1**:/ find the sum of first 10 natural numbers. (Using for loop)**

```
#include<stdio.h>
void main()
{
   int i,sum=0;
   printf("enter first 10 natural number:");
   for(i=1;i<=10;i++)
   {
      sum=sum+i;
      printf("%d\n",i);
   }
   printf("the sum is:%d\n",sum);
}
```

```
enter first 10 natural number:1
2
3
4
5
6
7
8
9
10
the sum is:55
```

2**:/ display the multiplication table of a given integer (Using while loop**)

```
#include<stdio.h>
int main()
{
   int i,n;
   printf("enter an integer :");
   scanf("%d",&n);
   for (i=1;i<=10;i++){
      printf("%d\n",(n*i));
   }
   return 0;
}
```

```
enter an integer :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>
void main()
{
  int i=1,n,sum=0;

  printf("Input number of terms : ");
  scanf("%d",&n);
  printf("\nThe odd numbers are :");
  do
  {
   printf("%d ",2*i-1);
   i++;
   sum+=2*i-1;
  }
  while(i<=n);
  printf("\nThe Sum of odd Natural Number upto %d terms : %d \n",n,sum);
}
```

```
Input number of terms : 5
The odd numbers are :1 3 5 7 9
The Sum of odd Natural Number upto 5 terms : 35
```

4: **display the pattern like right angle triangles. (Using for loop)**

```
#include <stdio.h>
```

```
int main()
{
   int i,j;


   for (i = 1 ; i <= 5 ; i++)
   {
      for( j=1 ; j <= i ; j++)
      {
         printf("*");
      }
      printf("\n");
   }
   return 0;
}
```

Q.5 Display the pattern like right angle triangles.

1

2 3

4 5 6

7 8 9 10

```
#include <stdio.h>
int main(){
int n,i=1,j,k=1;
        printf("Please 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;
}
```

```
Please Enter the Number of Rows:4
1
2 3
4 5 6
7 8 9 10
```

Q.6 Make such a pattern like a pyramid with numbers

1

2 3

4 5 6

7 8 9 10

```
#include <stdio.h>
int main(){
   int i=1,j,k,n,t=1,g;
   printf("Enter the value for n:");
   scanf("%d",&n);
```

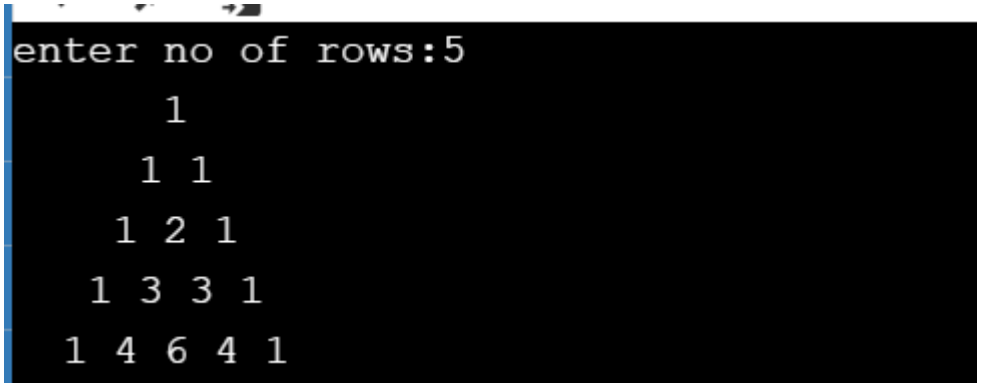
```
   g=n+4-1;
   do
   {
      for(k=g;k>=1;k--){
         printf(" ");
      }
for(j=1;j<=i;j++)
         printf("%d",t++);
      printf("\n");
      g--;
      i++;
   }
   while(i<=n);
   return 0;
}
```

```
Enter the value for n:4
      1
     2 3
    4 5 6
   7 8 9 10
```

