Assignment - 3

(1) // Sum of 3-digit number and Display each digit:

```
#include <stdio.h>
int main ()
{
    int a, H, T, O, sum;
    printf("Enter The Number:");
    scanf("%d", &a);
    O = a % 10;
    T = (a / 10) % 10;
    H = a/100;
    sum = H + T + O;
    printf("sum : %d \n", sum);
    printf("H: %d \n T: %d \n O: %d \n", H, T, O);
    return 0;
}
```

// OUTPUT : a = 245
sum = 11
H = 2 ; T = 4 ; O = 5

(2) // Convert from Rectangular Coordinate to Polar Coordinate:

```
#include <stdio.h>
#include <math.h>
int main ()
{
    float x, y, O, r, rad;
    printf("Enter Rect. Coor. : \n");
    scanf("%f%f", &x, &y);
    r = sqrt(x*x + y*y);
    rad = (y/x) * (3.14/180);
    O = atan(rad);
    printf("Polar Coor: %f , %f", r, O);   return 0; }
```

// OUTPUT (x, y) = (3, 4)
∴ (r, O) = (5.000000, 0.023255)

③ // Converting Polar Coordinates to Rectangular Coordinates:

```
#include <stdio.h>
#include <math.h>
int main()
{
float x, y, r, o, rad;
printf("Enter Polar Coord: \n");
scanf("%f %f", &r, &o);
rad = (o) * (3.14/180);
x = r * acos(rad);
y = r * asin(rad);
printf("x: %f , y: %f", x, y);
return 0;
}
```

// OUTPUT: r = 6 , o = 7

=> x, y = (8.630278, 0.734500)

④ // Sum of 1st and last digit of an entered 4-digit number:

```
#include <stdio.h>
int main()
{
int n, a, d, sum;
printf("Enter Nmbr: ");
scanf("%d", &n);
a = n/1000;
n = n%1000;
n = n%100;
d = n%10;
sum = a+d;
printf("Required sum is : %d", sum);
return 0;
}
```

// OUTPUT:

n = 6542

sum = 8

⑤ // Average Marks of a student in 5 subjects:

```
#include<stdio.h>
int main()
{
   int a,b,c,d,e,avg;
   printf("Enter Marks:\n");
   scanf("%d%d%d%d%d",&a,&b,&c,&d,&e);
   avg = (a+b+c+d+e)/5.0 ;
   printf("Average Marks: %d", avg);
   return 0;
}
```

// OUTPUT: Marks : 80, 90, 70, 79, 97

⇒ Average Marks = 83

⑥ // Radius of Circle when its area is equal to area of square of known side:

```
#include<stdio.h>
#include<math.h>
int main()
{
   int a, ar, r;
   printf("Side of Square:");
   scanf("%d", &a);
   ar = a*a ;
   r = sqrt(ar/3.14) ;
   printf("Radius: %d", r);
   return 0;
}
```

// OUTPUT:

a = 10

⇒ r = 5

(7) // Gross Salary of an Employee by giving basic salary as input ;

```
#include <stdio.h>
int main ( )
{
   double BS , GR , DA , HRA ;
   printf ( " Enter Basic Salary ) ;
  scanf (" %lf ", & BS ) ;
   DA = 0.6 * BS ;
   HRA = 0.15 * BS ;
   GR = HRA + DA + BS ;
  printf (" Gross Salary : %lf ", GR ) ;

   return 0;
}
```

// OUTPUT

BS = 5000

⇒ Gross Salary = 8750.000000

(8) // Calculate Hour, Minute by second as input :

```
#include <stdio.h>
int main ( )
{ int h , m, s ;
  printf ( " Enter Seconds : " ) ;
   scanf ( " %d ", & s ) ;
   h = s/3600 ;
   m = s/60 ;
  printf ( " H : %d In M : %d In S : %d In ", h, m, s ) ;
  return 0;
}
```

// OUTPUT

s = 12000

⇒ H = 3

M = 200

(9) // Calculate Year and Month by giving Days as input :

```
#include <stdio.h>
int main ( )
{ int y, m, d ;
printf (" Enter Day: " );
scanf (" %d", &d ) ;
y = d/365 ;
m = d/30 ;
printf (" Y: %d  In  M:%d  In D: %d ", y,m,d );
return 0;
}
```

// OUTPUT

d = 730 ⇒ y = 2 ; M = 24

(10) // Calculate meter (m), centimeter (cm) by giving millimeter (mm) as input :

```
#include <stdio.h>
int main ( )
{
int m, cm, mm ;
printf (" Enter mm : " );
scanf ("%d", &mm);
m = mm/1000 ;
cm = mm/100 ;
printf (" M: %d  In  CM: %d  In MM: %d , m, cm, mm);
return 0 ;
}
```

// OUTPUT

mm = 2000

⇒ m = 2

⇒ cm = 20

// Find the smallest among two numbers

```
#include<stdio.h>
int main ( )
{
int a, b, s ;
printf ("Enter two no.s a and b \n ");
scanf ("%d", &a) ;
scanf ("%d", &b);
  s = (a<b) ? a : b ;
printf ("Smaller no is : \n%d", s) ;
  return 0 ;
}
```

