Assignment 5

Write a C Program for the following problem statements

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

```
#include<stdio.h>
void main()
{
int i,sum;
printf("The first 10 natural number are:");
for(i=1;i<10;i++)
{
Sum=sum+i;
printf("%d",i);
}
printf("The sum is %d",sum)
return 0;
}
```

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

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

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

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

*

**
***
****

```
#include<stdio.h>
void main()
{
int i,j,n;
printf("enter how many rows you want to print");
scanf("%d",&n);
for(i=1;i<=n;i++)
{
for(j=1;j<=i;j++)
printf("*");
printf("\n");
}
return 0;
}
```

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 n,i=1,j,k=1;
printf("please enter the number row:");
scanf("%d",&n);
while(i<=n)
{
j=1;
while(j<=i)
{
printf("%d",k++);
j++;
}
i++;
printf("\n");
}
return 0;
}
```

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 x=1,i=1,j;
do
{
j=5-1;
do
{
printf("   ");
j--;
}while(j=0);
j=i;
do
{
Printf("%d ",x);
x++;j++;

}while(j>0);
printf("\n");
i++;
}while(i<5);
return 0;
}
```

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

```
     1
    1 1
   1 2 1
  1 3 3 1
```

1 4 6 4 1

```
#include<stdio.h>
int main()
{
int  row,col,space,n,no;
printf(“enter the number of rows);
 scanf(“%d”,&no);
for(row=0;row<no;row++)
{
for(space=0;space<(no-row);space++)
{
Pprintf(“”);
}
n=1;
for(col=0;col<=row;col++)
{
printf(“ %d”,n);
n=n*(row-col)/col+1);
}
printf(“\n);
}
Return 0;
}
```

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

```
#include<stdio.h>
int main()
{
int n,a=0,b=1,c;
printf(“enter limit”);
scanf(“%d”,&n);
for(i=1;i<=n;i++)
{
printf(“%d\n”,a);
c=a+b;
a=b;
b=c;
}
}
```

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

```
#include<stdio.h>
int main()
{
 int num,count=1,sum=0;
printf("enter a number\n");
scanf("%d",sum);
while(count < num)
{
if(num%count==0)
{
Sum=sum+count;
}
Count++;
If(sum== num
{
printf("%d  is a perfect number",num)
}
else
{
print("%d is a not a perfect number",num);
}
}
return 0;
}
```

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

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

```
#include<stdio.h>
int main()
{
int n,i,flag=0;
printf(""enter a integer");
scanf("%d",&n);
do
{
if((n!=2) &&(n%i==0))
{
```

```
flag=1;
}
i++;
}
While(i<=sqrt(n));
if(flag==0)
{
printf("number is prime");
}
else
{
Printf("number is not prime");
}
}
```

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

```
#include<stdio>
int main()
{
int n,a,r,s=0;
printf("enter the number");
scanf("%d",&n);
a=n;
do
{
r=n%10;
s=s*10+r;
n=n/10;
}
while(n>0);
printf("the reverse order is %d is%d",a,s);
}
```

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

```
#include<stdio.h>
int main()
{
int n,i,t=9,sum=0;
printf("input the number");
scanf("%d",&n);
for(i=1;i<=n;i++)
```

```
{
sum+=t;
printf("%d",t);
t=t*10+9;
}
Printf("The sum of the seried=%d",sum);
return 0;
}
```

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

```
#include<stdio.h>
 int main()
{
int x,sum,t,d,i=1,n;
print("input the value of x");
scanf("%d",&x);
print("input the number of terms");
scanf("%d",&n);
sum=1;
t=1;
do
{
d=(2*i)*(2*i-1);
t=-t*x*x/d;
sum=sum+t;
i++;
}
while(i<n);
printf("the sum =%d\n number of terms =%d\n value of
x=%d\n",sum,n,x);
return 0;
}
```

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

```
#include<stdio.h>

int main()

{

int x,sum,ctr,i,n,m,mn,nn;
```

```
printf("enter the value of x:");
scanf("%d",&x);
printf("enter the number of terms:");
scanf("%d",&n);
printf("the values of the series: \n");
printf("%d'\n,x");
sum=x;
m=-1;
do
{
Ctr=(2*i+1);
mm=pow(x,ctr);
nn=mm*m;
printf("%d" ,nn);
sum=sum+nn;
nm=m*(-1);
i++;
}while(i<n);
printf("the sunm =%d",sum);
return 0;
}
```

Practice Questions [Optional]:

16. display the n terms of even natural number and their sum.

```
#include<stdio.h>
int main()
{
int i,n,sum;
printf("input number of terms");
scanf("%d",&n);
printf("the even number are:");
for(i=1;i<=n;i++)
{
printf("%d",2*i);
sum=2*i;
}
printf("the sumof natural number upto %d
terms",n,sum);
}
```

17. display n terms of natural number and their sum.

```
#include<stdio.h>
int main()
{
int i,n,sum;
printf("input number of terms");
scanf("%d",&n);
printf("the natural number are:");
for(i=1;i<=n;i++)
{
printf("%d",i);
sum+=i;
}
printf("the sum of  natural number upto %d
terms",n,sum);
```

}

18. display the pattern like a diamond.

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

```
#include<stdio.h>
int main()
{
int i,j,r;
printf(“input number of rows”);
for(i=0;i<=r;i++)
{
for(j=1;j<=r;j++)
{
printf(“ ”);
}
for(j=1;j<=2*i-1;j++)
{
printf(“*”);
printf(“\n”);
}
for(i=r-1;i>=1;i--)
{
for(j=1;j<=r-1;j++)
{
Printf(“ ”);
```

```
}
for(j=1;j<=2*i-1;j++)
printf(“*”);
printf(“\n”);
}
}
}
```