   }
   return 0;
}
```



2) Write output to the following code.

```
#include<iostream>
int main() {
int x = 5;
int y = 10;
if (x == 5)
if (y == 10)
std::cout << "x is 5 and y is 10" << std::endl;
else
std::cout << "x is not 5" << std::endl;
return 0;
}
```

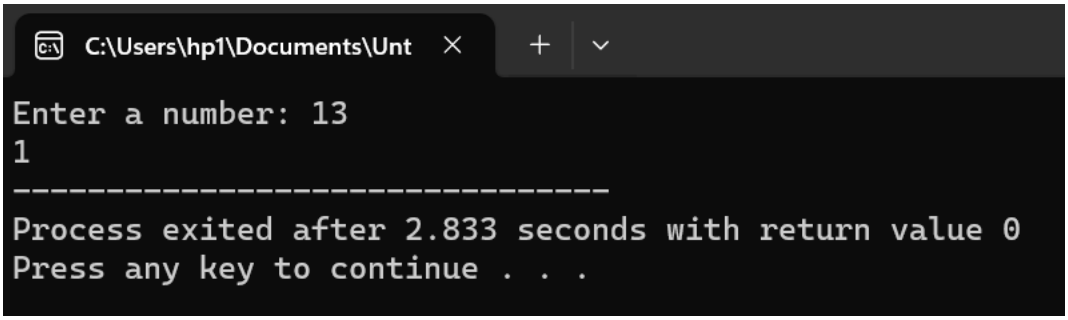
Output:

X is 5 and y is 10

3) Write a C++ program, take an integer value from user and check if it's greater than 10 and less than equal to 20. Print 1 if yes and print 0 if no. Use appropriate datatype for output.

```
#include <iostream>
using namespace std;
int main(){
        int a;
        bool flag;
        cout << "Enter a number: ";
        cin >> a;
        if (a > 10 && a <= 20){
                flag = true;
        }
```

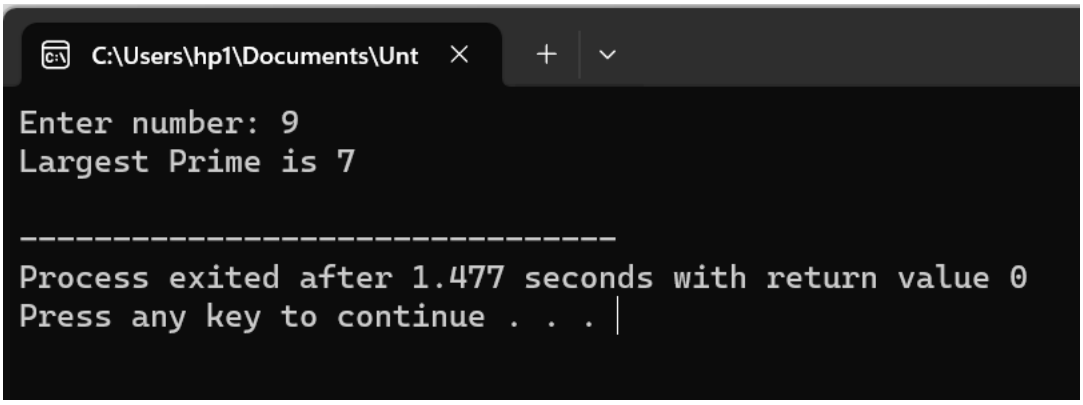
```
        else{
                flag =false;
        }
        cout << flag;
        return 0;
}
```



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.

