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PRACTICAL - 1

AIM : Programs to understand the basic datatypes
I/O.

SOURCE CODE :

```
#include <stdio.h>
#include <conio.h>
Void main()
{
    int roll;
    char name[30];
    long int mob;
    float per;
    char grade;
    char add[50];
    clrscr();
    printf("***** Demonstration of Datatypes *****");
    printf("\n, Enter the Roll no. : ");
    scanf("%d", &roll);
    printf("Enter the name of student : ");
    scanf("%s", and name);
    printf("Enter the grade : ");
    scanf("%c", and grade);
    printf("Enter the mobile number ");
    scanf("%s", &mob);
    printf("your roll number is : %s", roll);
```

```
printf("/n Name of the student is : %s",
      name);
getch();
}
```

AIM : WAP to find the area of circle.

SOURCE CODE :

```
#include <stdio.h>
#include <conio.h>
Void main()
{
    float radius, area ;
    clrscr();
    printf("Enter radius : \n");
    scanf("%f", &radius);
    area = 3.14 * radius * radius ;
    printf("area of circle is %.2f \n", area);
    getch();
}
```

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OUTPUT :

* * * * * Demonstration of Datatypes * * * * *

Enter the Roll No. : 1768

Enter the Name : Khushi Singh

Enter your mobile no. : 8828369610

Your Roll No. : 1768

Name of Student is : Khushi.

OUTPUT :

- > Enter radius : 4
> Area of circle is : 50.24

$$\text{Area} = \pi r^2$$
$$= 3.14 \times 4^2$$
$$= 3.14 \times 16$$
$$= 50.24$$

PRACTICAL - 2

AIM : Write a C program which will show the use of various different types of operators.

Arithmetic Operators :

SOURCE CODE :

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

3

Logical Operators :

```

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

```

3

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OUTPUT:

Enter 1st number : 8

Enter 2nd number : 6

Addition of 2 numbers : 14

Subtraction of 2 numbers : 2

Multiplication of 2 numbers : 48

Division of 2 numbers : 1.3333

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

Ternary Operator :

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

```
#include < conio.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",big);
```~~~~```
getch();
```~~

48.

OUTPUT:

The biggest number is 100.

## PRACTICAL-3

**AIM :** Decision Statements.

- A) 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 :");
 scanf("%d", &n);
 if(n % 2 == 0)
 {
 printf("Even number !");
 }
}
```

```

else
{
 printf(" Odd Number :");
}
getch();
}

```

- b) 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 NOT A LEAP YEAR.~~
- STEP 4 : Exit.

#### SOURCE CODE :

```

#include <stdio.h>
#include <conio.h>
void main()
{
 int year;
 clrscr();
 printf("Enter a year : ");

```

```

scanf("%d", &year);
if (year % 4 == 0)
{
 if (year % 100 == 0)
 {
 if (year % 400 == 0)
 {
 printf("leap year!");
 }
 else
 {
 printf("Not a leap year");
 }
 }
 else
 {
 printf("Not a leap year");
 }
}
getch();

```

- c) Write a program to find whether the character is vowel or consonant.

OUTPUT :

