PS PRACTICAL NO:- 01

(A) Aim: Programs to understand basic datatypes & I/O

Source code:

```
#include <stdio.h>
#include <conio.h>
void main ()
{
    int rollno;
    char name [50];
    long int mobno;
    float per;
    char grade;
    clrscr ();
    printf ("****** Demonstration of Datatypes ****** \n");
    printf ("Enter roll number : \n");
    scanf ("%d", &rollno);
    printf ("Enter your name : \n");
    scanf ("%s", &name);
    printf ("Enter your mobile number : \n");
    scanf ("%ld", &mobno);
    printf ("Enter your percentage : \n");
    scanf ("%f", &per);
    printf ("Enter your grade : \n");
    scanf ("%c", &grade);
    printf ("Your roll number is : %d \n", rollno);
    printf ("Your name is : %s \n", name);
```

OUTPUT :-

```
****** Demonstration of Datatypes ******
Enter your roll number :
1741
Enter your name :
Neeraj
Enter your mobile number :
9757695421
Enter your percentage :
87
Enter your grade :
A
Your roll number is :
1741
Your name is :
Neeraj
Your mobile number is :
9757695421
Your percentage is :
87.000000
Your grade is :
A
```

```
    printf ("Your mobile number is : %ld \n", mobno);
    printf ("Your percentage is : %f \n", per);
    printf ("Your grade is : %c \n", grade);
    getch ();
}
```

B) Aim:

Source code:

```
#include <stdio.h>
#include <conio.h>

void main ()
{
    float len, bred, area;
    clrscr ();
    printf ("*******
    printf(" Enter the length: \n");
    scanf ("%f", &len);
    printf(" Enter the breadth: \n");
    scanf ("%f", &bred);
    area = len * bred;
    printf ("Area of rectangle is : %f \n", area
    getch ();
}
```


OUTPUT:-

```
Enter the length :
12
Enter the breadth :
5
Area of rectangle is :
60.000000
```

PRACTICAL NO:-02

Aim : Write a C Program which will show the use of various different types of operator.

#Arithmetic Operators

SOURCE CODE :

```
#include <stdio.h>
#include <conio.h>
void main ()
{
    int num1, num2, add, sub, mul, div;
    clrscr();
    printf("Enter 1st number: \t");
    scanf("%d", &num1);
    printf("Enter 2nd number: \t");
    scanf("%d", &num2);
    add = num1 + num2;
    printf("Addition of two numbers: %d \n", add);
    sub = num1 - num2;
    printf("Subtraction of two numbers: %d \n", sub);
    mul = num1 * num2;
    printf("Multiplication of two numbers: %d \n", mul);
    div = num1 / num2;
    printf("Division of two numbers: %d \n", div);
    getch();
}
```

OUTPUT :

```
Enter 1st number: 4
Enter 2nd number: 2
Addition of two numbers: 6
Subtraction of two numbers: 2
Multiplication of two numbers: 8
Division of two numbers: 2
```

OUTPUT:

```
Enter 1st value : 9
Enter 2nd value : 8
Enter 3rd value : 2

Value 1 is : 0
Value 2 is : 1
Value 3 is : 1
Value 4 is : 0
Value 5 is : 1
```


#Logical Operators

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int x, y, z, value1, value2, value3, value4, value5;
    clrscr();
    printf("Enter 1st value : \t");
    scanf("%d", &x);
    printf("Enter 2nd value : \t");
    scanf("%d", &y);
    printf("Enter 3rd value : \t");
    scanf("%d", &z);
    value1 = (x<y) && (z>y);
    printf("Value1 is : %d \n", value1);
    value2 = (x=y) && (z<y);
    printf("Value2 is : %d \n", value2);
    value3 = (x<y) || (z=y);
    printf("Value 3 is : %d \n", value3);
    value4 = !(x==y);
    printf("Value 4 is : %d \n", value4);
    value5 = (x==y);
    printf("Value 5 is : %d \n", value5);
    getch();
}
```

Ternary Operators

