**Assignment: - 06/ Functions, call by value, Recursion, structure of recursive calls**

**Write a function fact ( ) that can calculate factorial of a number, and call this function in main( ) function to calculate the series S = .**

#include<stdio.h>

int fact(int );

int main()

{

int n,y,sum=0,i;

printf("enter the number:");

scanf("%d",&n);

for(i=1;i<=n;i=i+2)

{

sum=sum+fact(i);

    }

printf("the sum of  factorial of the number: %d",sum);

}

int fact(int n)

{

int sum;

if(n==1)

return 1;

else

return n\*fact(n-1);

}

Output: enter the number:6

   The sum of factorial of the number: 127

**Write a Recursive C Function to calculate GCD of two numbers**.

#include <stdio.h>

int gcd(int g1, int g2);

int main()

{

int g1, g2;

printf("Enter two positive integers:\n");

scanf("%d%d", &g1, &g2);

printf("G.C.D of %d and %d is %d.", g1, g2, gcd(g1, g2));

return 0;

}

int gcd(int g1, int g2)

{

if (g2 != 0)

return gcd(g2, g1 % g2);

else

return g1;

}

Output

Enter two positive integers:

2

4

G.C.D of 2 and 4 is 2.

--------------------------------

Process exited after 8.317 seconds with return value 0

Press any key to continue . . .

**Write a Recursive C Function to calculate Factorial of number.**

#include<stdio.h>

long int multiplyNumbers(int n);

int main() {

int n;

printf("Enter a positive integer: ");

scanf("%d",&n);

printf("Factorial of %d = %ld", n, multiplyNumbers(n));

return 0;

}

long int multiplyNumbers(int n) {

if (n>=1)

return n\*multiplyNumbers(n-1);

else

return 1;

}

Output

Enter a positive integer: 12

Factorial of 12 = 479001600

--------------------------------

Process exited after 4.376 seconds with return value 0

Press any key to continue . . .

**Write a C program to swap two variables using Call by Address.**

// function to swap the two numbers

#include <stdio.h>

void swap(int \*x,int \*y)

{

int t;

t = \*x;

\*x = \*y;

\*y = t;

}

int main()

{

int num1,num2;

printf("Enter value of num1: ");

scanf("%d",&num1);

printf("Enter value of num2: ");

scanf("%d",&num2);

printf("Before Swapping: num1 is: %d, num2 is: %d\n",num1,num2);

swap(&num1,&num2);

printf("After Swapping: num1 is: %d, num2 is: %d\n",num1,num2);

return 0;

}

Output

Enter value of num1: 12

Enter value of num2: 45

Before Swapping: num1 is: 12, num2 is: 45

After Swapping: num1 is: 45, num2 is: 12

--------------------------------

Process exited after 3.201 seconds with return value 0

Press any key to continue . . .