7: **display Pascal's triangle. (Using for loop)**

```
#include<stdio.h>
int main()
{
   int i,j,k,n,value;
   printf("enter no of rows:");
   scanf("%d",&n);
   for(i=1;i<=n;i++)
```

```
    {
        for(k=1;k<=(n-i);k++)
        {
            printf("");
        }
        value=1;
        for(j=0;j<=i;j++)
        {
            printf("%d",value);
            value=(value*(i-j))/(j+1);
        }
        printf("\n");
    }
    return 0;
}
```



8**: display the first n terms of Fibonacci series. (Using for loop)**

```
#include<stdio.h>
int main()
{
    int i,n,t1 = 0,t2 = 1,next_term;
    printf("enter number of terms:");
    scanf("%d",&n);
    printf("fibonacci series:");
    for(i=1;i<=n;i++){
```

```
        printf("%d, ",t1);
        next_term=t1+t2;
        t1=t2;
        t2=next_term;
    }

    return 0;
}
```

```
enter number of terms:8
fibonacci series:0, 1, 1, 2, 3, 5, 8, 13,
```

9**: check whether a given number is a perfect number or not. (Using while** loop)

```
#include<stdio.h>
int main()
{
    int i,n,sum=0;
    printf("enter any number:");
    scanf("%d",&n);
    while(i<=n){
      if (n%i==0);
        sum=sum+i;
        i++;
    }
        if(sum==0)
            printf("it's a perfect number");
        else
            printf("it's not a perfect number");
    return 0;
}
```

```
enter any number:7
it's a perfect number
```

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

```
#include<stdio.h>
void main()
{
   int n,r,x,s;
   printf("Armstrong numbers are\n");
   for(n=1;n<=1000;n++){
      s=0;
      x=n;
      while(x!=0){
         r=x%10;
         s=s+r*r*r;
         x=x/10;
      }
      if(s==n)
   printf("%d\n",n);
   }
}
```

```
Armstrong numbers are
1
153
370
371
407
```

11: **Q.7 Display Pascal's triangle**

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

```
#include <stdio.h>
```

```
int main(){
   int n,i,j,k=1,s;
   printf("Enter the value for n:");
   scanf("%d",&n);
   for(i=0;i<n;i++) {
      for(s=1;s<=n-i;s++)
         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");
   }
   return 0;
}
```

```
Enter the value for n:5
        1
       1   1
      1   2   1
     1   3   3   1
    1   4   6   4   1
```

Q.8 Display the first n terms of Fibonacci series

```
#include <stdio.h>
int main() {
   int i,n,a=0,b=1,temp;
   printf("Enter the value for n:");
```

```
    scanf("%d", &n);
    printf("Fibonacci Series:");
    for(i=1;i<=n;++i) {
        printf("%d, ",a);
        temp=a+b;
        a=b;
        b=temp;
    }
    return 0;
}
```

```
Enter the value for n:10

Fibonacci Series:0, 1, 1, 2, 3, 5, 8, 13, 21, 34
```

Q.9 Check whether a given number is a perfect number or not.

```
#include <stdio.h>
int main() {
    int i=1,n,sum=0;
    printf("Enter the value for n:");
    scanf("%d",&n);
    while(i<=n/2) {
        if(n%i==0) {
            sum=sum+i;
        }
        i++;
    }
    if(sum==n)
        printf("%d is PERFECT NUMBER",n);
    else
        printf("%d is NOT PERFECT NUMBER",n);
    return 0;
```

}

```
Enter the value for n:-
1

-1 is NOT PERFECT NUMBER
```

Q.10 Find the Armstrong number for a given range of number.

```
#include <stdio.h>
#include <math.h>
int main() {
   int a,b,n,on,rem,c=0;
   double res=0.0;
   printf("Enter 2 number:");
   scanf("%d %d", &a,&b);
   printf("Amstrong number between %d to %d are:",a,b);
   for(n=a+1;n<b;++n)
   {
      on=n;
      while(on!=0)
      {
         on=on/10;
         ++c;
      }
      on=n;
      while(on!=0)
      {
         rem=on % 10;
         res=res+ pow(rem, c);
         on=on/10;
      }
      if(res==n)
```

```
            printf("%d ",n);
        c=0;
        res=0;
    }
    return 0;
}
```

```
Enter 2 number:200 2000

Amstrong number between 200 to 2000 are:370 371 407 1634
```

