ASSIGNMENT -5

1. Find the sum of first 10 natural numbers(using for loop)

```
#include <stdio.h>
int main()
 {
   // Write C code here
   int sum=0,i;
   for(i=1;i<=10;i++)
   {
   sum=sum+i;
   printf("%d\n",i);
   }
   printf("sum of natural numbers:%d",sum);
    return 0;
}
```

Output:-

```
1
2
3
4
5
6
7
8
9
10
sum of natural numbers:55
```

2. Display the multiplication of a given integer(using while loop)

```
#include <stdio.h>
int main() {
   // Write C code here
  int num,i=1,tab;
  printf("enter a number: ");
  scanf("%d",&num);
  while(i<=10)
  {
     tab=num*i;
     printf("%d\n",tab);
     i++;
  }
   return 0;
```

```
}
```

Output:-

```
enter a number: 4
4
8
12
16
20
24
28
32
36
40
```

3. Display the n terms of odd natural number and their sum(using do..while loop)

```
#include<stdio.h>
int main()
{
 int num,sum=0,i;
 printf("enter the number: ");
 scanf("%d",&num);
 i=1;
 do
 {
 printf("%d\n",2*i-1);
 sum=sum+2*i-1;
 i++;
   }
   while(i<=num);
  printf("the sum of odd natural number is %d",sum);
  return 0;
}
```

Output:-

```
enter the number: 5
1
3
5
7
9
the sum of odd natural number is 25
```

4. Display the pattern like right angle triangle(using for loop)

*

* *

* * *

```
#include <stdio.h>
int main()
{
 int num, i, j;
printf("Enter number for row: ");
 scanf("%d", &num);
 for(i = 1; i <= num; i++)
 {
  for(j = 1; j <= i; j++)
    printf("*");
    printf("\n");
 }

 return 0;
}
```

Output:-

```
Enter number for row: 4
*
**
***
****
```

5. Display the pattern like right angle triangle (using while loop)

1

2 3

4 5 6

7 8 9 10

```
#include <stdio.h>
int main()
{
  int i=1,j,k=1,n;
  printf("enter the number of rows: ");
  scanf("%d",&n);
  while(i<=n)
  {
     j=1;
     while(j<=i)
     {
```

```
        printf("%d",k++);
        j++;
      }
      i++;
      printf("\n");
  }
  return 0;
}
```

Output:-

```
enter the number of rows: 3
1
23
456
```

6. Make such a pattern like a pyramid with numbers (Using do…while loop)

```
#include <stdio.h>
int main()
{
  int i,j,space,row,k,t=1;
  printf("enter the number of rows : ");
  scanf("%d",&row);
  space=row+4-1;
  for(i=1;i<=row;i++)
  {
      for(k=space;k>=1;k--)
        {
          printf(" ");
        }
            for(j=1;j<=i;j++)
            printf("%d ",t++);
          printf("\n");
   space--;
  }
  return 0;
}
```

Output:-

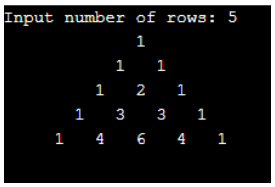
7. Display Pascal's triangle. (Using for loop)

```
#include <stdio.h>

void main()
```

```
{
   int no_row,k=1,sec,i,j;
   printf("Input number of rows: ");
   scanf("%d",&no_row);
   for(i=0;i<no_row;i++)
   {
      for(sec=1;sec<=no_row-i;sec++)
      printf("  ");
      for(j=0;j<=i;j++)
      {
         if (j==0||i==0)
            k=1;
         else
           k=k*(i-j+1)/j;
         printf("% 4d",k);
      }
      printf("\n");
   }
}
```

Output:-



8. Display the first n terms of Fibonacci series. (Using for loop)

```
#include <stdio.h>
int main()
{
   int i, num, term1 = 0, term2 = 1, nextTerm;
   printf("Enter the number of terms: ");
   scanf("%d", &num);
   printf("Fibonacci Series: ");

   for (i = 1; i <= num; ++i) {
      printf("%d, ", term1);
      nextTerm = term1 + term2;
      term1 = term2;
      term2 = nextTerm;
   }
```

```
   return 0;
}
```

Output:-

```
Enter the number of terms: 10
Fibonacci Series: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34,
```

9. Check whether a given number is a perfect number or not. (Using while loop)

```
#include<stdio.h>
int main()
{
 int num,i=1,sum;

 printf("Enter a number: ");
 scanf("%d",&num);

 while(i<num)
 {
    if(num%i==0)
        sum=sum+i;
       i++;
 }
 if(sum==num)
    printf("%d is a perfect number",i);
 else
    printf("%d is not a perfect number",i);

 return 0;
}
```

