Exam Seat No. _____

THAKUR COLLEGE OF SCIENCE & COMMERCE

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CERTIFICATE

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who has worked for the year 2019-20 in the Computer Laboratory.

Teacher In-Charge

Head of Department

Date : _____

Examiner

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PRACTICAL - 01

Aim: Programs to understand the basic datatype and I/O.

program : 1

```
#include <stdio.h>
#include <conio.h>
void main ()
{
    char name [50];
    char add [50];
    int roll_no;
    float percent;
    char grade;
    char mob [10];
    clrscr ();
    printf("***** Demonstration of various datatypes *****");
    printf("\nName of the Student : ");
    gets(name);
    printf("\nAddress of the student:");
    scanf("%s", &add);
    printf("\nRoll no. of the student:");
    scanf("%d", &rollno);
    printf("\n Percentage of student:");
    scanf("%f", &percent);
    printf("\nGrade of student:");
    scanf("%s", &Grade);
```

```
    printf("\n mobile no. : ");
    scanf("%10s", &mob);
    printf("\n Student name : %s", name);
    printf("\n Student address : %s", add);
    printf("\n Student roll_no : %d", roll_no);
    printf("\n Student percent : %f", percent);
    printf("\n Student grade : %c", grade);
    printf("\n Student mobile_no : %10s", mob);
    getch();
}
```

Program : 2

Source code :

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int side, area;
    clrscr();
    printf("Enter the side \n");
    scanf("%d", &side);
    area = side * side;
    printf("\n Area of square %d", area);
    getch();
}
```

59.

Output :

***** Demonstration of various datatypes *****

Name of the student : Adarsh Yadav

Address of the student : Mumbai

Roll no. of the student : 1755

Percentage of the student : 73%

Grade of the student : A

Mobile no. of the student : 8169908906

Student name : Adarsh Yadav

Student address : Mumbai

Student roll_no : 1755

Student percent : 73%

Student grade : A

Student mobile_no : 8169908906

Output:

Enter the side : 5

Area of A square : 25

11/12/19

PRACTICAL - 02

Aim: Programs on Operators and Expressions

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 ("\n Enter 1st number :");
  scanf ("%d", &num1);
  printf ("\n Enter 2nd number :");
  scanf ("%d", &num2);
  add = num1 + num2;
  printf ("\n Addition of 2 numbers : %d ", add);
  sub = num1 - num2;
  printf ("\n Subtraction of 2numbers : %d ", sub);
  mul = num1 * num2;
  printf ("\n Multiplication of 2 numbers : %d ", mul);
  div = num1 / num2;
  printf ("\n Division of 2 numbers : %d", div);
  getch ();
}
```

A8

output:

Enter 1st number : 6

Enter 2nd number : 2

Addition of 2 numbers : 8

Subtraction of 2numbers : 4

Multiplication of 2 numbers : 12

Division of 2 numbers : 3

=> LOGICAL OPERATORS

Source Code:

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

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

PRACTICAL -03

Aim : Programs on Decision statement.

1) Write a program to find odd & even number.

Algorithm :

Step 1 : Start

Step 2 : [Take Input] Read a number from user.

Step 3 : Check if number %2 == 0 then print "Even number" else print "odd number".

Step 5 : EXIT.

Program :

```
#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 ();
   }
```

Output:

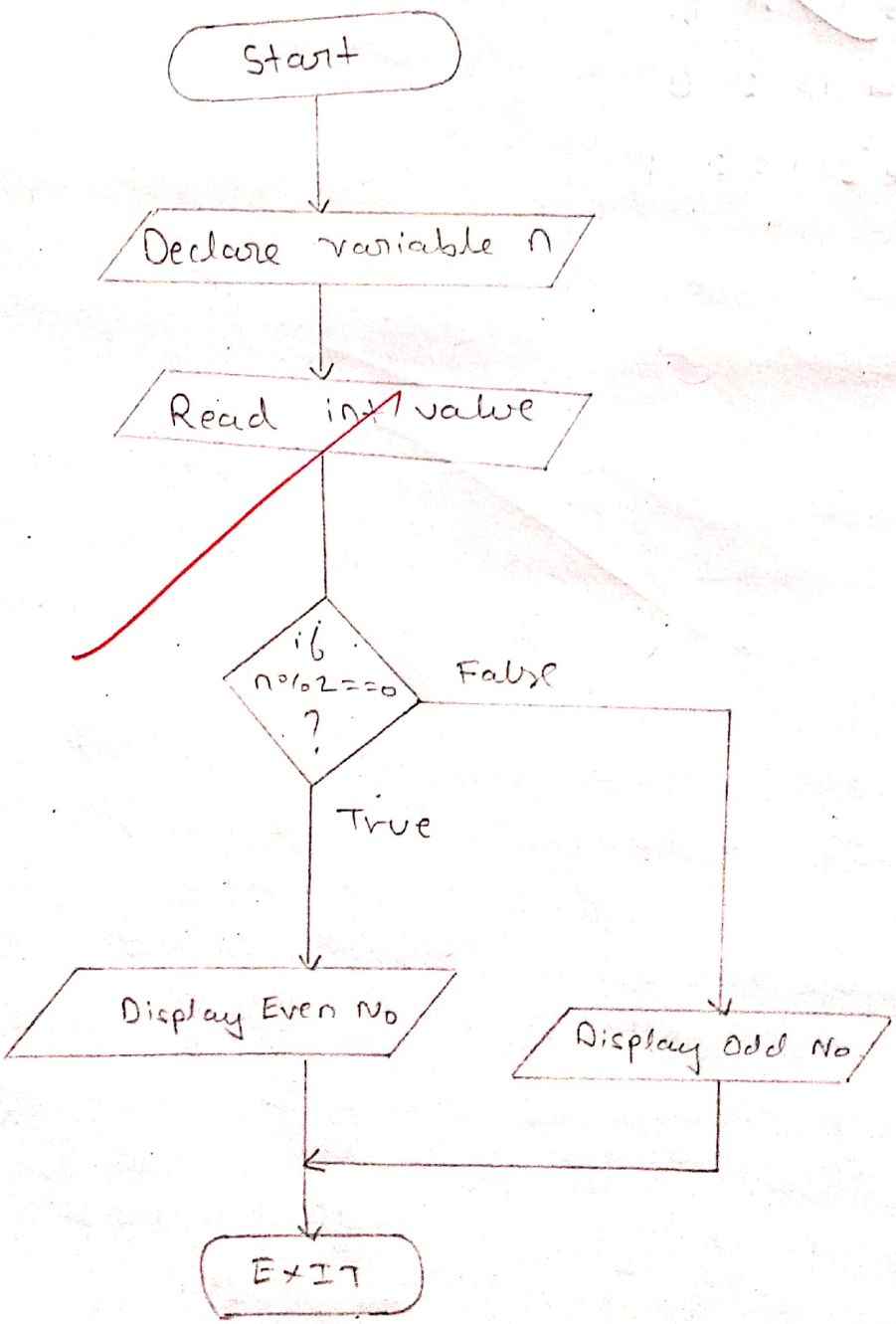
Enter a number : 46

Even number

Enter a number : 67

Odd Number

Flowchart:



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

Algorithm:

Step1: Start.

Step2: [Take Input] Read year from user.

Step3: if year %4=0 and year %400==0 OR
year %4 =0 and year %100 !=0
print "Leap Year".
else print "Not a leap Year".

Step4: EXIT.

Program:

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

Output:

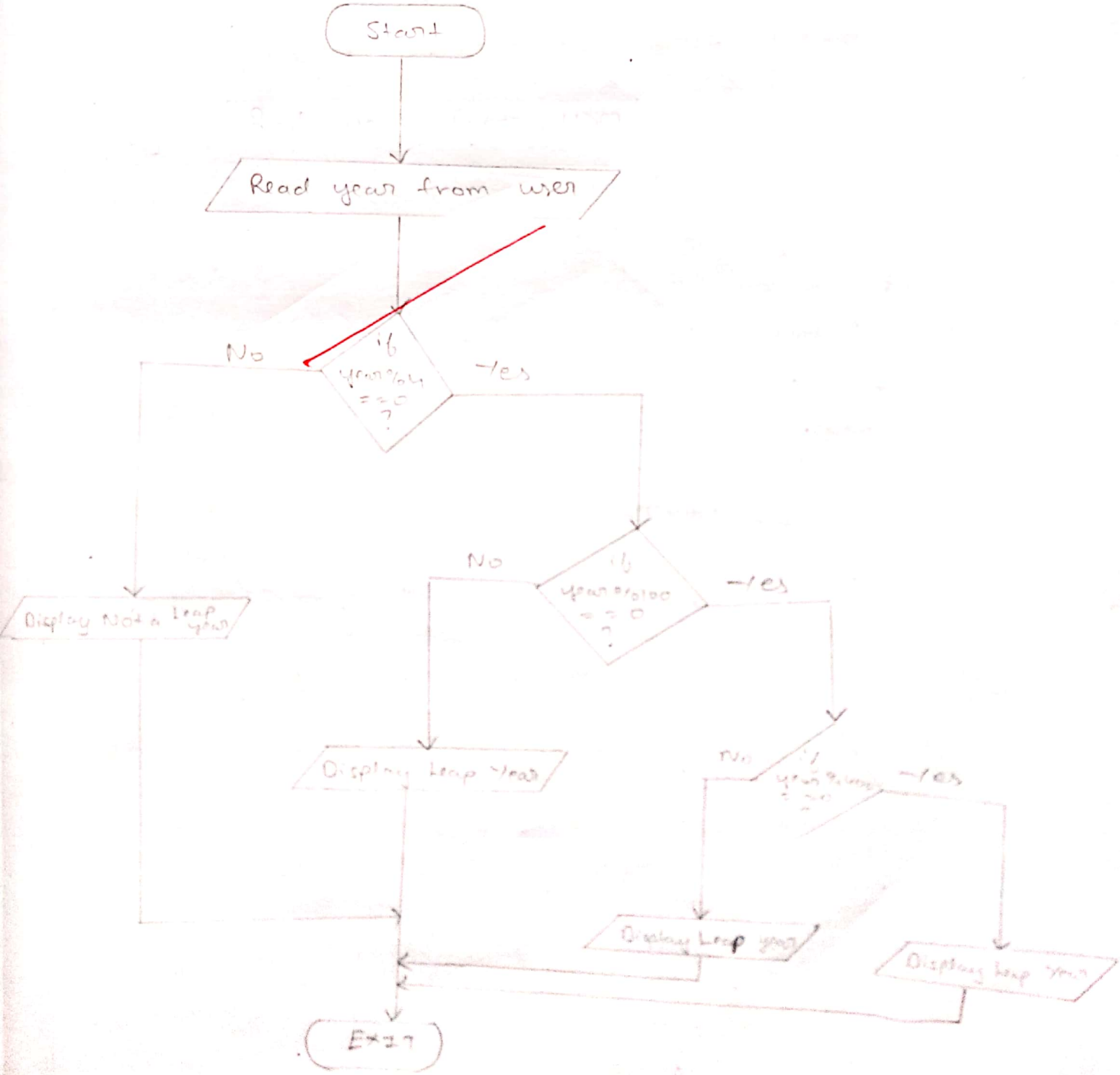
Enter a year : 2017

Not a Leap year

Enter a year : 2020

Leap year

Flowchart:



```
                else
                {
                    printf(" Leap Year");
                }
            }
            else
            {
                printf(" Leap Year ");
            }
        }
        else
        {
            print (" Not a Leap year ");
        }
        getch();
}
```

3) Write a program to find whether the entered 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 == 'u' || value == 'A' ||
value == 'E' || value == 'I' || value == 'O' ||
value == 'U'.
print "Vowel"
else print "Consonant"

Step4: EXIT.