Q.11 Determine whether a given number is prime or not.

```
#include <stdio.h>
int main() {
    int n,i=2,flag=0;
    printf("Enter the value for n:");
    scanf("%d",&n);
    while(i<=n/2) {
        if(n%i==0)  {
            flag=1;
            break;
        }
        ++i;
    }
    if(n==1)  {
        printf("1 is neither prime nor composite");
    }
    else
    {
        if(flag==0)
            printf("%d is a prime number",n);
        else
```

```
        printf("%d is not a prime number",n);
    }
    return 0;
}
```

```
Enter the value for n:29

29 is a prime number
```

Q.12 Display the number in reverse order

```
#include <stdio.h>
int main() {
    int n,r=0;
    printf("Enter the number:");
    scanf("%d",&n);
    do {
        r=r*10;
        r=r+n%10;
        n=n/10;
    }
    while(n!=0);
    printf("Reverse of the number is:%d\n",r);
    return 0;
}
```

```
Enter the number:3456

Reverse of the number is:6543
```

Q.13 Display the sum of the series [9 + 99 + 999 + 9999..]

```
#include <stdio.h>
void main()
{
    long int n,i,t=9;
```

```
   int sum=0;
   printf("Enter the value of n:");
   scanf("%d", &n);
   for(i=1;i<=n;i++)
   {
      sum=sum+t;
      printf("%ld ",t);
      t=t*10+9;
   }
   printf("\nsum of the series:%d\n",sum);
}
```

```
Enter the value of n:5

9 99 999 9999 99999

sum of the series:111105
```

Q.14 find the sum of the series{1-X^2/2!+X^4/4!-...]

```
#include <stdio.h>
void main()
{
   float x,sum,t,d;
   int i=1,n;
   printf("Enter the value for x:");
   scanf("%f", &x);
   printf("Enter the value for n:");
   scanf("%d",&n);
   sum=1;
   t=1;
   while(i<n)
   {
      d=(2*i)*(2*i-1);
```

```
    t=-t*x*x/d;
    sum=sum+t;
    i++;
  }
  printf("the sum= %f\n Value of n= %d\n Value of X=%.2f\n",sum,n,x);
}
```

```
Enter the value for x:2

Enter the value for n:5

the sum= -
0.415873

 Value of n= 5

 Value of X=2.00
```

Q.15 find the sum of the series [x-x^3+x^5+...]

```
#include <stdio.h>
#include <math.h>
void main()
{
  int x,sum,ctr,i=1,n,m,mm,nn;
  printf("Enter the value for x:");
  scanf("%d",&x);
  printf("Enter the value for n:");
  scanf("%d",&n);
  sum=x;
  m=-1;
  printf("The value of the series:\n");
  printf("%d\n",x);
```

```
   do
   {
      ctr=(2*i+1);
      mm=pow(x,ctr);
      nn=mm*m;
      printf("%d\n",nn);
      sum=sum+nn;
      m=m*(-1);
      i++;
   }
   while(i<n);
   printf("\n The sum=%d\n",sum);
}
```

```
Enter the value for x:2

Enter the value for n:5

The value of the series:

2

-
8

32

-
128

512


 The sum=410
```

16: **16. display the n terms of even natural number and their sum**

```
#include <stdio.h>
```

```
void main()
{
  int i,n,sum=0;

  printf("Input number of terms : ");
  scanf("%d",&n);
  printf("\nThe even numbers are :");
  for(i=1;i<=n;i++)
  {
    printf("%d ",2*i);
    sum+=2*i;
  }
  printf("\nThe Sum of even Natural Number upto %d terms : %d \n",n,sum);
}
```

```
Input number of terms : 7
The even numbers are :2 4 6 8 10 12 14
The Sum of even Natural Number upto 7 terms : 56
```