```
#include<conio.h>
#include<stdio.h>
void main ()
{
   int a = 100 , b = 20, c=50, big;
   clrscr ();
   big = a >b || a >c ? a:b;
   printf (" The biggest number is : %d \n", big);
   getch ();
}
```

OUTPUT

The biggest number is 100

OUTPUT :

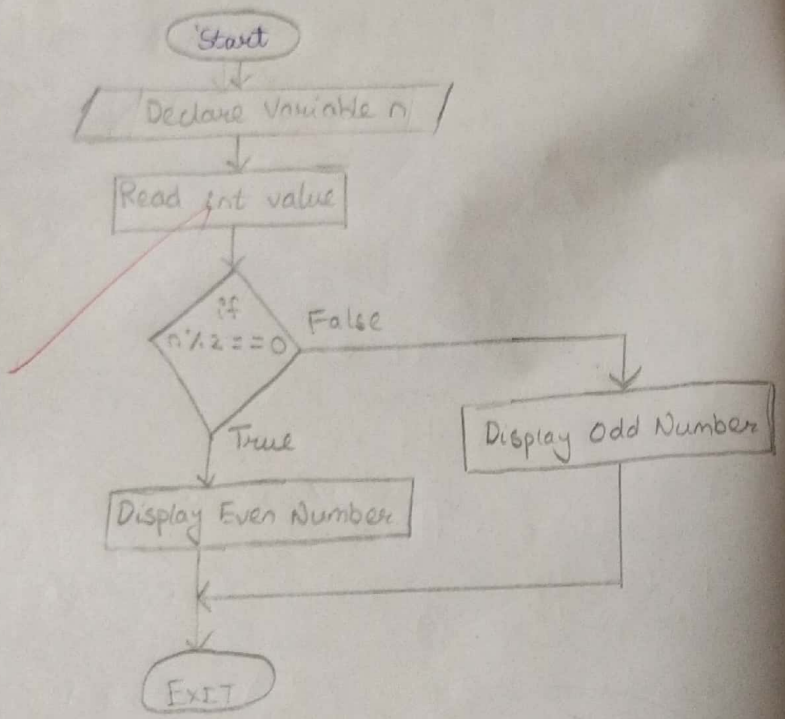
Enter a number : 41

Odd Number

Enter a number : 6

Even Number

FLOWCHART :



Aim : Decision Statements

Write a program to find out odd and even numbers.

Algorithm :

Step 1 : Start
Step 2 : [Take input] Read a number from the user
Step 3 : Check if number %.2 == 0 then print even number
Step 4 : EXIT

SOURCE CODE :