```
#include <iostream>
using namespace std;
int main(){
        int a, i;
        bool number;
        cout<<"Enter number: ";
        cin>>a;
        while (a>=2){
                i=2;
                number=false;
                while(i<a){
```

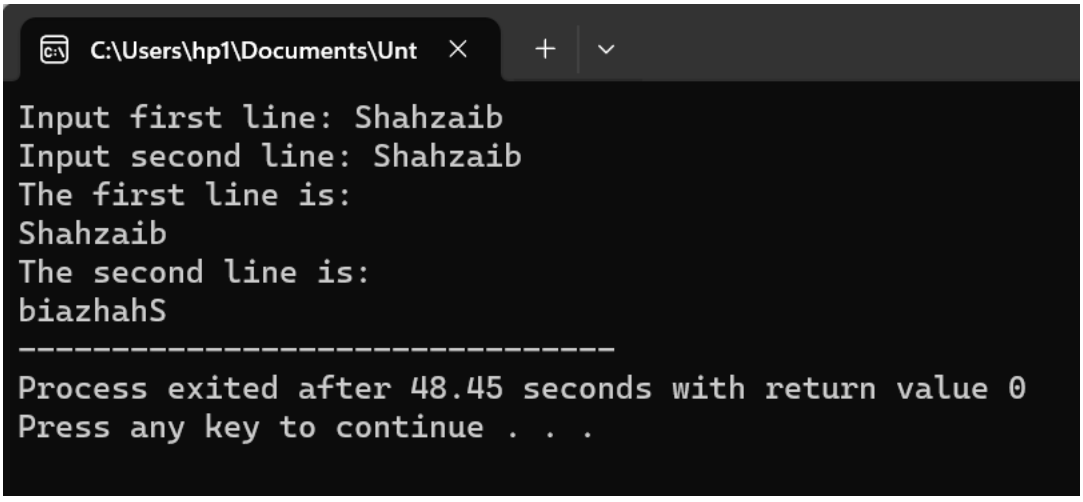
```
        if(a%i==0){
        number=true;
        break;
        }
        i++;
        }
        if(number==false){
        cout<<"Largest Prime is "<<a<<endl;
        break;
        }
        a--;
        }
        return 0;
}
```



5) Write a C++ program, take two string 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.

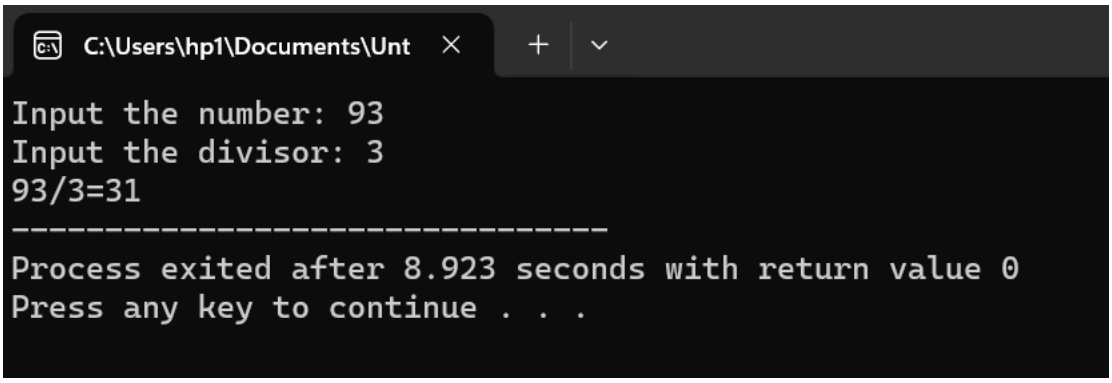
```
#include <iostream>
#include <limits>
```

