COMPUTER SYSTEMS AND PROGRAMING

(ASSIGNMENT-1)

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SECTION: A

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<u>**SUBMITTED TO:**</u>

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TASK-1:

```cpp
1    #include<iostream>
2    using namespace std;
3    int main()
4  {
5    //Write a C++ program to display factors of a number using for loops.
6        cout<<"TASK-1"<<endl;
7        cout<<"display factors of number from 1-100"<<endl;
8        int x;
9        cout<<"entre any number from 1-100"<<endl;
10       cin>>x;
11
12       int i;
13       cout<<"factors of number are:"<<endl;
14       for( i=1 ; i<=100 ; i++){
15           if ( x % i==0 )
16           cout<<i<<" "<<endl;
17       }
18       return 0;
19
20 }
```

OUTPUT:

```
TASK-1
display factors of number from 1-100
entre any number from 1-100
70
factors of number are:
1
2
5
7
10
14
35
70


--------------------------------

Process exited after 4.604 seconds with return value 0
Press any key to continue . . .
```

TASK-2:

2. Write output to the following code.

```cpp
#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:

```cpp
1    #include<iostream>
2    using namespace std;
3    int main()
4    {
5    cout<<"QUESTION-3"<<endl;
6    int x;
7    cout<<"enter the value of x:"<<endl;
8    cin>>x;
9
10   if(10<x && x<=20){
11       //print one if yes
12       cout<<"1"<<endl;
13       }
14   else{
15       //print 0 if no
16       cout<<"0"<<endl;
17       }
18   return 0;
19
20   }
```

OUTPUT:

```
QUESTION-3
enter the value of x:
25
0

_____
Process exited after 4.346 seconds with return valu
Press any key to continue . . .
```

```
QUESTION-3
enter the value of x:
18
1

_____
Process exited after 6.487 seconds with return value 0
Press any key to continue . . .
```

TASK-4:

```cpp
1    #include<iostream>
2    using namespace std;
3    int main()
4    {
5        cout<<"TASK-4"<<endl;
6            int x,y,z;
7        bool prime;
8        cout<<"positive integer:"<<endl;
9        cin>>x;
10
11       y=x-1;
12
13       if (x==1)    {
14               cout<<"no prime number less than 1."<<endl;
15       }
16       if(x<=0)     {
17           cout<<"Invalid"<<endl;
18       }
19       while(y>=2) {
20           prime=true;
21           z=2;
22           while(z<y)  {
23               if(y%z == 0)     {
24                   prime=false;
25                   break;
26               }
27               z++;
28           }
29           if(prime==true){
30               break;
31           }
32           y--;
33       }
34       if(prime == true)   {
35           cout<<"largest prime number less then x: "<<y;
36       }
37       else     {
38           cout<<"no prime number less then "<<x;
39       }
40       return 0;
41   }
```

OUTPUT:

```
positive integer:
8
largest prime number less then x: 7
--------------------------------
Process exited after 4.465 seconds with return value 0
Press any key to continue . . .
```

TASK-5:

```cpp
1   #include<iostream>
2   using namespace std;
3   int main()
4   {
5       //compare two strings
6       cout<<"TASK-5"<<endl;
7       string x1,x2;
8       string x3="";
9       cout<<"Enter the First String (x1): "<<endl;
10      cin>>x1;
11      cout<<"Enter the Second String(x2): "<<endl;
12      cin>>x2;
13      if (x1==x2)
14      {
15          cout<<"strings x1=x2"<<endl;
16          for ( int i= x1.length(); i>=0; i-- ) {
17              x3 = x3 + x1[i];
18          }
19      }
20      else {
21          cout<<"strings x1 and x2 are unequal"<<endl;
22
23      }
24      return 0;
25  }
```

OUTPUT:

```
TASK-5
Enter the First String (x1):
7
Enter the Second String(x2):
6
strings x1 and x2 are unequal

--------------------------------
Process exited after 28.38 seconds with return value 0
Press any key to continue . . .
```

```
TASK-5
Enter the First String (x1):
5
Enter the Second String(x2):
5
strings x1=x2

--------------------------------
Process exited after 3.533 seconds with return value 0
Press any key to continue . . .
```

TASK-6:

```cpp
1    #include<iostream>
2    using namespace std;
3    int main()
4    {
5        //perform division
6        cout<<"TASK-6"<<endl;
7        int dividend, divisor, quotient=0;
8        int ans;
9
10       cout<<"value of dividend:"<<endl;
11       cin>>dividend;
12
13       cout<<"value of divisor:"<<endl;
14       cin>>divisor;
15
16       ans=dividend;
17       if(dividend<divisor)    {
18           cout<<"dividend should be greater than the divisor."<<endl;
19       }
20   else if (dividend>0 && divisor>0)    {
21       for (int i=dividend;i>=divisor; i--)    {
22           if (i%divisor==0)    {
23               quotient=quotient+1;
24           }
25       }
26       cout<<"value of quotient:"<<quotient<<endl;
27       cout<<"value of remainder: "<<ans%divisor;
28   }
29   return 0;
30   }
```

OUTPUT:

```
TASK-6
value of dividend:
7
value of divisor:
8
dividend should be greater than the divisor.