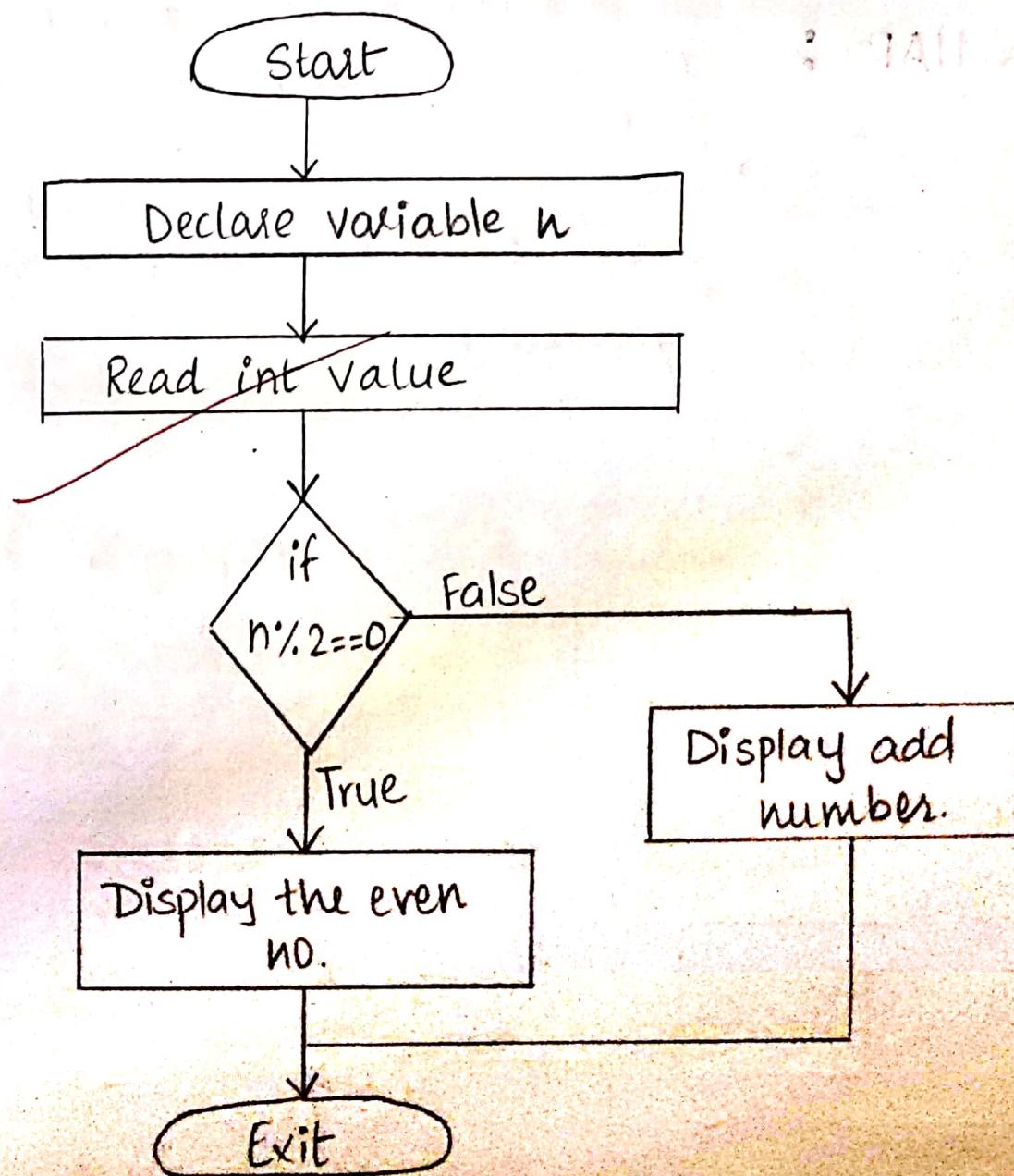
Enter a number : 26

Even Number

Enter a number : 53

Odd Number.

FLOWCHART :



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UTPUT :