```
using namespace std;
int main(){
	char x[25], y[25];
	cout<<"Input first line: ";
	cin.get(x, 25);
	cin.ignore(numeric_limits<streamsize>::max(), '\n');
	cout<<"Input second line: ";
	cin.get(y, 25);
	cout<<"The first line is: \n"<<x<<endl;
	cout<<"The second line is: \n";
	for (int i=24; i>=0; i--){
		if (x[i]==y[i]){
			cout<<y[i];
		}
	}
	return 0;
}
```



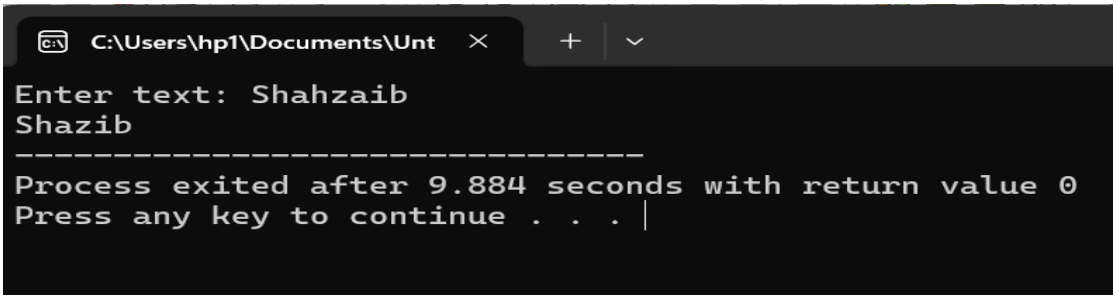
6) Perform division in C++ without / using for loops. You can use / only to display the final results. Your dividend must be greater than divisor.

```
#include <iostream>
using namespace std;
int main(){
	int a, x, b;
	cout<<"Input the number: ";
	cin>>a;
	cout<<"Input the divisor: ";
	cin>>x;
	for (b=1; b<=a; b++){
		if(x*b==a){
			cout<<a<<"/"<<x<<"="<<b;
			break;
		}
	}
	return 0;
}
```



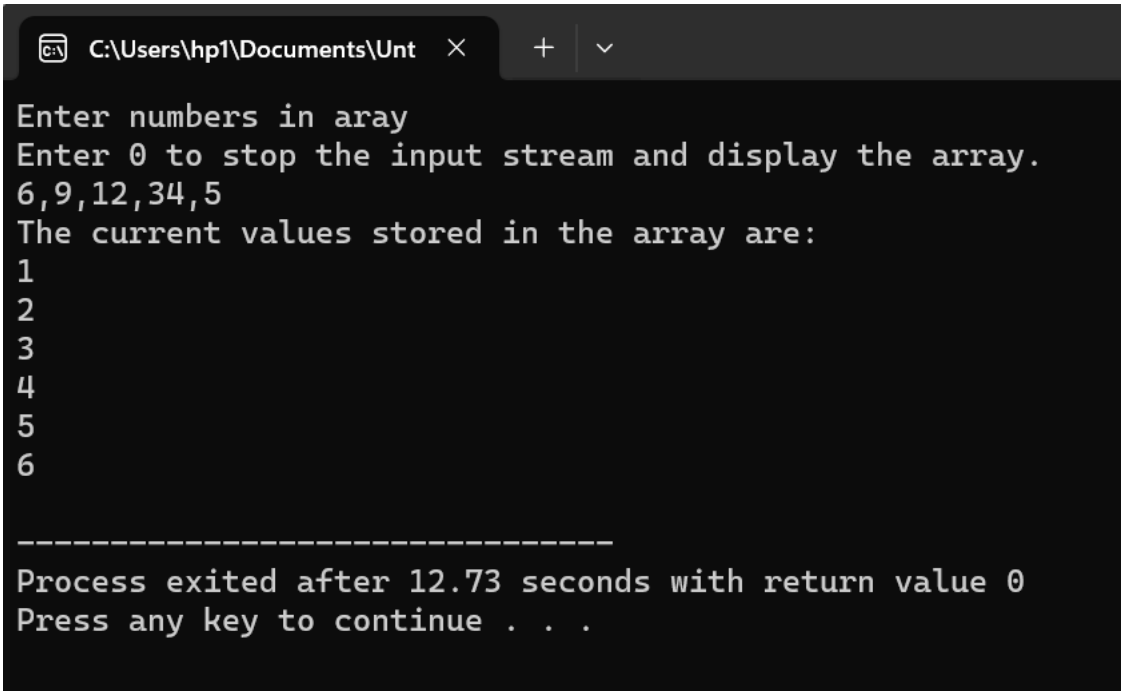
7) Write a C++program for a string which may contain lowercase and uppercase characters. The task is to remove all duplicate characters from the string and find the resultant string.