---------------------------------
Process exited after 5.734 seconds with return value 0
Press any key to continue . . .
```

```
TASK-6
value of dividend:
6
value of divisor:
3
value of quotient:2
value of remainder: 0
---------------------------------
Process exited after 11.43 seconds with return value 0
Press any key to continue . . .
```

TASK-7:

```cpp
1   #include<iostream>
2   using namespace std;
3   int main()
4   {
5       cout<<"TASK-7"<<endl;
6       //program for a string which may contain lowercase and uppercase
7           string x;
8       cout<<"value of x:"<<endl;
9       cin>>x;
10
11      for(int i=0 ; i<x.length() ; i++){
12          for(int j=0 ; j<x.length() ; j++){
13              if(i!=j){
14                  if (tolower(x[i])==tolower(x[j])){
15                      x[j] = x[j+1];
16                      x[j+1] = ' ';
17                  }
18              }
19          }
20      }
21      cout<<"The new string is "<<x;
22      return 0;
23  }
```

OUTPUT:

```
TASK-7
value of x:
8
The new string is 8
_____
Process exited after 3.505 seconds with return value 0
Press any key to continue . . .
```

TASK-8:

```cpp
#include<iostream>
using namespace std;
int main()
{
    //Add more elements to an integer array a[5] = {1,2,3,4,5}
    cout<<"TASK-8"<<endl;
        int arr[5]={1,2,3,4,5};
    int add;
    cout<<"Enter the size of the new array"<<endl;
    cin>>add;

    int number_updated[add];
    for (int i=0;i<5;i++){
        number_updated[i]=arr[i];
    }
    cout<<"Previous array is "<<endl;
    for (int i=0;i<5;i++){
        cout<<arr[i]<<endl;
    }
    for (int i=5 ; i<add ; i++){
        cout<<"new numbers to the array."<<endl;
        cin>>number_updated[i];
    }
    cout<<endl;
    for (int i=0;i<add;i++){
        cout<<i<<"th element : "<<number_updated[i]<<endl;
    }
    return 0;
}
```

OUTPUT:

```
TASK-8
Enter the size of the new array
7
Previous array is
1
2
3
4
5
new numbers to the array.
0
new numbers to the array.
6

0th element : 1
1th element : 2
2th element : 3
3th element : 4
4th element : 5
5th element : 0
6th element : 6


_____
Process exited after 18.59 seconds with return value 0
Press any key to continue . . .
```

TASK-9:

```cpp
1    #include<iostream>
2    using namespace std;
3    int main()
4    {
5        //Find if there's a triplet in the array which sums up to the given integer X of an array
6        cout<<"TASK-9"<<endl;
7            int x,y,z;
8        int numbers[x];
9        cout<<"array should be greater than 3"<<endl;
10       cin>>x;
11
12       for (int j=0; j<x;j++){
13           cout<<"number of array:"<<endl;
14           cin>>numbers[j];
15       }
16       cout<<endl;
17       cout<<"number for which triplet is required"<<endl;
18       cin>>y;
19
20       for(int i=0;i<x;i++){
21           for (int j=i+1;j<x;j++){
22               for (int k=j+1;k<x;k++){
23                   z=numbers[i]+numbers[j]+numbers[k];
24                   if (z==y){
25                       cout<<numbers[i]<<" "<<numbers[j]<<" "<<numbers[k]<<endl;
26                   }
27               }
28           }
29       }
30       return 0;
31   }
```

OUTPUT:

```
TASK-9
array should be greater than 3
5
number of array:
1
number of array:
2
number of array:
3
number of array:
4
number of array:
0

number for which triplet is required
3
1 2 0


--------------------------------
Process exited after 17.6 seconds with return value 0
Press any key to continue . . .
```

TASK-10:

```
1    #include<iostream>
2    using namespace std;
3    int main()
4    {
5        cout<<"TASK-10"<<endl;
6        //Implement Bubble sort on an array of 5 integers.
7        int a[5] = {10,9,4,15,25};
8
9        for(int i=0 ; i<5 ; i++ )
10       {
11           for(int j=0 ; j<5-1 ;j++)
12           {
13               if ( a[j]>a[j+1] )
14               {
15                   int temp = a[j];
16                   a[j] = a[j+1];
17                   a[j+1] = temp;
18               }
19           }
20       }
21       cout<<"sorted elements of array"<<endl;
22       for( int i=0 ; i<5 ; i++)
23       {
24           cout<< a[i] <<" ";
25
26       }
27       return 0;
28   }
```

OUTPUT:

```
TASK-10
sorted elements of array
4 9 10 15 25
--------------------------------
Process exited after 0.2224 seconds with return value 0
Press any key to continue . . .
```