Program:

```
#include <stdio.h>
#include <conio.h>
void main ()
{
    char a;
    clrscr ();
    printf ("Enter the Alphabet :");
    scanf ("%s", &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
    {
        printf("Consonant");
    }
    getch();
}
```

Output

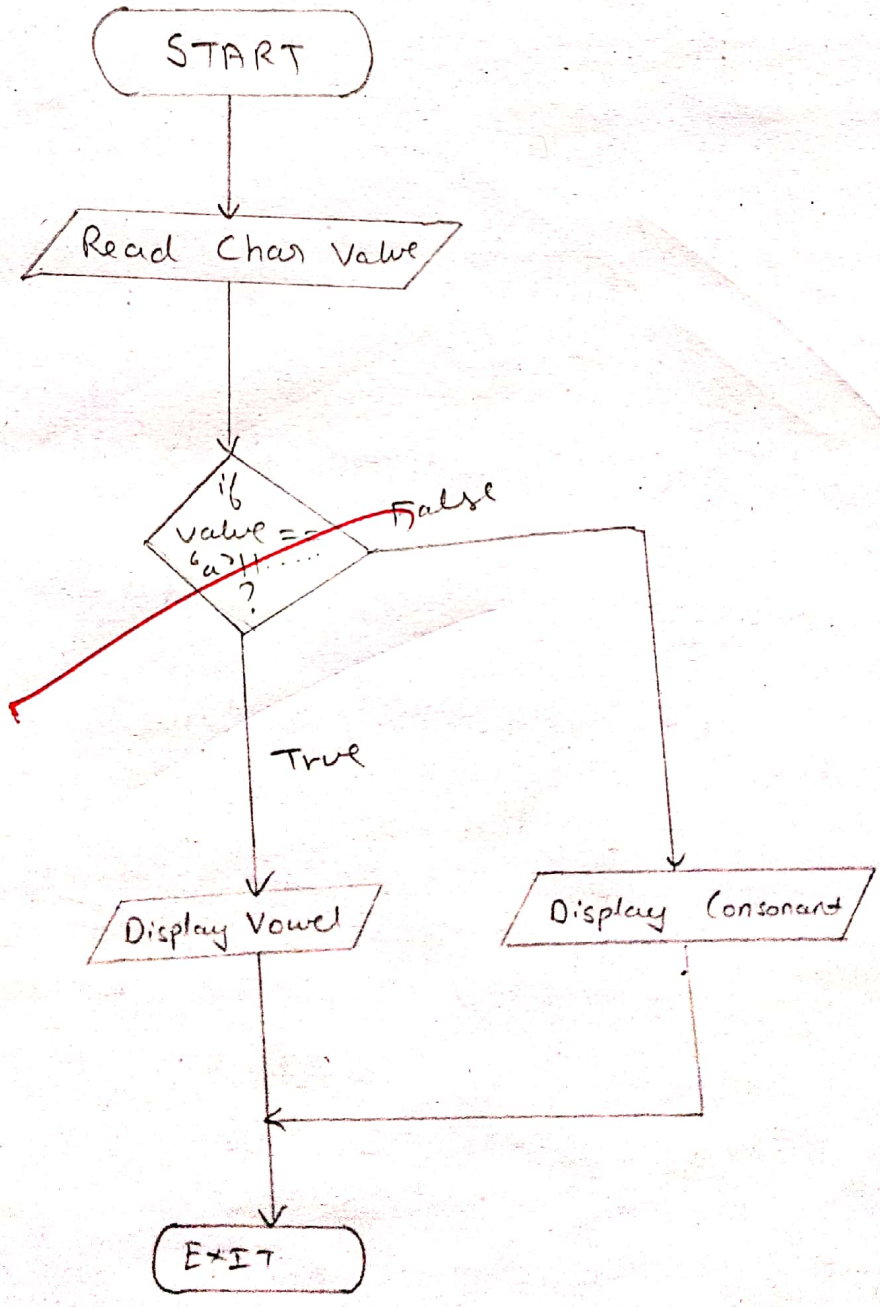
Enter the Alphabet : E

Vowel

Enter the Aphabet : W

Consonant

Flowchart:



PRACTICAL - 04

Aim : Programs on looping.

1) Write a program to print even number between 1-50 using while loop.

Source code :

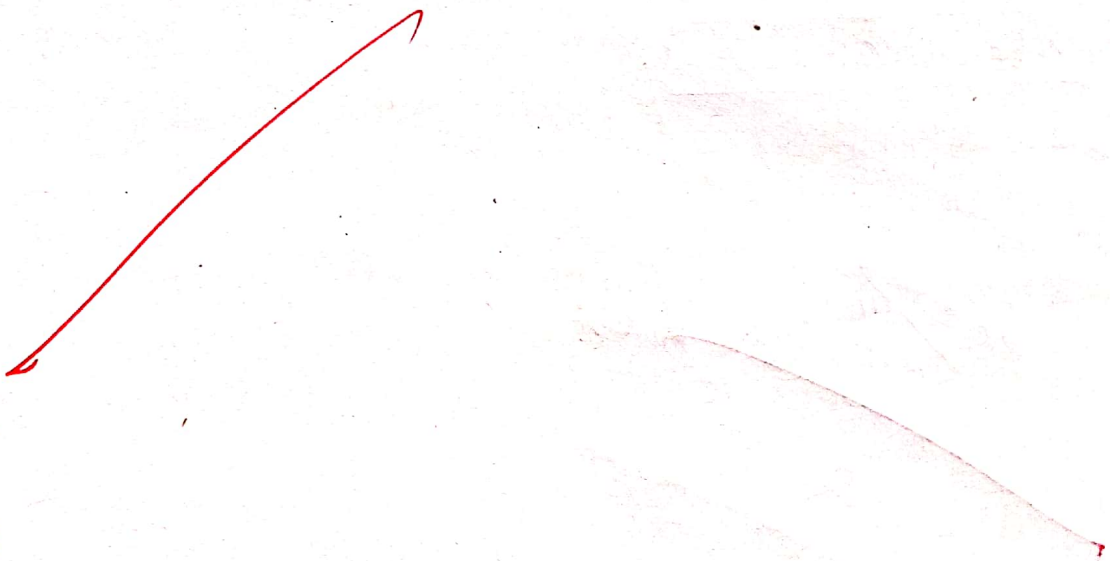
```
#include <stdio.h>
#include <conio.h>
void main ()
{
   int i, n=50;
   clrscr();
   printf("\n All even numbers from 1 to 50 are :", i);
   i=2;
   while (i<=n)
   {
      printf(" %d\n", i);
      i=i+2;
   }
     getch();
}
```

98:

output:

All even number 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



Algorithm:

Step 1: Start.

Step 2: Initialize two variable with static variable where n = 50 & i = 2.

