ASSIGNMENT-13

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

int SumN (int n)

{

    if(n>0)

    {

        return (n+ SumN(n-1));

    }

}

int main ()

{

    int a, b;

    printf ("Enter a number:");

    scanf ("%d", &a);

    b = SumN(a);

    printf ("%d", b);

    return 0;

}

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

#include<stdio.h>

int SumOfOdd (int);

int SumOfOdd (int n)

{

    if(n>0)

    {

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

    }

}

int main ()

{

    int a, b;

    printf ("Enter a number:");

    scanf ("%d", &a);

    b = SumOfOdd(a);

    printf ("%d", b);

    return 0;

}

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

#include<stdio.h>

int SumOfEven (int);

int SumOfEven (int n)

{

    if(n>0)

    {

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

    }

}

int main ()

{

    int a, b;

    printf ("Enter a Number:");

    scanf ("%d", &a);

    b = SumOfEven(a);

    printf ("%d", b);

    return 0;

}

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

#include<stdio.h>

int SquareN (int);

int SquareN (int n)

{

    if(n>0)

    {

        return (n\*n+ SquareN(n-1));

    }

}

int main ()

{

    int a, b;

    printf ("Enter a Number:");

    scanf ("%d", &a);

    b = SquareN(a);

    printf ("%d", b);

    return 0;

}

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

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

#include<stdio.h>

int SumOfDigit (int);

int SumOfDigit (int n)

{

    if(n==0)

      return 0;

      if (n>0)

      {

        return (n%10+ SumOfDigit(n/10));

      }

}

int main ()

{

    int a, b;

    printf ("Enter a number:");

    scanf ("%d", &a);

    b = SumOfDigit(a);

    printf ("%d", b);

    return 0;

}

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

#include<stdio.h>

int Factorial (int);

int Factorial (int n)

{

    if(n==0)

       return 1;

       if(n>0)

        return (n\*Factorial(n-1));

}

int main ()

{

    int a, b;

    printf ("Enter a Number:");

    scanf ("%d", &a);

    b = Factorial(a);

    printf ("%d", b);

    return 0;

}

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

#include<stdio.h>

int hcf (int, int);

int hcf (int a, int b)

{

    if (a %b == 0)

        return b;

    return hcf (b %a, a);

}

int main ()

{

    int a, b;

    printf ("Enter two Numbers: ");

    scanf ("%d%d", &a, &b);

    printf ("HCF = %d", hcf(a, b));

    return 0;

}

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

#include <stdio.h>

int fib(int);

int fib (int n)

{

    if (n == 0 || n == 1)

        return n;

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

}

int main ()

{

    int n;

    printf ("Enter number of terms: ");

    scanf ("%d", &n);

    for (int i = 0; i < n; i++)

    {

        printf ("%d ", fib(i));

    }

    return 0;

}

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

#include<stdio.h>

int Codof(int);

int Codof (int n)

{

    int cnt=0;

    if(n==0)

      return 0;

   return (Codof (n/10) +1);

}

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

#include<stdio.h>

int power (int, int);

int power (int a, int b)

{

    if (b == 1)

        return a\*b;

    return a\*power (a, b-1);

}

int main ()

{

    int a, b;

    printf ("Enter number and power: ");

    scanf ("%d%d", &a, &b);

    printf ("%d power %d = %d", a, b, power (a, b));

    return 0;

}