```
#include <iostream>
#include <string>
using namespace std;
int main(){
	string a;
	int b;
	cout<<"Enter text: ";
	getline(cin, a);
	b= a.length();
	for (int i=0; i<=b; i++){
		for (int k=0; k<=b; k++){
			if (tolower(a[i])==tolower(a[k]) && i!=k){
				a.erase(k, 1);
				k--;
				b=a.length();
			}
		}
	}
	cout<<a;
	return 0;
}
```



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

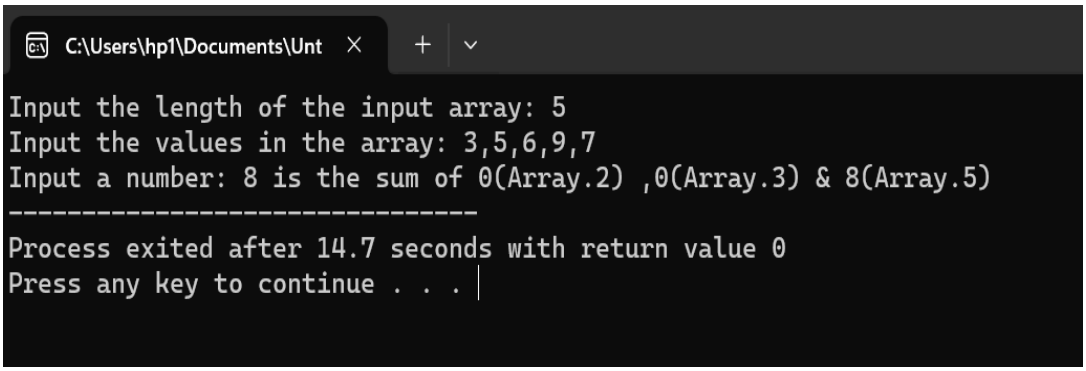
```
#include <iostream>
using namespace std;
int main(){
	int x[50]={1,2,3,4,5};
	cout<<"Enter numbers in aray \n"
		<<"Enter 0 to stop the input stream and display the array. \n";
	for (int i=5; i<=49; i++){
		cin>>x[i];
		if (x[i]==0){
			break;
		}
	}
	cout<<"The current values stored in the array are: \n";
	for (int k=0; k<=49; k++){
		if (x[k]==0){
		break;
		}
		cout<<x[k]<<endl;
	}
	return 0;
}
```



9) Given an integer array and an integer X. Find if there's a triplet in the array which sums up to the given integer X.