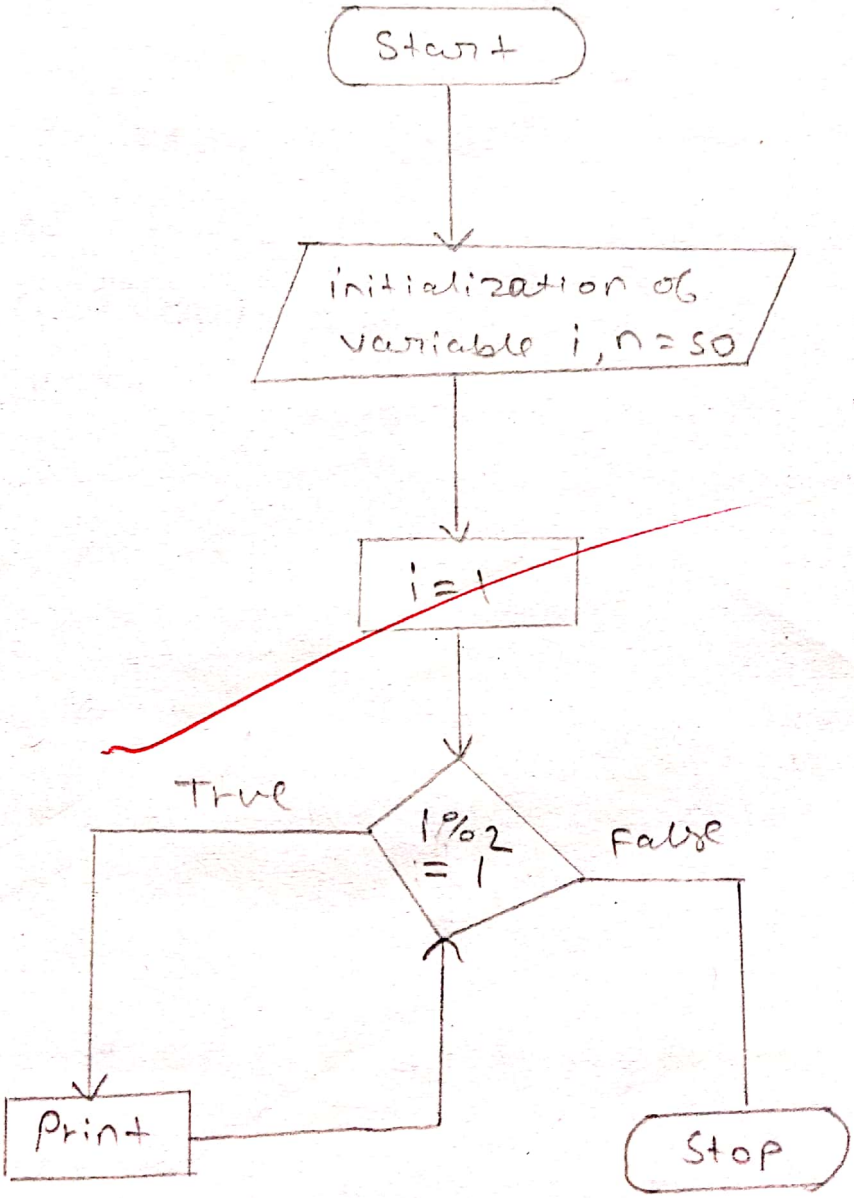
Step 3: Use while loop for printing the even number upto the range 50.

Step 4: Adding 2 to current even number will give next even number.

Step 5: Display the appropriate output.

Step 6: Stop.

Flowchart :



2) Write a C program to print odd number between 1-50 using do-while loop.

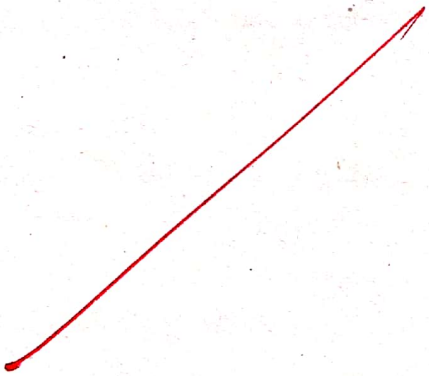
Source code:

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

Output :

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



Algorithm :

Step 1 : Start

Step2 : Initialize two static variable n=5 , i=1.

Step3 : use do while loop for printing odd number from 1 to 50.

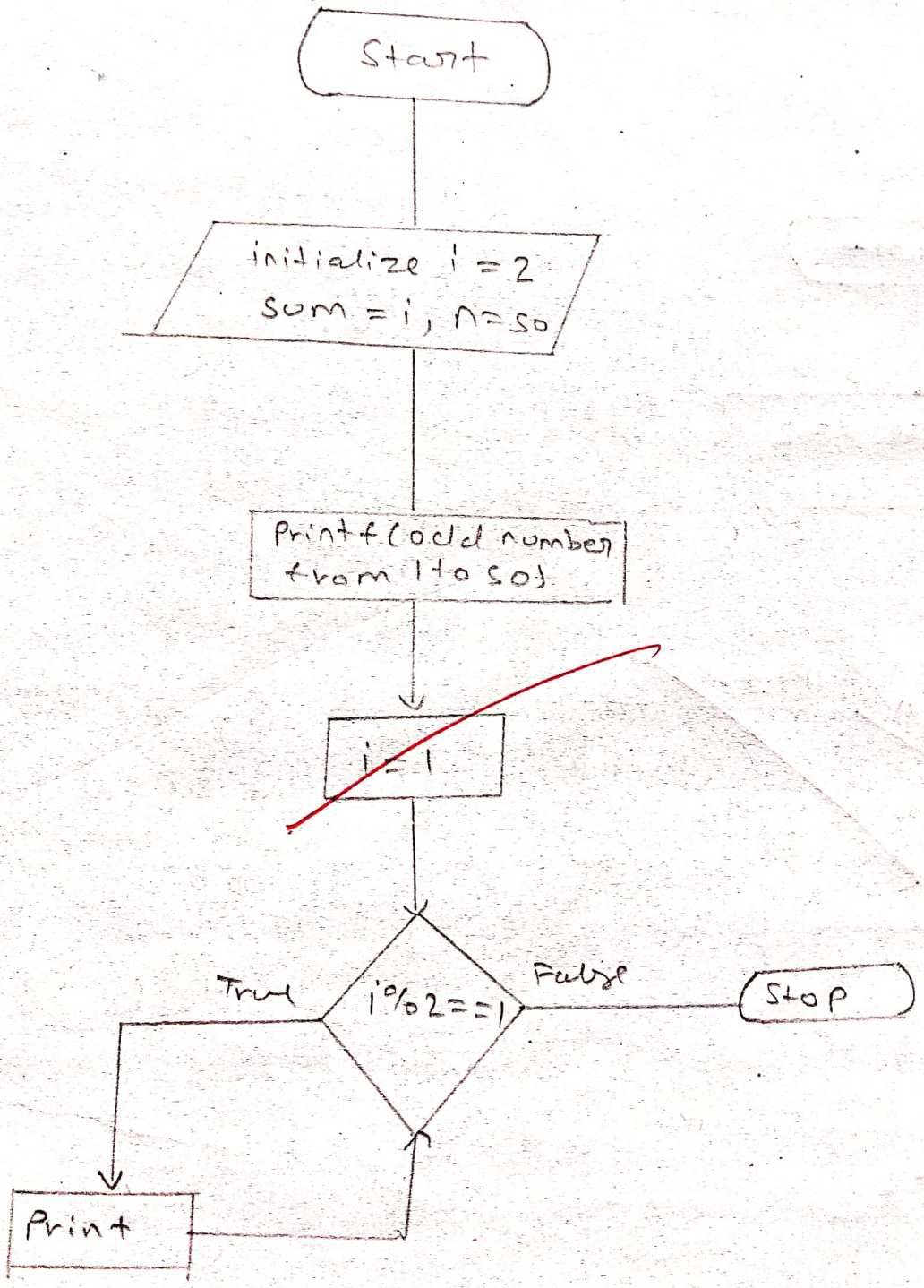
Step4 : Use if conditional statement to check whether given number is odd or even.