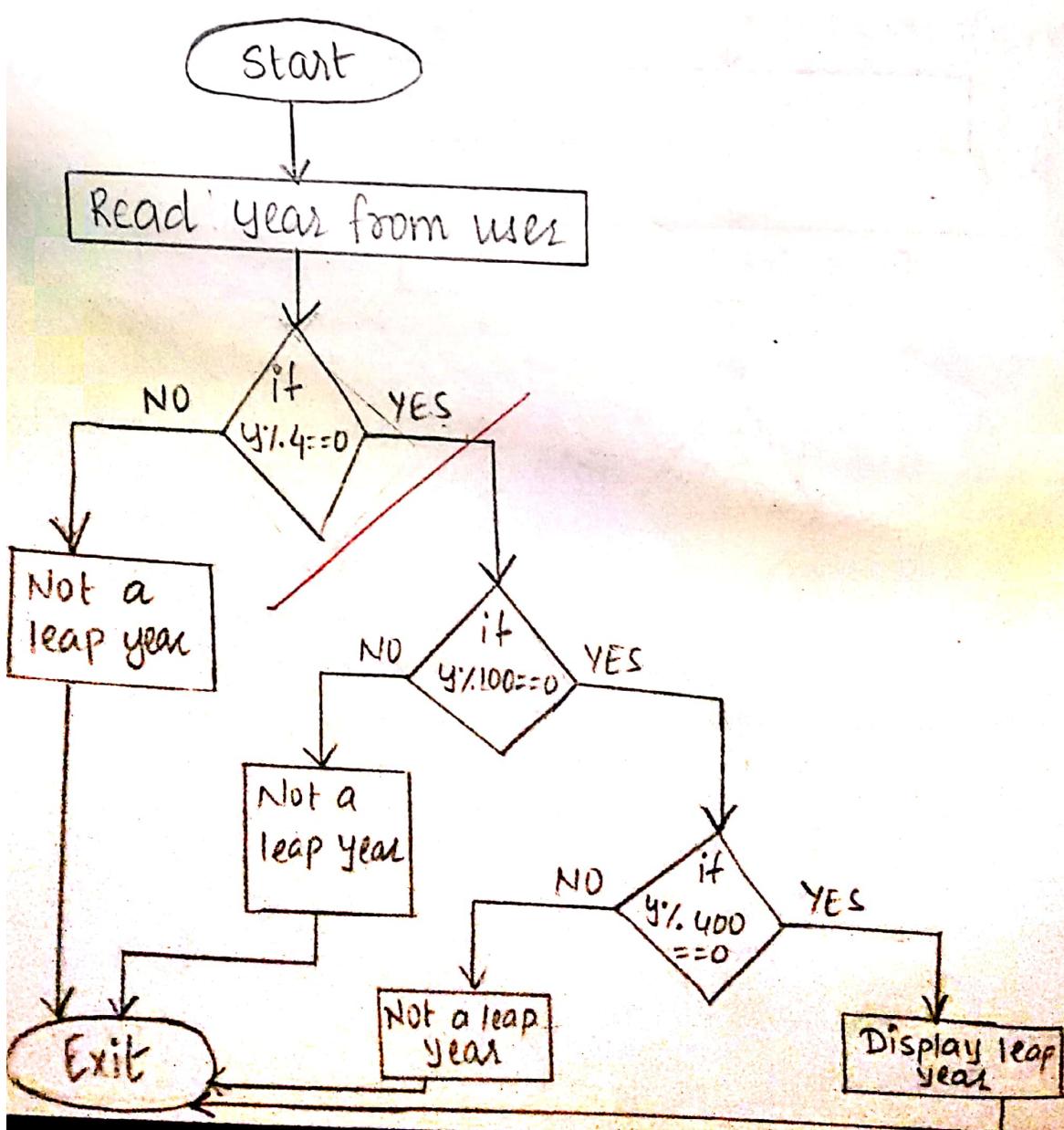
Enter a year : 2017

Not a leap year

Enter a year : 2020

Leap year.

FLOWCHART :



## ALGORITHM :

STEP 1 : Start

STEP 2 : [Take Input] Read characters value from user.

STEP 3 : [check] if value == 'a' || value == 'e' || value == 'i' || value == 'o' || value == 'U' || value == 'A' || value == 'E' || value == 'I' || value == 'O' || value == 'U'

