Assignment - 1

1) Write a c program that accept a variable with some distance value (in inch) and convert it into cm and display. (Note 1inch = 2.54cm)

Ans.
```
/* Purpose : Convert inch into cm */
/* Author : Nishikanta Ray */
/* Dept : ECE */
# include <stdio.h>
main()
{
float inch, cm;
printf("Give a value to convert");
scanf("%f", &inch);
cm = (inch * 2.54);
printf("The value in cm will be %f\n", cm);
}
```

O/P
```
Give a value to convert
7.62
The value in cm will be 3.000000
```

2) write a program, that accept a temp in Fahrenheit and prints the corresponding temp in celsius.
C/5 = (F-32)/9

Ans)
```
/* Purpose : Convert Fahrenheit to centigrade */
/* Author : Nishikanta Ray */
/* Dept : ECE */
# include <stdio.h>
main()
{
float f, c;
```

```
printf ("Enter temp in Fahrenheit :", temp);
scanf ("%f", &f);
c = ((f - 32) * 5)/9;
printf ("Temp %f in fahrenheit =", f);
printf ("Temp %f in fahrenheit = ", f);
printf ("%f Centigrade \n", c);
}
```

O/P Enter Temp in Fahrenheit : 44
Temp 44.000000 in Fahrenheit = 6.666667 Centigrade

3) write a c program, which take in put as co-efficients A, B & C of the quadratic eqn $AX^2 + BX + C = 0$ Find the real roots of eqn.

Ans
```
/* Purpose: Find the real roots */
/* Author : Nishikanta Ray */
/* Dept : ECE */
#include <stdio.h>
#include <math.h>
main()
{
int A, B, C, D, R1, R2;
printf ("Find the real roots of eqn
        A x^2 + Bx + C = 0");
scanf ("%d, %d, %d", &A, &B, &C);
D = (B^2 - 4*A*C);
R1 = (-B + SQRT(D))/2*A;
R2 = (-B - SQRT(D))/2*A;
printf ("%d", R1);
printf ("%d", R2);
```

```
main()
{
}
```

O/P

Find the real roots of eqn $Ax^2+Bx+C=0$

2, 3, 4

$R_1 = -40.000000$

$R_2 = 30.000000$

4) WAP to find the Area of a triangle.

Ans/

```
/* purpose: Find the area of the triangle */
/* Author : Nishikanta Ray */
/* Dept : ECE. */
# include<stdio.h>
main()
{
int b, h; float area;
printf("Give base and height of triangle \n");
scanf("%d %d", &b, &h);
Area = (b*h) *0.5;
printf("Area of triangle is : %f \n" area);
}
```

O/P

Give base and height of triangle.

5, 10

Area of triangle is

25.000000

5) WAP to calculate the gross salary of an employee by giving basic salary where DA is 60% and HRA is 15%. Gross salary = Basic DA + HRA

Ans)
```
/* Purpose : To find Gross salary of an employee */
/* Author : Nishikanta Ray */
/* Dept : ECE */
# include <stdio.h>
main()
{
float gs, basic, da, hra;
printf("what is the basic salary\n");
scanf("%f", &basic);
da = (basic * 60)/100;
hra = (basic * 15)/100;
gs = basic + da + hra;
printf("Gross salary is : \n", gs);
}
```

O/P what is the basic salary
54000
Gross salary is : 94500.000000

6) WAP to swap the values of 2 variable using 3rd variable.

Ans)
```
/* Purpose : swap the values of two variable
   using another variable */
/* Author : Nishikanta Ray */
/* Dept : ECE */
# include<stdio.h>
```

```
main()
{
int a, b, c;
printf ("Give two values for a and b \n");
scanf ("%d %d", &a, &b);
printf ("%d %d", a, b);
 c = b , b = a, a = c;
printf ("values are changed \n");
printf ("a = %d b = %d \n", a, b);
 }
```

O/P

Give two values for a and b

a = 5 b = 4

values are changed

a = 4 b = 5

7) WAP to swap the values of 2 variables without using 3rd varible

Ans-/* Purpose : swap the values of two variable without any other variable */

```
/* Author : Nishikanta Ray */
/* Dept : ECE */
# include <stdio.h>
main()
{
int a, b;
printf ("Two values for a and b \n");
scanf ("%d%d", &a, &b);
 a=(a+b);
 b=(a-b);
```

```
a=(a-b);
printf("a=%d b=%d",a,b);
}
```

O/P

Two values for a and b

10 50

a=50 b=10

(3.) write C program to generate the following output

```
Ans:- /* Purpose : To generate a pattern using printf */
      /* Author : Nishikanta Ray */
      /* Dept : ECE */
#include<stdio.h>
main()
{
printf("  *  \n");
printf(" * * \n");
printf("* * *\n");
printf("* * * *\n");
```

O/P

q) write a program to interchange the value of x, y and z without using fourth variable.

```
/* Purpose : Interchange the value of x, y and z
   without using fourth variable */
/* Author : Nishikanta Ray */
/* Dept : ECE */
# include <stdio.h>
main()
{ Float A,B,C;
printf("Enter x, y and z ");
scanf("%f,%f,%f", &A, &B, &C);
A = (A + B + C);
C = A - (B+C);
B = A - (B+C);
A = A - (B+C);
printf("%f, %f, %f", A, B, C);
}
```

OIP

Enter x, y and z

A = 5 , B = 6 , C = 8

A = 8 B = 5 C = 6

Indentation.

9/9/19

ASSIGNMENT-2

① WAP to swap the values of three variable x, y & z in following manner value of x to y, y to z. and z to x respectively.

```
#include<stdio.h>
main()
{
int x, y, z;
printf("Enter x, y, z");
scanf("%d,%d,%d", &x, &y, &z);
x = (x + y + z);
z = x - (y+z);
y = x - (y+z);
x = x - (y+z);
printf("%d, %d, %d", x, y, z);

}
```

O/P

Enter x, y, z

x = 5 y = 3 z = 2

x = 2 y = 5 z = 3

② WAP to swap the value variable x, y & z in the following manner value of y to x, z to y and x to z respectively.

```
#include<stdio.h>
main()
{
int x, y, z;
printf("Enter x, y, z");
scanf("%d,%d,%d", &x, &y, &z);
z = (x + y + z);
x = z - (y + x);
y = z - (y + x);
z = z - (y + x);
printf("%d,%d,%d", x, y, z);
}
```

O/P

Enter x, y, z

x = 5 y = 3 z = 2

x = 3 y = 2 z = 5

③ WAP to find volume of cylinder;

```
#include<stdio.h>
main()
{
int r, A, h;
printf("Enter r, &h");
scanf("%d,%d", &r, &h);
A = (2/3) * 3.141 * r * r * h;
printf("%d", A);
}
```

O/P

Enter r & h 5, 4

A = 209

(4) WAP to find volume of sphere.

```
#include<stdio.h>
main()
{
int r, A;
printf("Enter radius");
scanf("%d", &r);
A=(4/3)*3.141*r*r*r;
printf("%d", A);
}
```

O/P

Enter radius 4

A= 268

(3) Enter the principal, time and rate, Interest and then calculate Simple Interest

```
#include<stdio.h>
main()
{
int P, t, r, SI;
Printf("Enter principal, time, rate");
scanf("%d, %d, %d", &P, &t, &r);
SI=(P*t*r)/100;
printf("%d", SI);
}
```

O/P

Enter principal, time, rate 2000, 2, 5

SI= 200

⑥ Enter principal, time and interest and calculate interest.

```
#include<stdio.h>
#include<math.h>
main()
{
int P, t, r, CI;
printf("Enter P, t, r");
scanf("%d, %d, %d", &P, &t, &r);
CI = pow((1+r/100), t);
Printf("%d" CI);
}
```

O/P

Enter P, t, r 2000, 5, 2.

3216032

⑦ WAP to find the value of $S = ut + (1/2)at^2$

```
#include<stdio.h>
main()
{
float u, t, a., s;
printf("Enter u, t, a");
scanf("%f, %f, %f", &u, &t, &a);
S = u*t + 0.5*a*t*t;
Printf("%f", s);
}
```

O/P

Enter u, t, a 5, 7, 50

S = 1260

⑧ WAP to find the value of $v^2 = u^2 - 2as$.

```
#include<stdio.h>
#include<math.h>
main()
{
float v, u, a, s;
printf("Enter u, a, s");
scanf("%f %f %f", &u, &a, &s);
v = sqrt(u*u - 2*a*s);
printf("%f", v);
}
```

O/P

Enter u, a, s 20, 5, 6

v= 18.439088

⑨ WAP to calculate the hours, minutes and second by giving seconds as input.

```
#include<stdio.h>
main()
{
float H, M, S;
printf("Enter input as second");
scanf("%f", &s);
H = (S/3600);
S = S - (H*3600);
M = (S/60);
S = S - (M*60);
printf("%f %f %f", H, M, S);
}
```

O/P

Enter input as second 5000

1 : 23 : 20

(10) WAP to calculate the year, month and days giving days as input.

```
#include<stdio.h>
main()
{
float Y, M, D;
printf("Enter Days as Input");
scanf("%f", &D);
Y= (D/365);
D= D - (Y * 365);
M =(D/30);
D = D-(30 * M);
Printf("%f,%f,%f", Y, M, D);
}
```

O/P

Enter Days as Input 600

1, 7, 25

ASSIGNMENT - 3

① Enter a 3 digit number and calculate the sum of digit and also show the individual digit

```
#Include<stdio.h>
main()
{ int num, d1, d2, d3, sum;
  printf("Enter a number");
  scanf("%d", &num);
   d1 =(num%10);
   num= (num/10);
   d2 = (num%10);
   num = (num/10);
   d3= (num%10);
   sum= (d1+d2+d3);
   printf("%d", sum);
   }
```

O/P

Enter a number 355

13

② WAP to convert a point in rectangular co-ordinate system to polar co-ordinate system.

```
#include<stdio.h> #include<math.h>
main()
{
float x, y, r, z;
printf("Enter x and y");
scanf("%f,%f", &x, &y);
r = sqrt(x*x + y*y);
z = atanh(x/y);
printf("%f, %f", r, z);
}
```

O/P

Enter x and y 5, 6

r = 7.810249 z = -1.056100

③ WAP to convert a point in polar co-ordinal system to ~~polar~~ co-ordinate system.

```
#include<stdio.h>
main()
{
float x, y, r, z;
printf("Enter r, z");
scanf("%f;%f", &r, &z);
x = r*cos(z);
y = r*sin(z);
printf("%f;%f", x, y);
}
```

Enter r, z 6,15

X = 20.051623 Y = 30.051232.

