

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

```
#include <iostream>

using namespace std;

int main()
{int x;
  cout <<"enter your number"<<endl;
  cin>>x;
  for(int i=1;i<=x;i++){
    if(x%i==0){
      cout<<i<<" is a factor of your number"<<endl;
    }
  }
  return 0;
}
```

```
enter your number
52
1 is a factor of your number
2 is a factor of your number
4 is a factor of your number
13 is a factor of your number
26 is a factor of your number
52 is a factor of your number

Process returned 0 (0x0)   execution time : 5.464 s
Press any key to continue.
```

2. Write output to the following code

`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; }`

ANS: This code will not display anything and instead there will be an error as there are no curly brackets in front of both if statements.

3. Write a C++ program, take an integer value from the 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 num;
  cout << "enter your number" << endl;
  cin>>num;
  if(num>=10&&num<=20){
    cout<<"1"<<endl;

  }else{
    cout<<"0"<<endl;
  }
  return 0;
}
```

```
enter your number
18
1
Process returned 0 (0x0)   execution time : 1.835 s
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.

```
int main()
{int num,prime;
int i=2;
bool flag=true;
cout << "enter a positive integer" << endl;
cin>>num;
while(i<=num){
    flag=true;
    for(int j=2;j<=i;j++){
        if(i%j==0&&i!=j){
            flag=false;
            break;
        }

    }

    if(flag==true){
        prime=i;
    }
    i++;
}

cout<<prime<<endl;

return 0;
}
```

---

```
enter a positive integer
```

```
58
```

```
53
```

```
Process returned 0 (0x0)   execution time : 4.767 s
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.**

```
#include <iostream>
#include <string>

using namespace std;

int main()
{ string wordA, wordB;
  int lenghtA, lenghtB;
  cout << "enter string 1" << endl;
  cin>>wordA;
  cout << "enter string 2" << endl;
  cin>>wordB;
  lenghtA=wordA.length();
  lenghtB=wordB.length();
  char array[lenghtA];
  for(int i=0; i<lenghtB; i++){
    array[i]=wordB[lenghtB-i-1];

  }

  if(wordA==wordB){
  for(int j=0; j<lenghtB; j++){
    wordB[j]=array[j];
  }
  cout << "string 1 is now " << wordA << endl;
  cout << "string 2 is now " << wordB << endl;
```

---

```
enter string 1
normie
enter string 2
normie
string 1 is now normie
string 2 is now eimron
```

```
Process returned 0 (0x0)   execution time : 5.104 s
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.**

```
using namespace std;

int main()
{int dividend=0;
int divisor=1;
int ans=0;

while(divident<=divisor){
    cout << "enter divident followed by divisor" << endl;
    cin>>divident;
    cin>>divisor;

}
while(divident>=divisor){
    divident=divident-divisor;
    ans++;

}
int remainder=divident;
cout<<"your answer is "<<ans<<endl;
cout << "your remainder is "<< remainder<<endl;

return 0;
}
```

```
enter divident followed by divisor
82
9
your answer is 9
your remainder is 1

Process returned 0 (0x0)   execution time : 4.119 s
Press any key to continue.
_
```

**Q7 Write a C++ program for a string that 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 word;
  int lenght;
  cout << "enter your word" << endl;
  cin>>word;
  lenght=word.length();
  char array[lenght];
  for(int i=0;i<lenght;i++){
    array[i]=word[i];
  }
  for(int i=0;i<lenght;i++){
    for(int j=0;j<i;j++){
      if(array[i]==array[j]){
        array[i]=NULL;
      }
    }
  }
  for(int i=0;i<lenght;i++){
    word[i]=array[i];
  }
  cout << word << endl;
  return 0;
}
```

```
enter your word
hashbrowns
has brown
Process returned 0 (0x0)   execution time : 8.245 s
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++.**

```
using namespace std;

int main()
{int array[5]={1,2,3,4,5};
int num;
    cout << "how many elements do you wanna add" << endl;
    cin>>num;
    int extendedarray[num+5];
    for(int i=0;i<5;i++){
        extendedarray[i]=array[i];
    }
    for(int i=5;i<num+5;i++){
        cout << "add element to position number "<<i<< endl;
        cin>>extendedarray[i];
    }
    for(int i=0;i<num+5;i++){
        cout<<extendedarray[i];

    }
    return 0;
}
```

```
how many elements do you wanna add
3
add element to position number 5
5
add element to position number 6
7
add element to position number 7
1
12345571
Process returned 0 (0x0)   execution time : 4.262 s
Press any key to continue.
```

- 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

```
using namespace std;

int main()
{ int arraysize,x,sum;
bool flag=false;
    cout << "how big is you array" << endl;
    cin>>arraysize;
    int array[arraysize];
    for(int i=0;i<arraysize;i++){
        cout << "enter number "<< i+1<< endl;
        cin>>array[i];
    }
    cout << "Enter your Integer X" << endl;
    cin>>x;
    for(int i=1;i<arraysize-1;i++){
        sum=array[i]+array[i-1]+array[i+1];
        if(sum==x){
            flag=true;
            break;
        }
    }
    if(flag==true){
        cout<<"there is a triplet in you array that sums to X"<<endl;
    }else{cout<<"there is not a triplet in you array that sums to X"<<endl;}

    return 0;
}
```

```
how big is you array
8
enter number 1
2
enter number 2
4
enter number 3
5
enter number 4
1
enter number 5
7
enter number 6
3
enter number 7
2
enter number 8
1
Enter your Integer X
11
there is a triplet in you array that sums to X

Process returned 0 (0x0)   execution time : 18.036 s
Press any key to continue.
-
```



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

```
#include <iostream>

using namespace std;

int main()
{int arraysize = 6;
  int array[arraysize];

  cout<<"Enter 6 numbers to be sorted: ";
  for (int i = 0; i < arraysize; i++) {
    cin >> array[i];
  } for (int i=0;i<arraysize-1; i++) {
    for (int j=0;j<arraysize-i-1; j++) {
      if (array[j] > array[j+1]) {
        int temp=array[j];
        array[j] = array[j+1];
        array[j+1] = temp;
      }
    }
  }
  cout<<"your sorted array is "<<endl;

  for (int i = 0; i < arraysize; i++) {
    cout<<array[i]<<endl;
  }
  return 0;
}
```

---

```
Enter 6 numbers to be sorted: 8
1
1
4
5
11
your sorted array is
1
1
4
5
8
11

Process returned 0 (0x0)   execution time : 6.186 s
Press any key to continue.
```