```
#include <stdio.h>
#include <conio.h>
void main ()
{
   int n;
   clrscr();
   printf ("Enter a number: \t ");
   scanf ("%d", &n);
   if (n%.2==0)
   {
     printf ("Even Number ");
   }
   else
   {
     printf ("Odd Number ");
   }
   getch();
```

Write a program to find the entered year is a leap year or not

ALGORITHM:

Step 1 : Start
Step 2 : [Take Input] - Read year from the user
Step 3 : if year % 4 == 0 and year % 400 == 0 or
year % 4 == 0 and year % 100 != 0 print LEAP YEAR
Step 4 : EXIT

SOURCE CODE:

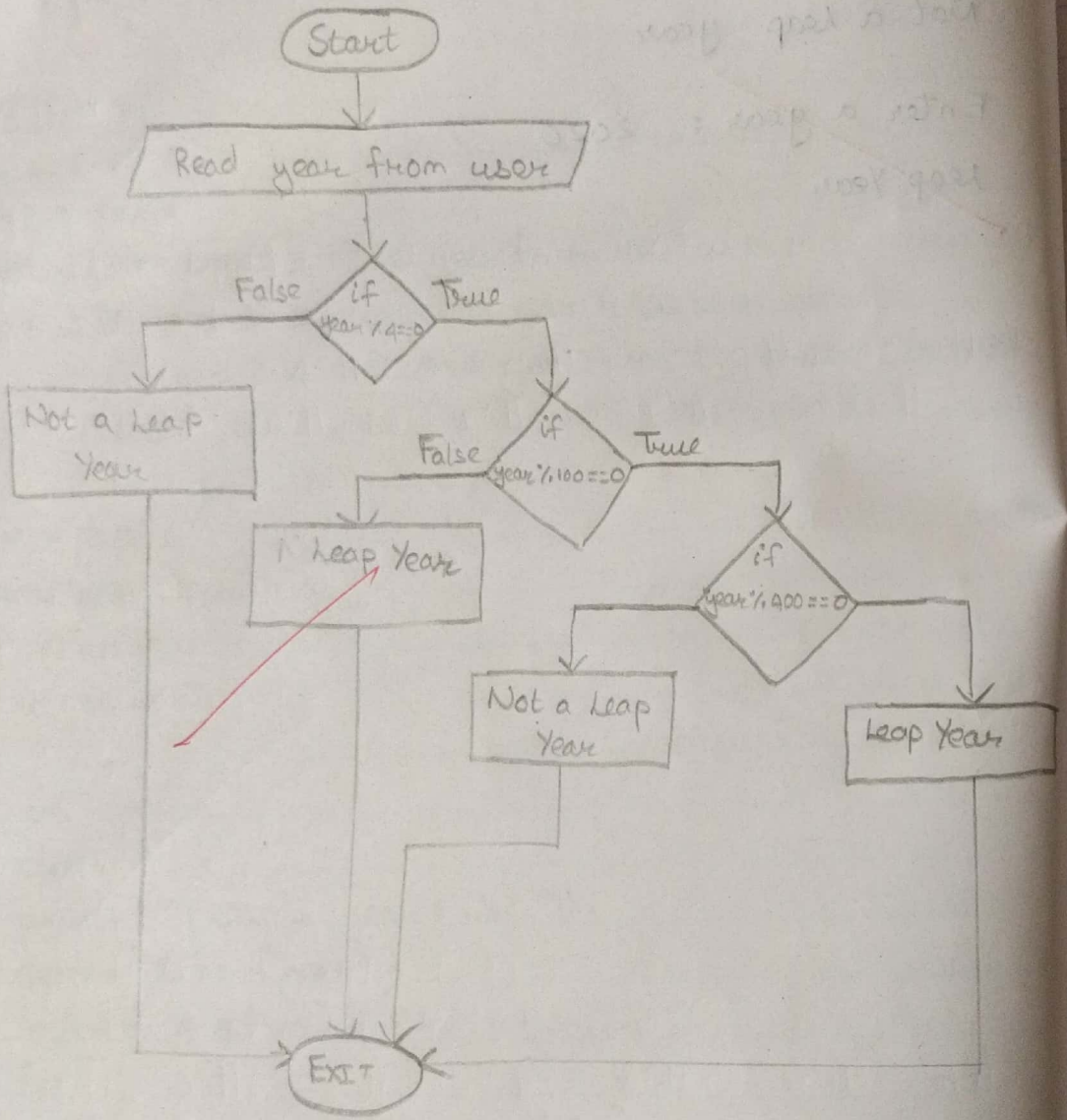
```
#include <conio.h>
#include <stdio.h>
void main()
{
  int year;
  clrscr();
  printf("Enter a year: \t");
  scanf("%d", &year);
  if(year % 4==0)
  {
    if(year % 100==0)
    {
      if (year % 400==0)
      {
        printf("Leap Year");
      }
    else
    {
```

OUTPUT:

```
Enter a year : 2009
Not a leap year
Enter a year : 2020
Leap Year
```

21

FLOWCHART :