17: . **display n terms of natural number and their sum**.

```
#include <stdio.h>
void main()
{
  int i,n,sum=0;
  printf("Input Value of terms : ");
  scanf("%d",&n);
  printf("\nThe first %d natural numbers are:\n",n);
  for(i=1;i<=n;i++)
  {
    printf("%d ",i);
    sum+=i;
```

```
  }
  printf("\nThe Sum of natural numbers upto %d terms : %d \n",n,sum);

}
```

```
Input Value of terms : 5

The first 5 natural numbers are:
1 2 3 4 5
The Sum of natural numbers upto 5 terms : 15
```

18:display the pattern like diamond.

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

```
        printf(" ");
      for(j=1;j<=2*(n-i)-1;j++)
        printf("*");
      printf("\n");
   }
   return 0;
}
```

```
Enter number of rows
:5
    *
   ***
  *****
 *******
*********
 *******
  *****
   ***
    *
```

19: **display the pattern like right angle triangle with a number**

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

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

```
enter a number:4
1
22
333
4444
```

20: **. calculate the factorial of a given number**.

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

```
please enter a number:5
factor of 5 is:120
```

21**: find the perfect numbers within a given number of range.**

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

```
{
   int min,max,n,sum,i,j;
   printf("enter min & max value:");
   scanf("%d%d",&min,&max);
   for(i=min;i<=max;i++)
   {
      n=i;
      sum=0;
      for(j=1;j<=n/2;j++)
      {
         if(n%j==0)
         sum=sum+j;
      }
      if(n==sum)
      printf("%d\n",sum);
   }
   return 0;
}
```

```
/tmp/aeMQwYDH20.o
enter min & max value:3 300
6
28
```

22**: check whether a given number is an armstrong number or not**.

```
#include <stdio.h>
int main() {
   int num, originalNum, remainder, result = 0;
   printf("Enter a two-digit integer: ");
   scanf("%d", &num);
   originalNum = num;

   while (originalNum != 0) {
```

```
    // remainder contains the last digit
     remainder = originalNum % 10;

    result += remainder * remainder * remainder;
    originalNum /= 10;
  }

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

  return 0;
}
```

```
Enter a two-digit integer: 89
is not an Armstrong number.
```

: 23. find the prime numbers within a range of numbers.

```
#include <stdio.h>
int main()
{
  int num1, num2, v, i, j;
  printf("please Enter two range:");
  scanf("%d %d", &num1, &num2);

  printf("Prime numbers from %d and %d are:\n", num1, num2);
  for(i=num1+1; i<num2; ++i)
  {
    v=0;
    for(j=2; j<=i/2; ++j)
    {
```

```
        if(i%j==0)
        {
          v=1;
          break;
        }
      }
      if(v==0)
        printf("%d\n",i);
  }
  return 0;
}
```

```
please Enter two range:1 10
Prime numbers from 1 and 10 are:
2
3
5
7
```

24: **. check whether a number is a palindrome or not**.

```
#include <stdio.h>
int main() {
    int n, reversedN = 0, remainder, originalN;
    printf("Enter an integer: ");
    scanf("%d", &n);
    originalN = n;
    while (n != 0) {
        remainder = n % 10;
        reversedN = reversedN * 10 + remainder;
        n /= 10;
    }
    if (originalN == reversedN)
        printf("%d is a palindrome.", originalN);
```

```
    else
        printf("%d is not a palindrome.", originalN);
    return 0;
}
```

```
Enter an integer: 8
is a palindrome.
```

