ASSIGNMENT-13

Write a recursive function to calculate sum of first N natural numbers

```c
#include<stdio.h>
int printN(int);
int main()
{
   int n,sum=0;
   printf("Enter a number : ");
   scanf("%d",&n);
   sum=printN(n);
   printf("Total Sum : %d",sum);
   printf("\n");
   return 0;
}
int printN(int n)
{
   if(n==1)
   {
      return 1;
   }
   return (n+printN(n-1));
}
```

Write a recursive function to calculate sum of first N odd natural numbers

```c
#include<stdio.h>
int printN(int);
int main()
{
   int n,sum=0;
   printf("Enter a number : ");
   scanf("%d",&n);
   sum=printN(n);
   printf("Total Sum : %d",sum);
   printf("\n");
   return 0;
}
int printN(int n)
{
   if(n==1)
   {
      return 1;
   }
   return ((2*n-1)+printN(n-1));
}
```

Write a recursive function to calculate sum of first N even natural numbers

```c
#include<stdio.h>
int printN(int);
int main()
{
   int n,sum=0;
   printf("Enter a number : ");
   scanf("%d",&n);
   sum=printN(n);
   printf("Total Sum : %d",sum);
   printf("\n");
   return 0;
}
int printN(int n)
{
   if(n==1)
   {
      return 2;
   }
   return ((2*n)+printN(n-1));
}
```

Write a recursive function to calculate sum of squares of first n natural numbers

```c
#include<stdio.h>
int printN(int);
int main()
{
   int n,sum=0;
   printf("Enter a number : ");
   scanf("%d",&n);
   sum=printN(n);
   printf("Total Sum : %d",sum);
   printf("\n");
   return 0;
}
int printN(int n)
{
   if(n==1)
   {
      return 1;
   }
   return ((n*n)+printN(n-1));
}
```

Write a recursive function to calculate sum of digits of a given number

```c
#include<stdio.h>
int printN(int);
int main()
{
   int n,sum=0;
   printf("Enter a number : ");
   scanf("%d",&n);
   sum=printN(n);
   printf("Total Sum : %d",sum);
   printf("\n");
   return 0;
}
int printN(int n)
{
   if(n<=9 && n>=0)
   {
      return n;
   }
   return ((n%10)+printN(n=n/10));
}
```

Write a recursive function to calculate factorial of a given number

```c
#include<stdio.h>
int fact(int);
int main()
{
   int n,sum=0;
   printf("Enter a number : ");
   scanf("%d",&n);
   sum=fact(n);
   printf("Total Sum : %d",sum);
   printf("\n");
   return 0;
}
int fact(int n)
{
   if(n==1)
   {
      return 1;
   }
   return (n*fact(n-1));
}
```

Write a recursive function to calculate HCF of two numbers

```c
#include<stdio.h>
```

```c
int hcf(int,int);
int main()
{
   int n,p,max=0;
   printf("Enter a first number : ");
   scanf("%d",&n);
   printf("Enter a second number : ");
   scanf("%d",&p);
   if(n>=p)
   {  max=n;
      n=p;
      p=max;
   }
   printf("HCF of %d and %d : %d",n,p,hcf(n,p));
   printf("\n");
   return 0;
}
int hcf(int a, int b)
{
   if(b%a==0)
   return a;

   hcf(b%a,a);
}
```

Write a recursive function to print first N terms of Fibonacci series

```c
#include<stdio.h>
int fibonacci(int);
int main()
{
   int n;
   printf("Enter a number : ");
   scanf("%d",&n);
   for(int i=0; i<n; i++)
   printf(" %d ",fibonacci(i));
   printf("\n");
   return 0;
}
int fibonacci(int n)
{
   if(n==1 || n==0)
   return n;

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

}
```

Write a program in C to count the digits of a given number using recursion.

```c
#include<stdio.h>
int count(int);
int ctr=0;
int main()
{
   int n,c=0;
   printf("Enter a number : ");
   scanf("%d",&n);
   c=count(n);
   printf("Total count of digit : %d",c);
   printf("\n");
   return 0;
}
int count(int n)
{

   if(n<=9 && n>=0)
   {
      return ++ctr;
   }
   ++ctr;
   count(n=n/10);
   return ctr;
}
```

Write a program in C to calculate the power of any number using recursion.

```c
#include<stdio.h>
int printpower(int,int);
int main()
{
   int n,p;
   printf("Enter a number : ");
   scanf("%d",&n);
   printf("Enter a power : ");
   scanf("%d",&p);
   printf("%d power %d : %d",n,p,printpower(n,p));
   printf("\n");
   return 0;
}
int printpower(int a, int b)
{
   if(b==1)
```

```
    return a;

    return (a*printpower(a,b-1));
}
```