④ If a 4digit no is inputed through keyboard WAP to obtain the sum of the first and last digit of the no

```
#include<stdio.h>
main()
{
int num, d1, d2, sum;
printf("Enter a number");
scanf("%d", &num);
d1 = (num%10);
num = (num/1000);
d2 = (num%10);
sum = (d1+d2);
printf("%d", sum);
}
```

O/P

Enter a number 5568

13

⑤ WAP to enter the side of a square and calculate the radius of the circle whose area is same as the square.

```
#include<stdio.h>
#include<math.h>
main()
{
int A, r, z, d;
```

```
printf("Enter side");
scanf("%d,%d,%d", &x, &d, &z);
A = (x*x);
if (A == z)
{
d = sqrt(z/3.141);
printf("%d", d);
}
```

O/P

Enter side 5, 6, 54

d = 3

⑥ WAP to determine the number is odd or e

```
#include<stdio.h>
main()
{
int num;
printf("Enter a number");
scanf("%d", &num);
(num%2==0)? printf("number is even") : Print
}
```

Enter a number 56

number is even.

⑦ Enter a number and shift the number t position left and two position to the right and display

```
#include<stdio.h>
main()
 {
 int num, x, y;
 printf("Enter a number");
 Scanf("%d", & num);
  x = num>>2;
  y = num<<2;
  printf("%d, %d", x, y);
   }
```

O/P

Enter a number 5

1, 10

(8) Calculate the meter, centimeter and milimeter by giving milimeter as input.

```
#include<stdio.h>
main()
 {
 int Met, MM, Cm;
 printf("Enter MM as input");
 scanf("%d", & MM);
 Met = (MM/100);
 MM = (MM-100*M);
 Cm = (MM/10);
 MM = MM - (Cm*10);
 printf("%d, %d, %d", Met, CM, MM),
  }
```

O/P

Enter rim as input 200

2:0.0

(9) WAP to find the smallest among two numbers conditional operator

```
#include <stdio.h>
main()
{
int a, b, c;
printf("Enter 2 numbers");
scanf("%d, %d", &a, &b);
c = (a < b) ? a : b;
printf("%d", c);
}
```

O/P

Enter 2 numbers 5,6

5

(10) WAP to find the smallest among the three numbe conditional operator

```
#include <stdio.h>
main()
{
int num1, num2, num3, small;
printf("Enter 3 numbers");
scanf("%d, %d, %d", &num1, &num2, &num3);
small = (num1 < num2) ? (num1 < num3) ? num1 : num
printf("%d", small);                    num2 < num3 ? num
}                                                    . num
```

O/P

Enter 3 numbers 5, 6, 7

5

WAP print the size of each basic datatype using size of operator.

```
#include<stdio.h>
main()
{
printf("%d\n", sizeof(char));
printf("%d\n", sizeof(int));
printf("%d\n", sizeof(float));
printf("%d\n", sizeof(double));
}
```

OIP
1
4
4
8

WAP to find the sum of n consecutive numbers where starting no is 1

```
#include<stdio.h>
main()
{
int n, sum=0;
printf("Enter the number");
scanf("%d", &n);
sum=(n+1)*n/2;
printf("%d", sum);
}
```

OIP
Enter the numbers 7
28

(13) WAP to find out the sum of $1^2 + 2^2 + 3^2 \ldots + n^2$

```
#include <stdio.h>
main()
{
int n, sum = 0;
printf ("Enter the number");
scanf ("%d", &n);
sum = (n*(n+1)*(2*n+1))/6;
printf("%d", sum);
}
```

O/P

Enter the number 6

91

(14) WAP to find out the sum of $1^3 + 2^3 + 3^3 \ldots + n^3$

```
#include <stdio.h>
#include <math.h>
main()
{
int n, sum = 0;
Printf(" Enter the number");
scanf ("%d", &n);
Sum = pow( (n*(n+1)/2), 2);
Printf ("%d", sum);
}
```

O/P

Enter the number 2.

9

WAP to demonstrate the Bitwise operator on giving variables x and y

```
#include <stdio.h>
main()
{
int x , y , z, A, B, C, D;
printf(" Input x, y ");
Scanf ("%d,%d", &x, &y);
 z = (x & y);

A = (x | y);

B = (x ^ y);

C = (x>>2);

D = (y<<2);

printf ("%d", z);
printf("%d", A);
printf("%d", B);
 printf("%d", C);
 printf("%d", D);
 }
```

O/P

Input x, y 1, 3

1, 7, 6, 1, 12

(16) Write a C program to get nth bit of a number

```
#include <stdio.h>
main()
{
int num, n, bitstatus;
printf("Enter any number");
scanf("%d", &n);
bitstatus = (num >> n) & 1;
printf("The %d bit is set to %d", n, bistatus);
}
```

O/P

Enter any number 12 , 2

The 2 bit is set to 1

(17) write a C program to flip bits of a binary number using bitwise operator.

```
#include<stdio.h>
main()
{
int num, Flip;
printf("Enter any Number");
Scanf("%d", &num);
Flip = ~num;
Printf("Orginal no = %d", num);
Print f("%d", Flip);
}
```

O/P

Enter any Number 22

orginal no = 22

-23

(18) write a C program to swap two numbers using bitwise operator

```
#include<stdio.h>
main()
{
int x, y;

x = x ^ y;
y = x ^ y;
x = x ^ y;
printf("After swapping: x = %d, Y = %d", x, y);
}
```

After swapping : x = 5, Y = 10

x = 10 Y = 5

— o —

ASSIGNMENT - 4

① WAP to check whether a given no is positive or negetive ?

```
#include<stdio.h>
main()
 {
  int num;
  printf("Enter a number");
  scanf("The number is %d", &num);
  if(num>0){
   printf("possitive");
    }
  Else
   if(num<0){
    printf("Negetive");
    }
  }
```

OIP

```
Enter a number 12
The number is 12
possitive.
```

② WAP to check whether a given no is even or odd.

```
#include<stdio.h>
main()
 {
 int num;
 Printf("Enter a number");
 Scanf("%d", &num);
 If(num%2==0){
  printf("even");
 else
  Printf("odd");
} }
```

O/P
Enter a number 15
Odd.

(3) WAP to test whether the given no is divisible by both 11 & 13.

```
#include<stdio.h>
main()
{
int num;
Printf("Enter a number");
Scanf("%d",&num);
if((num%11)&&(num%13)==0){
printf("Divisible");
else
printf("NOT Divisible");
}
}
```

O/P
Enter a number 121
NOT Divisible.

④ WAP to evaluate the following expression
$x = (a-b)/(c-d)$ Give the error message when $c == d$;

```
#Include <stdio.h>
main()
{
float a, b, c, d, x;
printf("Enter the number");
scanf("%f%f%f%f", &a, &b, &c, &d);
x = float(a-b)/float(c-d);
If(c == d){
printf("Error");
Else
printf("%f", x);
}
}
```

O/P

Enter the number 5 6 7 7

Error.

⑤ WAP to check whether a given year is leap year not.

```
# include <stdio.h>
main()
{
int year;
printf("Enter the year");
scanf("%d", &year);
if((year%4)&&(year%400)==0||(year%100)
                          ==!0);
 {
 printf("Leap year");
 else
 printf("Not a leap year");
 }
}
```

o/p

Enter the year
1600
Leap year

WAP to Find the largest among three nos.

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

```
#include <stdio.h>
main()
{
int x, y, z;
printf("Enter the numbers");
scanf("%d%d%d", &x, &y, &z);
if(x > y && x > z){
printf("largest is %d \n", x);
} Else
if(y > x && y > z){
printf("largest is %d\n", y);
Else
printf("largest is %d\n", z);
}
}
```

O/P

Enter the numbers 5 6 7

largest is

7

(7) WAP to test whether a 3 digit no is palindrome.

```
#include <stdio.h>
main()
{
int num, d1, d2, d3, x, z;
printf("Enter the number");
scanf("%d", &num);
num = x;
d1 = (num%10);
num = (num/10);
d2 = (num%10);
num = (num/10);
d3 = (num%10);
z = (100*d1 +10*d2 +d3);
If (x == z){
printf("Number is palindrome");
Else
printf("Not palindrome");
  }
}
```

O/P

Enter the number 121

Number is palindrome.

(8) Write a program to calculate the income tax, given the following condition

- If income is less than 1,50,000 then no tax
- If income is in range 1,50,001 - 300000 charge 10% tax
- If income is greater than 300000 then charge 20% tax

```
# include <stdio.h>
main()
{
Float Basic, z, Y;
printf("Enter the Basic");
Scanf("%f", &Basic);
If( Basic < 150000){
printf("NO tax");
}
Else
If((Basic >=150001) && ( Basic<=300000)
{ z = (Basic * 0.1);
printf("%f", z);
}
Else
If ( Basic > 300000 ){
Y = (Basic * 0.2);
Printf("%f", Y);
}
}
```

O/P
Enter the Basic 150050
15005

(6) An electric power distribution company charges its domestics consumers as follows.