STEP 4 : Exit

## SOURCE CODE :

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

Q8

```
 printf("consonant");
}
getch();
}
```

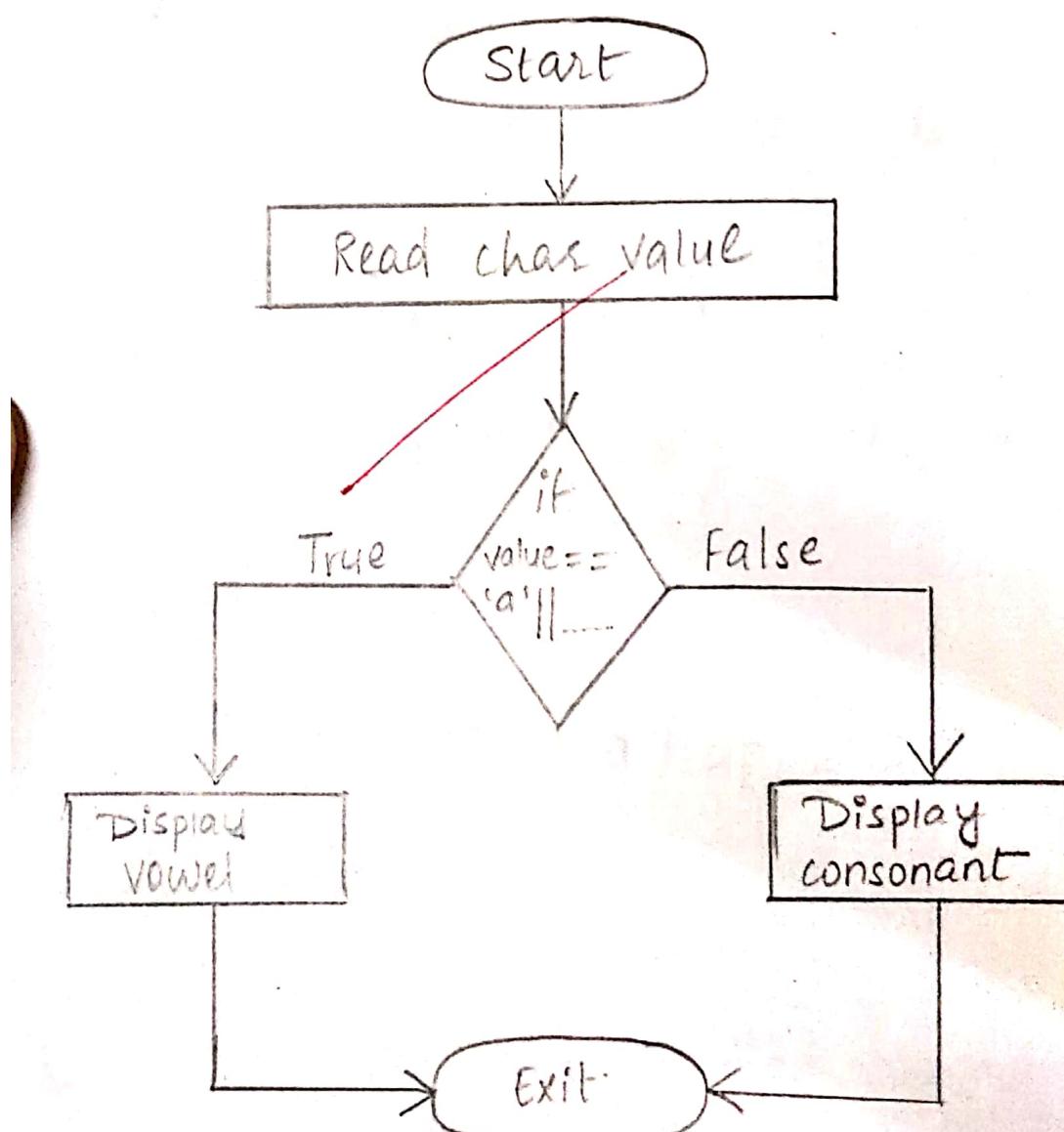
88

## OUTPUT:

Enter a alphabet : O  
Vowel

Enter a alphabet : x  
Consonant.

## FLOWCHART :



## PRACTICAL - 4

A) AIM : Write a program to print even numbers between 1-50 using while loop.

### ALGORITHM :

STEP 1 : Start

STEP 2 : Initialize two variables with static variable where  $n = 50$  and  $i = 2$

STEP 3 : Use while loop for printing the even numbers upto the range 50.

STEP 4 : Adding 2 to current even numbers will give next even numbers.

STEP 5 : Display the appropriate output.

STEP 6 : Stop.

### SOURCE CODE :

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

```
 printf("%d\n", i);
 i = i + 2;
}
getch();
```

B) AIM : Write a program to print even number between 0-50 using for loop.

ALGORITHM : ~~1. set goal point 2. set 3. set~~

- STEP 1 : Start
- STEP 2 : Initialize variable and assign any value.

~~any value.~~  
STEP 3 : Use for loop and display the output accordingly.

## ~~STEP 4: Stop.~~

## SOURCE CODE :

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

```
int sign=50; int n;
clrscr(); cout << "A/
```

```
printf("Even numbers between 0 to 50
are\n")
```

```
for(i=0;i<=n;i=i+2)
```

```
{ printf("%d \n", i); }
```

```
getch();
```

```
}
```

**AIM :** Write a C program to print odd numbers between 1-50 using do while loop.

**ALGORITHM :**

STEP 1 : Start

STEP 2 : Initialize two static variable  $n=50$ ,  
 $i=1$ ;

STEP 3 : Use do while loop for iterates from  
 1 to 50.

STEP 4 : Use if condition statement to check  
 whether given number is even or odd

STEP 5 : Increment the value of  $i$  by 1.

STEP 6 : Display the appropriate output

STEP 7 : Stop.