```
#include <iostream>
using namespace std;
int main(){
int length, a[length], num, j, k, l;
bool value=false;
cout<<"Input the length of the input array: ";
cin>>length;
cout<<"Input the values in the array: ";
for (int i=0; i<length; i++){
cin>> a[i];
}
cout<<"Input a number: ";
cin>>num;
```

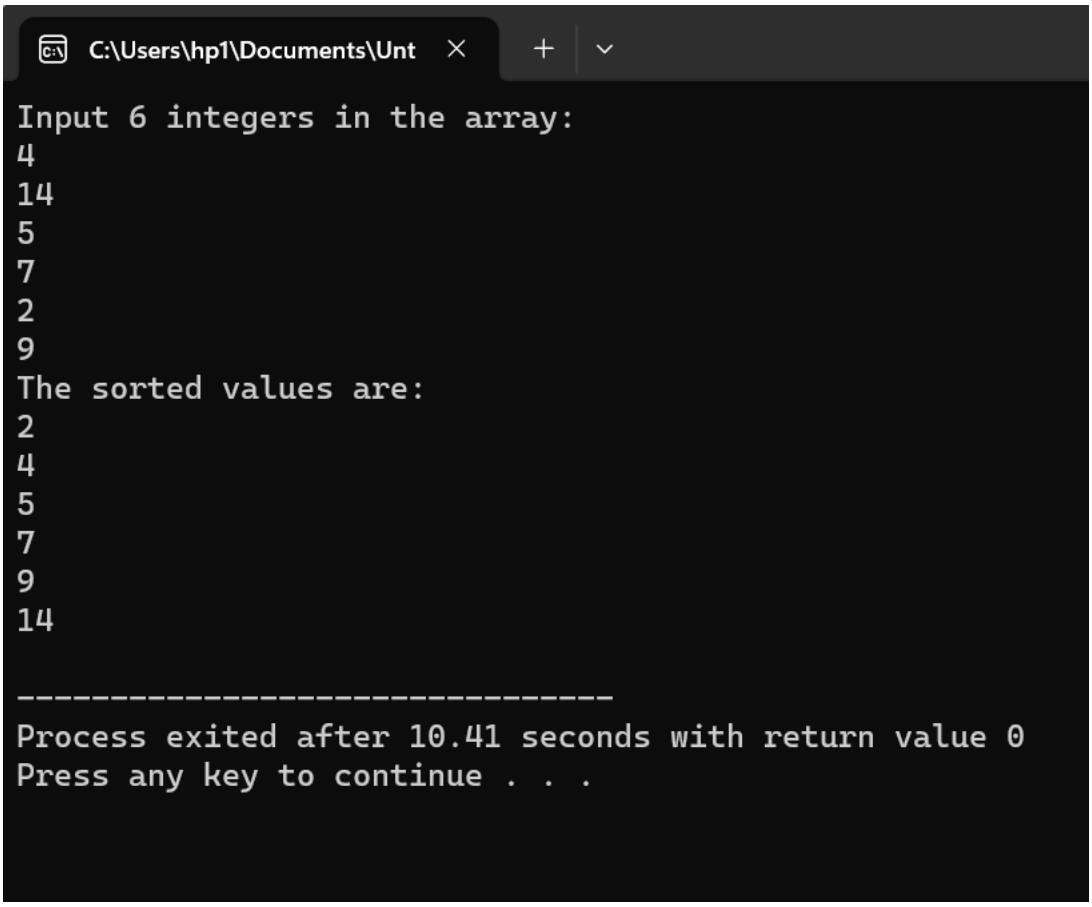
```
for(j=0; j<length; j++){
for(k=j+1; k<length; k++){
for (l=k+1; l<length; l++){
if (a[j]+a[k]+a[l]==num){
value=true;
break;
}
}
if(value==true){
break;
}
}
if(value==true){
break;
}
}
cout<<num<<" is the sum of "<<a[j]<<"(Array."<<j+1<<") ,"


<<a[k]<<"(Array."<<k+1<<") & "
<<a[l]<<"(Array."<<l+1<<")";
return 0;
}
```



10) Implement Bubble Sort on an array of 6 integers.

```
#include <iostream>
using namespace std;
int main(){
		int a[6];
		cout<<"Input 6 integers in the array: \n";
		for (int i=0; i<=5; i++){
			cin>>a[i];
		}
		for(int j=0; j<=5; j++){
			for (int k=0; k<=5; k++){
				if (a[k]>a[k+1]){
					swap(a[k], a[k+1]);
				}
			}
		}
		cout<<"The sorted values are: \n";
		for (int l=0; l<=5; l++){
			cout<<a[l]<<"\n";
		}
```

```
    return 0;
}
```


C:\Users\hp1\Documents\Unt
Input 6 integers in the array:
4
14
5
7
2
9
The sorted values are:
2
4
5
7
9
14

Process exited after 10.41 seconds with return value 0
Press any key to continue . . .