

# ASSIGNMENT 01

## TALHA SANGRASI (463833)

### ME-15

### SEC-A

#### Q1

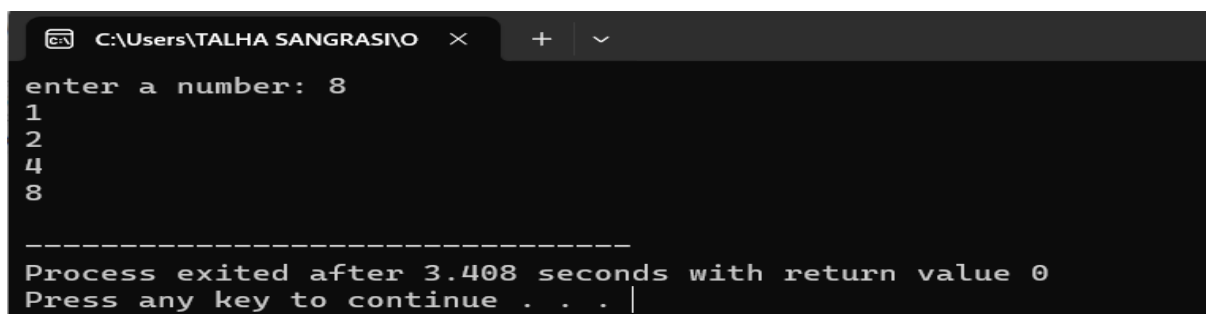
Write a C++ program to display factors of a number using for loops.

```
#include <iostream>

using namespace std;

int main()
{
    int n,i;

    cout<<"enter a number: ";
    cin>>n;
    for(i=1;i<=n;i++){
        if(n%i==0){
            cout<<i<<"\n";
        }
    }
}
```



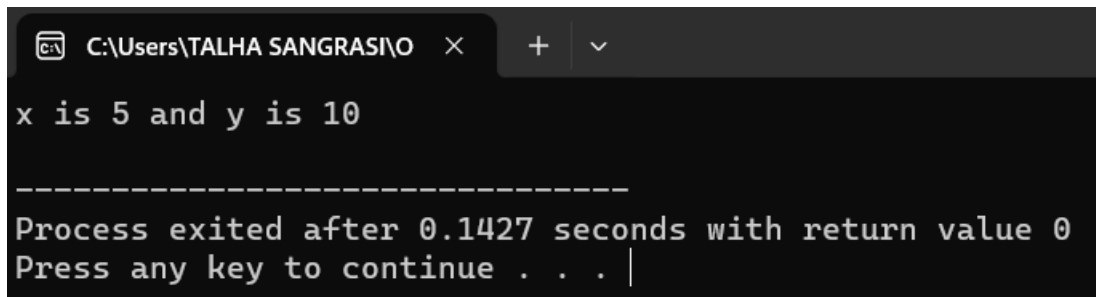
```
C:\Users\TALHA SANGRASI\O  +  v
enter a number: 8
1
2
4
8
-----
Process exited after 3.408 seconds with return value 0
Press any key to continue . . . |
```

## Q2

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;
}
```



```
C:\Users\TALHA SANGRASI\O  x + v
x is 5 and y is 10
-----
Process exited after 0.1427 seconds with return value 0
Press any key to continue . . . |
```

## Q3

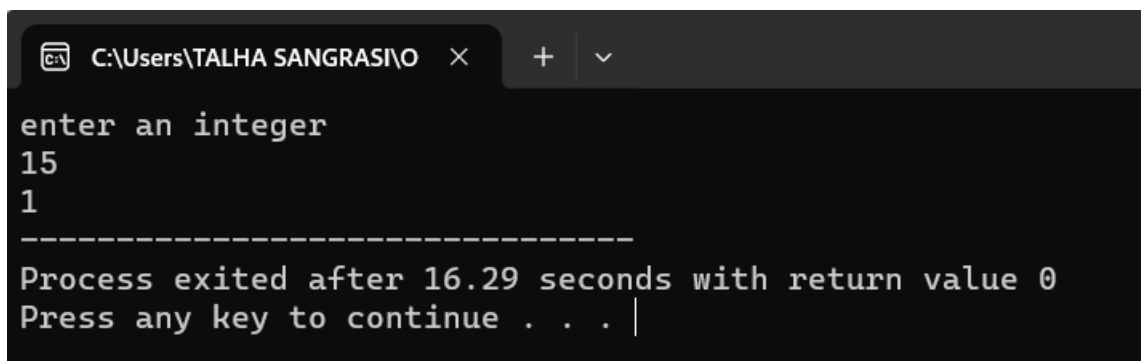
Write a C++ program, take an integer value from user and check if it's greater than 10 and less than equal to 20. Print 1 if yes and print 0 if no. Use appropriate datatype for output.