Output:-

```
Enter a number: 7
7 is not a perfect number
```

10. find the Armstrong number for a given range of number. (Using while loop)

```
#include <stdio.h>
int main()
{
   int num, originalNum, rem, result;
   printf("Enter the number: ");
   scanf("%d", &num);
   originalNum = num;
```

```
   while (originalNum != 0)
   {
      rem = originalNum % 10;

     result += rem* rem* rem;


     originalNum /= 10;
   }

   if (result == num)
      printf("%d is an Armstrong number.", num);
   else
      printf("%d is not an Armstrong number.", num);

   return 0;
}
```

Output:-

```
Enter the number: 371
371 is an Armstrong number.
```

11. Determine whether a given number is prime or not. (Using do…while loop)

```
#include <stdio.h>

int main()
{
   int num,i,count=0;

   printf("Enter the  number: ");
   scanf("%d",&num);

   i=2;
   do{

   if(num%i==0)
   {
      count=1;
      break;
   }
   i++;
```

```
}while(i<=num/2);


    if(count==0){
       printf("%d is a prime number ",num);
    }
    else{
        printf("%d is not a prime number ",num);
    }
  return 0;
}
```

Output:-

```
Enter the  number: 5
5 is a prime number
```

12. Display the number in reverse order. (Using do…while loop)

```
#include <stdio.h>
int main()
{
   int n, rev = 0, remainder;
   printf("Enter an integer: ");
   scanf("%d", &n);
   do{

      remainder = n % 10;
      rev = rev * 10 + remainder;
      n /= 10;

   }
   while (n != 0);
   printf("Reversed number = %d", rev);
   return 0;
}
```

Output:-

```
Enter an integer: 456
Reversed number = 654
```

13. Display the sum of the series [9 + 99 + 999 + 9999 ...] (Using for loop)

```
 #include <stdio.h>
int main()
```

```
{
   long int num,i,term=9;
          int sum =0;
          printf("Input the terms :");
          scanf("%ld",&num);
          for (i=1;i<=num;i++)
          {
            sum +=term;
            printf("%ld ",term);
            term=term*10+9;
          }
          printf("The sum of the series: %d \n",sum);
          return 0;
}
```

Output:-

```
Input the terms :4
9 99 999 9999 The sum of the series: 11106
```

16. Display the n terms of even natural number and their sum.

```
#include <stdio.h>
int main()
{
  int i,num,sum;

  printf("Enter the  number of terms : ");
  scanf("%d",&num);
  printf("\n even numbers are : ");
  for(i=1;i<=num;i++)
  {
    printf("%d",2*i);
    sum+=2*i;
  }
  printf("\nSum of even natural numbers: %d \n",sum);
  return 0;
}
```

Output:-

```
Enter the  number of terms : 5

 even numbers are : 246810
Sum of even natural numbers: 30
```

17. Display n terms of natural number and their sum.

```
#include <stdio.h>
int main()
{
  int i,num,sum;
  printf("enter the number of terms : ");
  scanf("%d",&num);
  for(i=1;i<=num;i++)
  {
   printf("%d ",i);
   sum+=i;
  }
  printf("\nThe Sum of natural numbers upto %d terms : %d \n",num,sum);
return 0;
}
```

Output:-

```
enter the number of terms : 5
1 2 3 4 5
The Sum of natural numbers upto 5 terms : 15
```

18. Display the pattern like a diamond.

```
#include <stdio.h>
int main()
{
  int i,j,row;
  printf("enter number of rows  :");
  scanf("%d",&row);
  for(i=0;i<=row;i++)
  {
   for(j=1;j<=row-i;j++)
   printf(" ");
   for(j=1;j<=2*i-1;j++)
     printf("*");
   printf("\n");
  }

  for(i=row-1;i>=1;i--)
  {
   for(j=1;j<=row-i;j++)
   printf(" ");
   for(j=1;j<=2*i-1;j++)
```

```
      printf("*");
    printf("\n");
  }
 return 0;
}
```

Output:-

```
enter number of rows  :3

  *
 ***
*****
 ***
  *
```

19. Display the pattern like right angle triangle with a number.

```
#include <stdio.h>
int main()
{
  int i,j,rows;

  printf("Input number of rows : ");
  scanf("%d",&rows);
  for(i=1;i<=rows;i++)
  {
          for(j=1;j<=i;j++)
            printf("%d",i);
          printf("\n");
  }
  return 0;
}
```

Output:-

```
Input number of rows : 5
1
22
333
4444
55555
```

20. calculate the factorial of a given number.

```
#include<stdio.h>
int main()
{
 int i,fact=1,num;
 printf("Enter a number: ");
  scanf("%d",&num);
 for(i=1;i<=num;i++)
```

```
    fact=fact*i;
 printf("Factorial of %d is: %d",num,fact);
 return 0;
}
```