Step5 : Increment the value of i

step6 : Display the appropriate output

Step7 : stop.

Flowchart :



Q) Aim: Write a C program to print sum of all even number between 1 to n using for loop.

Source code:

```
#include <stdio.h>
#include <conio.h>
void main()
{
  int i, n, sum=0;
   clrscr();
   printf("\n Enter the range=");
   scanf("\n %d", &n);
   for(i=2; i<=n; i=i+2)
   {
      sum=sum+i;
   }
   printf("\nsum of all even number upto the
          range are=", sum);
   getch();
}
```

Algorithm:

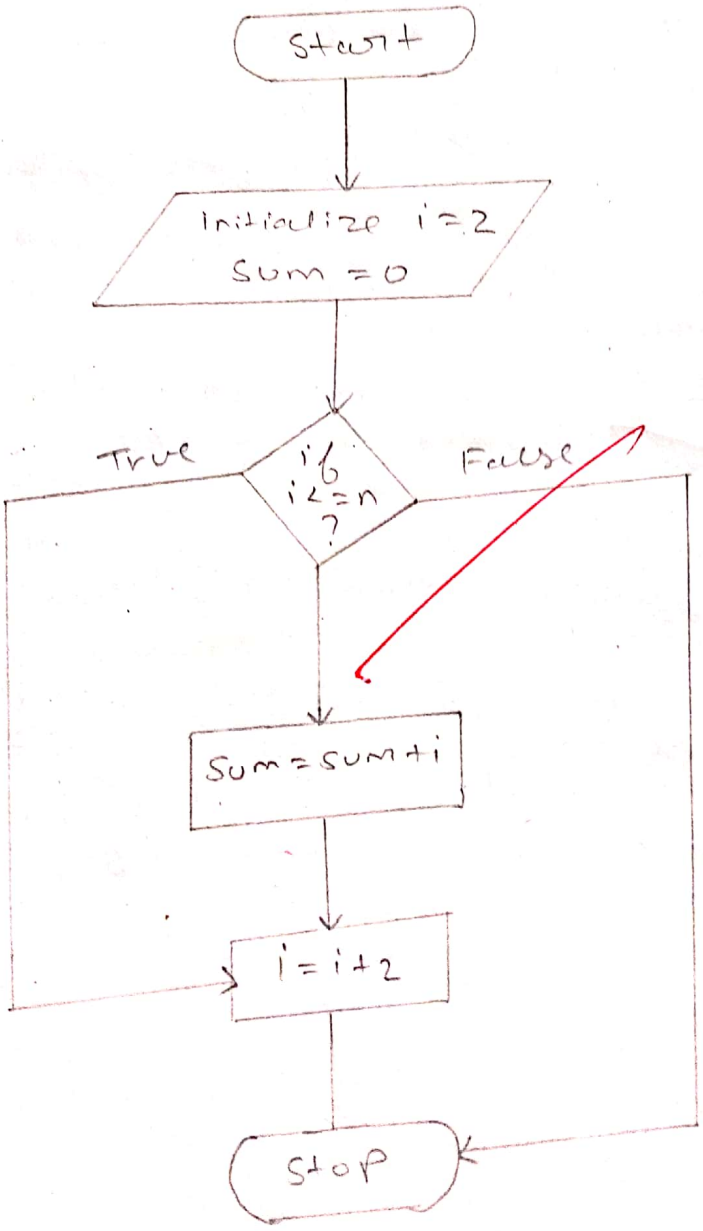
1) Start
2) Initialize three variable one is static and two are dynamic
3) Use for loop for check the given range.
4) Add current even number.
5) Display the appropriate
6) Stop.

output:

Enter the range = 10

Sum of all even numbers upto the range are 30

Flowchart:



PRACTICAL - 05

Aim: Use of array

1) Write a C program to print the input array elements.