Consumption unit	Rate of charge
0 - 200	Rs 0.50 per unit
200 - 400	Rs 100 + Rs 0.65 per unit excess of 200
401 - 600	Rs 230 + Rs 0.80 per unit excess of 400
601 and above	Rs 390 + Plus Rs 1.00 per unit excess of 600

WAP to reads customers number and power consumed and prints the amount to be paid by the customer.

```
#include<stdio.h>
main()
{
float pow, money, C.N;
printf("Enter the Customer number
        and power\n");
scanf("customer number is %f and\n
        power is %f", &C.N, &pow);
if((pow>0)&&(pow<=200)){
money = (pow*0.50);
printf("money is %f", money);
}
else
if((pow>=201)&&(pow<=400)){
money = 100+((pow-200)*0.65);
printf("money is %f", money);
}
else
if(pow>=401)&&(pow<=600)){
money = 230+((pow-400)*0.80);
printf("money is %f", money);
}
else
if(pow>=601){
money = 390+((pow-600)*1.00);
```

```
printf("Money is %d", Money);
  }
}
```

O/P

Enter the customer number and power

Customer number is 190410233 and

power is 500

Money is 295

Consider a grading system of students in an academic institution. The grading is done according the following rules

Index	grade
10	O
9	O
8	E
7	A
6	B
5	C
Default	F

WAP to input the stades and display the grade using switch statement (Index = mark / 100).

```
#include <stdio.h>
main()
{
int mark, index;
printf("Enter the mark");
scanf("%d", &mark);
index = (mark/10);
switch(index)
{
case 10:
 printf("your Grade : O");
 break;
case 9:
 printf("your Grade : O");
 break;
case 8:
 printf("your Grade : E");
 break;
case 7:
 printf("your Grade : A");
 break;
case 6:
 printf("your Grade : B");
 break;
case 5:
printf("your Grade : C");
break;
```

```
Default :
    printf(" Fail ");
    break;
  }
}
```

Enter the mark 90

Your Grade : O

— o —

ASSIGNMENT - 5

① WAP to check whether an inputted number is Armstrong number or not.

```
#include<stdio.h>
main()
{
int n, r, sum=0, z;
printf("enter the number=");
scanf("%d",&n);
z=n;
while(n>0)
{
r=n%10;
sum=sum+(r*r*r);
n=n/10;
}
if(z==sum)
printf("Armstrong");
else
printf("NOT Armstrong");
}
```

O/P

enter the number=153

Armstrong.

② write a C program to check whether a trang valid or not given sides of triangle if vali whether the triangle is equilateral, scalene o Also check whether the triangle is right angle

```
#include<stdio.h>
main()
{
    int a, b, c;
    printf("Enter the sides");
    scanf("%d %d %d", &a, &b, &c);
    if(((a+b)>c)&&((b+c)>a)&&((c+a)>b))
    {
        if (a==b || a==c || b==c)
          printf("Isoscales triangle");
        elseif ((a*a)+(b*b)==(c*c))
          printf("Right angled triangle");
        else if (a==b && b==C && C==c)
          printf("Equilateral triangle");
        else
          printf("scalene triangle");
    }
    else
        printf("No triangle possible");
}
```

O/P

Enter the sides

3 4 5

Right angled triangle.

③ WAP to find the number of denominations for a given amount.

```
#include<stdio.h>
main()
{
    int Amo, T1, T2, T3, T4, T5, T6, T7, T8, T9, T10;
    printf("Enter the amount");
    scanf("%d", &Amo);
    T1 = Amo/2000;
    Amo = (Amo%.2000);
    T2 = Amo/500;
    Amo = Amo%.500;
    T3 = Amo/200;
    Amo = Amo%.200;
    T4 = Amo/100;
    Amo = Amo%.100;
    T5 = Amo/50;
    Amo = Amo%.50;
    T6 = Amo/20;
    Amo = Amo%.20;
    T7 = Amo/10;
    Amo = Amo%.10;
    T8 = Amo/5;
    Amo = Amo%.5;
    T9 = Amo/2;
    Amo = Amo%.2;
    T10 = Amo/1;
```

```
printf("%d %d %d %d %d %d %d %d %d %d", T1, T2,
        T6, T7, T8, T9, T10);
}
```

O/P

Enter the Amount 5000

2 2

(4) Enter two operands and an operator & do the calculation using switch statement

```
#include<stdio.h>
main()
{
    int x, y, result, op;
    char OP;
    printf("Enter the value of op\n")
    scanf("%c", &OP);
    printf("Enter the values of y, x\n")
    scanf("%d %d", &x, &y);
    switch(OP)
    {
        case '+':
            result = x + y;
            printf("%d", result);
            break;
        case '-':
            result = x - y;
            printf("%d", result);
            break;
        case '*':
```

```
            result = x * y;
            printf ("%d", result);
            break;
        case "/":
            result = x / y;
            printf ("%d", result);
            break;
        default:
            printf ("no result");
            break;
    }
}
```

O/P

Enter the value of OP +

Enter the values of Y, X 5, 6

11

⑤ A certain grade of steel is graded according to the following conditions.

(i) Hardness must be greter than 50

(ii) carbon content must be less than 0.7

(iii) Tensile strength must begreter than 5600

The grade are as follows

Grade 10 : If all the three condition oremet

" 9 : " cond^n (i) & (iii) met

" 8 : " " (ii) & (iii) "

" 7 : " " (i) & (iii) "

Grade 6 : If only one cond^n is met

Grade 5 : If non of the cond^n is met

```
#include<stdio.h>
main()
{
    float H, CC, TS;
    int grade;
    printf("Enter the hardness, carbon & Tensile
            of steel");
    scanf("%f%f%f", &H, &CC, &TS);
    if((H>50)&&(CC<0.7)&&(TS>5600))
      grade=10;
    else if((H>50)&&(TS>5600))
      grade=9;
    else if((CC<0.7)&&(TS>5600))
      grade=8;
    else if((H>50)&&(CC>0.7))
      grade=7;
    else if((H>50)||(CC<0.7)||(TS>5600))
      grade=6;
    else
      grade=5;
    printf("grade = %d", grade);
}
```

O/P

Enter the hardness, carbon & Tensile of steel

60 0.5 1000

grade = 9

⑥ WAP to compute 1+2+3+4 ... +n

```
# include<stdio.h>
main()
{
int n, sum=0, i=1;
scanf("%d", &n);
while (i<=n)
  {
    sum=(sum+i);
    i++;
  }
printf("%d", sum);
}
```

O/P

10

sum = 55.

⑦ WAP to compute sum of square of first n natural number

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

⑥ WAP to compute 1+2+3+4 ... +n

```
# include<stdio.h>
main()
{
int n, sum=0, i=1;
scanf("%d", &n);
while (i<=n)
  {
    sum=(sum+i);
    i++;
  }
printf("sum=%d", sum);
}
```

O/P
10
sum = 55.

⑦ WAP to compute sum of square of first n natural number

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

```
        sum= sum + i * i ;
        i++;
      }
      printf ("%d", sum);
}
```

O/P

Enter the number 3

14

⑧ WAP to find the sum of digits of a g

```
#include<stdio.h>
main()
{
    int num, d, sum=0;
    printf(" Enter the number");
    scanf("%d", &num);
    d = (num % 10) ;
    sum = (sum + d);
    num = (num / 10);
    printf("%d", sum);
}
```

O/P

Enter the number 123

6.

@ WAP to print first n fibonacci numbers

```
#include<stdio.h>
main()
{
  int f1=0, f2=1, fibo=0, n, i=1;
  printf("Enter the number");
  scanf("%d", &n);
  printf("%d %d", f1, f2);
  while(i<=n)
  {
   fibo=f1+f2;
   f1=f2;
   f2=fibo;
   i++;
  }
}
```

O/P

Enter the number 5

0 1 1 2 3 5

(10) WAP to test whether a given no is p
or not

```
#include<stdio.h>
main()
{
int i=1, n, c=0;
printf("Enter the no");
scanf("%d", &n);
for(i=2; i
while(n!=0)
{
if(n%i==0)
c++;
i++;
}
if(c==2)
printf("prime");
else
printf("notprime");
}
```

O/P

Enter the no 5

prime.

ASSIGNMENT-6

① WAP to print the numbers from 1 to 100 which are not divisible by 2 and 3

```
#include<stdio.h>
main()
{
  int i
  for(i=1, i<=100, i++)
    {
      if((i%2!=0)&&(i%3!=0))

      printf("%d", i);
    }
}
```

O/P

1 5 7 11 13 17 19 23 25 29 31 35 37 41 43 47 49 53 55 59
61 65 67 71 73 77 83 85 89 95 97.

② WAP to check a character is a vowel or constant

```
#include<stdio.h>
main()
{
 char a;
printf("Enter the character - ");
scanf("%c", &a);
switch(a)
{
    case 'a':
    case 'e':
    case 'i':
    case 'o':
    case 'u':
    case 'A':
    case 'E':
    case 'I':
    case 'O':
    case 'U':
     printf("vowel");
     break;
  default:
      printf("consonant");
      break;
   }
}
```

O/P

Enter the character - a

vowel

③ Find the prime nos within the range.

```
#include<stdio.h>
main()
{
    int i, j, n;
    printf("Enter the range");
    scanf("%d", &n);
    for(i=2; i<=n; i++)
    {
        int c=0;
        for(j=1; j<=i, j++)
        {
            if(i%j==0)
            c++;
        }
        if(c==2)
        printf("%d", i);
    }
}
```

O/P

Enter the range -5

3 5 7 11 13.

④ Find the number which is divisible sum of its digits (e.g 12) bet^ 1 to

```
#Include<stdio.h>
#include<math.h>
main()
{
  int i, m;
   for (i=1; i<=10000; i++)
    {
       if (i % 2 == 0)
       {
        M =(int)sqrt(i);
        if ((M*M) == i)
        printf("%d", i);
       }
    }
}
```

O/P

4 16 10000

⑤ WAP to find out perfect squares are even numbers with in 1 - 100

```
# Include<stdio.h>
# Include<math.h>
```

```
main()
{
int n, z, i;
printf("Enter a number");
scanf("%d", &n);
i = n;
while(i<=10000)
{
    z = (int) sqrt(i);
    if((i==z*z)&&(i%2==0))
    {
    printf("%d", i);
    }
    n++;
}
}
```

OIP

Enter a number

4, 16 ---- 10000

⑥ WAP to print number between 10 to 1000 where the digits of the number are equal (eg 22, 33, 111, 555 or 999)

```
#include<stdio.h>
main()
{
  int i, sum, r, rev, mid;
  for (i=10; i<10000; i++)
  {
     rev= 0
     int num = i;
     while(num>0)
      {
      sum=(num %. 10);
      rev = rev*10+sum;
      num = num/10;
      }
     mid = i/10;
     rem = mid %. 10;
    if ((rev == i) && (r == rem))
     printf("%d ; .i );
     }
  }
}
```

O/P

11 22 33 44 ... 9999

(7) WAP find out a 4 digit number AABB, which is a perfect square where AA and BB are also perfect square

```
#include <stdio.h>
#include <math.h>
main()
{
    int n=0; d1, d2, x, y, z;
    scanf("%d", &n);
    while (n<10000 && n>=1001)
    {
        d1 = (d1 % 100);
        d2 = (d2 / 100);
        x = (int) sqrt(d1);
        y = (int) sqrt(d2);
        if ((d1==x*x) && (d2==y*y))
        z = (int) sqrt(i);
        if (i==z*z)
        printf("%d", n);
    }
}
```

