programming and structures using c

Assignment 5

1.find the sum of first 10 natural numbers. (Using for loop)  
#include <stdio.h>  
int main()  
{  
    int i,sum=0;  
    printf("the sum of first 10 natural numbers is:\n");  
    for(i=1;i<=10;i++)  
    {  
      sum=sum+i;  
    }  
    printf("%d",sum);  
    return 0;  
}  
Output-  
the sum of first 10 natural numbers is:  
55

2.display the multiplication table of a given integer (Using while loop)  
#include <stdio.h>  
  
int main() {  
    int n,i=1;  
    printf("enter the number which  table you want to print:\n");  
    scanf("%d",&n);  
     
    while(i<=10)  
    {  
      printf("%d × %d = %d\n",n,i,n\*i);  
        i++;  
         
    }  
    return 0;  
}  
Output-  
enter the number which  table you want to print:  
5  
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,n,sum=0,count=0;  
     printf("enter the value of n:\n");  
     scanf("%d",&n);  
     do{  
         if(i%2!=0){  
         printf("%d\t",i);  
         sum += i;  
         count++;  
                   }  
         i++;  
     }while(count<=n);  
    printf("\nthe sum of %d odd natural numbers is:%d",n,sum);  
     
    return 0;  
}  
  
Output-  
enter the value of n:  
6  
1 3 5 7 9 11 13  
the sum of 6 odd natural numbers is:49

4.display the pattern like right angle triangles. (Using for loop)  
\*  
\*\*  
\*\*\*  
\*\*\*\*  
#include <stdio.h>  
int main() {  
    int i=1;  
    while(i<=4)  
    {  
      int  j=1;  
        while(j<=i)  
        {  
            printf("\*\t");  
            j++;  
        }  
        
        printf("\n");  
        i++;  
    }  
    return 0;  
}

Output-  
\*  
\* \*  
\* \* \*  
\* \* \* \*

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=1,j,n=1;  
    while(i<=4)  
    {  
        j=1;  
      while(j<=i)  
      {  
          printf("%d\t",n);  
          n++;  
          j++;  
      }  
      printf("\n");  
      i++;  
    }  
    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>  
void main()  
{  
   int t1=0,t2=1,t,i,n;  
   printf("enter the number of terms to  display : ");  
   scanf("%d",&n);  
   printf("the Fibonacci series upto %d terms is:\n",n);  
   printf("%d\t%d\t",t1,t2);  
  
  for(i=3;i<=n;i++)  
   {  
     t=t1+t2;  
     printf("%d\t",t);  
     t1=t2;  
     t2=t;  
   }  
    return 0;  
}  
Output-  
enter the number of terms to  display : 8  
the Fibonacci series upto 8 terms is:  
0 1 1 2 3 5 8 13  
  
9.check whether a given number is a perfect number or not. (Using while loop)  
#include <stdio.h>  
  
int main() {  
int n,i=1,sum=0;  
  printf("enter a number to check perfect or not : ");  
  scanf("%d",&n);  
printf("The factors are : ");  
    while(i<n)  
      {  
      if(n%i==0)  
         {  
         sum=sum+i;  
         printf("%d\t",i);  
         }  
         i++;  
       }  
printf("The sum of the factors is : %d\n",sum);  
    if(sum==n)  
      printf("the number is perfect.");  
    else  
      printf("the number is not perfect.");  
    return 0;  
}

Output-  
enter a number to check perfect or not : 28  
The factors are : 1 2 4 7 14  
The sum of the factors is : 28  
the number is perfect.  
  
