**ASSIGNMENT 13**

**1) Write a recursive function to calculate sum of first N natural numbers.**

#include<stdio.h>

int sNatural(int);

int main(){

int a;

printf("Enter n: ");

scanf("%d", &a);

printf("Sum of %d natural numbers is %d", a, sNatural(a));

return 0;

}

int sNatural(int n){

if(n>0)

{

return n+sNatural(n-1);

}

}

* **2) Write a recursive function to calculate sum of first N odd natural numbers.**

#include<stdio.h>

int sOdd(int);

int main(){

int a;

printf("Enter n: ");

scanf("%d", &a);

printf("Sum of first %d odd natural numbers is %d", a, sOdd(a));

return 0;

}

int sOdd(int n){

if(n>0)

{

return (2\*n-1 + sOdd(n-1));

}

}

**3) Write a recursive function to calculate sum of first N even natural numbers.**

#include<stdio.h>

int sEven(int);

int main(){

int a;

printf("Enter n: ");

scanf("%d", &a);

printf("Sum of first %d even natural numbers is %d", a, sEven(a));

return 0;

}

int sEven(int n){

if(n>0)

{

return (2\*n + sEven(n-1));

}

}

**4) Write a recursive function to calculate sum of squares of first n natural numbers.**

#include<stdio.h>

int sSquare(int);

int main(){

int a;

printf("Enter n: ");

scanf("%d", &a);

printf("Sum of squares of first %d natural numbers is %d", a, sSquare(a));

return 0;

}

int sSquare(int n){

if(n>0)

{

return (n\*n + sSquare(n-1));

}

}

**5) Write a recursive function to calculate sum of digits of a given number.**

#include<stdio.h>

int sumOfDigits(int);

int main(){

int n;

printf("Enter number: ");

scanf("%d", &n);

printf("Sum of digits in %d is %d", n, sumOfDigits(n));

return 0;

}

int sum=0;

int sumOfDigits(int n){

int last;

if(n!=0){

last=n%10;

sum=sum+last;

n/=10;

if(n==0) return sum;

else return sumOfDigits(n);

}

}

**6) Write a recursive function to calculate factorial of a given number.**

#include<stdio.h>

int fact(int);

int main(){

int n;

printf("Enter number: ");

scanf("%d", &n);

printf("Factorial of %d is= %d",n, fact(n));

return 0;

}

int fact(int n){ //123

if(n==1) return 1;

else return n\*fact(n-1);

}

**7) Write a recursive function to calculate HCF of two numbers.**

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

#include<stdio.h>

int countDigits(int);

int main(){

int n;

printf("Enter number: ");

scanf("%d", &n);

printf("Number of digits in %d is %d", n, countDigits(n));

return 0;

}

int count=0;

int countDigits(int n){

if(n>0){

n=n/10;

count++;

if(n==0) return count;

else return countDigits(n);

}

}

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

#include<stdio.h>

int power(int, int);

int main(){

int n, p;

printf("Enter number and power: ");

scanf("%d %d", &n, &p);

printf("%d", power(n, p));

return 0;

}

int power(int n, int p){

if(p==0) return 1;

else return n\*power(n, p-1);

}