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

```
#include <stdio.h>

int main(){
int i=1,sum=0;

for(;i<=10;i++){
    sum += i ;
}

printf("Sum of first 10 natural number is :: %d ",sum);

return 0;
}
```

Output:

Sum of first 10 natural number is :: 55

2. 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);

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

return 0;
}
```

Output:

```
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 i=1, num,sum=0;

    printf("Enter a number :: ");
    scanf("%d",&num);
    printf("Odd numbers are :: ");

    do{
        if(num % 2 != 0){
            printf(" %d ",num);
           sum += num;

        }

        num--;
    }while(num >= 1);

   printf("\nSum of the odd numbers is :: %d",sum);


return 0;
}
```

Output:

```
Enter a number :: 20
Odd numbers are ::  19  17  15  13  11  9  7  5  3  1
Sum of the odd numbers is :: 100
```

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

*
**
***
****

```
#include <stdio.h>

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

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

    }
    printf("\n");
}

return 0;
}
```

Output:

*
**
***
****

4. 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=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

5. 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=0,k=1,s=1;

do{
    s=i;
    j=0;
    while(s<=3){
        printf(" ");
        s++;

    }
    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
```

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

```
#include <stdio.h>

int main(){

int a = 0,b=1,sum =0,n,i;
printf("Enter a number :: ");
scanf("%d",&n);
printf("%d %d ",a,b);

for(i=0;i<n;i++){
    sum = a + b;
    printf("%d ",sum);
    a = b;
    b = sum;
}

  return 0;
}
```

Output:

```
Enter a number :: 10
0 1 1 2 3 5 8 13 21 34 55 89
```

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

```
#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 :: 5
5 is not a perfect number
```

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

```
#include <stdio.h>

int main(){

int n,n1,d,x,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 a Armstrong number",n1);
}
else{
    printf("%d is not a Armstrong number",n1);
}
return 0;
}
```

Output:

```
Enter a number :: 565
565 is not a Armstrong number

Enter a number :: 153
153 is a Armstrong number
```

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

```
#include <stdio.h>

int main(){

int n,d,i=1,c=0;

printf("Enter a number :: ");
scanf("%d",&n);

do{

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

```
return 0;
}
```

Output:

```
Enter a number :: 2
2 is a prime number

Enter a number :: 10
10 is not a prime number
```

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

```
#include <stdio.h>

int main(){

int n,d,i=1,c=0;

printf("Enter a number :: ");
scanf("%d",&n);
printf("Befor reverse the number is = %d \n",n);
printf("After reverse the number is = ");
do{
    d = n % 10;

    printf("%d",d);;

    n /= 10;
}while(n>0);

return 0;
}
```

Output:

```
Before reverse the number is = 5698
After reverse the number is = 8965
```

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

```
#include <stdio.h>

int main(){
int i,n,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 :: 5
9  99  999  9999  99999  = 111105
```

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)

```
#include <stdio.h>

int main(){
int i,n,j=1,s,a=1,b=1,sum=0;

printf("input series number :: ");
scanf("%d",&n);

printf("input a number :: ");
scanf("%d",&s);


for(i=0;i<n;i++){
     a = 1;

  for(j=1;j<=b;j++){

    a = a * s;

  }
  sum = sum + a;
  b = b + 2;


}
printf("sum of series is = %d",sum);

return 0;
}
```

Output:

input series number :: 4
input a number :: 3
sum of series is = 2460