Lesson 64 Learn more

We want to make a program, the user enters a number and we want to print the sum of the numbers from one to this number.

The program will be like this:

```c
#include <stdio.h>
int main() {
int n, i, sum = 0;
printf("Enter a number: ");
scanf("%d", &n);
for (i = 0; i <= n; i++)
sum += i;
printf("Sum = %d", sum);
}
```

input:

3

Output

sum = 6

Try the code yourself : Click Here!

This program is a simple program, but there is a slight problem that **for** rotates with a number **n** and this means for example; If the user enters as a number **one million**, the program will do **one million cycles**, and this means that we will wait until it finishes these steps.

But if you understand the field of mathematics, we will discover that we do not need to rotate a million times to reach the result, because there is simply an equation in mathematics that calculates the sum of the numbers from one to the number that the user enters, and this equation is **n** multiplied by **n+1** over the divisor of **2.**

```c
#include <stdio.h>
int main() {
int n, i, sum = 0, sum2 = 0;
printf("Enter a number: ");
scanf("%d", &n);
for (i = 0; i <= n; i++)
sum += i;
sum2 = (n * (n + 1)) / 2;
printf("Sum = %d\n", sum);
printf("Sum = %d\n", sum2);
}
```

input: 20

output:

sum = 210

sum = 210

Try the code yourself : <u>Click Here!</u>

The difference between the first **sum** and the second is that the first one rotates **n,** but the **sum** of the second will work from **one** step.

If the programmer is looking for many things and has knowledge of many sciences, the program will quickly get what is required of him.

Mathematics is the most important field related to programming , so if you are very good at math, you won't have struggles.

For a programmer, he must have the ability to understand everything. If we want to make a program for a doctor, we must have information in medicine, and the same applies to accounting. If we want to make an accounting program, we must be able to understand its mechanism of action, so the more superior you are in your field, the more information you have in different fields, the more you excel in programming, so read and study anything in different fields, the more you learn something, the more you increase your excellence.