Source code:

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

Output :

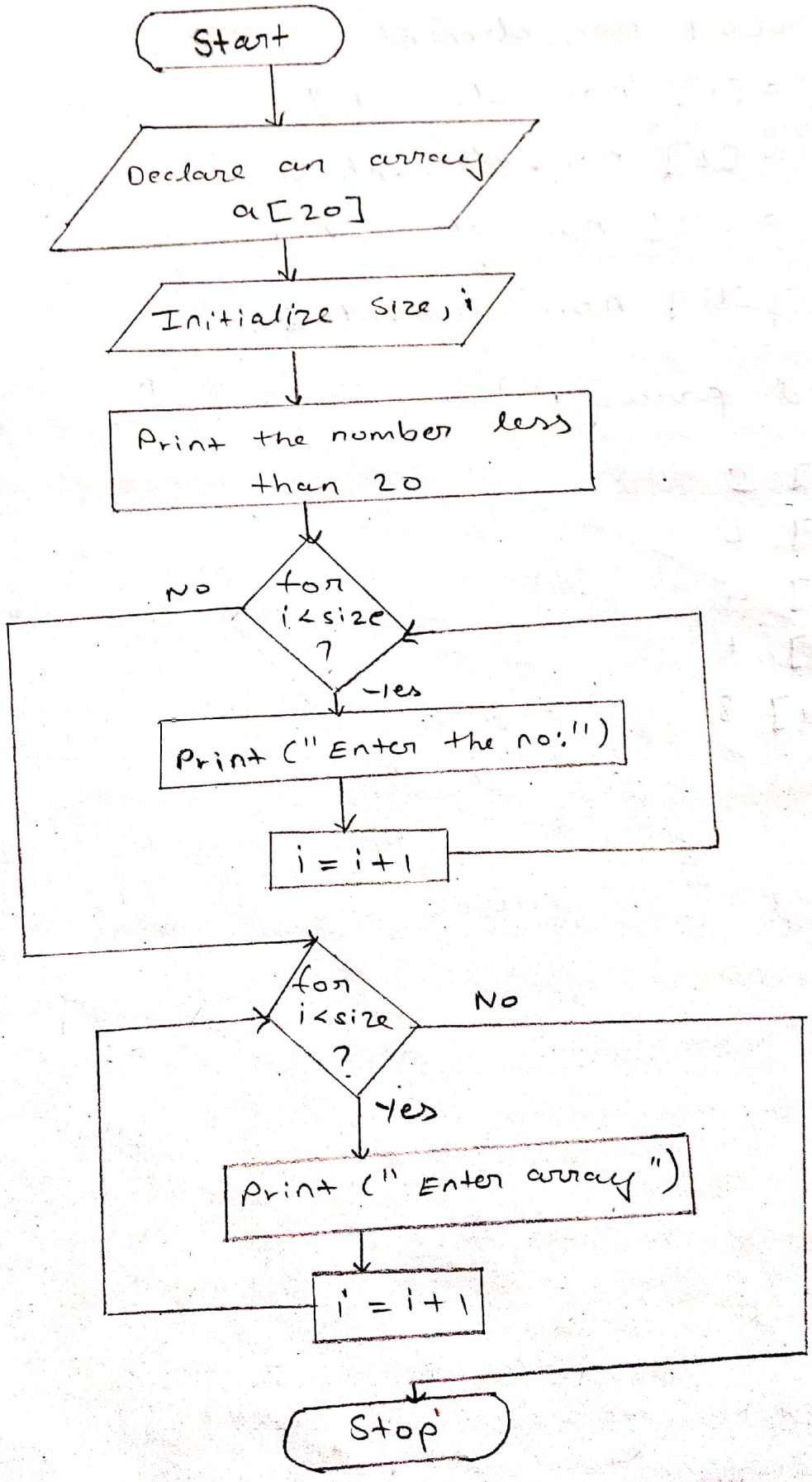
```
Enter the number less than 20 : 5
Enter the a[0] no. element 5
Enter the a[1] no. element 2
Enter the a[2] no. element 4
Enter the a[3] no. element 2
Enter the a[4] no. element 8
```

The displayed array :

```
Enter a[0] 5
Enter a[1] 2
Enter a[2] 4
Enter a[3] 1
Enter a[4] 8
```

18)

Flow chart;



Algorithm:

Step 1: Start

Step 2: Declare an array of user specified to size

Step 3: Initialize two variables of integer ~~void~~ type i.e. size and i.

Step 4: ~~Take~~ Take range from the user that to be printed which should be less than the specified size of an array.

Step 5: Use nested for conditional loop for printing the elements in arrays according to its indexing.

Step 6: Print the appropriate output.

Step 7: Exit.

2) To find the sum of elements of the array.

Source code:

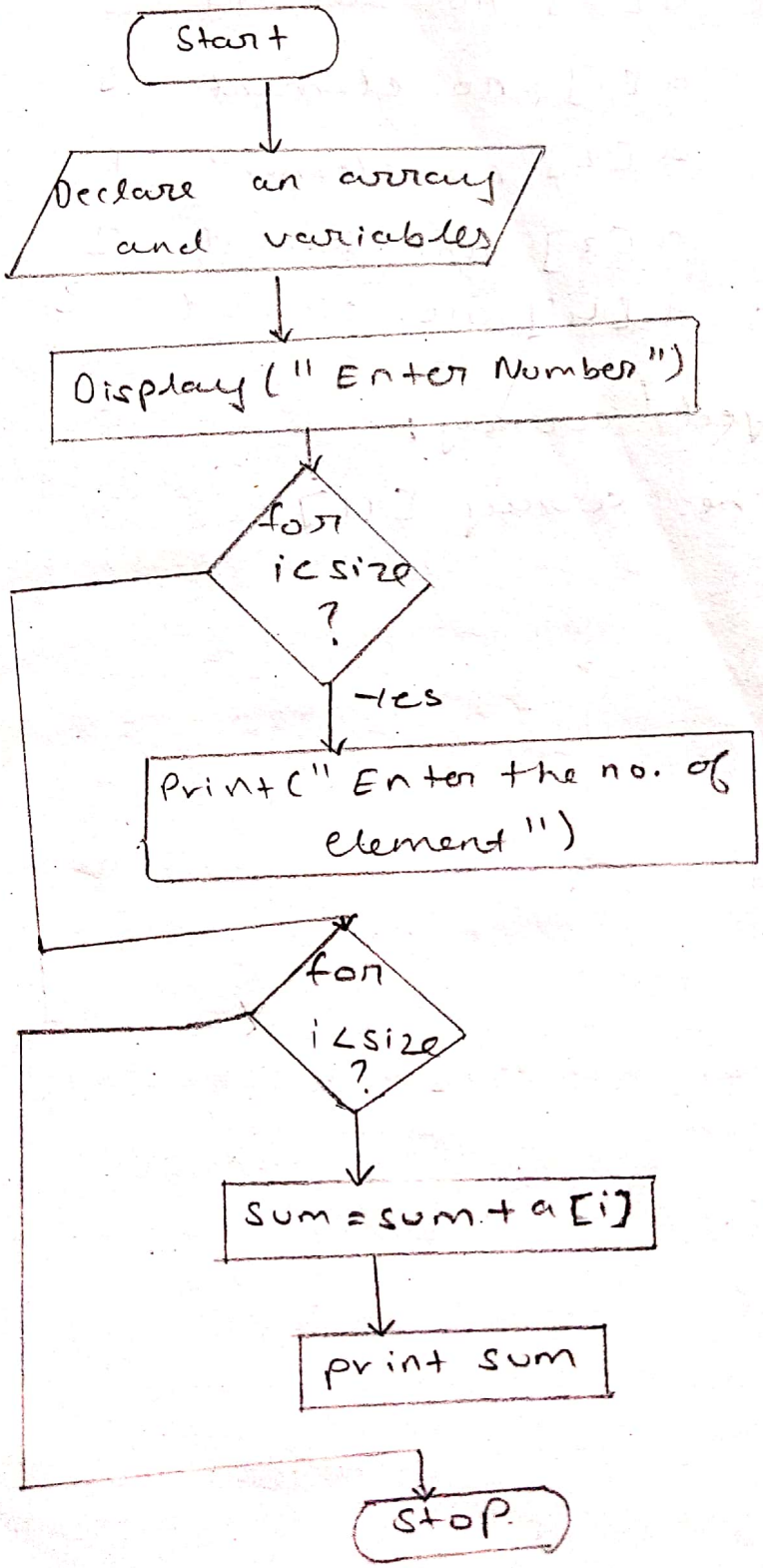
```
#Include <Stdio.h>
#include <conio.h>
void main ()
{
   int a[20];
  int  sum=0 , size , i ;
   clrscr();
   printf ("\n Enter number less than 20 : ");
   scanf ("%od", &size);
   for (i=0; i<size ; i++) {
   {
    printf ("\nEnter the a[%od] no. element ", i );
    scanf ("%od", &a[i]);
   }
   printf("\n the displayed array : ");
   for (i=0 ; i<size ; i++)
   {
     sum = sum + a[i];
   }
   printf("\n Sum of the arrays : [%od]", sum);
   getch ();
}
```