**SOURCE CODE :**

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

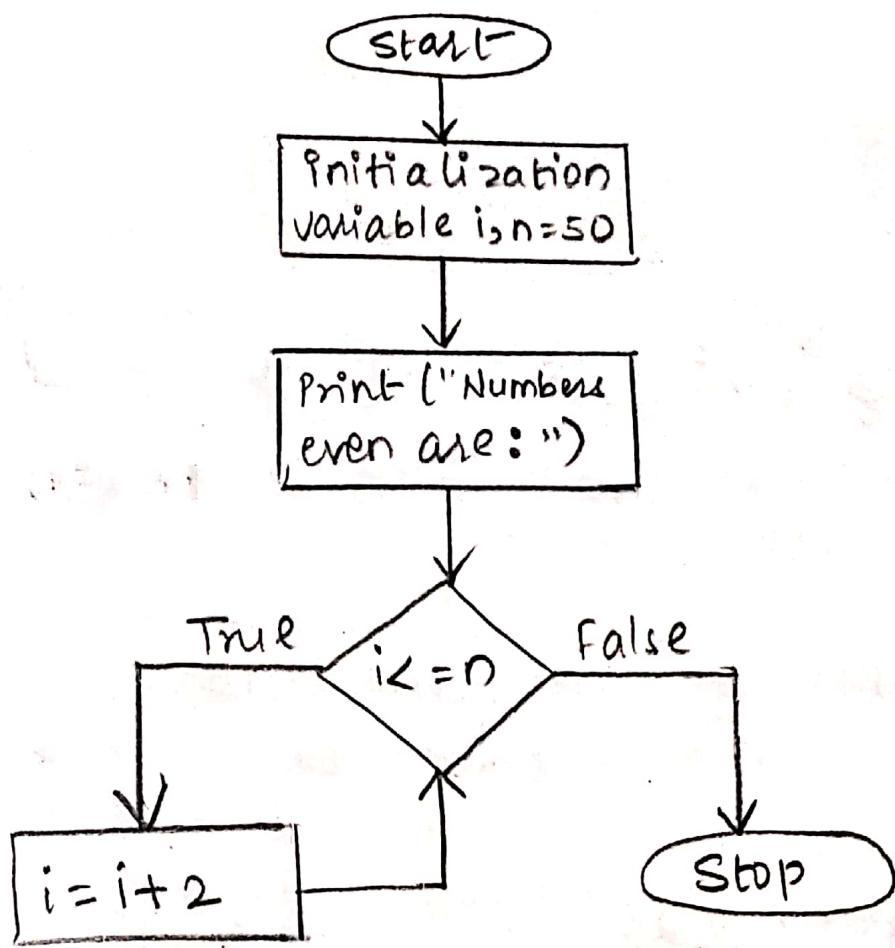
```
#include <conio.h>
```

```
void main()
{
 int i, n = 50;
 clrscr();
 printf("Odd numbers from 1 to 50 are:
 \n", n);
 i = 1;
 do
 {
 if (i % 2 == 1)
 printf("%d\n", i);
 i++;
 } while (i <= n);
 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



B)

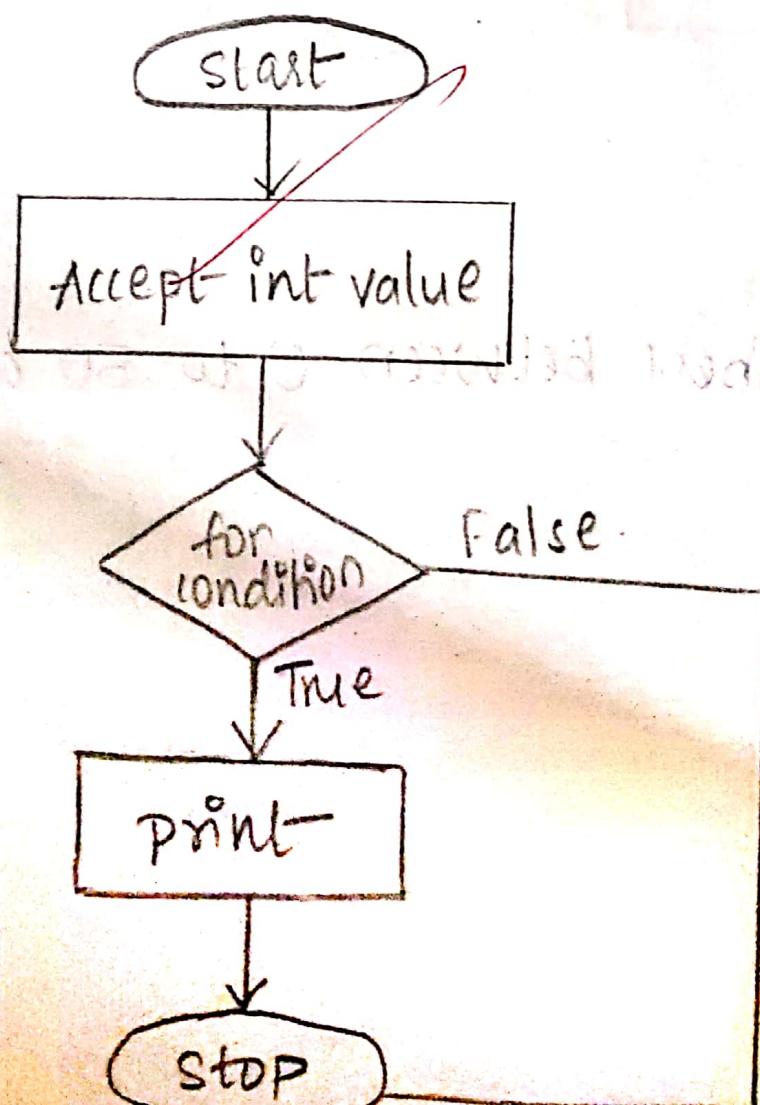
OUTPUT:

All even numbers between 0 to 50 are :

0  
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 :

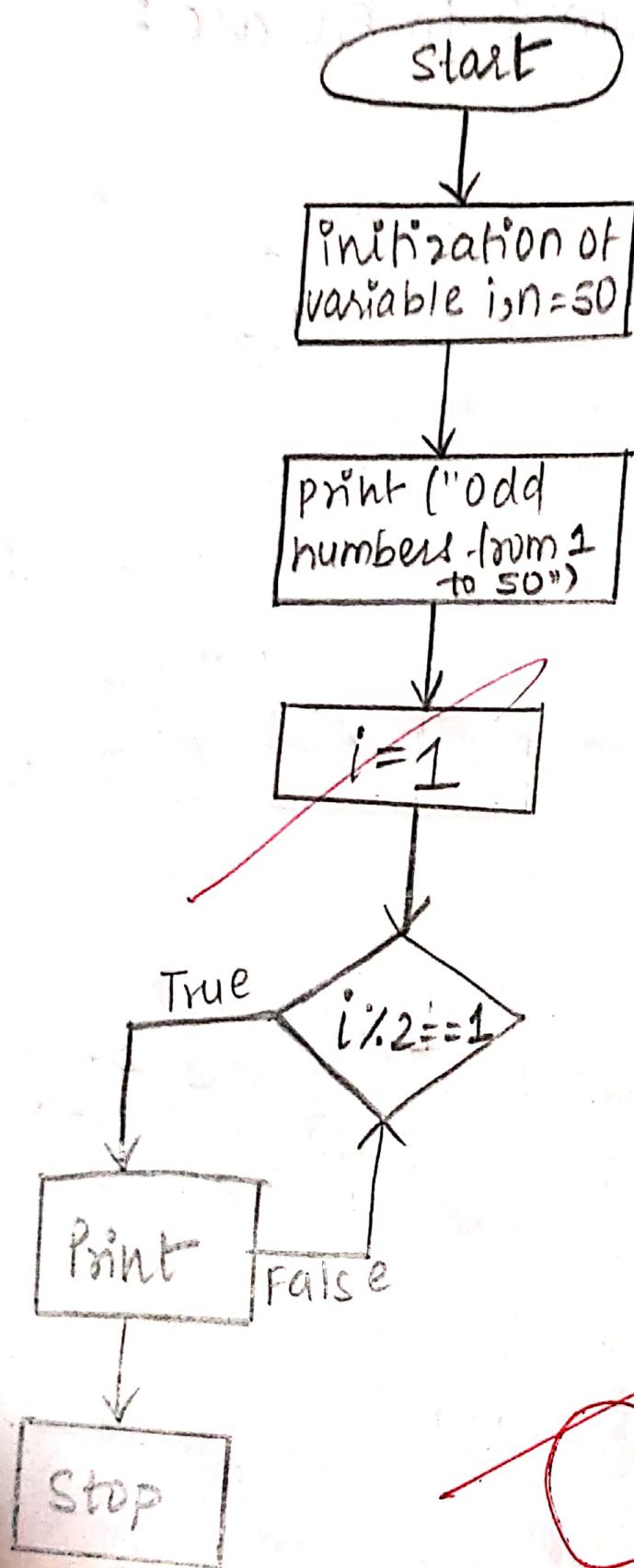


i) OUTPUT :

All Odd numbers from 1 to 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 :



## PRACTICAL - 5

### AIM : Arrays

A) Write a program to print maximum element from given array.

### ALGORITHM :

STEP 1 : Start

STEP 2 : Declare an array of integer type of specific size.

STEP 3 : Initialize three variable one of static type and two of dynamic type i.e-  
 $\text{sum} = 0$

STEP 4 : Take range from the user, that it be printing & add, which should be less than the specified size of an array.

STEP 5 : Use nested for conditional loop for printing elements in array acc. to its indexing.

STEP 6 : Add the elements of the array.

STEP 7 : Print the appropriate output.

STEP 8 : Stop.

## SOURCE CODE :