25: **. find HCF (Highest Common Factor) of two numbers**.

```
#include <stdio.h>
int main()
{
    int i, num1, num2, min, hcf=1;
    printf("Enter any two numbers to find HCF: ");
    scanf("%d%d", &num1, &num2);
    min = (num1<num2) ? num1 : num2;

    for(i=1; i<=min; i++)
    {
        /* If i is factor of both number */
        if(num1%i==0 && num2%i==0)
        {
            hcf = i;
        }
    }

    printf("HCF of %d and %d = %d\n", num1, num2, hcf);

    return 0;
}
```

```
Enter any two numbers to find HCF: 9 10
HCF of 9 and 10 = 1
```

26: **. find LCM of any two numbers using HCF**.

```
#include <stdio.h>
int main() {
   int n1, n2, max;
   printf("Enter two positive integers: ");
   scanf("%d %d", &n1, &n2);
   max = (n1 > n2) ? n1 : n2;

   while (1) {
      if (max % n1 == 0 && max % n2 == 0) {
         printf("The LCM of %d and %d is %d.", n1, n2, max);
         break;
      }
      ++max;
   }
   return 0;
}
```

```
Enter two positive integers: 3 7
The LCM of 3 and 7 is 21.
```

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

```
#include <stdio.h>
int checkPrime(int n);
int main() {
   int n, i, flag = 0;
   printf("Enter a positive integer: ");
   scanf("%d", &n);
```

```
    for (i = 2; i <= n / 2; ++i) {
        // condition for i to be a prime number
        if (checkPrime(i) == 1) {
            // condition for n-i to be a prime number
            if (checkPrime(n - i) == 1) {
                printf("%d = %d + %d\n", n, i, n - i);
                flag = 1;
            }
        }
    }
    if (flag == 0)
        printf("%d cannot be expressed as the sum of two prime numbers.", n);

    return 0;
}

// function to check prime number
int checkPrime(int n) {
    int i, isPrime = 1;
    for (i = 2; i <= n / 2; ++i) {
        if (n % i == 0) {
            isPrime = 0;
            break;
        }
    }
    return isPrime;
}
```

```
Enter a positive integer: 78
= 5 + 73
78 = 7 + 71
78 = 11 + 67
78 = 17 + 61
78 = 19 + 59
78 = 31 + 47
78 = 37 + 41
```

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

```
#include <stdio.h>


void main()
{
  int i, sum=0;
  printf("Numbers between 100 and 200, divisible by 9 : \n");
  for(i=101;i<200;i++)
  {
    if(i%9==0)
    {
      printf("% 5d",i);
      sum+=i;
    }
  }
  printf("\n\nThe sum : %d \n",sum);
}
```

```
Numbers between 100 and 200, divisible by 9 :
  108  117  126  135  144  153  162  171  180  189  198

The sum : 1683
```

29: **display the sum of the series [9 + 99 + 999 + 9999 ...]**

```
#include <stdio.h>
```

```
void main()
{   long int n,i,t=9;
        int sum =0;
        printf("Input the number or terms :");
        scanf("%ld",&n);
        for (i=1;i<=n;i++)
        { sum +=t;
          printf("%ld   ",t);
          t=t*10+9;
        }
        printf("\nThe sum of the series = %d \n",sum);
}
```

```
Input the number or terms :8
9   99   999   9999   99999   999999   9999999   99999999
The sum of the series = 111111102
```

30**: display the sum of the series [1+x+x^2/2!+x^3/3!+....].**

```
#include <stdio.h>


void main()
{
        float x,sum,no_row;
        int i,n;
        printf("Input the value of x :");
        scanf("%f",&x);
        printf("Input number of terms : ");
        scanf("%d",&n);
        sum =1; no_row = 1;
        for (i=1;i<n;i++)
        {
          no_row = no_row*x/(float)i;
```

```
        sum =sum+ no_row;
      }
      printf("\nThe sum  is : %f\n",sum);
}
```

```
Input the value of x :7
Input number of terms : 9
The sum  is : 799.545593
```