Q1. FIND THE SUM OF FIRST 10 NATURAL NUMBERS. (USING FOR LOOP)

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

OUTPUT: Sum of first 10 natural numbers = 55

Q2. DISPLAY THE MULTIPLICATION TABLE OF A GIVEN INTEGER (USING WHILE LOOP)

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

    printf("Enter a Number: ");
    scanf("%d",&n);
    i=1;
    while(i<=10){
        printf("%d * %d = %d \n", n, i, n*i);
        i++;
    }

return 0;

}
```

OUTPUT: Enter a Number: 6

```
6 * 1 = 6
6 * 2 = 12
6 * 3 = 18
6 * 4 = 24
6 * 5 = 30
6 * 6 = 36
6 * 7 = 42
6 * 8 = 48
6 * 9 = 54
6 * 10 = 60
```

Q3. DISPLAY THE N TERMS OF ODD NATURAL NUMBER AND THEIR SUM (USING DO...WHILE LOOP).

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

```
{
  int i=1,n,sum=0;


  printf("Input number of terms: ");
  scanf("%d",&n);
  printf("\nThe odd numbers are: ");
  //for(i=1;i<=n;i++)
  do
  {


   printf("%d ",2*i-1);
   sum+=2*i-1;
   i++;
  }while(i<=(n+1)/2);
  printf("\nThe Sum of odd Natural Number upto %d terms : %d
\n",n,sum);
return 0;
}
```

OUTPUT:

```
Input number of terms: 15


The odd numbers are: 1 3 5 7 9 11 13 15
The Sum of odd Natural Number upto 15 terms : 64
```

Q4. DISPLAY THE PATTERN LIKE RIGHT ANGLE TRIANGLES. (USING FOR LOOP)

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

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

OUTPUT:

```
Enter number of rows : 5

*

**

***

****

*****
```

Q5. 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 i=1,j=1,k=1,rows;
        printf("Enter number of rows : ");
        scanf("%d",&rows);
        while(i<=rows){
        j=1;
        while(j<=i){
        printf("%d ",k++);
        j++;
        }
        i++;
        printf("\n");
  }
return 0;
}
  /*for(i=1;i<=4;i++)
  {
        for(j=1;j<=i;j++)
          printf("%d ",k++);
        printf("\n");
  }
}*/
```

OUTPUT:

```
Enter number of rows : 4

1
```

```
2 3

4 5 6

7 8 9 10
```

Q6. 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,j,spc,rows,n,value=1;
        printf("Enter number of rows : ");
        scanf("%d",&rows);
        n=rows;
        for(i=1;i<=rows;i++){
        for(spc=1;spc<=n;spc++){
        printf(" ");
   }
   n--;
   for(j=1;j<=i;j++){
        printf("%d ",value);
        value++;
        }
        printf("\n");

}
return 0;
}
```

OUTPUT:

```
Enter number of rows : 4

   1

  2 3

 4 5 6

7 8 9 10
```

Q7. 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 space, i, j, n,rows;
printf("Enter number of rows : ");
scanf("%d",&rows);
   for (i = 0; i < rows; i++){
   for (space = 0; space <= rows-i; space++){
        printf("  ");
        }
        n=1;
        for (j = 0; j <= i; j++){
                printf("%4d",n);
                n=n*(i-j)/(j+1);
        }
        printf("\n");
}

return 0;
}
```

OUTPUT:

```
Enter number of rows : 5

           1

         1   1

       1   2   1

     1   3   3   1

   1   4   6   4   1
```

Q8. DISPLAY THE FIRST N TERMS OF FIBONACCI SERIES. (USING FOR LOOP)

```
#include <stdio.h>

int main(){

   int i, n, a= 0, b = 1, c;

   printf("Enter the number of terms: ");

   scanf("%d", &n);

   printf("Fibonacci Series: ");


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

      printf("%d ", a);

      c = a + b;

      a = b;

      b = c;

   }


return 0;
}
```

OUTPUT:

```
Enter the number of terms: 10

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

Q9. CHECK WHETHER A GIVEN NUMBER IS A PERFECT NUMBER OR NOT. (USING WHILE LOOP)

```
#include<stdio.h>
 int main(){
  int num, count = 1, sum = 0;
     printf("Enter a number: ");
  scanf("%d", &num);
     while(count < num){
    if(num%count == 0){
      sum = sum + count;
    }
    count++;
  }

  if(sum == num){
    printf("%d is a perfect number.", num);
  }
  else{
    printf("%d is not a perfect number.", num);
    }

return 0;

}
```

OUTPUT:

```
Enter a number: 6

6 is a perfect number.
```

Q10. FIND THE ARMSTRONG NUMBER FOR A GIVEN RANGE OF NUMBER. (USING WHILE LOOP)

```
#include<stdio.h>

int main(){

        int range,n,rem,sum,temp;

        printf("enter a range: ");

        scanf("%d",&range);

        printf("Armstrong numbers are: ");

        for(n=1;n<=range;n++){

                temp = n;

                sum=0;

                while(temp!=0){


                        rem=temp % 10;

                        sum=sum+(rem*rem*rem);

                        temp=temp / 10;
        }
        if(n==sum)
            printf("%d ",n);

    }
return 0;
}
```

OUTPUT:

```
enter a range: 1000
Armstrong numbers are: 1 153 370 371 407
```

Q11. DETERMINE WHETHER A GIVEN NUMBER IS PRIME OR NOT. (USING DO...WHILE LOOP)

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

OUTPUT:

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

Q12. DISPLAY THE NUMBER IN REVERSE ORDER. (USING DO...WHILE LOOP)

```
#include <stdio.h>
int main(){
    int n, rev = 0, rem;
    printf("Enter an integer: ");
    scanf("%d", &n);
    do{
        rem = n % 10;
        rev = rev * 10 + rem;
        n /= 10;
    }while (n != 0);
    printf("Reversed number = %d", rev);
return 0;
}
```

OUTPUT:

```
Enter an integer: 123
Reversed number = 321
```

Q13. DISPLAY THE SUM OF THE SERIES [9 + 99 + 999 + 9999 ...] (USING FOR LOOP)

```
#include <stdio.h>
int 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=sum+t;
          printf("%ld   ",t);
          t=t*10+9;
        }
        printf("\nThe sum of the series = %d \n",sum);
}
```

OUTPUT:

```
Input the number or terms: 5
```

```
9   99   999   9999   99999

The sum of the series = 111105
```

Q14. FIND THE SUM OF THE SERIES [1-X^2/2!+X^4/4!-.........]. (USING WHILE LOOP)

```c
#include <stdio.h>

int 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;

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

        i=1;

        while(i<n){

          d = (2*i)*(2*i-1);

          t = -t*x*x/d;

          sum =sum+ t;

          i++;

        }

        printf("\nSum = %f",sum);

return 0;
}
```

OUTPUT:

```
Input the value of x :2

Input the number of terms : 5


Sum = -0.415873
```

Q15. FIND THE SUM OF THE SERIES [X -X^3 + X^5 + ...]. (USING DO...WHILE LOOP)

```
#include <stdio.h>

#include <math.h>

int main()

{

        int x,sum,ctr;

        int i=1,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);

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

   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);

}
```

OUTPUT:

```
Input the value of x :2

Input number of terms : 5

The values of the series:

2

-8

32

-128

512


The sum = 410
```