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

```c
#include<stdio.h>
int main()
{
    int i=0,num=1;
    printf("enter the number:");
    scanf("%d",&num);

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

Output:-

enter the number:2

3

4

5

6

7

8

9

10

11

12

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

```c
#include<stdio.h>
int main()
{
    int i=1,num=0;
    printf("enter the number :");
    scanf("%d",&num);

    while (i<=10)
    {
       printf("%d \n",(num*i));
       i++;
    }
    return 0;

}
```

Output:-

enter the number :5

5

10

15

20

25

30

35

40

45

50

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

```c
#include<stdio.h>
int main()
{
    int i=1,n,sum=0;
    printf("enter a number :");
    scanf("%d",&n);

    do
    {
        if((i%2) != 0)
        sum=sum+i;
        i++;
    }
    while(i<=n);
    printf("sum of odd natural numbers are:%d",sum);
        return 0;

}
```

Output:-

enter a number :5

sum of odd natural numbers are:9

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

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

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

    }
    return 0;
}
```

Output:-

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

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

```c
#include <stdio.h>

int main(){
int i=1,j=0,k=1;

while(i<=4){
    j=0;
    while(j<i){
      printf("%d ",k);
      k++;
      j++;
    }
  printf("\n");
  i++;
}


return 0;
}
```

Output:-

1

2 3

4 5 6

7 8 9 10

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

```c
#include <stdio.h>
int main()
{
int i=1,j=0,k=1,n=1;
   do
{
    n=i;
    j=0;
    while(n<=3)
    {
        printf(" ");
        n++;
    }
    while(j<i)
    {
      printf("%d ",k);
      k++;
      j++;
    }
  printf("\n");
  i++;
}
while(i<=4);

return 0;
}
```

Output:-

1

2 3

4 5 6

7 8 9 10

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

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

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

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

    return 0;
}
```

Output:-

Enter the number: 8

Fibonacci Series are:0, 1, 1, 2, 3, 5, 8, 13,

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

```c
#include <stdio.h>
int main()
{
int i=1,n,sum=0;;
printf("Enter a number: ");
scanf("%d",&n);

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

Output:-

Enter a number: 6

6 is a perfect number

Enter a number: 8

8 is not a perfect number

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

```c
#include <stdio.h>
int main()
{
int n,n1,d,sum=0;
printf("Enter a number:");
scanf("%d",&n);

n1 = n ;
while(n > 0)
{
    d = n % 10;
    sum = sum + (d * d * d) ;
    n = n / 10;
}
if(sum == n1)
{
    printf("%d is Armstrong number",n1);
}
else
{
    printf("%d is not a Armstrong number",n1);
}
return 0;
}
```

Output:-

Enter a number:153

153 is Armstrong number

Enter a number:332

332 is not a Armstrong number

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

```c
#include <stdio.h>
int main()
{
int n,d,i=1,j=0;
printf("Enter a number:");
scanf("%d",&n);

do
{
   if(n % i == 0)
   {
       j = j+1;
   }
   i++;
}
while(i<=n);
if(j == 2)
{
    printf("%d is a prime number",n);
}
else
{
    printf("%d is not a prime number",n);
}
return 0;
}
```

Output:-

Enter a number:6

6 is not a prime number

Enter a number:5

5 is a prime number

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

```c
#include <stdio.h>
int main()
{
int n,d;
printf("Enter a number:");
scanf("%d",&n);

printf("Befor reverse %d \n",n);
printf("After reverse  ");

do
{
    d = n % 10;
    printf("%d",d);;
    n /= 10;
}
while(n>0);

return 0;
}
```

Output:-

Enter a number:123

Befor reverse 123

After reverse 321

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

```c
#include <stdio.h>
int main()
{
int n,i,j=9,sum=0;
printf("Enter a number:");
scanf("%d",&n);

for(i=0;i<n;i++)
{
  sum = j + sum;
  printf("%d  ",j);
  j = j * 10 + 9;
}

printf("= %d",sum);
return 0;
}
```

Output:-

Enter a number:9

9 99 999 9999 99999 999999 9999999 99999999 999999999 = 1111111101

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

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