Assignment 5

1. 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 n natural numbers is %d",sum);
   return 0;
}
```

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

```
#include<stdio.h>
int main()
{
   int n,i=1;
   printf("Enter a number : ");
   scanf("%d",&n);
   while(i<=10)
   {
      printf("%d * %d = %d\n",n,i,n*i);
      i++;
   }
   Return 0;
}
```

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

```
#include<stdio.h>
int main()
{
   int n,i=1,sum=0;
   printf("Enter value of n : ");
   scanf("%d",&n);
   do
   {
      if(i%2!=0)
      {
         printf("%d ",i);
         sum=sum+i;
      }
      i++;
   }while(i<=n);
   printf("\n");
   printf("Sum of odd natural numbers until %d is %d",n,sum);
   getch();
   return 0;
}
```

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

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

```
#include<stdio.h>
int main()
{
   int i,j;
   for(i=0; i<=3; i++)
   {
      for(j=0; j<=3; j++)
      {
         if(j<=i)
            printf("*");
         else
            printf(" ");
      }
      printf("\n");
   }
}
```

5. 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,j,k;
   i=j=1;
   while(i<=4)
   {
      k=i;
      while(k>0)
      {
         printf("%d ",j++);
         k--;
      }
      printf("\n");
      i++;
   }
}
```

6. 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,flag=0,k=1;
   i=0; j=0;
   do
   {
      j=0;
      while(j<=6)
      {
         if(j>=3-i && j<=3+i)
         {
            if(flag==0)
               printf("%d",k++);
            else
               printf(" ");
            flag=1-flag;
         }
         else
            printf(" ");
         j++;
      }
      printf("\n");   i++;  flag=0;
   }while(i<=3);    }
```

7. display Pascal's triangle. (Using for loop) 1

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

```
#include<stdio.h>
int main()
{
   int i,j,k,r,n;
   printf("Enter : ");
   scanf("%d",&n);
   for(i=0; i<n; i++)
   {
      k=1;r=0;
      for(j=0; j<(n*2)-1; j++)
      {
         if(j>=n-1-i && j<=n-1+i && k)
         {
            printf("%d",combi(i,r));
            k=0; r++;
         }
         else
         {
            printf(" ");
            k=1;
         }
```

```
        }
        printf("\n");
    }
    getch();
    return 0;
}
int combi(int n,int r)
{
    return(fact(n)/(fact(n-r)*fact(r)));
}
int fact(int n)
{
    int f=1;
    while(n>0)
    {
        f=f*n;
        n--;
    }
    return f;
}
```

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

```
#include<stdio.h>
int main()
{
   int n,i,a,b,t;
   printf("Enter the nth term : ");
   scanf("%d",&n);
   a=0; b=1;
   printf("%d %d ",a,b);
   for(i=1; i<=n; i++)
   {
      t=b;
      b=a+b;
      a=t;
      printf("%d ",b);
   }
   getch();
   return 0;
}
```

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

```
#include<stdio.h>
int main()
{
   int n,i,sum=0;
   printf("Enter a number : ");
   scanf("%d",&n);
   for(i=2; i<n; i++)
   {
      if(n%i==0)
         sum=sum+i;
   }
   if(sum+1==n)
      printf("%d is a perfect number",n);
   else
      printf("%d is not a perfect number",n);
   getch();
   return 0;
}
```

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

```
#include<stdio.h>
int main()
{
   int start,end,i,num,rem,sum=0;
   printf("Enter the start and end : ");
   scanf("%d%d",&start,&end);
   for(i=start; i<=end; i++)
   {
      num=i;sum=0;
      while(num>0)
      {
         rem=num%10;
         sum=sum+(rem*rem*rem);
         num=num/10;
      }
      if(sum==i)
         printf("%d ",i);
   }
   getch();
   return 0;
}
```

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

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