

Developing and executing 'C' programs – (By using Recursion)

RECURSION

When a function in turn calls another function a process of 'chaining' occurs.

Recursion is a special case of this process, where a function calls itself.

Eg:1)

```
main()
{
    printf("Example for recursion");
    main();
}
```

Exercise : Write a C program to find ${}^n C_r$ value using Recursion

$${}^n C_r = n! / r! (n - r)!$$

```
/*TO FIND NCR VALUE USING RECURSION FUNCTION*/
#include<stdio.h>
#include<conio.h>
void main( )
{
    long int factorial( );
    long int nf,rf,nrf,ncr;
    int n,r;
    clrscr();
    printf("\n ENTER THE VALUES OF n AND r:");
    scanf("%d%d",&n,&r);
    nf = factorial(n);
    rf = factorial(r);
    nrf = factorial(n-r);
    ncr = nf / (rf * nrf);
    printf("\n The factorial of %d is %d",n,nf);
    printf("\n The factorial of %d is %d",r,rf);
    printf("\n The factorial of %d is %ld",(n-r),nrf);
    printf("\n The %dc%d value=%ld",n,r,ncr);
    getch();
}/* main */

/*Recursion function to find Factorial */
long int factorial(n)
int n;
{
    long int f;
    if(n==1)
    {
        return(1);
    }
    else {
        f = n * factorial(n-1);
    }
}
```



```
        return(f);  
    }/* Function End*/
```

2. Write a C program to find FACTORIAL of a number using Recursion