10.find the Armstrong number for a given range of number. (Using while loop)  
#include <stdio.h>  
  
void main(){  
    int n,sum,temp;  
    int sn,en;  
  
    printf("enter starting number of range: ");  
    scanf("%d",&sn);  
  
    printf("enter ending number of range : ");  
    scanf("%d",&en);  
  
    printf("Armstrong numbers in given range are:\n");  
    while(sn<=en){  
         temp=sn;  
         sum=0;  
         while(temp!=0){  
             n=temp % 10;  
             temp=temp/10;  
             sum=sum+(n\*n\*n);  
         }  
         if(sum==sn)  
             printf("%d\n",sn);  
             sn++;  
}  
    return 0;  
}  
  
Output-  
enter starting number of range: 1  
enter ending number of range : 1000  
Armstrong numbers in given range are:  
1  
153  
370  
371  
407

11.determine whether a given number is prime or not.  (Using do…while loop) #include <stdio.h>  
int main() {  
    int p=1,n,i=2;  
    printf("enter a number to determine prime or not:\n");  
    scanf("%d",&n);  
    do{  
       if(n%i==0||n==1)  
       {  
       p=0;  
       break;  
       }  
       i++;  
    }while(i<n/2);  
      
   if(p==0&&n!=2)  
   printf("%d is not a prime number",n);  
   else  
   printf("%d is a prime number",n);  
     
    return 0;  
}  
Output-  
enter a number to determine prime or not:  
6  
is not a prime number

12.display the number in reverse order. (Using do…while loop)  
#include <stdio.h>  
int main()  
{  
    int num,rev=0,n,i;  
    printf("enter a number to find the reverse of:\n");  
    scanf("%d",&num);  
printf("the reverse of %d number",num);  
    do{  
        i=num%10;  
        num=num/10;  
        rev=rev\*10+i;  
    } while(num>0);  
     
printf("is:%d",rev);   
return 0;  
}  
Output-  
enter a number to find the reverse of:  
1234  
the reverse of 1234 numberis:4321

13.display the sum of the series [ 9 + 99 + 999 + 9999 ...] (Using for loop)  
#include <stdio.h>  
int main() {  
   long int i,n,j=9,sum=0;  
    printf("enter the value for n:\n");  
    scanf("%ld",&n);  
    printf("the value of 0");  
    for(i=1;i<=n;i++)  
    {  
     printf("+%ld",j);  
     sum=sum+j;  
     j=j\*10+9;  
     
    }  
    printf(" is:%ld",sum);  
    return 0;  
}  
Output-  
enter the value for n:  
4  
the value of 0+9+99+999+9999 is:11106

14.find the sum of the series [ 1-X^2/2!+X^4/4!- .........]. (Using while loop)  
#include <stdio.h>  
#include <math.h>  
int main() {  
    int i=1,j=1,x,n,t;  
    float fac=1,sum=1;  
printf("enter the value for x:\n");  
    scanf("%d",&x);  
printf("enter the value for n:\n");  
    scanf("%d",&n);  
    printf("the sum of 1\t");  
    while(i<n)  
    {  
      while(j<=2\*i){  
          fac\*=j;  
          j++;  
        }  
       t=pow(-1,i)\*pow(x,2\*i);  
        sum+=t/fac;  
        printf("%f\t",t/fac);  
        i++;  
    }  
    printf("is : %.3f",sum);  
    return 0;  
}  
Output-  
enter the value for x:  
7  
enter the value for n:

8  
the sum of 1 -24.500000 100.041664 -163.401382 142.976212 -77.842613 -4.483249 -0.024633 is : -26.234

15.find the sum of the series [ x - x^3 + x^5 + ......]. (Using do…while loop)  
#include <stdio.h>  
#include <math.h>  
int main() {  
    int sum=0,i=0,n,x,t;  
    printf("enter the value for x:\n");  
    scanf("%d",&x);  
printf("enter the value for n:\n");  
    scanf("%d",&n);  
    printf("the sum of ");  
    while(i<n)  
    {  
       t=pow(-1,i)\*pow(x,2\*i+1);  
       printf("%d\t",t);  
       sum+=t;  
        i++;  
    }  
   printf("is: %d",sum);  
     return 0;  
}  
Output-  
enter the value for x:  
7  
enter the value for n:  
8

the sum of 7 -343 16807 -823543 40353607 -1977326743 -2147483648 -2147483648 is: -1937780208