

ASSIGNMENT 1 FOP: -

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SECTION	A

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

```
1  #include <iostream>
2  #include <cstring>
3  #include <algorithm>
4  using namespace std;
5  int main()
6  {
7      //TASK 1
8      int num;
9      cout<<"State number: "<<endl;
10     cin>>num;
11     cout<<"Factors: ";
12     for(int i=1; i<=num; i++){
13         if(num%i == 0)
14             cout << i << " ";
15     }
```

```
State number:
12
Factors: 1 2 3 4 6 12
-----
Process exited after 2.105 seconds with return value 0
Press any key to continue . . .
```

TASK 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

TASK 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.

```
// TASK 3
int n;
cout<<"State a number: "<<endl;
cin>>n;
//use if statement to create a range for n
if(n>10 && n<=20){cout<<1<<endl;}
else{cout<<0<<endl;}
```

```
C:\Users\ACG\Desktop\C++\ASSIGN 1 fop.exe
State a number:
13
1
-----
Process exited after 2.126 seconds with return value 0
Press any key to continue . . .
```

TASK 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.

```
26 // TASK 4
27 int n;
28 int prime;
29 cout<<"State number: "<<endl;
30 cin>>n;
31 //to avoid negative numbers:-
32 if(n<0)
33 {cout<<"invalid number!!";
34 }
35 else
36 {
37     for(int i=n; i>=2; i--){
38         for(int j=2; j<=i; j++){
39             if(i%j==0 && i==j){prime = j;}
40             if(i%j==0){break;}
41         }
42         if(prime==i){break;}
43     }
44     cout<<"prime no.: "<<prime<<endl;
45 }
```

```
C:\Users\ACG\Desktop\C++\ASSIGN 1 fop.exe
State number:
32
prime no.: 31
-----
Process exited after 3.508 seconds with return value 0
Press any key to continue . . .
```

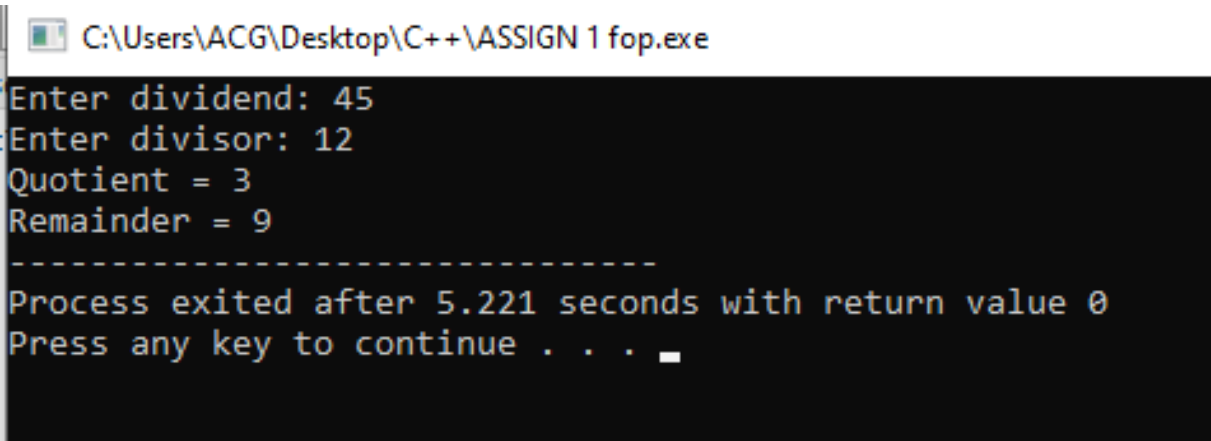
TASK 5; Write a C++ program, take two strings as input from user and check if both strings are equal or not. If they are equal make them unequal by rotating string. e.g., Hello is turned into olleH etc.

```
47 // TASK 5
48 string x, y;
49 cout<<"State two strings: ";
50     cin>>x>>y;
51     if(x==y){
52         rotate(y.begin(), y.begin()+1, y.end());
53         cout<<"After rotation: "<<y;
54     }
55     else {
56         cout<<"The strings are unequal";
57     }
58 }
```

```
C:\Users\ACG\Desktop\C++\ASSIGN 1 fop.exe
State two strings: wertg
dsfdv
The strings are unequal
-----
Process exited after 3.926 seconds with return value 0
Press any key to continue . . .
```

TASK 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.


```
63 // TASK 6
64 int divisor, dividend, quotient, remainder;
65
66 cout << "Enter dividend: ";
67 cin >> dividend;
68
69 cout << "Enter divisor: ";
70 cin >> divisor;
71 if(dividend<divisor)
72 {cout<<"wrong input!!";
73 }
74 else{
75 quotient = dividend / divisor;
76 remainder = dividend % divisor;
77 cout << "Quotient = " << quotient << endl;
78 cout << "Remainder = " << remainder;
79 }
```



```
C:\Users\ACG\Desktop\C++\ASSIGN 1 fop.exe
Enter dividend: 45
Enter divisor: 12
Quotient = 3
Remainder = 9
-----
Process exited after 5.221 seconds with return value 0
Press any key to continue . . .
```

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

```
83
84 // TASK 8
85 int a[5]={1,2,3,4,5};
86 int m=5;
87 int ele[]={7,12,23,13,10};
88 int n=10;
89
90 cout<<"New array: ";
91 for(int i=0;i<n;i++){
92     if(i<m) {
93         cout<<a[i]<<" ";
94     }
95     else{
96         cout<<ele[i-m]<<" ";
97     }
98 }
99 cout<<endl;
```

 C:\Users\ACG\Desktop\C++\ASSIGN 1 fop.exe

New array: 1 2 3 4 5 7 12 23 13 10

Process exited after 0.02688 seconds with return value 0
Press any key to continue . . .

TASK 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.

```
// TASK 9
int ary[10]={1,2,3,4,5,6,7,8,9,10};
int x;
cout<<"Enter the values: ";
cin>>x;
for(int i=0;i<=10;i++) {
    for(int j=0;j<=10;j++) {
        for(int y=0;y<=10;y++) {
            if(ary[i]+ary[j]+ary[y]==x){
                cout<<ary[i]<<" "<<ary[j]<<" "<<ary[y]<<endl;
            }
        }
    }
}

return 0;
}
```


C:\Users\ACG\Desktop\C++\ASSIGN 1 fop.exe

Enter the values: 9

1 1 7

1 2 6

1 3 5

1 4 4

1 5 3

1 6 2

1 7 1

2 1 6

2 2 5

2 3 4

2 4 3

2 5 2

2 6 1

3 1 5

3 2 4

3 3 3

3 4 2

3 5 1

4 1 4

4 2 3

4 3 2

4 4 1

5 1 3

5 2 2

5 3 1

6 1 2

6 2 1

7 1 1