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

Solution:-

```
#include<stdio.h>
void main()
{
int i,b=0;
for(i=1;i<=10;i++)
{
b=b+i;

}

printf("sum=%d",b);

}
```

2. display the multiplication table of a given integer (Using while loop)

Solution:-

```
#include<stdio.h>
void main()
{
int i,a;
printf("enter ");
scanf("%d",&a);
i=1;
while(i<=10)
{
printf("\n%d×%d=%d",a,i,a*i);
```

```
i++;


}


}
```

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

Solution:-

```
#include<stdio.h>
void main()
{
i=1;
do
{
if(i%2!=0)
{
printf("\n%d",i);
osum=osum+i;
}
i++;


}while(i<=a);
printf("\nsum=%d",osum);


}
```

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

```
*
**
```

***

****

Solution:-

```
#include<stdio.h>
void main()
{

int i,j;
for(i=1;i<=4;i++)
{
for(j=1;j<=i;j++)
{
printf("*");

}

printf("\n");

}

}
```

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

1

2 3

4 5 6

7 8 9 10

Solution:-

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

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

k=1;
i=1;
while(i<=4)
{
j=1;

while(j<=i)
{

printf("%3d", k);

j++;
k++;

}

printf("\n");

i++;
}
}
```

6. make such a pattern like a pyramid with numbers .

 1

 2 3

4 5 6

7 8 9 10

Solution:-

```
#include <stdio.h>
void main()
{
  int i,j,spc,k,t=1;
  spc=4+4-1;
  for(i=1;i<=4;i++)
  {
       for(k=spc;k>=1;k--)
         {
           printf(" ");
         }
             for(j=1;j<=i;j++)
             printf("%d ",t++);
           printf("\n");
   spc--;
  }
}
```

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

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

Solution:-

```
#include <stdio.h>

void main()
{
   int c=1,blk,i,j;

   for(i=0;i<5;i++)
   {
      for(blk=1;blk<=5-i;blk++)
      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");
   }
}
```

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

Solution:-

```
#include <stdio.h>
 int main()
{
int i, n, t1 = 0, t2 = 1, nextTerm;
```

```
 printf("Enter the number of terms: ");
scanf("%d", &n);
 printf("Fibonacci Series: ");
 for (i = 1; i <= n; ++i)
 {
printf("%d, ", t1);
 nextTerm = t1 + t2;
 t1 = t2; t2 = nextTerm;
 }
return 0;
}
```

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

3Solution:-

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

int i, Number, Sum = 0;
  printf("\n Please Enter any number \n") ;
scanf("%d", &Number) ;
 i = 1 ;
 while(i < Number )
{
if(Number % i == 0)
 Sum = Sum + i ;
i++;
 }
if (Sum == Number)
 printf("\n %d is a Perfect Number", Number) ;
```

```
else
 printf("\n%d is not the Perfect Number", Number) ;
return 0 ;
 }
```

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

Solution:-

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

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

Solution:-

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

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

    printf("Enter the positive integer\n");
    scanf("%d",&num);

    i=2;
    do{

    //condition for non-prime
    if(num%i==0)
    {
        count=1;
        break;
    }
    i++;
}while(i<=num/2);

if(num==1){
        printf("you entered %d\n",num);
    printf("%d is neither a prime nor a composite number ",num);
}
else{
        if(count==0){
```

```
            printf("you entered %d\n\n",num);
            printf("%d is a prime number ",num);
        }
        else{
             printf("you entered %d\n",num);
             printf("%d is not a prime number ",num);
        }
}
getch();
   return 0;
}
```

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

Solution:-

```
#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;
}
```

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

Solution:-

```
#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);
}
```

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

Solution-

```
#include <stdio.h>
void main()
{
        float x,sum,t,d;
        int i,n;
        printf("Input the Value of x :");
        scanf("%f",&x);
        printf("Input the number of terms : ");
        scanf("%d",&n);
        sum =1; t = 1;
i=1;
        while(i<n)
```

```
{
             d = (2*i)*(2*i-1);
             t = -t*x*x/d;
             sum =sum+ t;
i++;
            }
            printf("\nthe sum = %f\nNumber of terms = %d\nvalue of x = %f\n",sum,n,x);
}
```

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

Solution:-

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