Output:-

```
Enter a number: 5
Factorial of 5 is: 120
```

21. Find the perfect numbers within a given number of range.

```
#include <stdio.h>
int main()
{
   int i, j, low, up, sum;

   /* Input upper limit to print perfect number */
   printf("Enter upper limit: ");
   scanf("%d", &up);
   printf("Enter lower limit: ");
   scanf("%d", &low);

   printf("All Perfect numbers between %d to %d:\n",low,up);

   for(i=1; i<=up; i++)
   {
      sum = 0;

      for(j=1; j<i; j++)
      {
         if(i % j == 0)
         {
            sum += j;
         }
      }

      if(sum == i)
      {
         printf("%d, ", i);
      }

   }
           return 0;
```

```
}
```

Output:-

```
Enter lower limit: 1
All Perfect numbers between 1 to 50:
6, 28,
```

22. Check whether a given number is an armstrong number or not.

```
#include <stdio.h>
void main()
{
   int num,r,sum,temp;

   printf("enter the number: ");
   scanf("%d",&num);

   for(temp=num;num!=0;num=num/10)
   {
      r=num % 10;
      sum=sum+(r*r*r);
   }
   if(sum==temp)
      printf("%d is an Armstrong number\n",temp);
   else
      printf("%d is not an Armstrong number\n",temp);

}
```

Output:-

```
enter the number: 345
345 is not an Armstrong number
```

23. Find the prime numbers within a range of numbers.

```
#include <stdio.h>

void main(){
   int num,i,count,first,last;

   printf("Input starting number of range: ");
   scanf("%d",&first);

   printf("Input ending number of range : ");
```

```
   scanf("%d",&last);
   printf("The prime numbers between %d and %d are : \n",first,last);

   for(num = first;num<=last;num++)
     {
      count = 0;

      for(i=2;i<=num/2;i++)
        {
         if(num%i==0){
            count++;
            break;
         }
      }

      if(count==0 && num!= 1)
         printf("%d ",num);
   }
printf("\n");
}
```

Output:-

```
Input starting number of range: 1
Input ending number of range : 50
The prime numbers between 1 and 50 are :
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47
```

24. Check whether a number is a palindrome or not.

```
#include <stdio.h>
int main()
{
  int num, rev=0, rem,temp;
  printf("Enter the number: ");
  scanf("%d", &num);


  temp=num;
  while(temp!=0)
  {
    rem=temp%10;
    rev=rev*10+rem;
    temp/=10;
```

```
  }

  if(rev==num)
    printf("%d is a palindrome number",num);
  else
    printf("%d is not a palindrome number",num);
  return 0;
}
```

Output:-

```
Enter the number: 121
121 is a palindrome number
```

25. Find HCF (Highest Common Factor) of two numbers.

```
#include <stdio.h>
int main()
{
   int i, num1, num2, j, hcf=1;
   printf("Input 1st number: ");
   scanf("%d", &num1);
   printf("Input 2nd number: ");
   scanf("%d", &num2);

   j = (num1<num2) ? num1 : num2;

   for(i=1; i<=j; i++)
   {

      if(num1%i==0 && num2%i==0)
      {
         hcf = i;
      }
   }

   printf("\nHCF of %d and %d is : %d\n", num1, num2, hcf);
}
```

Output:-

```
Input 1st number: 12
Input 2nd number: 20

HCF of 12 and 20 is : 4
```

26. Find LCM of any two numbers using HCF.

```
#include <stdio.h>
int main()
{
   int i,j, num1, num2,hcf=1,lcm;
   printf("enter 1st number: ");
   scanf("%d", &num1);
   printf("enter 2nd number: ");
   scanf("%d", &num2);

   j = (num1<num2) ? num1 : num2;

   for(i=1; i<=j; i++)
   {

      if(num1%i==0 && num2%i==0)
      {
         hcf = i;
      }
   }
   lcm=(num1*num2)/hcf;

   printf("\nThe LCM of %d and %d is : %d\n", num1, num2, lcm);

}
```

Output:-

```
enter 1st number: 20
enter 2nd number: 25

The LCM of 20 and 25 is : 100
```

27. Check Whether a Number can be Express as Sum of Two Prime Numbers.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
int num,i,j,temp1,temp2,ctr=0;
printf("input the number:\n");
scanf("%d",&num);
for(i=2;i<=num/2;i++){
```

```
temp1=i;
temp2=num-i;
for(j=2;j<=i/2;j++){
if(i%j==0){ctr++;break;}
}
if(ctr==0){
for(j=2;j<=(num-i)/2;j++){
if((num-i)%j==0){ctr++;break;}
}
if(ctr==0) printf("%d can be written as %d + %d.\n ",num,i,num-i);
}
ctr=0;
}
return 0;
}
```

Output:-

```
input the number:
16
16 can be written as 3 + 13.
 16 can be written as 5 + 11.
```

28. Find the number and sum of all integer between 100 and 200 which are divisible by 9.

```
#include <stdio.h>
int main()
{
  int i, sum=0;
  for(i=100;i<=200;i++)
  {
    if(i%9==0)
    {
      printf(" %d",i);
      sum+=i;
    }
  }
  printf("\nsum : %d \n",sum);
}
```

Output:-

```
 108 117 126 135 144 153 162 171 180 189 198
sum : 1683
```