ASSIGNMENT-5

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

PROGRAM:

```
#include <stdio.h>
int main()
{
   int i, sum=0;

   for(i=1; i<=10; i++)
   {
      sum = sum + i;
   }
   printf("The sum of first 10 natural numbers are %d", sum);

   return 0;
}
```

OUTPUT:

The sum of first 10 natural numbers are 55

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

PROGRAM:

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

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

    return 0;
}
```

OUTPUT:

```
Enter the number:15
15 * 1 = 15
15 * 2 = 30
15 * 3 = 45
15 * 4 = 60
15 * 5 = 75
15 * 6 = 90
15 * 7 = 105
15 * 8 = 120
15 * 9 = 135
15 * 10 = 150
```

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

PROGRAM:

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

```
{
   int i=1, n, sum=0;
   printf("Enter the value of n:");
   scanf("%d", &n);

   do
   {
      if(i % 2 != 0)
      sum = sum + i;
      i++;
   }while(i<=n);

   printf("The sum of odd natural numbers are %d", sum);

   return 0;
}
```

OUTPUT:

```
Enter the value of n:100
The sum of odd natural numbers are 2500
```

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

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

PROGRAM:

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

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

   return 0;
}
```

OUTPUT:

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

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

1

2 3

4 5 6

7 8 9 10

PROGRAM:

```
#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

23

456

78910

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

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

PROGRAM:

```
#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
```

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

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

PROGRAM:

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

```
    int c=1,k,i,j;

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

OUTPUT:

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

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

PROGRAM:

```
#include <stdio.h>
int main()
{
   int a = 0,b=1,sum =0,n,i;
   printf("Enter the value of n:: ");
   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 the value of n:: 5
0 1 1 2 3 5 8
```

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

PROGRAM:

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

```
{
  int x, d=1, s=0;
  printf("Enter a number:");
  scanf("%d",&x);

  while(d < x)
  {
   if(x % d == 0)
   s = s + d;
   d++;
   }
   if(s == x)
   printf(" %d Is A Perfect Number", x);

   else
   printf("%d Is Not A Perfect Number", x);

   return 0;
}
```

OUTPUT:

```
Enter a number:6
6   Is A Perfect Number
```

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

PROGRAM:

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

```
{
  int x, d, c, s=0, x1;
  printf("Enter a number:");
  scanf("%d",&x);
  x1 = x;

  while(x > 0)
  {
   d = x % 10;
   c = d * d * d;
   s = s + c;
   x = x / 10;
   }
   if(s == x1)
   printf(" %d Is An Armstrong Number", x);

   else
   printf("%d Is Not An Armstrong Number", x);

   return 0;
}
```

OUTPUT:

```
Enter a number:153
153 Is An Armstrong Number
```

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

PROGRAM:

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

   do
   {
    if(x % d == 0)
    c = c + 1;
    d++;
   }while(d <= x);
   if(c == 2)
   printf(" %d Is A Prime Number", x);

   else
   printf("%d Is Not A Prime Number", x);

   return 0;
}
```

OUTPUT:

```
Enter a number:5
5 Is A Prime Number
```

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

PROGRAM:

```
#include <stdio.h>
int main()
{
   int x, d, r=0, x1;
   printf("Enter a number:");
   scanf("%d",&x);
   x1 = x;

   do
   {
     d = x % 10;
     r = r * 10 + d;
     x = x / 10;
    }while(x > 0);

    printf("The Reverse Of %d is %d", x1, r);

    return 0;
}
```

OUTPUT:

```
Enter a number:115
The Reverse Of 115 is 511
```

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

PROGRAM:

```
#include <stdio.h>
int main()
{
        int n,i,sum=0;
        long int a=9;
        printf("Input the number or terms :");
        scanf("%ld",&n);

        for (i=1;i<=n;i++)
        {
           sum = sum + a;
           printf("%ld ", a);
           a=a*10+9;
        }

        printf("\nThe sum of the series = %d \n",sum);

        return 0;
}
```

OUTPUT:

```
Input the number or terms :4
9 99 999 9999
The sum of the series = 11106
```

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

PROGRAM:

```
#include <stdio.h>

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

```
Enter series number : 5
Enter a number : 5
Sum of series is = 2034505
```