

# Introduction to C programming

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## project 3

### C Program to display Fibonacci series

In this project, we will learn two following ways to display Fibonacci series in C programming language:

- 1) Using For loop
- 2) Using recursion

#### Fibonacci Series in C using loop

A simple for loop to display the series. Program prompts the user for the number of terms and displays the series having the same number of terms.

```
#include<stdio.h>
int main()
{
    int count, first_term = 0, second_term = 1, next_term, i;

    //Ask user to input number of terms
    printf("Enter the number of terms:\n");
    scanf("%d",&count);

    printf("First %d terms of Fibonacci series:\n",count);
    for ( i = 0 ; i < count ; i++ )
    {
        if ( i <= 1 )
            next_term = i;
        else
        {
            next_term = first_term + second_term;
            first_term = second_term;
            second_term = next_term;
        }
        printf("%d\n",next_term);
    }
}
```

```
    return 0;  
}
```

Output:

```
Enter the number of terms: 8  
First 8 terms of Fibonacci series:  
0  
1  
1  
2  
3  
5  
8  
13
```

### Program to display Fibonacci series using recursion

Here we are using a user defined function fibonacci\_series() that calls itself recursively, in order to display series for the entered number of terms.

```
#include<stdio.h>  
int fibonacci_series(int);  
int main()  
{  
    int count, c = 0, i;  
    printf("Enter number of terms:");  
    scanf("%d",&count);  
  
    printf("\nFibonacci series:\n");  
    for ( i = 1 ; i <= count ; i++ )  
    {  
        printf("%d\n", fibonacci_series(c));  
        c++;  
    }  
  
    return 0;  
}  
int fibonacci_series(int num)  
{  
    if ( num == 0 )  
        return 0;  
    else if ( num == 1 )  
        return 1;
```

```
    else
        return ( fibonacci_series(num-1) + fibonacci_series(num-2) );
}
```

Output:

```
Enter number of terms: 6
Fibonacci series:
0
1
1
2
3
5
```