output :

Enter the numbers less than 20 : 5
Enther 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]

Flowchart :



Algorithm:

Step 1 : Start

Step 2 : Declare an array of integer type of user specified size.

Step 3 : Initialize the variable one of static type and two of dynamic type.
i.e. sum = 0 , i , size.

Step 4 : Take range of ~~%~~ from the user ~~that~~ that to be printed and add, which should be less than the specified size of an array.

Step 5 : Use nested for conditional loop for printing the elements in array according to its indexing.

Step 6 : Adding the elements of the array.

Step 7 : Print the appropriate output.

Step 8 : Exit.

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

Source code :

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

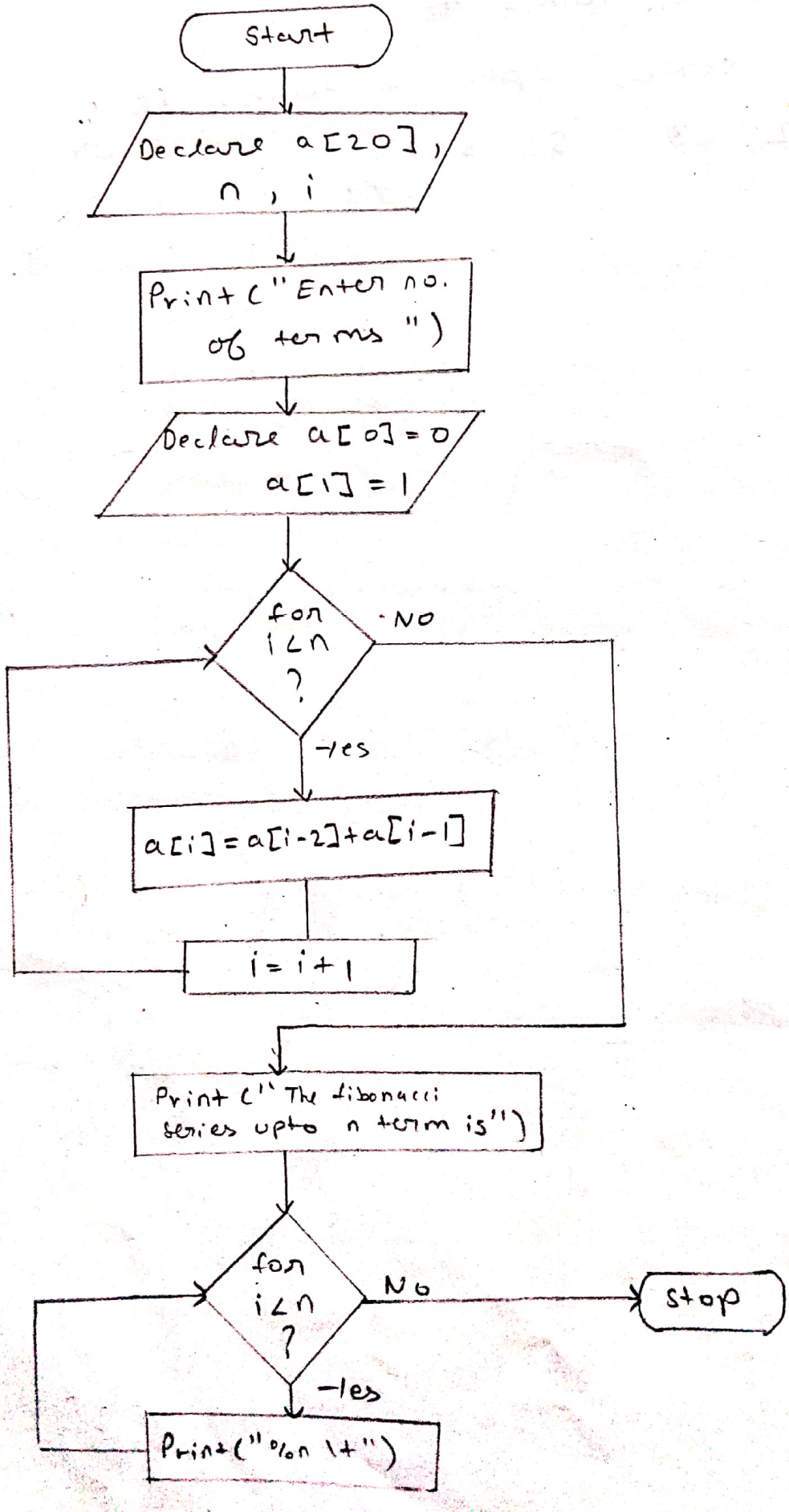
output:

Enter the no. of terms 7

The fibonacci series upto 7 terms is:

0 1 1 2 3 5 8

Flow chart :



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 variable i.e. i, n.

