Assignment # 6

Recursion

1. WAP to find power of any number using recursion.
2. WAP to find the product of two given numbers using recursion.
3. WAP to find sum of all natural numbers between 1 to n using recursion.
4. WAP to find reverse of any number using recursion.
5. WAP to find sum of digits of a given number using recursion.
6. WAP to find factorial of any number using recursion.
7. WAP to generate nth Fibonacci term using recursion.

1).

```
#include<stdio.h>
int power(int,int);
int main()
{
   int b,p,pow;
   printf("enter a two number ");
   scanf("%d%d",&b,&p);
   pow=power(b,p);
   printf("the power of %d is to  %d is:%d",b,p,pow);
   return 0;
}
int power(int b,int p)
{
   int f;
  if(p==0)
```

```
  return 1;
  else
  {
     f=b * power(b,p-1);
  }
  return f;

}
```

2).

```
#include<stdio.h>
int product(int,int);
int main()
{
   int a,b,ans;
   printf("enter a two number");
   scanf("%d%d",&a,&b);
   ans=product(a,b);
   printf("the product of two number is:%d",ans);
   return 0;
}
int product(int a,int b)
{
   int res;
   if(b==1)
   return a;
   else
   res= a + product(a,b-1);
   return res;
}
```

3).

```
#include<stdio.h>
int num(int);
```

```
int main()
{
   int n,res;
   printf("enter a number ");
   scanf("%d",&n);
   res = num(n);
   printf("the sum of natural number is %d\n",res);
   return 0;
}
int num(int n)
{
   int sum;
   if(n==1)
   return (1);
   else
   {
      sum = n + num(n-1);
   }
   return sum;

}
```

4).

```
#include<stdio.h>
int rev(int);
int main()
{
   int n,reverse;
   printf("enter a number:");
   scanf("%d",&n);
   reverse = rev(n);
   printf("the revese number is %d",reverse);
   return 0;
```

```
}
int rev(int num)
{
   int rem,z=1;
   if(num==0)

     return 0;

      for(int i=num;i>0;i/=10){
     rem = i % 10;
      z*=10;
   }
      return rem+rev(num%(z/10))*10;
}
```

5).

```
#include<stdio.h>
int sum(int);
int main()
{
   int a,res;
   printf("enter a  number :");
   scanf("%d",&a);
   res=sum(a);
   printf("the sum of number is:%4d",res);
   return 0;
}
int sum(int n )
{
   int sums;
   if (n ==0)
   return 0;
   else
```

```
    sums =n % 10 + sum(n / 10);
    return sums;
}
```

6).

```
#include<stdio.h>
int fact(int);
int main()
{
    int n,facto;
    printf("enter a number ");
    scanf("%d",&n);
    facto=fact(n);
    printf("the factorial of %d is:%d",n,facto);
    return 0;
}
int fact(int n)
{
    if (n == 0) return 1;
    else{
    return (n*fact(n-1));}
}
```

7).

```
#include<stdio.h>
int fibo(int);
int main()
{
int n, m= 0, i;
printf("Enter Total terms:");
scanf("%d", &n);
printf("Fibonacci series terms are:");
for(i = 1; i <= n; i++)
```

```
{
printf("%2d", fibo(m));
m++;
}
return 0;
}
int fibo(int n)
{
if(n == 0 || n == 1)
return n;
else
return(fibo(n-1) + fibo(n-2));
}
```