**ASSIGNMENT 13 SOLUTION**

**Ans 1.**

#include <stdio.h>

int addNumbers(int n);

int main() {

int num;

printf("Enter a positive integer: ");

scanf("%d", &num);

printf("Sum = %d", addNumbers(num));

return 0;

}

int addNumbers(int n) {

if (n != 0)

return n + addNumbers(n - 1);

else

return n;

}

**Ans 2.**

#include<stdio.h>

int SumOdd(int num1, int num2)

{

if(num1>num2)

return 0;

return num1+SumOdd(num1+2,num2);

}

int main()

{

int num1=1,num2;

printf("Enter your Limit:");

scanf("%d",&num2);

printf("Sum of all odd numbers in the given range is: %d",SumOdd(num1,num2));

}

**Ans 3.**

#include<stdio.h>

int SumOdd(int num1, int num2)

{

if(num1>num2)

return 0;

return num1+SumOdd(num1+2,num2);

}

int main()

{

int num1=1,num2;

printf("Enter your Limit:");

scanf("%d",&num2);

printf("Sum of all odd numbers in the given range is: %d",SumOdd(num1,num2));

}

**Ans 4.**

#include <stdio.h>

// Function to calculate sum

int summation(int n)

{

int sum = 0;

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

sum += (i \* i);

return sum;

}

// Driver code

int main()

{

int n;

printf("Enter the number : ");

scanf("%d",&n);

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

return 0;

}

**Ans 5.**

#include <stdio.h>

int sum (int a);

int main()

{

int num, result;

printf("Enter the number: ");

scanf("%d", &num);

result = sum(num);

printf("Sum of digits in %d is %d\n", num, result);

return 0;

}

int sum (int num)

{

if (num != 0)

{

return (num % 10 + sum (num / 10));

}

else

{

return 0;

}

}

**Ans 6.**

#include<stdio.h>

long factorial(int n)

{

if (n == 0)

return 1;

else

return(n \* factorial(n-1));

}

void main()

{

int number;

long fact;

printf("Enter a number: ");

scanf("%d", &number);

fact = factorial(number);

printf("Factorial of %d is %ld\n", number, fact);

return 0;

}

**Ans 7.**

#include <stdio.h>

int hcf(int, int);

int main()

{

int a, b, result;

printf("Enter the two numbers to find their HCF: ");

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

result = hcf(a, b);

printf("The HCF of %d and %d is %d.\n", a, b, result);

}

int hcf(int a, int b)

{

while (a != b)

{

if (a > b)

{

return hcf(a - b, b);

}

else

{

return hcf(a, b - a);

}

}

return a;

}

**Ans 8.**

#include<stdio.h>

int Fibonacci(int);

int main()

{

int n, i = 0, c;

scanf("%d",&n);

printf("Fibonacci series\n");

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

{

printf("%d\n", Fibonacci(i));

i++;

}

return 0;

}

int Fibonacci(int n)

{

if ( n == 0 )

return 0;

else if ( n == 1 )

return 1;

else

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

}

**Ans 9.**

#include <stdio.h>

//function to count digits

int countDigits(int num)

{

static int count=0;

if(num>0)

{

count++;

countDigits(num/10);

}

else

{

return count;

}

}

int main()

{

int number;

int count=0;

printf("Enter a positive integer number: ");

scanf("%d",&number);

count=countDigits(number);

printf("Total digits in number %d is: %d\n",number,count);

return 0;

}

**Ans 10.**

#include <stdio.h>

int power(int n1, int n2);

int main() {

int base, a, result;

printf("Enter base number: ");

scanf("%d", &base);

printf("Enter power number(positive integer): ");

scanf("%d", &a);

result = power(base, a);

printf("%d^%d = %d", base, a, result);

return 0;

}

int power(int base, int a) {

if (a != 0)

return (base \* power(base, a - 1));

else

return 1;

}