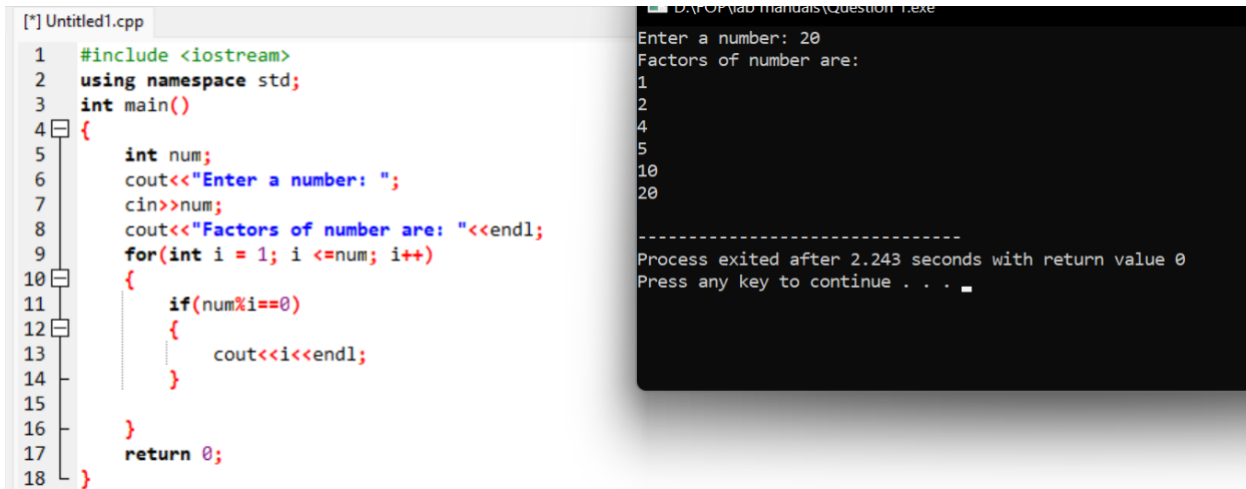


ASSIGNMENT 1

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



```
[*] Untitled1.cpp
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      int num;
6      cout<<"Enter a number: ";
7      cin>>num;
8      cout<<"Factors of number are: "<<endl;
9      for(int i = 1; i <=num; i++)
10     {
11         if(num%i==0)
12         {
13             cout<<i<<endl;
14         }
15     }
16     return 0;
17 }
18 }
```

```
D:\FOP\lab manuals\Question 1.exe
Enter a number: 20
Factors of number are:
1
2
4
5
10
20
-----
Process exited after 2.243 seconds with return value 0
Press any key to continue . . .
```

2. Write output to the following code.

```
#include <iostream>

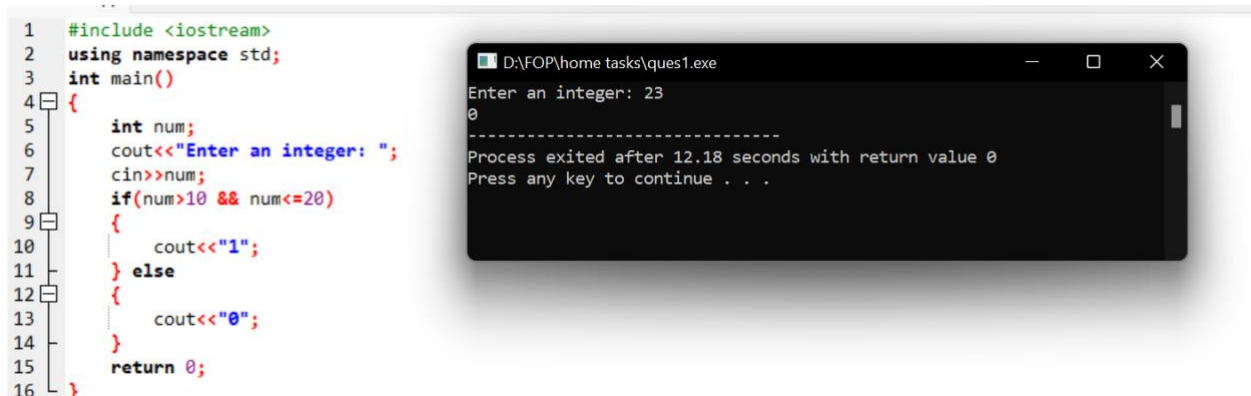
int main() {
    int x = 5;
    int y = 10;

    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;
}
```