```

#include <stdio.h>
#include <conio.h>
void main()
{
 int a[20];
 int size, i, b;
 printf("Enter number less than 20 : ");
 scanf("%d", &size);
 for (i=0; i<size; i++)
 {
 printf("Enter the [a[i].d] no. element-", i);
 scanf("%d", &a[i]);
 }
 printf("\n the displayed array \n :");
 for (i=0; i<size; i++)
 {
 sum = sum + a[i];
 }
 printf(" sum of the array : [%d]", sum);
 getch();
}

```

B) Write a C program to find out fibonacci series using array.

ALGORITHM :

STEP 1 : Start

STEP 2 : Declare an array of integer type of specified size by the user.

STEP 3 : Initialize two variables of dynamic variables i.e - i, n.

STEP 4 : Take the no. of terms from the user up to what the no. should be printed.

STEP 5 : Initialize indexing value of  $a[0] = 0$  and  $a[1] = 1$ , for printing the fibonacci series.

STEP 6 : Using for condition loop for looping of numbers.

STEP 7 : Indexing value of present array is equal to previous indexing value and previous indexing value.

STEP 8 : Print the fibonacci series upto the term given by the user.

STEP 9 : Use for loop for printing the output in tabular form.

STEP 10 : Stop.

## SOURCE CODE :

```

#include <stdio.h>
#include <conio.h>
void main()
{
 int a[20], n, i;
 clrscr();
 printf("Enter the no. of terms \n");
 scanf("%d", &n);
 a[0] = 0;
 a[1] = 1;
 for (i = 2; i < n; i++)
 {
 a[i] = a[i - 2] + a[i - 1];
 }
 print ("The fibonacci series upto %d term
 is \n", n);
 for (i = 0; i < n; i++)
 {
 print ("%d \t", a[i]);
 }
 getch();
}

```

c) Write a program to represent a multi-dimensional array in matrix input.

### ALGORITHM :

STEP 1 : Start

STEP 2 : Declare multi-dimensional array  
and row, column, i and j

STEP 3 : Display the enter no. of row

STEP 4 : Scan the same.

STEP 5 : Use the for conditional for accessing  
the array element

STEP 6 : Use another for loop for displaying  
the array values.

STEP 7 : Stop.

SOURCE CODE :

