Fibonacci Series in C

Fibonacci Series in C: In case of fibonacci series, *next number is the sum of previous two numbers* for example 0, 1, 1, 2, 3, 5, 8, 13, 21 etc. The first two numbers of fibonacci series are 0 and 1.

There are two ways to write the fibonacci series program:

- Fibonacci Series without recursion
- Fibonacci Series using recursion

What is Recursion in C?

Recursion, in general, can be defined as **the repetition of a process in a similar way until the specific condition reaches**. In C Programming, if a function calls itself from inside, the same function is called recursion

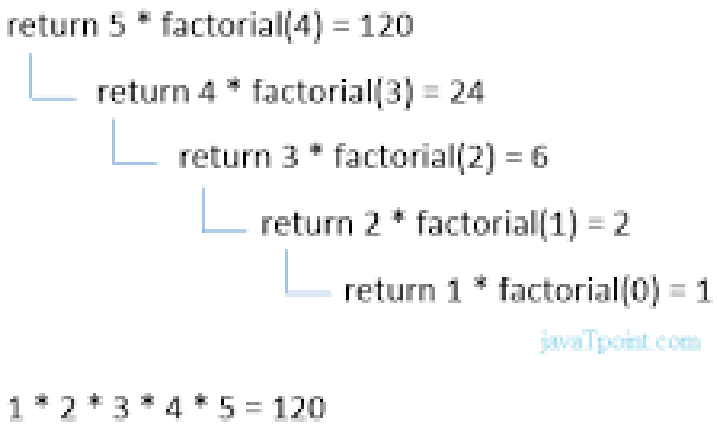

Fig: Recursion

Fibonacci Series in C without recursion

Let's see the fibonacci series program in c without recursion.

```
#include<stdio.h>
#include<conio.h>
int main()
{
 int n1=0,n2=1,n3,i,number;
Clrscr();
 printf("Enter the number of elements:");
 scanf("%d",&number);
 printf("\n %d %d",n1,n2);//printing 0 and 1
 for(i=2;i<number;++i) //loop starts from 2 because 0 and 1 are already printed
 {
  n3=n1+n2;
  printf(" %d",n3);
  n1=n2;
  n2=n3;
 }
  return 0;
 }
```

Output:

```
Enter the number of elements:15
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377
```

Fibonacci Series using recursion in C

Let's see the fibonacci series program in c using recursion.

```
 #include<stdio.h>
void printFibonacci(int n)
{
    static int n1=0,n2=1,n3;
```

```
5.      if(n>0)
6.   {
7.          n3 = n1 + n2;
8.          n1 = n2;
9.          n2 = n3;
10.         printf("%d ",n3);
11.         printFibonacci(n-1);
12.     }
13. }
14. int main()
15. {
16.     int n;
17.     printf("Enter the number of elements: ");
18.     scanf("%d",&n);
19.     printf("Fibonacci Series: ");
20.     printf("%d %d ",0,1);
21.     printFibonacci(n-2);//n-2 because 2 numbers are already printed
22.   return 0;
23.  }
```

Output:

```
Enter the number of elements:15
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377
```

Palindrome program in C

Palindrome number in c: A **palindrome number** is *a number that is same after reverse*. For example 121, 34543, 343, 131, 48984 are the palindrome numbers.

Palindrome number algorithm

- Get the number from user
- Hold the number in temporary variable
- Reverse the number
- Compare the temporary number with reversed number
- If both numbers are same, print palindrome number
- Else print not palindrome number

Let's see the palindrome program in C. In this c program, we will get an input from the user and check whether number is palindrome or not.

```
1. #include<stdio.h>
2. int main()
3. {
4. int n,r,sum=0,temp;
5. printf("enter the number=");
6. scanf("%d",&n);
7. temp=n;
8. while(n>0)
9. {
10. r=n%10;
11. sum=(sum*10)+r;
12. n=n/10;
13. }
14. if(temp==sum)
15. printf("palindrome number ");
16. else
17. printf("not palindrome");
18. return 0;
19. }
```

Output:

```
enter the number=151
palindrome  number

enter the number=5621
```