**C Programming and Data Structures**

**Computer Science and Technology-B**

**Week 6**

**6) Write a C program to find Factorial, GCD, Fibonacci, (Using recursion)**

Factorial

#include<stdio.h>

int fact(int n);

int main()

{

int n;

printf("enter a number");

scanf("%d",&n);

printf("%d",fact(n));

return 0;

}

int fact(int n)

{

if (n==0)

return 1;

else

return n\*fact(n-1);

}

**Output:**

enter a number 5

120

**GCD**

#include<stdio.h>

int gcd(int a,int b);

void main()

{

int a,b;

printf("Enter a two numbers");

scanf("%d%d",&a,&b);

printf("%d",gcd(a,b));

}

int gcd(int a, int b)

{

if (a==0)

return b;

else if (b==0)

return a;

else

return gcd(b,a%b);

}

**Output:**

Enter two numbers 40 20

20

**Fibonacci**

#include<stdio.h>

int fibonacci(int);

int main()

{

int n, m= 0, i;

printf("Enter Total terms:");

scanf("%d", &n);

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

{

printf("%d\n", fibonacci(m));

m++;

}

return 0;

}

int fibonacci(int n)

{

if(n == 0 || n == 1)

return n;

else

return(fibonacci(n-1) + fibonacci(n-2));

}

**Output:**

Enter Total terms:10

0  
1  
1  
2  
3  
5  
8  
13  
21  
34