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Q1. Write a program to Swap to two numbers.

```cpp
#include <iostream>
using namespace std;
int main()
{
    int a = 5, b = 10, temp;
    cout << "Before swapping." << endl;
    cout << "a = " << a << ", b = " << b << endl;

    temp = a;
    a = b;
    b = temp;

    cout << "\nAfter swapping." << endl;
    cout << "a = " << a << ", b = " << b << endl;
    return 0;
}
```

Output:

```
Before swapping.
a = 5, b = 10

After swapping.
a = 10, b = 5
```

Q2. Write a program to find the largest number among three numbers entered by the user.

```cpp
#include <iostream>
using namespace std;

int main() {
    float n1, n2, n3;

    cout << "Enter three numbers: ";
    cin >> n1 >> n2 >> n3;

    if(n1 >= n2 && n1 >= n3)
        cout << "Largest number: " << n1;
```

```cpp
    if(n2 >= n1 && n2 >= n3)
        cout << "Largest number: " << n2;

    if(n3 >= n1 && n3 >= n2)
        cout << "Largest number: " << n3;

    return 0;
}
```

Output:

```
Enter three numbers:
10
-45
98
Largest number: 98
```

Q3. Write a program to check whether a year entered by a user is Leap year or not.

```cpp
#include <iostream>
using namespace std;

int main() {
    int year;

    cout << "Enter a year: ";
    cin >> year;

    if (year % 4 == 0) {
        if (year % 100 == 0) {
            if (year % 400 == 0)
                cout << year << " is a leap year.";
            else
                cout << year << " is not a leap year.";
        }
        else
            cout << year << " is a leap year.";
    }
    else
        cout << year << " is not a leap year.";

    return 0;
}
```
Output:

Enter a year: 2014

2014 is not a leap year.

Q4. Write a program to display Fibonacci Series upto nth term.
(Using loops)

```cpp
#include <iostream>
using namespace std;

int main() {
    int n, t1 = 0, t2 = 1, nextTerm = 0;

    cout << "Enter the number of terms: ";
    cin >> n;

    cout << "Fibonacci Series: ";

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

        if(i == 1) {
            cout << t1 << ", ";
            continue;
        }
        if(i == 2) {
            cout << t2 << ", ";
            continue;
        }
        nextTerm = t1 + t2;
        t1 = t2;
        t2 = nextTerm;

        cout << nextTerm << ", ";
    }
    return 0;
}
```

Output:

Enter the number of terms: 10

Fibonacci Series: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34,

```cpp
#include <iostream>
using namespace std;

int main() {
    int i, n;
    bool isPrime = true;

    cout << "Enter a positive integer: ";
    cin >> n;

    // 0 and 1 are not prime numbers
    if (n == 0 || n == 1) {
        isPrime = false;
    }
    else {
        for (i = 2; i <= n / 2; ++i) {
            if (n % i == 0) {
                isPrime = false;
                break;
            }
        }
    }
    if (isPrime)
        cout << n << " is a prime number";
    else
        cout << n << " is not a prime number";

    return 0;
}
```

Output:

Enter a positive integer: 29
29 is a prime number.

```
        *
       * *
      * * *
     * * * *
    * * * * *
```

```cpp
#include <iostream>
using namespace std;

void pypart2(int n)
{

    int i, j, k = n;

    for (i = 1; i <= n; i++) {


        for (j = 1; j <= n; j++) {

            if (j >= k)
                cout << "* ";
            else
                cout << "  ";
        }
        k--;
        cout << "\n";
    }
}

int main()
{
    int n = 5;
    pypart2(n);
    return 0;
}
```

Output

```
        *
       * *
```

```
  * * *
 * * * *
* * * * *
```

Q7.Write a program that takes n elements from the user and displays the second largest element of an array.

```cpp
#include<iostream>

using namespace std;

int main ()

{

    int A[10], n, i, j, x;

    cout << "Enter size of array : ";

    cin >> n;

    cout << "Enter elements of array : ";

    for (i = 0; i < n; i++)

        cin >> A[i];

    for (i = 0; i < n; i++)

    {

        for (j = i + 1; j < n; j++)

        {

            if (A[i] < A[j])

            {

                x = A[i];

                A[i] = A[j];

                A[j] = x;

            }

        }
```

```
    }

    cout << "Second largest number : " << A[1];

    cout << "\nSecond smallest number : " << A[n - 2];

    return 0;

}
```

Output:

Enter size of array : 4

Enter elements of array : 150 69 741 0

Second largest number : 150

Q8. Given an integer d, rotate the array that many steps left and return the result.

```
#include <bits/stdc++.h>
using namespace std;

void leftRotatebyOne(int arr[], int n)
{
    int temp = arr[0], i;
    for (i = 0; i < n - 1; i++)
        arr[i] = arr[i + 1];

    arr[n-1] = temp;
}

void leftRotate(int arr[], int d, int n)
{
    for (int i = 0; i < d; i++)
        leftRotatebyOne(arr, n);
}

void printArray(int arr[], int n)
{
    for (int i = 0; i < n; i++)
        cout << arr[i] << " ";
}
```

```cpp
int main()
{
    int arr[] = { 1, 2, 3, 4, 5, 6, 7 };
    int n = sizeof(arr) / sizeof(arr[0]);
    leftRotate(arr, 2, n);
    printArray(arr, n);

    return 0;
}
```

Output :
3 4 5 6 7 1 2

Q9.Grading students' problem:

```cpp
#include <bits/stdc++.h>
#include<assert.h>

using namespace std;

void solution()
{

    int n, x;

    cin >> n;

    assert(n > 0 && n <= 60);

    for(int i = 0; i < n; i++)
    {
        cin >> x;
        assert(x >= 0 && x <= 100);
        if(x >= 38)
        {
            int y = x;
            while(1)
            {
                if(y % 5 == 0)
                            break;
                y++;
            }
            if(y - x <= 2)
```

```cpp
            x = y;
        }
        cout << x << endl;
    }
}

int main ()
{

        solution();
        return 0;

}
```

Q10. Camelcase problem:

```cpp
#include <bits/stdc++.h>
#include<assert.h>

using namespace std;


void solution() {

    string str;
    cin >> str;
    int len = str.size();
    int ans = 1;
    for(int i = 0; i < len; i++){
        if(str[i] >= 'A' && str[i] <= 'Z') {
            ans++;
        }
    }
    cout<<ans<<endl;
}


int main() {

        solution();

    return 0;
}
```