```
        printf ("Not a LEAP Year");
    }
    else
    {
        printf("Leap Year");
    }
else
{
    printf ("Not a leap Year");
}
getch();
}
```

write a program to find whether the character is vowel or consonant

ALGORITHM :

Step1 : Start
Step2 : [Take Input] Read character value from user
Step3 : [Check] @
if value == 'a' || value == 'e' || value == 'i' || value == 'o' || value ==
|| value == 'A' || value == 'E' || value == 'I' || value == 'O' || value == 'U'
Step4 : Exit

SOURCE CODE :

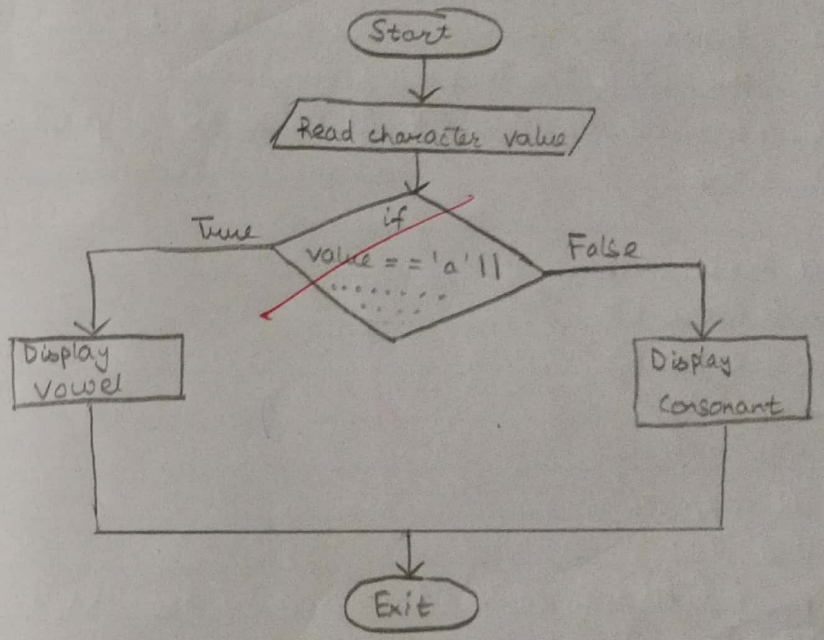
```
#include <conio.h>
#include <stdio.h>
void main ()
{
   int char c;
   clrscr ();
   printf ("Enter a alphabet:");
   scanf ("\n%c", &c);
   if (c=='a'||c=='e'||c=='i'||c=='o'||c=='u'||c=='A'||c=='E'
      ||c=='I'||c=='O'||c=='U')
   {
      printf ("Vowel");
   }
   else
   {
      printf ("Consonant");
   }
```


OUTPUT :

Enter a alphabet : a
Vowel

Enter a alphabet : c
Consonant

FLOWCHART :



PRACTICAL NO:-04

Aim: Loop Statements

Write a program to print even numbers between 1-50 using while loop

ALGORITHM:

Step 1 : Start
Step 2 : Initialise two variable where n = 50 and i = 2
Step 3 : Use while loop for printing even numbers
Step 4 : Increment the value till all values are compared
Step 5 : Stop

SOURCE CODE:

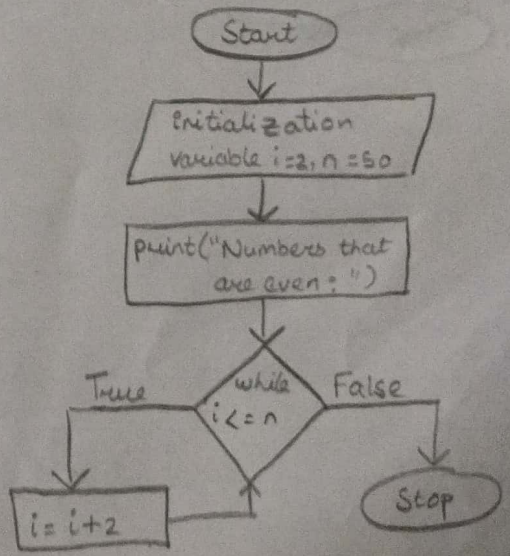
```
#include <conio.h>
#include <stdio.h>
void main ()
{
    int i=2,n=50;
    clrscr ();
    printf ("All even numbers from 1 to 50 are: \n");
    while (i<=n)
    {
        printf ("%d \n", i);
        i=i+2;
    }
    getch ();
}
```

OUTPUT:

All even numbers from 1 to 50 are:

2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50

FLOWCHART:

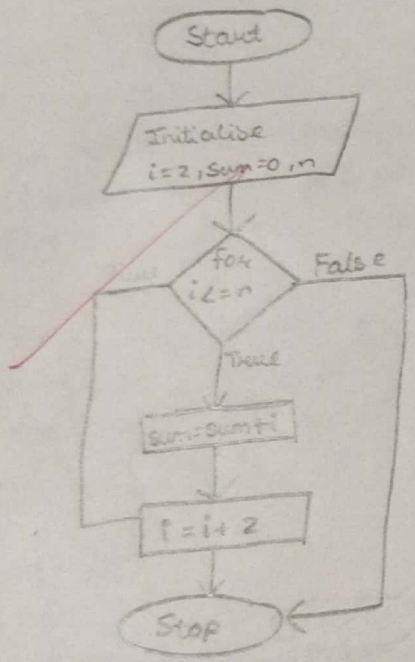


OUTPOT :

Enter range number: 10

Sum of all even numbers upto range is : 30

FLOWCHART :



write a program to print sum of all even number between 1 to n using for loop

ALGORITHM

Step 1 : Start

Step 2 : Initialize three variable from ijk or out of which one is dynamic and two are static.
i=2; sum=0, n;

Step 3 : Use for loop for checking the number is even and pri upto given range.

Step 4 : Add current even number to sum and display the Sum variable.

Step 5 : Stop.

SOURCE CODE :

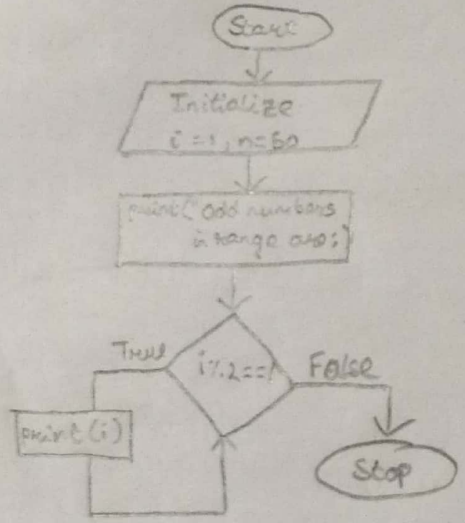
```
#include<conio.h>
#include<stdio.h>
void main ()
{
   int i, n, sum=0;
   clrscr();
   printf("Enter range number: \t");
   scanf("%d", &n);
   printf
   for (i=2; i<=n; i+2)
   {
      sum = Sum + i;
   }
```

OUTPUT:

Odd numbers in range of 1-50 are :

1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49

FLOWCHART :



write a program to print odd numbers between 1-50 using do-while

ALGORITHM :

Step 1 : Start
Step 2 : Initialise two variable n=50, i=1
Step 3 : Use do while loop to iterate from 1 to 50
Step 4 : Use if condition to check whether the number is odd.
Step 5 : Increment value of i by 1 and print approximate output
Step 6 : Stop

SOURCE CODE :

