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Fibonacci Series in C

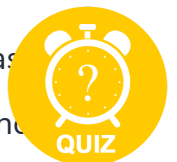
```
{  
    third_number = first_number +  
    second_number;  
    printf(" %d", third_number);  
    first_number = second_number;  
    second_number = third_number;  
}  
return 0;  
}
```

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Introduction to Fibonacci Series in C

In the Fibonacci Series in C, a number of the series is the result of the addition of the last two numbers of the series. C program with a loop (<https://www.educba.com/loops-in-c/>) and recursion for the Fibonacci Series (<https://www.educba.com/fibonacci-series-php/>). You can

print as many series terms as needed using the code below. The Fibonacci numbers are referred





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The recurrence relationship describes the n th of Fibonacci numbers in mathematical terms.

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$$F_n = F_{n-1} + F_{n-2}$$

Fibonacci Series Program in C without Recursion:

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int first_number = 0, second_number = 1, third_number, i, number;
    printf("Enter the number for fibonacci series:");
    scanf("%d",&number);
    printf("Fibonacci Series for a given number:");
    printf("\n%d %d", first_number, second_number); //To print 0 and 1
    for(i = 2; i < number; ++i) //loop will starts from 2 because we
    have printed 0 and 1 before
    {
        third_number = first_number + second_number;
        printf(" %d", third_number);
        first_number = second_number;
        second_number = third_number;
    }
```





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Fibonacci Series using Recursion in C:

```
#include<stdio.h>
#include<conio.h>
void printFibonacci(int number)
{
    static int first_number = 0, second_number = 1, third_number;
    if(number > 0)
    {
        third_number = first_number + second_number;
        first_number = second_number;
        second_number = third_number;
        printf("%d ",third_number);
        printFibonacci(number - 1);
    }
}
int main()
{
    int number;
    printf("Enter the number for fibonacci series:");

    scanf("%d",&number);
```





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```
return 0;  
}
```

Output:

Fibonacci Series in C using a For Loop

In the For loop, the Initialization step is executed and only once in the whole program. In this step, you can initialize and declare variables for the code. Then the condition will get evaluated.

If the condition is true, then it will execute the code inside the block of For loop. If the condition is false, it will jump to the code after the For loop without executing the for loop code.

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After the For loop, the increment statement will be executed. After that again, the condition will be checked. Loop will get executed if the condition is true, and the loop will repeat itself, i.e. the body of the loop, an increment statement, and condition. The For loop ends when the condition is false.

Program to Generate Fibonacci Series using For Loop:

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int first_number = 0, second_number = 1, third_number, i, number;
    printf("Enter the number for fibonacci series:");
    scanf("%d",&number);
    printf("Fibonacci Series for a given number:");
    printf("\n%d %d", first_number, second_number); //To print 0 and 1
    for(i = 0; i < number; i++) //loop will starts from 2 because we
    have printed 0 and 1 before
    {
        if(i <= 1)
            third_number = i;
        else
```





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```
second_number = third_number;
}
}
return 0;
}
```

Output:

Fibonacci Series Using While Loop

In the While loop, Base on Condition, the While loop gets executed multiple times.

If the condition is true, then it will execute the code inside the block of While loop. If the condition is false, it jumps to the code after the While loop without executing the while loop code's; see how we can generate the Fibonacci series Using While Loop.

```
#include<stdio.h>
#include<conio.h>
int main()
{
int first_number = 0, second_number = 1, third_number = 0, i = 0;
number;

printf("Enter the number for fibonacci series:");
```





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```
{  
    third_number = first_number + second_number;  
    printf(" %d", third_number);  
    first_number = second_number;  
    second_number = third_number;  
    i = i + 1;  
}  
return 0;  
}
```

Output:

Fibonacci Series in C using an Array:

Let $f(n)$ be the n 'th term.

$f(0)=0$;

$f(1)=1$;

$f(n)=f(n-1)+f(n-2)$; (for $n \geq 2$)



Series will be as Follows:



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$$0 + 1 = 1$$

$$1 + 1 = 2$$

$$1 + 2 = 3$$

$$2 + 3 = 5$$

$$3 + 5 = 8$$

$$5 + 8 = 13$$

$$8 + 13 = 21$$

$$13 + 21 = 34$$

$$21 + 34 = 55$$

...and so on

Program to Generate Fibonacci Series using Array:

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int fibonacci[25], i, number;
    printf("Enter the number for fibonacci series:");
    scanf("%d",&number);
```





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```
fibonacci[i] = fibonacci[i - 1] + fibonacci[i - 2];
}
printf("Fibonacci Series for a given number: \n");
for (i = 0; i < number; i++)
{
    printf("%d ", fibonacci[i]);
}
return 0;
}
```

Output:

Fibonacci Series using Specified Number

The first two numbers are 0 and 1, and the other numbers in the series are generated by adding the last two numbers of the series using looping. These numbers are stored in an array and will be printed as output.

Program to Generate Fibonacci Series using Specified Number:





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```
printf("Fibonacci Series for a given number:");  
printf("\n%d %d", first_number, second_number); //To print 0 and 1  
for(i = 2; i < 10; ++i) //loop will starts from 2 because we have  
printed 0 and 1 before  
{  
    third_number = first_number + second_number;  
    printf(" %d", third_number);  
    first_number = second_number;  
    second_number = third_number;  
}  
return 0;  
}
```

Output:

Conclusion

In this article, we have seen how to generate the Fibonacci series

(<https://www.educba.com/fibonacci-series-in-javascript/>) in C by various methods. I hope you'll find this article helpful.

Recommended Articles



This is a guide to Fibonacci Series in C. Here we discuss the introduction to the Fibonacci series,



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2. [Fibonacci Series in C++ \(https://www.educba.com/fibonacci-series-in-c-plus-plus/\)](https://www.educba.com/fibonacci-series-in-c-plus-plus/)

3. [Fibonacci Series in C# \(https://www.educba.com/fibonacci-series-in-c-sharp/\)](https://www.educba.com/fibonacci-series-in-c-sharp/)

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