```

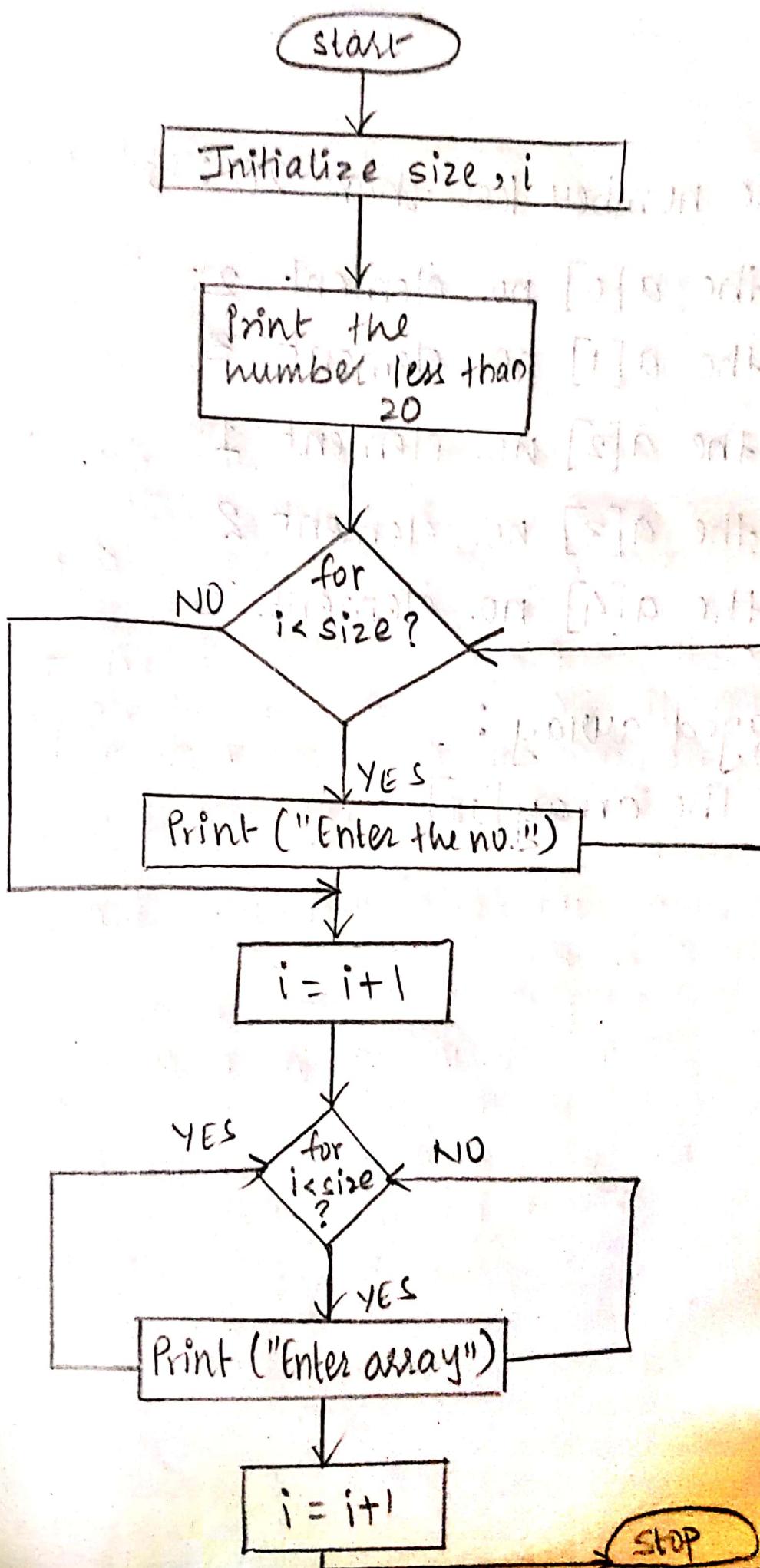
#include <stdio.h>
#include <conio.h>
void main()
{
 int a[20][20];
 int row, col, i, j;
 clrscr();
 printf("Enter no. of rows : ");
 scanf("%d", &row);
 printf("Enter no. of columns : ");
 scanf("%d", &col);
 for (i=0; i<row; i++)
 {
 for (j=0; j<col; j++)
 {
 printf("Enter the a[%d][%d] no.
 element : ", i);
 scanf("%d", &a[i][j]);
 }
 }
 printf("The displayed matrix is \n \n");
 for (i=0; i<row; i++)
 {
 for (j=0; j<col; j++)
 {
 printf("\t %d", a[i][j]);
 }
 }
}

```

12.