Output :

```
Enter two no.s a and b
5
7
Smaller no is :
 5
```

(17) // Find the largest among two numbers

```
#include <stdio.h>
int main( )
{
int x, y, G;
printf ("Enter the value of x, y \n");
scanf ("%d %d" &x, &y);
G = (x > y) ? x : y;
printf ("Greater is : \n %d", G);
return 0;
}
```

Output :

```
Enter the value of x, y
7
8
Greater is :
8
```

(13) // Finding the smallest among three numbers.

```
#include<stdio.h>
int main( )
{
int x, y, z, s;
printf("Enter value of x, y, z \n");
scanf("%d %d %d", &x, &y, &z);
  s = (x<y)? ((x<z)? x:z) : ((y<z)? y:z);
  printf("Smallest is : \n%d", s);
  return 0;
}
```

Output :

```
Enter value of x, y, z
 6
 7
 8
 smallest is
  6
```

(14) // Finding the largest among three numbers

```
#include<stdio.h>
int main( )
{
int x, y, z, g;
printf ("Enter value of x, y, z \n");
scanf ("%d %d %d", &x, &y, &z);
g = (x>y) ? ((x>z) ? x : z) : ((y>z) ? y : z);
printf ("greatest is : \n %d", g);
return 0;
}
```

Output

```
Enter the value of x, y, z
6
8
9
Greatest is : 9
```

(15) // print the size of each basic data type

```
#include <stdio.h>
int main ( )
{
printf ("\n size of int is : %u", sizeof (int));
 return 0;
}
```

Output:

```
Size of int is : 4
```

(16) // Finding sum of n consecutive natural numbers

```
#include<stdio.h>
int main ( )
{
 int n, s=0;
 printf (" Enter the no \n ");
 scanf ("%d", &n );
  s = n*(n+1)/2;
 printf ("sum of n natural numbers is : %d", s);
  return 0;
 }
```

Output:

```
Enter the no.
7
sum of n natural number is : 45
```

(11) // Finding the value of sum of squares.

```
#Include <stdio.h>
Int main ( )
{
Int x, sum ;
printf ("Enter the value of x");
scanf ("%d"; &x);
sum = (n*(n+1)*(2*n+1))/6;
printf ("Sum of square of 1st n is = %d", sum);
return 0;
}
```

Output :

```
Enter the value of x 9.
Sum of square of 1st x is 285.
```

(11) // To find the value of sum of cubes.

```
#include <stdio.h>
#include <math.h>
int main()
{
int n, sum;
printf("Enter the value of n");
scanf("%d", &n);
  sum = (n*(n+1)/2)^2;
 printf("sum of cubic entities is:%d", sum);
  return 0;
  }
```

Output:

Enter the value of n 6

Sum of cubic entities is : 23

..

(19) // To demonstrate the bitwise operation

```
#include<stdio.h>
int main ( )
{
int x,y,z, a,b,c,d;
printf ("\n Enter the value in x and y ");
 scanf (" %d %d", &x, &y);
   z = x & y ;
 printf ("\n The use of Bitwise AND operator %d", z);
    a = x/y ;
 printf ("\n The use of Bitwise OR operator %d", a);
   b = x ^ y ;
   printf ("\n The Use of bitwise EXCLUSIVE OR operator %d", b)
    c = x>>y ;
    d = x<<y ;
   printf ( "\n The use of Bitwise RIGHT SHIFT operator %d ", c);
 printf ("\n The use of Bitwise LEFT SHIFT operator %d", d);
    y = -x ;
   print f ("\n NOT of %d", x, y);
 return 0;
}
```

Output :

```
Enter the values of x and y 10
2
The use of bitwise AND operator 2
The use of bitwise OR operator 10
The use of bitwise EXCLUSIVE OR operator 8
The use of bitwise RIGHT SHIFT operator 2
The use of bitwise LEFT SHIFT operator 40
 Not of 10 is -10.
```

(20)
```
// To get the nth bit of a number
#include<stdio.h>
int main ( )
{
int x, n, bit ;
printf ("\n Enter the number and the position you want to view \n");
scanf ("%d %d", &x, &n);
  bit = x >> x ;
  bit = bit & 1 ;
  printf ("%d", Bit);
  return 0;
  }
```

Output :

```
Enter the number and the position you want to view 6
 2
 Bit & 1
```

(21) // To swap two numbers you using bitwise operator.

```
#include <stdio.h>
int main ( )
{
int x, y ;
printf ( "\n Enter the two numbers you want to swap \n");
scanf ( "%d %d", &x, &y );
   x = x ^ y ;
   y = x ^ y ;
   x = x ^ y ;
   printf ("After swapping x = %d, y = %d", x, y);
   return 0;
  }
```

Output :

```
Enter two numbers you want to swap
67
89
After swapping  x = 89 , y = 67
```