O/P 1681 ---

(8) write a C program that will check kth bit of a number is one or zero

```
#include<stdio.h>
main()
{
int num, n, bitstatus;
scanf("%d%d", &num, &n);
bitstatus = (num >> n)&1;
Printf("%d,%d", n, bitstatus);
}
```

5 2

5, 1

(9) WAP to takes input m and n display $m/2^n$ using bitwise operator

```
#include<stdio.h>
main()
{
int m, n, z;
scanf("%d%d", &m, &n);
z = m << n;
Printf("%d", z);
}
```

O/P

5 2

1

(10) WAP that takes M and n as input and displays $m * 2^n$ using bitwise operators

```
#include<stdio.h>
main()
 {
 int m, n, z;
 scanf("%d%d", &m, &n);
  z = m >> n;
  printf("%d", z);
   }
```

Output
5 2
20

—o—

Improve handwriting
proper Indentation

21/8/19

ASSIGNMENT - 7

1) Print all the perfect nos upto a given range.

```
#include <stdio.h>
main()
{
    int sum, n, i, j, z;
    printf("perfect nos are \n");
    for(i=1; i<100; i++)
    {
        sum=0;
        for(j=1; j<i; j++)
        {
            z = i%j;
            if(z == 0)
            sum = sum+j;
        }
        if(sum == i)
            printf("%d \t", i);
    }
}
```

O/P →

perfect nos are

6 28

2) pWAP to print:

```
#include<stdio.h>
main()
{
    int i, j, k;
    for(i=1; i<=5; i++)
    {
        for(j=i; j<5; j++)
        {
          printf("  ");
        }
        for(k=1; k<(i*2); k++)
        {
          printf("* ");
        }
        printf("\n");
    }
}
```

O/P →

3) WAP to print a pattern.

```
        1
      1 2 1
    1 2 3 2 1
  1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
```

```
# include<stdio.h>
main()
{
    int i, j, k, s;
    for(i=1; i<=5; i++)
    {
        for(s=5; s>=i; s--)
        {
            printf("  ");
        for(j=1; j<=i; j++)
        {
            printf("%d ", j);
        }
        for(k=j-2; k>=1; k--)
            printf("%d ", k);
            printf("\n");
    }
}
```

OIP→

```
        1
      1 2 1
    1 2 3 2 1
  1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
```

4) WAP to print a pattern.

```
#include<stdio.h>
main()
{
    int i, s, j;
    for(i=1; i<=5; i++)
    {
        for(s=1; s<=i; s++)
            printf(" ");
        for(j=5; j>=i; j--)
        {
            printf("%d", i);
        }
        printf("\n");
    }
}
```

O/P

```
1 1 1 1 1
 2 2 2 2
  3 3 3
   4 4
    5
```

5) WAP to print a pattern.

```
#include <stdio.h>
main()
{
    int i, s, j;
    for(i=1; i<=5; i++)
    {
        for(s=1; s<=i; s++)
            printf(" ");
        for(j=5; j>=i; j--)
        {
            printf("%d", j%2);
        }
        printf("\n");
    }
}
```

O/P

```
1 0 1 0 1
 1 0 1 0
  1 0 1
   1 0
    1
```

6) WAP to print a pattern.

```
#include<stdio.h>
main()
{
    int i, s, j;
    for(i=1; i<=5; i++)
    {
      for(j=5; j>=i; j--)
      {
        printf("%d", j);
      }
      printf("\n");
    }
}
```

O/P →

```
5 4 3 2 1
5 4 3 2
5 4 3
5 4
5.
```

7) WAP to print reverse perfect sq within 1-100

```
#include<stdio.h>
main()
{
    int rev, rev1, n, i, sq, sq1, rem, rem1;
    printf("The nos are");
    for(i=1; i<=100; i++).
    {
      rev=0;
      rev1=0;
      sq=i*i;
      n=i;
      while(n>0)
      {
```

```
        rem = n%10;
        rev = rev*10 + rem;
        n = n/10
    }
    sq1 = rev * rev;
    while(sq1 > 0)
    {
        rem1 = sq1%10;
        rev1 = rev1 * 10 + rem1;
        sq1 = sq1/10;
    }
    if(rev1 == sq)
        printf("%d\t", i);
  }
}
```

O/P

The nos are 1 2 3 12 13 21 22 31

8) HCF of 3 given numbers.

```
# Include <stdio.h>
main()
{
    int a, b, c, hcf, z;
    printf("Enter three numbers: ");
    scanf("%d,%d,%d", &a, &b, &c);
    z = a<b ? (a<c ? a : c) : (b<c ? b : c);
    for(hcf=z; hcf>=1; hcf--)
    {
      if(a%hcf==0 && b%hcf==0 && c%hcf==0)
        break;
    }
    printf("%d", hcf);
}
```

O/P

Enter three numbers: 20, 40, 70

hcf = 10

```
#include <stdio.h>
main()
{
    int a, b, c, hcf, z;
    printf("Enter three numbers: ");
    scanf("%d,%d,%d", &a, &b, &c);
    z = a<b?(a<c?a:c):(b<c?b:c);
    for(hcf=z; hcf>=1; hcf--)
    {
      if(a%hcf==0 && b%hcf==0 && c%hcf==0)
        break;
    }
    printf("%d", hcf);
}
```

O/P

Enter three numbers: 20,40,70

hcf = 10

⑨ WAP to print a pattern.

```
#include<stdio.h>
main()
{
    int i, j;
    char name[10]={'H','e','l','l','o'};
    for(i=0; i<5; i++)
    {
        for(j=0; j<=i; j++)
        {
            printf("%c", name[j]);
        }
        printf("\n");
    }
    for(i=4; i>0; i--)
    {
        for(j=0; j<i; j++)
        {
            printf("%c", name[j]);
        }
        printf("\n");
    }
}
```

OLP

```
H
He
Hel
Hell
Hello
Hell
Hel
He
```

10) Print the pattern

```
#include<stdio.h>
main()
{
  int i;
  for(i=1;i<=9;i=i+2)
   {
     printf(i=1,i<=9;i=i+2)
       }

}
```

O/P->

1 9 25 49

11)

print the factorial sum

```
#include<stdio.h>
main()
{
 float sum;
 int i, n, j, fac;
 printf("enter x");
 scanf("%d", &x);
 for(i=1; i<=x; i++)
 { for(j=1; j<=i;j++)
   {
     fac=(j*j)
   }
   sum = sum+(1/fac);
 }
 printf("%f",sum);
}
```

O/P

enter x 4

1.708333

12) print sum of factorial

```
# include<stdio.h>
# include<math.h>
main()
{
   float sum=1;
   int i,j,n,x,fact;
   printf("enter value of n");
   scanf("%d", &n);
   printf("enter x");
   scanf("%d", &x);
   for(i=1; i<=x ; i++)
   {
      for(j=1; j<=x; j++)
      {
         fact=j * j;
      }
    sum = sum+(pow(x,i)/fact);
   }
printf("%f", sum);

}
```

O/P

enter value of n 4

enter x 2

4.166666

ASSIGNMENT-8

1) Wap to reverse the elements of an array without using another array

```
#include<stdio.h>
main()
{
int a[100],b[100],size,i;
printf("enter your size of array");
scanf("%d",&size);
printf("enter your array");
for(i=0;i<size;i++)
{
scanf("%d",&a[i]),
    b[size-(i+1)]=a[i];
}
printf("reverse array is");
for(i=0;i<size;i++)
{
printf("%d\n",b[i]);
}
}
```

O/P → enter your size of array 4
enter your array
1
3 2
4
2
reverse array is
2
4
3 2
1

② WAP to delete an element of given index a array

```
#include<stdio.h>
main()
{
    int arr[100], size, i, d;
    printf("Enter your size of an array");
    scanf("%d", &size);
    for(i=0; i<size; i++)
    {
        scanf("%d", &arr[i]);
        printf("enter the element");
    }   scanf("%d", &d);
    for(i=0; i<size; i++)
    {
        if(arr[i]=arr[i+1]);
    }
    size--;
    arr[size]=0;
    for(i=0; i<size; i++)
    {
        printf("%d\n", arr[i]);
    }
}
```

O/P

```
Enter your size of an array 5
2
10
13
15
29
enter the element 15
2
10
13
29
```

(3) WAP to delete an element from an array.

```
#include<stdio.h>
main()
{
    int arr[100], size, i, del;
    printf("enter your size of an array");
    scanf("%d", &size);
    for(i=0; i<size; i++)
    {
        scanf("%d", &arr[i]);
    }
    printf("Enter the index ");
    scanf("%d", &del);
    for(i=del; i<size; i++)
    {
        arr[i] = arr[i+1];
        size--;
        arr[size]=0
    }
    for(i=0; i<size; i++)
    {
        printf("%d", arr[i]);
    }
}
```

O/P → enter your size of an array 3
34
23
12
enter the index 12
34 12

(4) insert an element to a given index

```
#include<stdio.h>
main()
{
    int arr[100], size, del, m, i;
    printf("enter your size");
    scanf("%d", &size);
    printf("enter your array");
    for(i=0; i<size; i++)
    {
        printf("%d", &arr[i]);
    }
    printf("enter the array index");
    scanf("%d", &m)
    size++;
    for(i=size; i>m; i--)
    {
      arr[i] = arr[i-1];
    }
    printf("enter the element");
    scanf("%d", &del);
    arr[m] = del;
    printf("modified array is");
    for(i=0; i<size; j++)
    {
    printf("%d", arr[i]);
    }
}
```

O/P
enter your size 5
1 2 3 45 76
enter the array index 2
enter the element 69
modified array is 1 2 69 3 45 96

⑤ WAP to update a particular location of an array

```
#include<stdio.h>
main()
 {
      int arr[100], val, i, loc, size;
      printf("enter your size");
      scanf("%d", &size);
      printf("enter your array");
      for(i=0; i<size; i++)
       {
       scanf("%d", &arr[i]);
       }
      printf("enter the location");
      scanf("%d", &loc);
      printf("enter the value");
      scanf("%d", &val);
      arr[loc-1] = val;
      printf("modified array is");
      for(i=0; i<size; i++)
        {printf("\n%d", arr[i]);
        }
```

O/P

```
enter your size 4
enter your array
2
3
4
1
enter the location to update the array 1
enter the value 69
modified array is
69
3
4
1
```

⑥ WAP to update the content of an array c element is given

```
#include<stdio.h>
main()
{
   int arr[100], val, i, de, size;
   printf("enter your size");
   scanf("%d", &size);
   printf("enter your array");
   for(i=0; i<size; i++)
   {
      scanf("%d", &de);
   }
   printf("enter the element to update th
   scanf("%d", &de);
   printf("enter the value");
   scanf("%d", &val);
   for(i=0; i<size; i++)
   {
   if(arr[i]==de)
     arr[i]=val;
   }
```

```
printf("Modified array is");
for(i=0; i<size; i++)
{
    printf("\n%d", arr[i]);

}
}
```

O/P
```
enter your size 4
enter your array
2
3
4
6
enter the element to update the array
enter the value 2
modified array is
2
3
4
6
```

7) WAP to multiply the content of two array and store the result in third array.

