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

```
#include <stdio.h>

   int main()
 {
       int i,sum = 0;
       printf("The first 10 natural number is:\n");

       for(i=1;i<=10;i++)
       {
              sum = sum + i;
              printf(" %d ",i);
       }
       printf("\nThe sum is %d\n",sum);
       return 0;
 }
```

Output:

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

1. Display the multiplication table of a given integer (Using while loop)

```
#include <stdio.h>

    int main()
  {
    int num,i = 1;
    printf("Enter a number :");
    scanf("%d",&num);
    printf("Multiplication table for %d is :\n",num);
    while (i<=10)
    {
            printf("%d * %d = %d\n",num,i,(num * i));
            i++;
    }
        return 0;
  }
```

Output:

```
Enter a number :5
Multiplication table for 5 is :
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
```

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

```
#include <stdio.h>

    int main()
  {
  int num,i=1,sum;
  printf("Enter the number :");
  scanf("%d",&num);

        do
        {
          if(i % 2!= 0){
          sum = sum + i;
          }
          i++;
  }
          while(i<=num);
printf("sum of all odd integer is %d",sum);

  return 0;
}
```

Output:

Enter the number : 24

Sum of all odd integer is 144

4. Display the pattern like right angle triangles. (Using for loop)

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

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

        printf("Enter value of n: ");
        scanf("%d", &n);

        for(i=1; i<=n; i++)
        {
            for(j=1; j<=i; j++)
                {
                        printf("*");
                }


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

Output:

```
Enter value of n: 4
*
**
***
****
```

5. Display the pattern like right angle triangles. (Using while loop)

1
2 3
4 5 6
7 8 9 10

```
#include <stdio.h>
int main()
{
      int n,i= 1,j,k= 1;
      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 :4
  1
  2    3
  4    5    6
  7    8    9    10
```

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

1
2 3
4 5 6
7 8 9 10

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

              return 0;
}
```

Output:

```
Enter the number of rows:4
              1
            2    3
          4    5    6
        7    8    9    10
```

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

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1

```
#include <stdio.h>
  int main()
  {
  int row,c=1,s,i,j;
  printf("Input number of rows:");
  scanf("%d",&row);
  for(i=0;i<row;i++)
  {
  for( s=1;s<=row-i;s++ )
  printf("");
  for(j=0;j<=i;j++)
  {
  if (j==0||i==0)
  c=1;
  else
  c=c*(i-j+1)/j;
  printf("% 4d",c);
  }
  printf("\n");
  }
  return 0;
  }
```

Output:

```
Input number of rows:5
      1
      1       1
      1       2       1
      1       3       3       1
      1       4       6       4       1
```

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

```
#include <stdio.h>
int main()
{
  int i, n, t1 = 0, t2 = 1, s;
        printf("Enter the number of terms: ");
        scanf("%d", &n);
        printf("Fibonacci Series: ");
          for (i = 1; i <= n; ++i)
            {
                printf(" %d ", t1);
                s = t1 + t2;
                t1 = t2;
                t2 = s;
            }

        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 i = 1,Num,Sum = 0 ;
    printf("Enter any number:") ;
    scanf("%d", &Num) ;

    while( i < Num )
      {
          if(Num % i == 0)
          Sum = Sum + i ;
          i++;
      }

    if (Sum == Num)
        printf(" %d is a Perfect Number", Num) ;
    else
        printf(" %d is not the Perfect Number", Num) ;

  return 0 ;
}
```

Output:

```
Enter any number:50
  50 is not the Perfect Number
```

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

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

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

        printf("Input ending number of range : ");
        scanf("%d",&enno);

        printf("Armstrong numbers in given range are: ");
        for(num=stno;num<=enno;num++){
                temp=num;
                sum = 0;

                while(temp!=0){
                        r=temp % 10;
                        temp=temp/10;
                        sum=sum+(r*r*r);
                }
                if(sum==num)
                        printf("%d ",num);
        }
printf("\n");
}
```

Output:

```
Input starting number of range: 1
Input ending number of range : 2000
Armstrong numbers in given range are: 1     153     370     371     407
```

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

```
# include <stdio.h>
    int main()
    {
      int n,i,count=0;
      printf("Enter a number:");
      scanf("%d", &n);
        do
          {
          if((n!=2) && (n%i==0))
          {
                count=1;
                break;
          }
            i++;
          }
          while(i<=sqrt(n));
          if (count==0)
          printf(" %d is a prime number",n);
          else
          printf(" %d is not a prime number",n);
          return 0 ;
    }
```

Output:

```
Enter a number:167
167 is a prime number
```

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

```
# include <stdio.h>

  int main()
  {
  int n,a,r,s=0;
  printf("Enter a number:");
  scanf("%d", &n);
  a=n;
        do
        {
          r=n%10;
          s=s*10+r;
          n=n/10;
        }
        while(n>0);
        printf("\n The reverse number of %d is %d",a,s);

  return 0 ;
}
```

Output:

```
Enter a number:654
The reverse number of 654 is 456
```

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

```
# include <stdio.h>
    int main()
    {
      long int n,i,k=9;
      int sum=0;
        printf(“Enter a number:”)
        scanf("%ld", &n);
          for(i=1;i<=n;i++)
            {
              sum +=k;
              printf("%ld     ",k);
              k=k*10+9;
              }
          printf("\nThe sum of series %d \n",sum);

          return 0 ;
      }
```

Output:

```
Input the number:7
9    99    999    9999    99999    999999    9999999
The sum of series 11111103
```

14. Find the sum of the series [1-X^2/2!+X^4/4!- .....]. (Using while loop)

```
#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);

}
```

Output:

```
Enter the value for x:6
Enter the value for n:8
the sum=-0.839803
  value of n=8
  value of x=6.00
```

15. find the sum of the series [x - x^3 + x^5 + ...]. (Using do…while loop)

```
#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);

}
```

Output:

```
Enter the value for x:6
Enter the value for n:9
The value of the series:
6
-216
7776
-279936
10077696
-362797056
-2147483648
```

-2147483648
-2147483648

The sum=1794491918