```
#include <conio.h>
#include <stdio.h>
void main()
{
    int i = 1, n=50;
    clrscr();
    printf("Odd numbers in range of 1-50 are: \n");
    do
    {
        if (i%.2==1)
        {
            printf("%.d \n", i);
        }
        i++;
    }
    while (i<=n);
    getch();
}
```

05/02/2020

PRACTICAL No:- 05

Aim : Programs on Array

Write a C program to print input array strings

ALGORITHM :

Step 1 : Start
Step 2 : Initialise two variable size and i and an array of length 20
Step 3 : Take the input from user which defines the value of size
Step 4 : Use for loop to take user input for each element of array.
Step 5 : Use another for loop to print individual elements of array
Step 6 : Stop

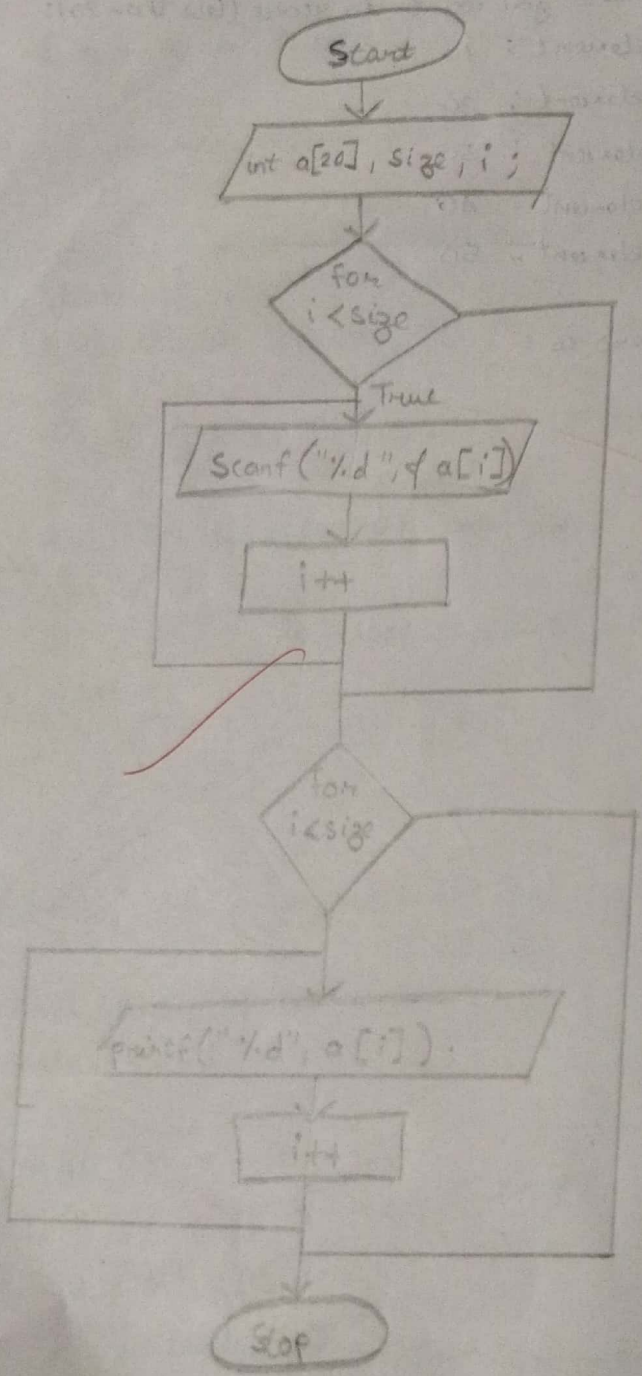
SOURCE CODE:

```
#include <Stdio.h>
#include <conio.h>

void main()
{
   int a[20], size, i;
   printf("Enter how many numbers you want to store
         (less than 20): \t");
   scanf("%d", &size);
```

OUTPUT :

```
Enter how many numbers you want to store (less than 20):  5
Enter the a[0] no. element :  10
Enter the a[1] no. element :  20
Enter the a[2] no. element :  30
Enter the a[3] no. element :  40
Enter the a[4] no. element :  50

The array of numbers is :
a[0] = 10
a[1] = 20
a[2] = 30
a[3] = 40
a[4] = 50
```

FLOWCHART:




```
For (i=0; i<size; i++)
{
    printf("Enter the a[%d] no. of element : \t", i);
    scanf ("%d", &a[i]);
}
printf("The array of number is : ");
for (i=0; i<size; i++)
{
    printf("\n a[%d] = \t %d", i, a[i]);
}
getch();
}
```

Q2.

Write a C program to find maximum elements from given input array

ALGORITHM:

Step 1 : Start
Step 2 : Initialise two variables 'size' and 'i' and an array of length 10
Step 3 : Take the size as user input from user which is less than 10
Step 4 : Use for loop to take user input of individual element of array
Step 5 : Use a variable and store the value of first element in it
Step 6 : Use another for loop to compare each elements of the array
Step 7 : Print the largest number in the array
Step 8 : Stop

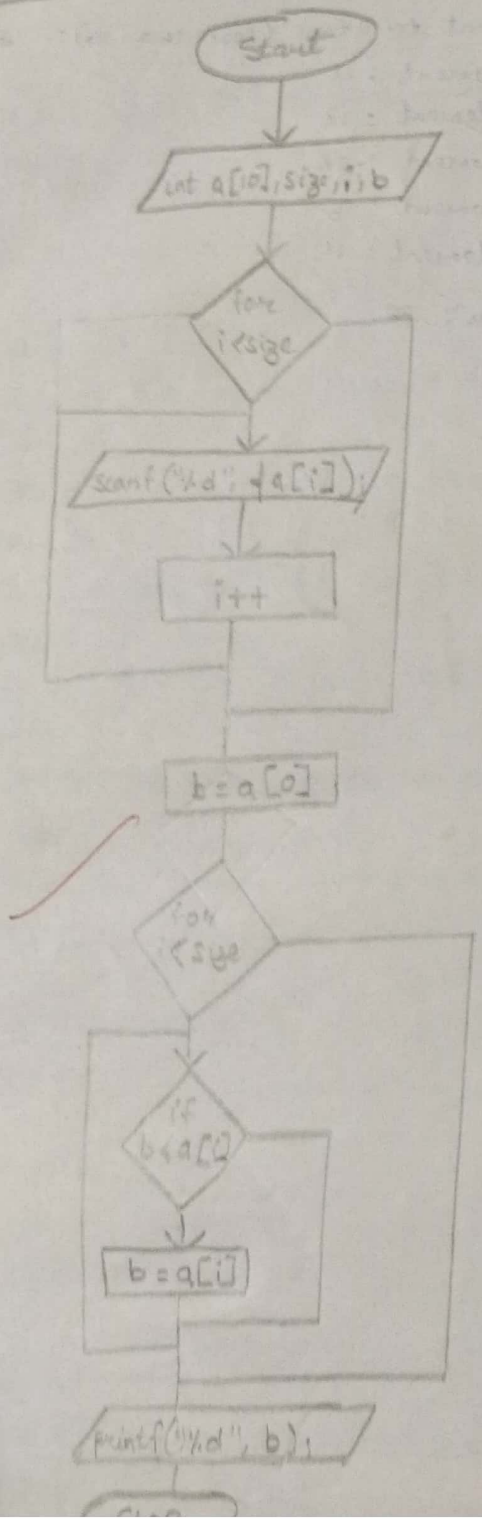
SOURCE CODE :