④ Multiplication of 2 array

```
#include<stdio.h>
main()
{
    int a[100], b[100], c[100], i, size;
    printf("enter your size");
    scanf("%d", &size);
    printf("enter your 1st array");
    for(i=0; i<size; i++)
    {
        scanf("%d", &a[i]);
    }
    printf("enter your 2nd array");
    for(i=0; i<size; i++)
    {
        scanf("%d", &b[i]);
    }
    printf("result");
    for(i=0; i<size; i++)
    {
        c[i] = a[i] * b[i];
        printf("%d", c[i]);
    }
}
```

O/P

enter your size 4
enter your 1st array
1
2
3
4
5
6

enter your 2nd array
1
2
4
6

(8) WAP to find the minimum, maximum and average of an array.

```
# include <stdio.h>
main()
{
    int arr[100]; i, size, sum=0, min, max;
    float avg;
    printf("enter your size");
    scanf("%d", &size);
    printf("enter your array");
    for(i=0; i<size; i++)
    {
     scanf("%d", &arr[i]);
    }
    min = arr[0];
    for(i=1; i<size; i++)
    {
        if(max < arr[i])
            max = arr[i];
    }
    for(i=0; i<size ; i++)
    {
     sum = sum + arr[i];
    }
    avg = (sum/size);
    printf("%d %d %d", Avg, min, max);
}
```

O/P → enter your size 4

enter your array

12

34

2

56

Avg = 26.00 max 56 min 2

⑨ In Descending order

```
#Include <stdio.h>
main()
{
    int A[100], i, j, temp, n;
    printf("enter the no of element");
    scanf("%d", &n);
    printf("enter the elements");
    for(i=0; i<n; i++)
    {
        scanf("%d", &A[i]);
    }
    for(i=0; i<n; i++)
    {
        for(j=i+1; j<n; j++)
        {
            IF (A[i] < A[j])
            {
                temp = A[i];
                A[i] = A[j];
                A[j] = temp;
            }
        }
    }
}
```

O/P

enter the no of elements 5
enter the elements.
5
4
9
8
60

the elements of the array
60
9
8
5
4

(10) WAP to find the odd no, even no, positive no, negative no present in an array.

```
#include<stdio.h>
main()
{
    int a[100], i, size;
    printf("enter your size");
    scanf("%d", &size);
    printf("enter your array");
```

```
for( i=0; i<size ; i++ )
 {
    scanf("%d", &a[i]);
 }
 for(i=0; i<size;i++).
  {
      if (a[i]%2!=0)
       printf("%d\n", a[i]);
 }
 for (i=0; i<size ;i++)
   {
     if (a[i]%2==0)
        printf("%d\n", a[i]);
   }
   for(i=0; i<size ; i++)
    {
     if (a[i]>0)
          printf("%d\n", a[i]);
    }
    for(i=0; i<size; i++)
     {
        if (a[i]<0)
           printf("%d\n", a[i])
     }
}
```

O/P

```
enter your size 5
enter your array
2
3
14
-2
0
```

odd 3 even 2 14 -20 +ve 2 314
-ve -2

(11) Ascending order in an array

```
# include <stdio.h>
main()
{
   int A[100], i, j, temp, n;
   printf("enter the no of elements");
   scanf("%d", &n);
   for(i=0; i<n; i++)
   {
      scanf("%d", &A[i]);
   }
   For(i=0; i<n; i++)
   {   For(j=i+1; j<n; j++)
       {   if(A[i] > A[j])
           {
```

```
                temp = A[i];
                A[i] = A[j];
                A[j] = temp;
            }
        }
    }
    printf("the elements of the array \n");
    for(i=0;i<n;i++)
    {
        printf("%d \n", A[i]);
    }
}
```

O/P

enter the no of elements 5
enter the element to be inserted.
2
5
7
60
1

the elements of the array
1
2
5
7
60

— o —

ASSIGNMENT - 9

1) Merge two matrices

```
# include <stdio.h>
main()
{
    int a[50], b[50], c[50], i, j, n1, n2, x=0, y=0;
    printf(" enter the size ");
    scanf("%d %d", &n1, &n2);
    printf(" Enter the array");
    for(i=0; i<n1; i++)
    {
        scanf("%d", &a[i]);
    }
    for(i=0; i<n2; i++)
    {
        scanf("%d", &b[i]);
    }
    for(i=0; i<n1+n2; i++)
    {
        c[i] = a[y];
        i = i+1;
        c[i] = b[x];
        x++;
        y++;
    }
    for(j=0; j<n2; j++)
    {
        printf("%d\t", c[j]);
    }
}
```

O/P

```
enter the size 3 2.
enter the array
1 2 3
4 5
1 2 3 4 5.
```

2) Read and Display a Matrix

```
#include<stdio.h>
main()
{
    int a[50][50], i, j, n, m;
    Printf(" enter the size.");
    scanf ("%d%d", &n, &m);
    Printf(" enter the value");
    for(i=0; i<n; i++)
    {
        for(j=0; j<m; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
    for( i=0 ; i<m ; i++)
    {
        for(j=0; j<m; j++)
        {
            scanf("%d", &a[i][j]);
        }
        Printf("\n");
    }
}
```

O/P

```
enter the size 2 2.
enter the value
1 2
3 4

1 2
3 4
```

3) sum of 2 matrix

```
#include<stdio.h>
main()
{
    int a[50][50], b[50][50], c[50][50], m, n, i, j;
    Printf("Enter the size");
    scanf("%d%d", &m, &n);
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
    for(i=0; i<m, i++)
    {
        for(j=0; j<n; j++)
        {
            scanf("%d", & b[i][j]);
        }
    }
    for(i=0; i<m, i++)
    {
        for(j=0; j<n; j++)
        {
            c[i][j] = a[i][j] + b[i][j];
        }
    }
```

```
for(i=0; i<m ; i++)
{
    for( j=0; j<n ;j++ )
    {
        printf("%d", c[i][j]);
    }
    printf("\n");
}
```

OIP

```
enter the size 2 2
3 4
5 6
5 6
3 4

8 10
8 10
```

(4) search by binary search

```
#include<stdio.h>
main()
{
    int a[50], n, i, de, mid=0;
    printf("enter the size");
```

4)
```
#include<stdio.h>
main()
{
    int a[50], n, i, de, mid=0;
    Printf("enter the size");
    scanf("%d", &n);
    printf("enter the sorted elements");
    for(i=0; i<n; i++)
    {
        scanf("%d", &a[i]);
    }
    printf("enther the search element");
    scanf("%d", &de);
    int low=0, high=n;
    while(low<=high)
    {
        mid = (low+high)/2;
        if(a[mid]>de)
        { high = mid-1;
        else if(a[mid]<de)
        {
            low=mid+1;
        }
        else
            printf("%i", mid);
    }
    if(low>high)
    printf("not found");
}
```

O/P

enter the size 5

1 5 6 7 9

enter the search element

6

3.

⑤ Sum of diagonal elements of a matrix

```
#include<stdio.h>
main()
{
    int a[50][50], m, n, s=0, i, j;
    printf("enter the no of rows and columns");
    scanf("%d %d", &m, &n);
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
    for(i=0; i<m; i++)
    {
        for(j=0; j<c; j++)
        {
            a[i][j]=0;
            if(i==j)
            {
                s= s+ a[i][j]
                printf("%d", a[i][j]);
            }
```

```
            else
            {
             a[i][j]=1;
             printf("%d \t", a[i][j]);
            }
        }
        printf("\n");
    }
}
```

enter the no of rows and column 3 3

1 2 3
4 5 6
7 8 9

1 5 9

15

⑥ WAP to make all the diagonals element as 0 of square matrix

```
#include<stdio.h>
main()
{
    int a[50][60],n,i,j;
    printf("enter the dimension.");
    scanf("%d",&n);
    printf("enter the value");
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            scanf("%d",&a[i][j]);
        }
    }
    printf("see the new matrix");
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            if(i==j)
            {
                printf("0");
            }
        }
    }
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            printf("%d",a[i][j]);
        }
        printf("\n");
    }
```

O/P

enter the dimension. 3

Enter the value

1 2 3

4 5 6

7 8 9

see the new matrix

0 2 3

4 0 6

7 8 0

⑦ show the upper half

```
#include<stdio.h>
main()
 {
      int a[50][50], i, j, n, m;
      printf("Enter the no of row and column");
      scanf("%d %d", &n, &m);
      for(i=0; i<n; i++)
      {  for(j=0; j<m; j++)
          {
            scanf("%d", &a[i][j]);

          }
      }.
      printf("Enter the upper half");
```

```
for( i=0; i<n; i++)
{
    for(j=0; j<c; j++)
    {
      if ( (j!=i) && (i<j) )

        printf("%d \t", a[i][j]);

    }
}
}
```

O/P

enter the no of row and column 3 3

enter the value.

1 3 5

6 7 8

9 6 7

the upper half is

3 5 8.