```
#include <iostream>
using namespace std;
int main()
{
    int n;
    cout<<"enter an integer \n";
```

```

        cin>>n;
        if(n>10&& n<=20){
            cout<<"1";
        }
        else{
            cout<<"0";
        }
    }
}

```



```

C:\Users\TALHA SANGRASI\O
enter an integer
15
1
-----
Process exited after 16.29 seconds with return value 0
Press any key to continue . . . |

```

## Q4

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 i=1,j,k(0),x,y;
    cout<<"enter the number : ";
    cin>>y;
    while(i<=y){
        j=2;
        while(i>j&& i%j!=0){
            j++;
        }
        if(i==j){
            k=i;
        }
        i++;
    }
    cout<<k;
}

```

```
C:\Users\TALHA SANGRASI\O x + v
enter the number : 20
19
-----
Process exited after 5.104 seconds with return value 0
Press any key to continue . . . |
```

## Q5

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 <string>
using namespace std;
int main()
{
    string string1;
    char string2[100];
    cout<<"enter first string \n";
    cin>>string1;
    cout<<"enter second string \n";
    cin>>string2;
    if(string1==string2){
        cout<<"both strings are equal rotating one of them \n";
        for(int i=0,j=string1.length()-1;i<j;i++,j--){
            char temp=string2[i];
            string2[i]=string2[j];
            string2[j]=temp;
        }
        cout<<string2;
    }
    else {
        cout<<"the strings are not equal ";
    }
}
```

```
C:\Users\TALHA SANGRASI\O  x + v
enter first string
racingcar
enter second string
racingcar
both strings are equal rotating one of them
racgnicar
-----
Process exited after 12.63 seconds with return value 0
Press any key to continue . . . |
```

## Q6

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 den,num,f(0),r;
    cout<<"enter dividend: ";
    cin>>num;
    cout<<"enter divisor(not zero): ";
    cin>>den;
    if(den==0){
        cout<<"kaha bhi tha zero nahi likhna ";
    }
    while(num>=den){
        num-=den;
        f++;
    }
    cout<<"Answer = "<<f;
}
```

```
C:\Users\TALHA SANGRAS\O x + v
enter dividend: 8
enter divisor(not zero): 2
Answer = 4
-----
Process exited after 4.905 seconds with return value 0
Press any key to continue . . . |
```

## Q7

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.h>
using namespace std;
int main()
{
    int i,j;
    string sen,res;
    cout<<"enter a sentence \n";
    cin>>sen;
    for(i=0;i<=sen.length();i++){
        for(j=0;j<=i;j++){
            if(sen[i]==sen[j]){
                break;
            }
        }
        if(i==j){
            res+=sen[i];
        }
    }
    cout<<res;
}
```

```
C:\Users\TALHA SANGRASI\O  x + v
enter a sentence
BANANA
BAN
-----
Process exited after 37.14 seconds with return value 0
Press any key to continue . . . |
```

## Q8

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=0,i;
    int array[]={1,2,3,4,5};
    int val[50];
    char x;

    do{
        cout<<"Input element to add: "<<endl;
        cin>>val[n];
        n++;
        cout<<"Do you want to continue. Input y if yes"<<endl;
        cin>> x;
    }while(x=='y');

    int newArray[5+n];

    for(int i =0; i<5;i++){
        newArray[i] = array[i];
    }

    for(int j = 5,k=0; k< n;j++,k++){
        newArray[j]= val[k];
    }

    for(int l = 0; l<5+n; l++){
        cout<<newArray[l]<<' ';
    }
}
```

```
C:\Users\TALHA SANGRASI\O x + v
Input element to add:
6
Do you want to continue. Input y if yes
y
Input element to add:
7
Do you want to continue. Input y if yes
y
Input element to add:
9000034
Do you want to continue. Input y if yes
n
1 2 3 4 5 6 7 9000034
-----
Process exited after 21.68 seconds with return value 0
Press any key to continue . . . |
```

## Q9

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 n;
    int array[n];
    int i,j,s,k;
    char x;
    do{
        cout<<"Input element to array: "<<endl;
        cin>>array[n];
        n++;
        cout<<"Do you want to continue. Input y if yes"<<endl;
        cin>> x;
    }while(x=='y');
    cout<<"enter the sum you are looking for \n";
    cin>>s;
    for (int i = 0; i < n - 2; i++)
    {

        for (int j = i + 1; j < n - 1; j++)
        {
```



```

for (int k = j + 1; k < n; k++)
{
    if (array[i] + array[j] + array[k] == s)
    {
        cout << "Triplet is " << array[i] << ", " << array[j] << ", " << array[k];

        }
    }
}
}
}
}

```

```

C:\Users\TALHA SANGRASI\O x + v
Input element to array:
1
Do you want to continue. Input y if yes
y
Input element to array:
2
Do you want to continue. Input y if yes
y
Input element to array:
3
Do you want to continue. Input y if yes
y
Input element to array:
4
Do you want to continue. Input y if yes
y
Input element to array:
6
Do you want to continue. Input y if yes
n
enter the sum you are looking for
6
Triplet is 1, 2, 3
-----
Process exited after 23.03 seconds with return value 0
Press any key to continue . . . |

```

## Q10

Implement Bubble Sort on an array of 6 integers.

```
#include <iostream>
using namespace std;
int main()
{
    int n;
    int array[n];
    int i,j,s,k;
    char x;
    do{
        cout<<"Input element to array: "<<endl;
        cin>>array[n];
        n++;
        cout<<"Do you want to continue. Input y if yes"<<endl;
        cin>> x;
    }while(x=='y');
    for (int step = 0; step < n; step++) {

        for (int i = 0; i < n - step; i++) {

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

                int temp = array[i];
                array[i] = array[i + 1];
                array[i + 1] = temp;
            }
        }
    }
    for(int l = 0; l<n; l++){
        cout<<array[l]<<' ';
    }
}
```



C:\Users\TALHA SANGRASI\O



Input element to array:

4

Do you want to continue. Input y if yes

y

Input element to array:

2

Do you want to continue. Input y if yes

y

Input element to array:

8

Do you want to continue. Input y if yes

y

Input element to array:

1

Do you want to continue. Input y if yes

y

Input element to array:

3

Do you want to continue. Input y if yes

y

Input element to array:

2

Do you want to continue. Input y if yes

n

1 2 2 3 4 8

-----

Process exited after 32.23 seconds with return value 0

Press any key to continue . . . |