Answer: The output will be "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 or equal to 20. Print 1 if yes and print 0 if no. Use appropriate datatype for output.



```
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      int num;
6      cout<<"Enter an integer: ";
7      cin>>num;
8      if(num>10 && num<=20)
9      {
10         cout<<"1";
11     } else
12     {
13         cout<<"0";
14     }
15     return 0;
16 }
```

```
D:\FOP\home tasks\ques1.exe
Enter an integer: 23
0
-----
Process exited after 12.18 seconds with return value 0
Press any key to continue . . .
```

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.

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int n, count=2,i=1,largestPrime=1;
7      cout<<"Enter the value of N: ";
8      cin>>n;
9      bool isPrime = true;
10     while (count<=n)
11     {
12         isPrime=true;
13         i=2;
14         while(i<count && isPrime==true)
15         {
16             if (!(count%i==0))
17             {
18                 isPrime=true;
19             }
20             else
21             {
22                 isPrime=false;
23             }
24             i++;
25         }
26         if (isPrime==true)
27         {
28             largestPrime=count;
29         }
30         count++;
31     }
32     cout<<"The largest prime number is : "<<largestPrime<<endl;
33     return 0;
34 }
```

```
D:\FOP\lab manuals\QUE4.exe
Enter the value of N: 44
The largest prime number is : 43

-----
Process exited after 10.68 seconds with return value 0
Press any key to continue . . .
```

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.

```
1  #include <iostream>
2  #include <algorithm> //used for reverse function
3  using namespace std;
4
5  int main()
6  {
7      string x;
8      string y;
9      cin>>x;
10     cin>>y;
11     if (x==y)
12     {
13         reverse(x.begin(), x.end());
14         //reverses the function
15     }
16     cout<<x<<endl;
17     cout<<y<<endl;
18     return 0;
19 }
```

```
D:\FOP\lab manuals\Untitled1.5.exe
hello
hello
olleh
hello

-----
Process exited after 4.977 seconds with return value 0
Press any key to continue . . .
```

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.

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int num;
6     cout<<"Enter the number: ";
7     cin>>num;
8     int quotient,divisor;
9     cout<<"Enter the divisor: ";
10    cin>>divisor;
11    while (num>=divisor)
12    {
13        num=num-divisor;
14        quotient++;
15    }
16    cout<<"The answer is "<<quotient<<endl;
17    return 0;
18 }
```

```
D:\FOP\lab manuals\Untitled1.6.exe
Enter the number: 12
Enter the divisor: 4
The answer is 3

-----
Process exited after 11.49 seconds with return value 0
Press any key to continue . . .
```

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

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int a[10]={1,2,3,4,5};
6     cout<<"Enter numbers: ";
7     for(int i=0;i<=9;i++)
8     {
9         cin>>a[i];
10    }
11    for(int i=0;i<=9;i++)
12    {
13        cout<<a[i]<<",";
14    }
15 }
```

```
D:\FOP\lab manuals\Untitled8.exe
Enter numbers: 1
2
2
3
45
6
6
5
4
90
1,2,2,3,45,6,6,5,4,90,
-----
Process exited after 12.87 seconds with return value 0
Press any key to continue . . .
```

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

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int a[6];
6     cout<<"Enter the 6 numbers:"<<endl;
7     for (int i=0;i<6;i++){
8         cout<<"Number "<<i+1<<": ";
9         cin>>a[i];
10    }
11    for (int i=0;i<6;i++) {
12        for (int j=0;j<5;j++) {
13            if (a[j]>a[j+1]){
14                int temp=a[j];
15                a[j]=a[j+1];
16                a[j+1]=temp;
17            }
18        }
19    }
20    cout<<"Sorted array:"<<endl;
21    for (int i=0;i<6;i++) {
22        cout<<a[i]<<" ";
23    }
24    return 0;
25 }
```

```
Select D:\FOP\lab manuals\ppp.exe
Enter the 6 numbers:
Number 1: 10
Number 2: 34
Number 3: 56
Number 4: 34
Number 5: 66
Number 6: 80
Sorted array:
10 34 34 56 66 80
-----
Process exited after 7.709 seconds with return value 0
Press any key to continue . . .
```