(8) WAP to show the lower half.

```
#include<stdio.h>
main()
{
    int a[50][50], i, j, m, n;
    printf("enter the size");
    scanf("%d %d", &m, &n);
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
    printf("the lower half is");
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++)
        {
            if((j!=i) && (j<i))
            printf("%d", a[i][j]);
        }
    }
```

3

OIP

enter the size 3 3

1 2 3
4 5 6
7 8 9

the lower half is
4 7 8.

a) convert upper half = 0

```
#include <stdio.h>
main()
{
    int a[100][100], i, j, m, n;
    printf("enter the no of rows and colum
    scanf("                    %d %d", &m,
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++)
        {
            if((j!=i) && (i<j))
            {printf("%d\t", a[i][j]);
            }
            else
            {printf("0\t");
            }
        }
        printf("%d\t", a[i][j]);
    }
}
```

O/P

enter the no of row and column 4 4

1 2 3 4
7 8 9 10
13 14 16 17
3 2 1 0

1 0 0 0
7 8 0 0
13 14 16 0
3 2 1 0

(10) WAP to find the sum of column.

```
#include <stdio.h>
main()
{
    int a[50][50], i, j, m, n, s=0, b;
    printf("enter the no of rows and colm");
    scanf("%d %d", &m, &n);
    for(i=0; i<m; i++)
    {
        for (j =0; j< m; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
```

```
for(i=0; i<m; i++)
{
  for(j=0; j<c; j++)
  {
    s = s+a[i][j];
  }
  printf("%d\n", s);
}
```

O/P

```
enter the no of rows and column  3 3
1  2  3
4  5  6
7  8  9
12 15 18
```

11) show sum of row.

```
#include <stdio.h>
main()
{
  int a[50][50], i, j, m, n, s=0, b;
  printf("enter the columns and rows");
  scanf("%d %d", &m, &n);
```

```
for(i=0; i<m; i++)
{
   for(j=0; j<n; j++)
     {
       scanf("%d", &a[i][j]);
     }
}
 for(i=0; i<m, i++)
  {
    b=i+1;
    printf("sum of elements of %d \n", c);
    for(j=0; j<n; j++)
     {
        s = s+a[i][j];
     }
    printf("%d \n", s);
  }
}
```

OIP

```
enter the rows and colum 3 3
1 2 3
4 5 6
7 8 9
6
15
24
```

(12) Multiplication of 2 matrix

```
#include<stdio.h>
main()
{
    int a[50][50], b[50][50], c[50][50];
    int m, n;
    printf("Enter the row and column");
    scanf("%d %d %d", &m, &n, &p)
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++).
        {
            scanf("%d", &a[i][j]);
        }
    }
    for(i=0; i<m; i++)
    {
        for(j=0; j<p; j++)
        {
            scanf("%d", &b[i][j]);
        }
    }
    for(i=0; i<m, i++)
    {
        for(j=0; j<p; j++)
        {
```

```
for( k=0; k<n ; k++)
    {
      c[i][j] = c[i][j] + a[i][j]
                * b[k][j];
    }
  }
}
```

O/P

Enter the rows and colum. 2 2 3.

1 2
3 4

2 3 4
4 5 6

10 13 16
22 29 36

(13) WAP to test whether a square matrix is symmetrical or not

```
#include <stdio.h>
main()
{
  int a[50][50], b[50][50], i, j, m.
  printf("Enter the rows and column");
  scanf("%d", &m);
  for(i=0; i<m; i++)
  {
    for(j=0; j<m; j++)
      {
        scanf("%d", &a[i][j]);
      }
  }
  for( i=0; i<m; i++ )
    {
      for(j=0; j<m; j++)
        {
          b[j][i] = a[i][j];
        }
  }
for(i=0; i<m; i++)
{
  for(j=0; j<m; j++)
    {
      printf("%d", b[i][j]);
    }
  printf("\n");
}
```

```
if( a[i][j] == b[i][j] )
 {
    printf("symmetrical");
 }
else
 {printf("unsymmetrical");

 }
}
```

O|P

```
Enter the rows and column = 3
 1  2  3
 4  5  6
 7  8  9

 1  4  7
 2  5  8
 3  6  9

unsymmetrical.
```

— o —

Assignment-10

① WAP to find the area of circle

```
#include<stdio.h>
int Area(int);
main()
{
    int r, A;
    Printf("Enter the radius of circle");
    Scanf("%d", &r);
    A = Area(r);
    Printf("Area is=");
    Printf("%d", A);
}
int Area(int x)
{
    int z;
    z = 3.141 * x * x;
    return z;
}
```

O/P

Enter the radius of circle.
5
Area is = 78

② WAP to calculate gross salary of an employee by giving basic salary using a user defined function.

```
#include<stdio.h>
int salary(int);
main()
{
    int s, Basic
    Printf("Enter the Basic salary");
    scanf("%d", &Basic);
    s = salary(Basic);
    printf("salary is %d", salary);
}
int salary(int Y);
{
    int DA, HRA, Sa.
    Sa = Y + 0.6*Y + 0.15*Y;
    return sa;
}
```

O/P

Enter the Basic salary 500
Salary is 875

3) WAP to swap two variable

```
#include<stdio.h>
void swap(int*, int*);
main()
{
    int a, b;
    printf("Enter the numbers");
    scanf("%d%d", &a, &b);
    printf("Numbers are %d %d", a, b);
    swap(&a, &b);
    printf("%d %d", a, b);
}
void swap(int *x, int *y)
{
    *x = *x + *y;
    *y = *y - *x;
    *x = *x - *y;
}
```

O/P

```
Enter the number 5 6
Numbers are 5 6
6 5
```

④ WAP to read 2 no and a char as (+, -, *, /) and do the corresponding calc

```
#include<stdio.h>
int add(int, int);
int sub(int, int);
int mul(int, int);
int div(int, int);
main()
{
    int n1, n2, result;
    char ch;
    printf("Enter the 2 no");
    scanf("%d%d", &n1, &n2);
    printf("Enter an operater");
    scanf("%c", &ch);
    switch(ch)
    {
        case '+':
            result = add(n1, n2);
            break;
        case '-':
            result = sub(n1, n2);
            break;
        case '*':
            result = mul(n1, n2);
            break;
        case '/':
            result = div(n1, n2);
            break;
        Default:
            Printf("Wrong one");
    }
Printf("%d", result);
}
```

```
int add( int x, int y)
 {
   return x+y;
 }
int sub( int x, int y)
 {
   return x-y;
 }
 int div( int x, int y)
  {
    return x / y;
  }
 int mul (int x, int y)
  {
    return x * y;
  }
```

O/P

Enter 2 no 2 3

Enter an operator +

5

5) WAP to add 2 matrices.

```
#include <stdio.h>
void input(int[10][10],int,int);
void display(int[10][10],int,int);
void add(int[10][10],int[10][10],int[10][10],int,
main()
{
  int m1[10][10],m2[10][10],m3[10][10];
  printf("enter the row and col");
  scanf("%d %d",&r,&c);
  input(m1,r,c);
  input(m2,r,c);
  add(m1,m2,m3,r,c);
  display(m3,r,c);
}
void input(int x[10][10],int row,int col)
  {
    for(i=0;i<row,i++)
     {
     for(j=0;j<col;j++)
       {
         scanf("%d",&x[i][j]);
     }
  }
void add(int x[10][10],int y[10][10]; int z[
                                    int row,i
{
  for(i=0;i<row;i++)
    {
      for(j=0;j<col;j++)
       {
        z[i][j]=x[i][j]+y[i][j];
       }
    }
}
```

O/P
enter the row and col 3 3

3 3 3
3 3 3
3 3 3

3 3 3
3 3 3
3 3 3
6 6 6
6 6 6
6 6 6

6) WAP to multiply 2 matrix

```
#include<stdio.h>
void input(int n[10][10], int*, int*);
void display(int n[10][10], int, int);
void mul(int a[10][10], int b[10][10], int c[10][10], int, int,
main()
{
    int a[10][0], r=0, c=0, r1 = 0, c1=0, b[0][10], c[10][0];
    Printf("Enter the row and column of matrix 1");
    scanf("%d%d", &r, &c);
    Printf("Enter the matrix");
    input(a, &r, &c);
    Printf("Enter the row and column of matrix2");
    scanf("%d%d", &r1, &c1);
    printf("Enter the matrix");
    input(b, &r1, &c1);
    if(c==r1){
```

```
        mul(a, b, c, x, c, c1);
        display(c, x, c1);
      }
      else
      {
        printf("Matrix multiplication not possible");
      }
    }
    void input(int a[10][10], int *a, int *b)
    {
      int i, j;
      for(i=0; i<a; i++)
      {
        for(j=0; j<b; j++)
        {
          scanf("%d", &a[i][j]);
        }
      }
    }
    void display(int a[10][10], int *a, int *b)
    {
      int i, j;
      for(i=0; i<a; i++)
      {
        for(j=0; j<b; j++)
        {
          printf("%d", a[i][j]);
        }
```

```
        printf("\n");
    }
}
void mul(int a[10][10], int b[10][10], int c[10][10]
                                    int r, int r1, int c)
{
    int i, j, k;
    for(i=0; i<r; i++)
    {
        for(j=0; j<c; j++)
        {
            c[i][j]=0;
            for(k=0; k<r1; k++)
            {
                c[i][j]=c[i][j]+a[i][k]*b[k][j];
            }
        }
    }
}
```

o/p

```
Enter the row and colum 2 2
Enter the element
1 2
3 4
Enter the row and colum 2 2
2 1
3 4
8 9
18 19
```

7) WAP to calculate C I.

```
#include<stdio.h>
#include<math.h>
float(float,float,float);
void main()
{
   float p, t, r;
   float ci, compound;
   clrscr(float,float,float);
printf("enter the principle, rate of intrest, time");
scanf("%f %f %f", &p, &t, &r);
if((p<1) ||(t<1) ||(r<1))
{
   printf("invalid");
}
else
   compound = ci(p, t, r);
   printf("the compound intrest is Rs %g", compou
}
float ci(int p, int r, int t)
{
   int amount = (float) p * (pow(1+r/100, t));
   return (amount - p);
}
```

O/P

enter the principle rate of intrest, time 200, 10

the compound intrest is Rs 220

⑧ WAP no of days in month.

```
# include<stdio.h>
int month(int);
main()
{
  int m;
  printf("enter the month no ");
  scanf("%d", &m);
  if((m==1)||(m==3)||(m==5)||(m==7)||(m==8)||
      (m==10)||(m==12))
  {
    printf("31 days");
  }
  else if((m==4)||(m==6)||(m==9)||(m==11))
  {
    printf("30 days");
  }
  else if(m==2)
  {
    printf("28 or 29 days");
  }
  else
  {
    printf("invalid");
  }
  return 0;
  }
```

O/P

enter the month no · 6

30 days

(a) WAP prime no / not

```
#include<stdio.h>
int prime(int);
void main()
{
   int x, res=0;
   printf("enter a number");
   scanf("%d", &x);
   res = prime(num);
   if(res==0)
      printf("%d is prime", x);
   else
      printf("%d is not prime", x);
   getch();
}
int prime(int n)
{
   int i;
   for(i=2; i<=n/2; i++)
   {  if(n%i!=0)
      continue;
   else
      return 1;
}
return 0;
}
```

O/P →

enter a number 7

7 is prime.