```
 printf ("\n");
}
getch();
```

3



Q1

OUTPUT:

Enter the number less than 20 : 5

Enter the a[0] no. element 2

Enter the a[1] no. element 3

Enter the a[2] no. element 1

Enter the a[3] no. element 2

Enter the a[4] no. element 3

The displayed array :

Sum of the array [11]

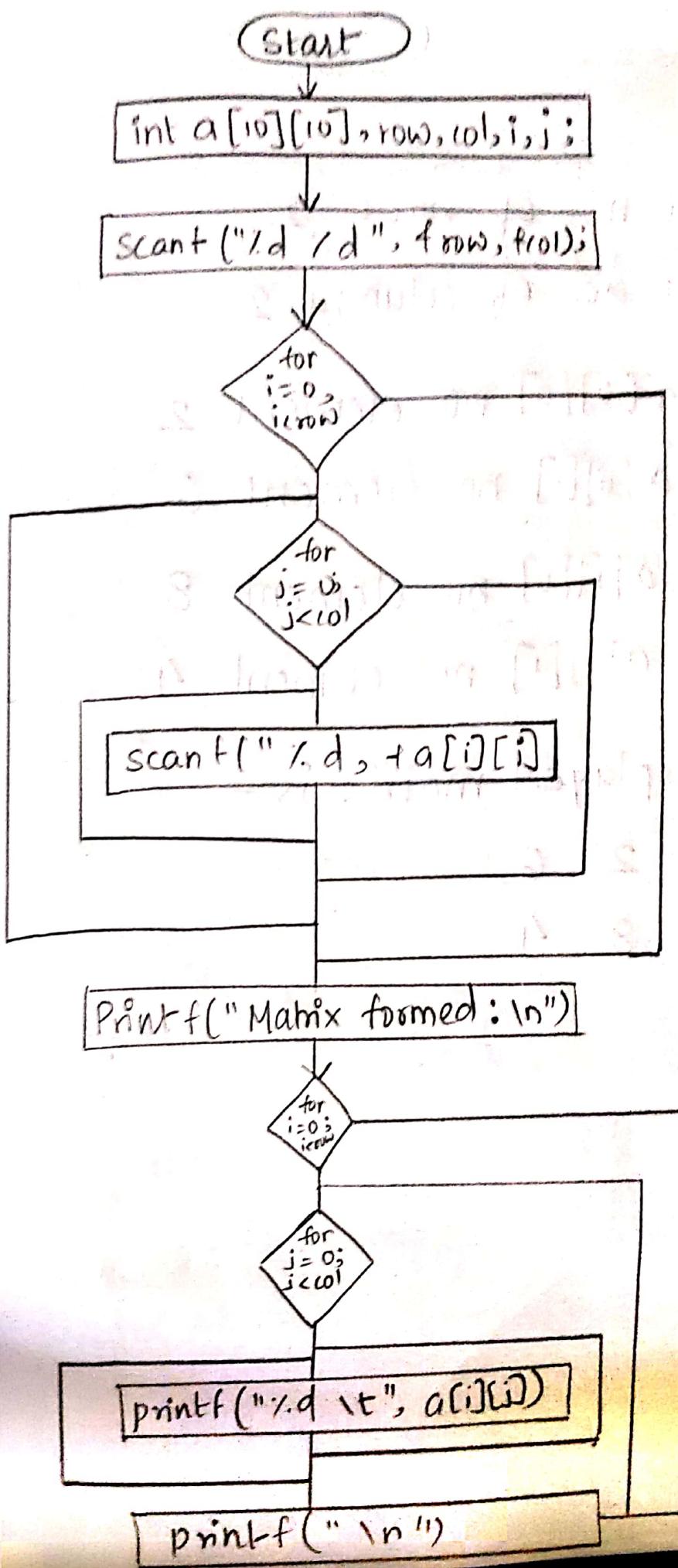
84

## OUTPUT:

Enter the no. of terms 7

The fibonacci Series upto 7 term is -

0 1 1 2 3 5 8



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OUTPUT :

Enter the no. of rows 2

Enter the no. of columns 2

Enter the  $a[0][0]$  no. element 2

Enter the  $a[0][1]$  no. element 6

Enter the  $a[1][0]$  no. element 8

Enter the  $a[1][1]$  no. element 4

The displayed matrix is -

2 6

8 4

## PRACTICAL - 6

AIM : Programs on Functions.

Write a program to find factorial of a number using recursion functions.

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 data-type.
- 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);
void main()
{
 int num, fact;
 clrscr();
 printf("Enter a number : \n");
 scanf("%d", &num);
 fact = factorial (num);
 printf("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);
}
```

Program to find sum of digits of entered numbers.

### ALGORITHM :

- STEP 1 : Start
- STEP 2 : Define a function which will calculate the sum of digits.
- STEP 3 : Take a number from a 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 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();
```

```
printf("In 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 : In %d",
```

```
s);
```

OUTPUT :

Enter a number : 6

Factorial of 6 is : 720

OUTPUT :

Enter a number : 1124

Sum of digits is : 8