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

```c
#include<stdio.h>
int main()
{
int j, sum=0;
printf("Enter the 1st 10 natural number is: \n");
for (j=1; j <= 10; j++)
{
sum=sum+j;
printf("%d ",j);
}
printf("the sum is %d",sum);
}
```

Out put
Enter the 1st 10 natural number is:
1 2 3 4 5 6 7 8 9 10 the sum is 55

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

```c
#include<stdio.h>
int main()
{
    int j=1,f,n,z;
    printf("enter a no. to be calculated");
    scanf("%d",&n);
    printf("how much table U nedded");
    scanf("%d",&f);
    while (j<=f)
    {
        z=n*j;
        printf("%d * %d=%d\n",j,n,z);
        j++;
    }
}
```

Output
enter a no. to be alculated20
how much table U nedded12
1 * 20=20
2 * 20=40
3 * 20=60
4 * 20=80
5 * 20=100
6 * 20=120
7 * 20=140
8 * 20=160
9 * 20=180
10 * 20=200
11 * 20=220
12 * 20=240

Que 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("Input the no of terms:");
    scanf("%d",&n);
    printf("The odd nos are ");
    do{
        printf("%d ",2*i-1);
        sum+=2*i-1;
        i++;
    }while(i<=n);
    printf("\nThe sum of odd natural no upto %d terms: %d\n",n,sum);
}
```

Output)
Input the no of terms:10
The odd nos are 1 3 5 7 9 11 13 15 17 19
The sum of odd natural no upto 10 terms: 100

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

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

```c
#include<stdio.h>
int main()
{
    int i, j, r;
    printf("enter the row no:");
    scanf("%d",&r);
    for ( i = 1; i <=r; i++)
    {
        for( j=1; j<=i;j++)
        printf("*");
        printf("\n");
    }

}
```

Output)
enter the row no:4
*
**
***
****

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

```
1
2 3
4 5 6
7 8 9 10
```

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

Output)
Input number of rows : 4
1
2 3
4 5 6
7 8 9 10

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

```
   1
  2 3
 4 5 6
7 8 9 10
```

```c
#include <stdio.h>
void main()
{
   int i,j,sp,r,k,t=1;
   printf("Input number of rows : ");
   scanf("%d",&r);
   sp=r+4-1;
   for(i=1;i<=r;i++)
   {
    for(k=sp;k>=1;k--)
    {
     printf(" ");
    }
   for(j=1;j<=i;j++)
   printf("%d ",t++);
printf("\n");
    sp--;
   }
}
```

```
Output)
Input number of rows : 4
          1
        2 3
      4 5 6
    7 8 9 10
```

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

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

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

```
Output)
Enter the number of rows: 6
                1
              1   1
            1   2   1
          1   3   3   1
        1   4   6   4   1
      1   5  10  10   5   1
```

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

```c
#include <stdio.h>
void main()
{
   int prv=0,pre=1,trm,i,n;
   printf("Input number of terms : ");
   scanf("%d",&n);
   printf("Fibonacci series %d: \n",n);
   printf("% 5d % 5d", prv,pre);
   for(i=3;i<=n;i++)
   {
     trm=prv+pre;
     printf("%5d",trm);
     prv=pre;
     pre=trm;
   }
   printf("\n");
}
```

```
Output)
Input number of terms : 10
Fibonacci series 10:
    0  1  1  2  3  5  8 13 21  34
```

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

```c
#include<stdio.h>
int main(){
  int n,i=1,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",i);
  else
      printf("%d is not a perfect number",i);
  return 0;
}
```

```
Enter a number: 4
4 is not a perfect number
Enter a number: 6
6 is a perfect number
```

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

```c
#include<stdio.h>
int main()
{
int r, sum = 0, temp, snumber, enumber, k;
printf("Input starting number of range: ");
scanf("%d", &snumber);
printf("Input ending number of range : ");
scanf("%d", &enumber);
printf("Armstrong numbers in given range are: ");
for (int i = snumber; i <= enumber; ++i)
```

```
{
sum = 0;
for (k = i; k != 0; k /= 10)
{
r = k % 10;
sum += (r * r * r);
}
if (sum == i)
printf("%d ", sum);
}
return 0;
}
```

```
Output)
Input starting number of range: 1
Input ending number of range : 1000
Armstrong numbers in given range are: 1 153 370 371 407
```

Que no11) determine whether a given number is prime or not. (Using do…while loop)

```
#include <stdio.h>

void main(){

    int num,i,ctr=0;
    printf("Input a number: ");
    scanf("%d",&num);
    for(i=2;i<=num/2;i++){
        if(num % i==0){
         ctr++;
            break;
        }
    }
   if(ctr==0 && num!= 1)
        printf("%d is a prime number.\n",num);
   else
      printf("%d is not a prime number",num);
}
```

```
Output)
Input a number: 5
5 is a prime number.
Input a number: 6
6 is not a prime number
```

Que no12) display the number in reverse order. (Using while loop)

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

```
Enter an integer: 243647585
Reversed is = 585746342
```

Que No13) display the sum of the series [9 + 99 + 999 + 9999 ...] (Using for loop)

```c
#include <stdio.h>
void main()
{   long int n,i,t=9;
int sum =0;
printf("Input no. of terms :");
scanf("%ld",&n);
for (i=1;i<=n;i++)
{ sum +=t;
  printf("%ld   ",t);
  t=t*10+9;
}
printf("\nThe sum is = %d \n",sum);
}
```

```
Input no. of terms :6
9   99   999   9999   99999   999999
The sum is = 1111104
```

Que No14) find the sum of the series [1-X^2/2!+X^4/4!]. (Using while loop)

```c
#include <stdio.h>
void main()
{
float x,sum,t,d;
int i,n;
printf("Input the Value of x :");
scanf("%f",&x);
printf("Input number of terms : ");
scanf("%d",&n);
sum =1; t = 1;
for (i=1;i<n;i++)
{
  d = (2*i)*(2*i-1);
  t = -t*x*x/d;
  sum =sum+ t;
}
printf("\nthe sum = %f\nNumber of terms = %d\nvalue of x = %f\n",sum,n,x);
}
```

```
Output)
Input the Value of x :5
Input the number of terms : 7

the sum = 0.346939
Number of terms = 7
value of x = 5.000000
```

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

```c
#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);
    for (i = 1; i < n; i++)
```

```
Output)
Input the value of x :6
Input number of terms : 6
The values of the series:
6
-216
7776
-279936
10077696
-362797056

The sum = -352991730
```

```
    {
        ctr = (2 * i + 1);
        mm = pow(x, ctr);
        nn = mm * m;
        printf("%d \n",nn);
        sum = sum + nn;
        m = m * (-1);
}
printf("\nThe sum = %d\n",sum);
}
```