10) WAP LCM of 2 no s.

```
# include <stdio.h>
void lcm (int,int);
void main()
 {
   int x, y;
   printf(" enter the no");
   scanf("%d%d", &x, &y);
   lcm( x, y );
 }
 void lcm(int x, int y)
  {
     int lcm, remainder, numerator, denominator;
     if(x>y)
     {
      numerator = x;
      denominator=y;
     }
     else
      {
       numerator = y;
       denominator = x;
      }
     remainder = numerator % denominator;
     while( remainder != 0)
      {
       numerator = denominator;
       denominator = remainder
       remainder = numerator % denominator;
      }
     lcm = x * y/ denominator;
```

printf("lcm of %d and %d = %d", x, y, lcm);

}

O/P

enter two nos 12 8

lcm of 12 and 8 = 24

Assignment - 11

1) WAP power of a number

```
#include<stdio.h>
int power(int x, int y);
main()
{
    int base, pow, result;
    printf("enter the base");
    scanf("%d", &base);
    printf("enter the power");
    scanf("%d", &pow);
    result = power(base, pow);
    printf("%d^%d=%d", base, pow, result);
    return 0;
}
int power(int b, int p)
{
    if(p != 0)
        return(b * power(base, pow-1));
    else
        return 1;
}
```

O/P

enter the base 2
enter the power 3
2^3 = 8

2) WAP sum of digits of a numbers

```
#include <stdio.h>
int sumdig(int num);
main()
{
  int num, sum;
  printf("enter the no");
  scanf("%d", &num);
  sum = sumdig(num);
  printf("%d %d", num, sum);
  return 0;
}
int sumdig(int num)
{
  if(num==0)
    return 0;
  else
    return((num%10) + sumdig(num/10));
}
```

O/P

enter the no 12
sum = 6

3) WAP sum of n numbers

```
#include <stdio.h>
int add(int num);
main()
{
  int num;
  Printf("enter a tve integer");
  scanf("%d", &num);
  printf("sum=%d", add(num));
  return 0;
}
int add(int n)
{
  if(n!=0)
    return n+add(n-1);
  else
    return n;
}
```

O/P

enter a tve int
sum= 6

) WAP to find gcd

```
#include<stdio.h>
int gcd(int x, int y);
main()
 { int x, y;
   printf("enter 2 nos");
   scanf("%d %d", &x, &y);
   printf("GCD of %d and is %d", x, y, gcd(x,y));
   return 0;
 }
int gcd(int x, int y)
 {  if(y != 0)
     return gcd(y, x%y);
    else
     return x;
 }
```

o/p

enter 2 nos 4, 8

GCD of 4 and 8 is 4

5) WAP to factorial of a no

```
# include <stdio.h>
int fact(int);
main()
{
    int n, f;
    printf("input a no ");
    scanf("%d", &n);
    f= fact(n);
    printf("%d", f);
}
int fact(int x)
{
 int f;
   if(x==0 || x==1)
      return 1;
   else
     return f= x * fact(x-1);
}
```

O/P

input a no 6

720

6) WAP to print fibonacci series.

```
#include<stdio.h>
int fibo(int);
main()
{
    int n;
    printf("enter the no of terms");
    scanf("%d", &n);
    for( i=0; i<n, i++)
        printf("%d", fibo(i));
}
int fibo(int x)
{
    if(x==0)
      return 0;
    else if(x==1)
      return 1;
    else
      return fibo(x-2) + fibo(x-1);
}
```

O/P → enter the no of terms 7

0 1 1 2 3 5 8

⑦ linear search

```
#include <stdio.h>
int lsearch(int A[10], int, int, int);
main()
{
    int A[10], x, loc, size;
    printf("Enter the size");
    scanf("%d", &size);
    printf("Enter the elements");
    for(i=0; i<size; i++)
        scanf("%d", &A[i]);
        printf("Enter the element to be sea
    loc = lsearch(A, size, 0, x);
    if(loc==-1)
        printf("The element is not found");
    else
        printf("The element is present %d,
}
int lsearch(int A[], int size, int i, int
{
    if(i==size)
        return -1;
    else if(x==A[i])
        return i;
    else
        return lsearch(A, size, i++, x);
}
```

O/P

```
Enter the size 4
Enter the elements
1 2 3 4
Enter the elements to be seacch 2
The element is present 1
```

(8) Binary search

```
#include<stdio.h>
int bseorch(int A[10], int, int, int);
main()
{
    int A[10], x, loc, size;
    printf("Enter the size");
    scanf("%d", &size);
    printf("Enter the elements");
    for(i=0; i<size; i++)
    {
    scanf("%d", &A[i]);
    }
    printf("Enter the element to be seacch");
    scanf("%d", &x);
    loc = bseorch(A, x, 0, size-1);
    if(loc==-1)
      printf("The element is not found");
    else
      printf("The element is present %d", loc);
```

```
int bsearch(int A[], int l, int u, int x)
{   int mid;
  if (l > u)
    return -1;
  else
  {   mid = (l+u)/2;
    if(x == A[mid])
        return mid;
    else if (x > A[mid])
        return bsearch(A, x, mid+1, u);
    else
        return bsearch(A, x, l, mid-1);
  }
}
```

O/P

```
Enter the size 4
Enter the elements
3 4 5 6
Enter the elements to be search 5
The element is present at 2
```

— 0 —

ASSIGNMENT-12

① Calculate the no of words and blank space

```
#include<stdio.h>
main()
{
    char str[50];
    int i, flag;
    printf("Enter your string");
    scanf("%.[\n]s", str);
    for(i=0; flag=0; str[i]!='\0'; i++)
        if(str[i]==' ')
            flag++;
    Printf("No of words: %.d \n No of space:
            %.d \n", flag+1, flag);
```

O/P

Enter your string Nishikanta.
No of words: 10
No of space: 0

② To convert the uppercase letter into lower case letters and vice versa.

```
#include<stdio.h>
main()
{
    char str[50], i;
    printf("enter your string");
    scanf("%.s", str);
    for(i=0; str[i]!='\0'; i++)
        if(str[i]>='a' && str[i]<='z')
            str[i] = str[i]-32;
        else
            str[i] = str[i]+32;
    printf("Modified string is %.s", str);
}
```

O/P

Enter your string
Silicon
SILICON

③ To Find the frequency of alphabet in a string.

```
#include <stdio.h>
main()
{
   char str[50], ch;
   int i, count;
   printf("enter your string");
   scanf("%s", str);
   printf("Enter your alphabet :");
   scanf("%c", &ch);
   if(ch>='A' && ch<='z')
       ch+=32;
   for(i=0; count=0; str[i]!='\0'; i++)
       if((str[i]==ch) || (str[i]+=32==ch)
           count ++;
   printf("%c" is present %d times", count);
}
```

O/P

```
enter your string
Enter your alphabet
i is present times.
```

④ To extract the 1st n char of a string.

```
#include<stdio.h>
#include<string.h>
main()
{
   char str[50], ex[50];
   int n, i;
   Printf("Enter your string");
   Scanf("%s", str);
   Printf("Enter no. characters to be extracted");
   Scanf("%d", &n);
   For(i=0; i<n; i++)
      ex[i] = str[i];
   Printf("Extracted char are %c", ex);
}
```

O/P

```
Enter your string Nishivarta
Enter no characters to be extracted 3
Extracted char are Nis
```

⑤ To convert lowercase letter to uppercase

```
#include <stdio.h>
#include <string.h>
main()
{ char str[50];
  int i;
  printf("Enter your string");
  scanf("%s", str);
  for(i=0; str[i]!="\0"; i++)
      if( upper(str[i]) )
          str[i] = to lower(str[i]);
  printf("modified string is:%s", str);
}
```

O/P

Enter your string
Nishikanta
modified string
NISHIKANTA

⑥ To convert uppercase letter to lowercase

```
#include<stdio.h>
#include<string.h>
main()
{ char str[50];
  int i;
  printf("enter your string");
  scanf("%s", str);
  for(i=0; str[i]!='\0'; i++)
     if(islowercase(str[i]))
  str[i] = to upper(str[i]);
  printf("Modified string is:%s", str);
}
```

O/P

enter your string Nishi
modified string is nishi

⑦ To check whether the given string in Palindrome or not

```
#include<stdio.h>
main()
{
  char str[50];
  int i, count, n;
  printf("Enter your string: ");
  scanf("%s", str);
  for(n=0; str[n]!='\0'; n++)
     n--;
  for(i=0; count=0; i<=n; i++)
    {
      if(str[i] != str[n-i])
        {
          count++;
          break;
        }
    }
  if(count!=0)
     Printf("not palindrome\n");
  else
     Printf("Palindrome\n");
}
```

OIP

Enter your string: DAD

Palindrome.

(8) To compare 2 strings

```
#include<stdio.h>
main()
{ char str[80], str1[80];
  int i, flag = 0;
  printf("Enter your 1st string:");
  scanf("%s", str);
  printf("Enter your 2nd string");
  scanf("%s", str1);
  for(i=0; str[i]!='\0' || str1[i]!='\0'; i++)
    if(str[i]!=str1[i])
      {
        flag++;
        break;
      }
  if((str[i]!='\0' && str1[i]!='\0') || (flag!=0))
      printf("Not equal\n");

  else
      printf("Equal\n");

}
```

O/P

Enter your 1st string NKR

Enter your 2nd string DKR

Not equal.

⑨ To concatenate two string

```
#include<stdio.h>
main()
{
    char str[50], str1[50], str2[50];
    int i, j;
    printf("Enter your 1st string:");
    scanf("%s", str);
    printf("Enter your 2nd string:");
    scanf("%s", str1);
    for(i=0; str[i]!="\0"; i++)
        str2[i] = str[i];
    For(j=0; str[j]!='\0'; j++, i++);
        str1[i] = str2[j];
        str2[i] = '\0';
    printf("combined string is: %s\n", str2);
}
```

O/P

Enter your 1st string ABC

Enter your 2nd string DEF

combined string is ABCDEF

⑩ To reverse the string.

```
#include<stdio.h>
main()
{
    char str[50], c;
    int i, n;
```

```
#include <stdio.h>
main()
{ char str[50], c;
  int i, n;
  printf("Enter your 1st string");
  scanf("%s", str);
  for(n=0; str[n]!='\0'; n++)
      n--;
  for( i=0; i<n/2; i++)
   {
       c = str[i];
      str[i] = str[n-1];
      str[n-i] = c;
   }
  printf("Reverse string is %s\n", str);
}
```

O/P

Enter your 1st string NKR

Reverse string is RKN.