```
#include <stdio.h>
#include <conio.h>
void main ()
{
    int a[10], size, i, b;
    printf("Enter numbers you want to store (less than 20): \t");
    scanf("%d", &size);
```

OUTPUT :

```
Enter numbers you want to store (less than 10):  5
Enter the a[0] no. element : 13
Enter the a[1] no. element : 12
Enter the a[2] no. element : 28
Enter the a[3] no. element : 5
Enter the a[4] no. element : 11

The largest number is : 28
```

FLOWCHART :




```
for (i=0; i<size; i++)
{
    printf("Enter the a[%d] no. element : \t", i);
    scanf("%d", &a[i]);
}
b = a[0];
for (i=0; i<size; i++)
{
    if (b<a[i])
    {
        b = a[i];
    }
}
printf("The largest number is : \t %d", b);
getch();
}
```

Write a program to represent multidimensional array in matrix input

ALGORITHM:

Step 1 : Start
Step 2 : Initialise four variables: row, col, i, j with integer datatype and a multidimensional array
Step 3 : Take the number of rows and columns as input from the user.
Step 4 : Use for loop followed by another for loop and take individual element of array as the user input.
Step 5 : Again, use for loop followed by another for loop to print the matrix so formed.
Step 6 : Stop

SOURCE CODE:

```
#include <conio.h>
#include <stdio.h>

void main ()
{
  int a[10][10], row, col, i, j;
  clrscr ();
  printf ("Enter number of rows: \t");
  scanf ("%d", &row);
```

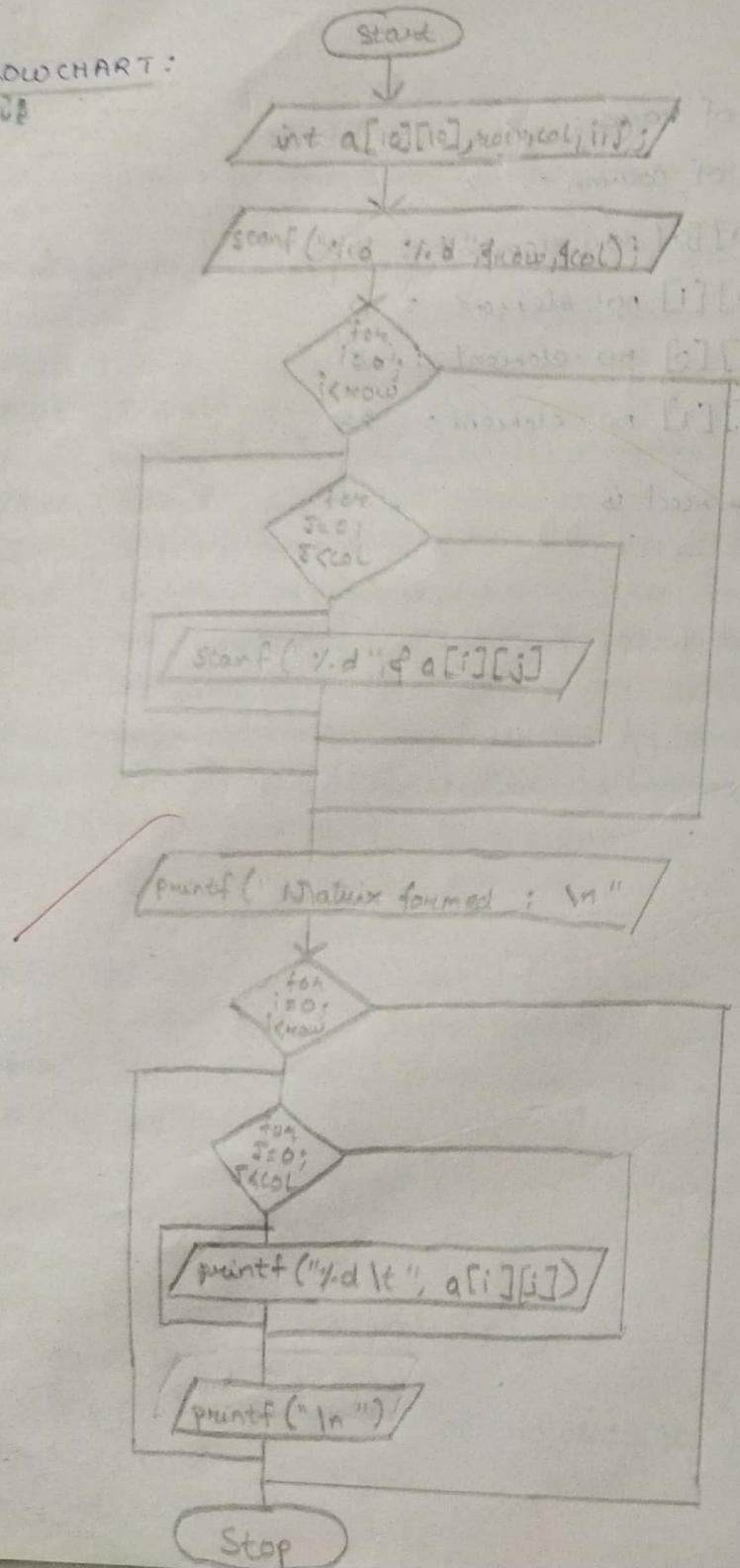
OUTPUT:

Enter number of rows: 2
Enter number of column: 2
Enter the a[0][0] no. element: 13
Enter the a[0][1] no. element: 12
Enter the a[1][0] no. element: 5
Enter the a[1][1] no. element: 28

Matrix so formed is:

13 12
5 28

FLOWCHART:




```
printf("Enter number of columns: \t");
scanf("%d", &col);
for (i=0; i<row; i++)
{
    for (j=0; j<col; j++)
    {
        printf("Enter the a[%d][%d] no. element
        scanf("%d", &a[i][j]);
    }
}
printf("Matrix so formed is : \n");
for (i=0; i<row; i++)
{
    for (j=0; j<col; j++)
    {
        printf("%d \t", a[i][j]);
    }
    printf("\n");
}
getch();
}
```

13/02/2020

PRACTICAL No:- 06

Aim : Programs on Function

① write a program to find factorial of a number using recursive function

ALGORITHM :-

Step 1 : Start.
Step 2 : Define a function which will calculate the factorial of given number.
Step 3 : Define main function and accept the number from the user. Also define another variable of integer datatype.
Step 4 : Call the function declared above main function to calculate factorial and print the value.
Step 5 : Now define the body of function which calculate factorial.
Step 6 : Use the if conditional statement and calculate the value accordingly.
Step 7 : Return the value to the user.
Step 8 : Stop.

SOURCE CODE :-

```
#include <stdio.h>
#include <conio.h>

int factorial (int n);
```

OUTPUT :

```
Enter a number :
5
Factorial of 5 is :
120
```

```
void main ()
{
    int num, fact ;
    clrscr ();
    printf("\n Enter a number : \n");
    scanf("%d", &num);
    fact = factorial (num);
    printf ("\n Factorial of %d is : %d", num, fact);
    getch ();
}
int factorial (int n)
{
    int f ;
    if (n == 1)
    {
      return (1)
    }
    else
    {
       f = n * factorial (n-1);
    }
    return (f);
}
```

PR

② Program to find sum of digits of entered numbers

ALGORITHM :

Step 1 : Start
Step 2 : Define a function which will calculate the sum of the digits.
Step 3 : Take a number from user which contains atleast two digits.
Step 4 : Call the function defined above main function to calculate sum of digits.
Step 5 : Define the body of function defined above and accept ~~two~~ define two integer variables.
Step 6 : Use the while loop and perform the calculation accordingly.
Step 7 : Print the value of sum so calculated.
Step 8 : Stop.

SOURCE CODE :

```
#include <stdio.h>
#include <conio.h>

void sum(int n);
void main()
{
  int num;
  clrscr();
```

OUTPUT :-

```
Enter a number :
1741
Sum of digits is :
13
```

50

```
    printf ("\n Enter a number : \n");
    scanf ("%d", &num);
    sum(num);
    getch();
}
void sum (int n)
{
    int v, s = 0;
    while (n > 0)
    {
        v = n % 10;
        s = s + v;
        n = n / 10;
    }
    printf ("\n Sum of digits is : %\n %d ", s);
}
```