12) To check whether the given char is present in a string or not

```
#include<stdio.h>
main()
{
   char str[50], ch;
   int i, count;
   printf("Enter your string ");
   scanf("%s", str);
   printf(" Enter your character: ");
   scanf("%c", &ch);
   for( i=0; count=0; str[i]!='\0'; i++)
       if (str[i]==ch)
           count ++;
   printf("%c is present %d times \n", ch, count);
}
```

O/P

Enter your string NHR
Enter your character H
H is present 2

Assignment 13

① WAP of student information using structure.

```
#include<stdio.h>
int i,j;
struct student
 {
   char name[50], branch[3];
   int roll, mark, sub, sum;
   float avg;
 }
stu[20];
void input(int n)
 {
   for(i=0; i<n; i++)
     {
      printf("Enter student's name:");
      scanf("%.[^\n]s", stu[i].name);
      printf("Enter students branch code:");
      scanf("%.[^\n]s", stu[i].branch);
      printf("Enter students roll number:");
      scanf("%d", &stu[i].roll);
      printf("Enter number of subjects:");
      scanf("%d", &stu[i].sub);
      printf("Enter your marks:\n");
      for(j=0; j<stu[i].sub; j++)
        {
          printf("mark%d:", j+1);
          scanf("%d", &stu[i].mark);
          stu[i].sum += stu[i].mark;
        }
        stu[i].avg = (float) stu[i].sum / stu[i].sub;
     }
 }
void output(int n)
```

Assignment 13

(1) WAP of student information using structure.

```
#include<stdio.h>
int i,j;
struct student
 {
   char name[50], branch[3];
   int roll, mark, sub, sum;
   float avg;
 }
stu[20];
void input(int n)
 {
   for(i=0; i<n; i++)
     {
      printf("Enter student's name:");
      scanf("%.[^\n]s", stu[i].name);
      printf("Enter students branch code:");
      scanf("%.[^\n]s", stu[i].branch);
      printf("Enter students roll numbers:");
      scanf("%d", &stu[i].roll);
      printf("Enter numbers of subjects:");
      scanf("%d", &stu[i].sub);
      printf("Enter your marks:\n");
      for(j=0; j<stu[i].sub; j++)
        {
          printf("mark%d:", j+1);
          scanf("%d", &stu[i].mark);
          stu[i].sum = stu[i].mark;
        }
      stu[i].avg = (float) stu[i].sum / stu[i].sub;
     }
 }
void output(int n)
```

```
{
    printf("NAME\tBRANCH\tROLL\tAVERAGE\n");
    printf("---\t---\t---\t---");
    for(i=0;i<n;i++)
        printf("\n%s\t%s\t%d\t%.2f", stu[i].name, stu[i].branch, stu[i].roll, stu[i].avg);
}
main()
{
    int n;
    printf("Enter number of students:");
    scanf("%d",&n);
    input(n);
    output(n);
}
```

O/P

Enter 20 students ~~data~~ information according to program,

② To add two numbers using pointers.

```
#include<stdio.h>
main()
{
 int *p1,*p2,n1,n2;
 p1=&n1;
 p2=&n2;
 printf("Enter your numbers:\n\t Number 1:");
 scanf("%d",p1);
 printf("\tNumber2:");
 scanf("%d",p2);
 *p1=*p1+*p2;
 printf("Addition is: %d\n",*p1);
}
```

O/P

Enter your numbers:
Number 1: 5
Number 2: 6
Addition is 11

③ To store the information of a student in a structure

```
#include<stdio.h>
struct student
{
    char name[50];
    int sic;
    int marks[5];
    char add[100];
};
main()
{
    struct student s;
    int i;
    printf("Enter students name:");
    scanf("%s", s.name);
    printf("Enter your sic number:");
    scanf("%d", &s.sic);
    printf("Enter your marks:\n");
    for(i=0; i<5; i++)
    {
        printf("\tmark %d:", i+1);
        scanf("%d", &s.marks[i]);
    }
    printf("students name:%s\nSIC : %d\nMarks:\n\t"
                                    s.name, s.sic);
    for(i=0; i<5; i++)
        printf("MARKS %d:%d \n\t", i+1, s.marks[i]);
    printf("Add : %s\n", s.add);
}
```

OIP

```
Enter students name
Nishikanta.
Enter your sic numbers:
190410294
Enter your address:
Dhenkanal
Enter yaur marks
10
20
30
40
50
60
Students name:
Nishikanta.
Sic number
1904102a4
Address
Dhenkanal
Marks.
10
20
30
40
50
60
Add:
200
```

(4) To subtract two numbers using pointers.

```
#include<stdio.h>
main()
{ int *p1, *p2, n1, n2;
  p1 = &n1;
  p2 = &n2;
  printf("Enter your numbers:\n1t Numbers1: ");
  scanf("%d", p1);
  printf("1t Number2:");
  scanf("%d", p2);
  *p1 = *p1 - *p2;
  printf("Result is %d", *p1);
}
```

OIP

Enter your numbers:

Number1: 5

number2: 4

Result is 1

⑤ To compute the sum of elements of an array by using pointers.

```
#include<stdio.h>
main()
{
  int arr[50], i, size, sum;
  printf("Enter your size : ");
  scanf("%d ", &size);
  printf("Enter your array:\n");
  for(i=0; sum 0; i<size; i++)
  {
      scanf("%d ", &(arr+i));
      sum = sum + *(arr+i);
  }
  printf("sum is : %d\n", sum);
}
```

O/P

```
Enter your size : 3.
Enter your array
5
6
3
sum is : 14
```

⑥ to swap two numbers using user defined function.

```
#include <stdio.h>
void swap(int *x, int *y)
{
  *x = *x + *y;
  *y = *x - *y;
  *x = *x - *y;
}
main()
{
  int n1, n2;
  printf("Enter two numbers:\n\tNumber1: ");
  scanf("%d", &n1);
  printf("\tNumber2:");
  scanf("%d", &n2);
  swap(&n1, &n2);
  printf("Swapped values are:\n\tNumber1:%d\n\t
                Number2:%d\n", n1, n2);
}
```

O/P

Enter two numbers:
Number 1: 5
Number 2: 6
swapped values are:
Number1: 6
Number2: 5.

⑦ TO Find the difference bet^n two time intervals.

```
#include<stdio.h>
#include<math.h>
struct time
{
  int hh, mm, ss;
};
main()
{
   struct time t1, t2, t3;
   int h, m, s;
   printf("Enter your 1st time interval:\n\t");
   Printf("Hours:");
   scanf("%d", &t1.hh);
   printf("\tMinute:");
   Scanf("%d", &t1.Mm);
   Printf("\tseconds:");
   scanf("%d", &t1.ss);
   Printf("Enter your second time interval:\n\t");
  Printf("Hours:");
  scanf("%d", &t2.hh);
  printf("\tMinute:");
  scanf("%d", &t2.mm);
  Printf("\tsecond:");
  scanf("%d", &t2.ss);
  if(t2.ss<t1.ss)
  {
    t2.ss+=60;
    t2.mm-;
  }
  if(t2.mm.<t1.mm)
  {
    t2.mm+=60,
    t2.mm-;
  }
```

```
}
t3.ss = t2.ss - t1.ss;
t3.mm = t2.mm - t1.mm;
t3.hh = t2.hh - t1.hh;
printf("Diff: %d : %d : %d\n", t3.hh, t3.mm, t3.ss);

}
```

OIP

Enter your first time interval

Hours: 5

Minute : 20

seconds: 5

Enter your 2nd time interval

Hours : 3

Minute: 10

seconds: 3

Hours: 2

minute: 10

seconds: 2.

(8): Distance between two points.

```
#include<math.h>
#include<stdio.h>
struct dist
{
  float x, y;

};
```

```
main()
 {
   struct x1, x2;
   float d, a;
   printf("Enter the co-ordinate of one axis\n");
   printf("X-co-ord:");
   scanf("%f", x1.x);
   printf("Y-co-ord:");
   scanf("%f", x1.y);
   printf("Enter the co-ordinate of 2 axis");
   printf("X-co-ord:");
   scanf("%f", x2.x);
   printf("Y-co-ord:");
   scanf("%f", x2.y);
  d = (x2.x - x1.x)(x2.x - x1.x) + (x2.y - x1.y)(x2.y-
  a = sqrt(d);
  printf("distance: %f", a);
 }
```

OIP

```
Enter the co-ordinate of one axis
X-co-ord: 4
Y-co-ord: 5
Enter the co-ordinate of 2 axis
X-co-ord: 2
Y-co-ord: 3
distance: 2.828427
```

To Find the difference bet^n two date

```
#include <stdio.h>
struct date
{
  int dd, mm, YY;

};
main()
{
  struct date d1,d2,d3;
   int d, m, Y;
   printf("Enter your 1st date\n");
   printf(" day:");
   scanf("%d", &d1.dd);
   printf(" month:");
   scanf("%d", &d1.mm);

   printf(" year:");
   scanf("%d", &d1.YY);
   printf("Enter your second date:\n");
   printf(" day:");
   scanf("%d", &d2.dd);
   printf(" month:");
   scanf("%d", &d2.mm);
   printf(" years:");
   scanf("%d", &d2.YY);
  IF(d2.dd < d1.dd)
  { d2.dd+=30;
    d2.mm-;
  }
```

```
if(d2.mm<d1.mm)
 {
   d2.mm+ = 12;
   d2.YY-;
 }
 d3.YY= d2.YY-d1.YY;
 d3.mm = d2.mm-d1.mm;
 d3.dd = d2.dd-d1.dd;
 printf("day:%d month:%d\n year:%d", d3.dd, d3.mm,
}
```

O/P

```
Enter your first date
day: 12
month: 2
 year : 2012
Enter your 2nd date
day: 3
month: 1
year : 2010
day : 9
month: 1
year : 2
```