Step 4 : Take the no. of terms from the user up till what the no. should be printed,

Step 5 : Initialize indexing value of a[0] = 0 & 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 to previous indexing value + 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 tabulor form.

Step 10 : print the appropriate output.

Step 11 : Exit.

4) write a C program to represent a multidimensional array in matrix input.

Source code:

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

output :

```
Enter no. of rows : 2
Enter no. of columns : 2
Enter the a[0][0] no. element : 1
Enter the a[0][1] no. element : 5
Enter the a[1][0] no. element : 4
Enter the a[1][1] no. element : 2
The displayed matrix is :
1  5
4  2
```

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

Algorithm:

Step1: Start

Step2: Declare multi-dimensional array and row, column, i and j.

Step 3: Display to enter no of rows.

Step 4: Scan the same.

Step5: Similarly for columns.

Step 6: Use the for conditional for accessing the array elements

Step 7: use another for loop for displaying the array value.

Step 8; Stop.

8.A.

PRACTICAL – 06

Aim: Programs on functions.

1) Write a program in C which will demonstrate the use of getch(), getche() and getchar().

Source Code:

```
#include <stdio.h>
#include <conio.h>
void main ()
{
  char ch = 'a';
  printf ("\n Press any key to continue");
   getch();
  printf ("\n Enter an alphabet");
   ch = getche ();
  printf ("\n Continue Y/N");
   getchar ();
}
```

2) Write a program in C which will demonstrate the use of putch and putchar.

```
#include <stdio.h>
#include <conio.h>
void main ()
{
   char ch = "a";
    putch (ch);
    putchar (ch);
    getch();
}
```

output:

press any key to continue (enter)

Enter an alphabet a

Continue Y/N Y (enter)

output:

aa

3) WAP to find factorial of a number using recursion function.

```
#include <stdio.h>
#include <conio.h>
int factorial (int n);
void main ()
{
 clrscr ();
 int x, fact ;
 printf ("\n Enter value of x :");
 scanf ("%od" ,&x) ;
 fact = factorial (x);
 printf ("\n Factorial of %od = %od ", x, fact);
 getch ();
}
 int factorial (int n)
 {
    int f ;
    if (n==1)
    return (1)
    else
       f = n * factorial (n-1);
    return (f)
}
```

Output:

Enter the value of X : 4

Factorial of 4 = 24

4) Sum of digits of entered numbers.

```
#include <stdio.h>
#include <conio.h>
void abc (int n);
void main()
{
   clrscr();
   int n;
   printf("\n Enter Number : ");
   scanf ("%d", &n);
   abc(n);
   getch();
}
   void abc(int n)
   {
      int r, s=0;
      while (n!=0)
      {
         r = n%10;
         s = s+r;
         n = n/10;
      }
      printf("\n Sum of digits = %d ", s);
}
```

output :

Enter number : 31

Sum of digit : 4

5) Average of 3 (entered numbers).

```
#include <stdio.h>
#include <conio.h>
void average (int sum);
void sum (int a, int b, int c);
void main()
{
  clrscr();
  int x, y, z;
  printf ("\n Enter value of x, y, z);
  scanf ("%d %d %d", &x, &y, &z);
  sum (x, y, z);
  getch();
}
  void sum (int a, int b, int c)
  {
    int s;
    s = a+b+c;
    average (s);
  }
  void average (int sum)
  {
     float average;
     average = sum/3.0;
     printf ("\n Average : %f", avg);
  }
```

Output:

Enter value of x, y, z : 4 6 9

Average = 6.333333

PRACTICAL - 07

Aim: Programs on string manipulations.

1) Write a program which shows the entered character is vowel or not.

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
int main()
{
   char ch;
   printf("\n Enter any character : ");
   scanf("%c", &ch);
   if (ch=='a' || ch=='e' || ch=='i'
      || ch=='o' || ch=='u' || ch=='A'
      || ch=='E' || ch=='I' || ch=='O'
      || ch=='U')
   {
      printf("'%c' is vowel", ch);
   }
   else if
   {
      printf("'%c' is not vowel", ch);
   }
   else
   {
      printf("'%c' is not an alphabet", ch);
   }
   getch();
}
```

Output :

```
Enter any character : e
'e' is vowel
Enter any character : b
'b' is not vowel
```

2) Write a program to calculate no. of words in string.

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main()
{
   char a[50];
   int b=0;
   int i=0;
   clrscr();
   printf("\n Enter a string");
   gets(a);
   printf("\n The entered string is: %s", a);
   while (a[i]!='\0')
   {
     if (a[i]==' ')
      b++;
      i++;
   }
   printf("\n\n The number of words in
    a string is: %d", b+1);
    getch();
}
```

Output:

Enter a string : write a program to calculate number of words in a string

The entered string is : write a program to calculate number of words in a string

The number of words in a string is : 11

3) WAP in C to print a string.

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main ()
{
  char a[20];
  clrscr();
  printf("\n Enter a string");
  scanf("%s", a);
  printf("%s", a);
  getch();
}
```

Output:

```
Enter a string : print a string
print a string
```

PRACTICAL - 08

Aim: Programs on structures and unions.

1) Write a program in C to read the students record using structure.

```
#include <stdio.h>
#include <conio.h>
void main ()
{
   struct student
   {
      char name [20];
      int rollno;
      float per;
   };
   struct student S1;
   clrscr();
   printf("\n Enter Student name :");
   scanf("%s", &S1.name);
   printf("\n Enter roll no :");
   scanf("%d", S1.rollno);
   printf("\n Enter percentage :");
   scanf("%of", S1.per);
   printf("\n\n \t Name \t Rollno \t Per \n");
   printf("\t %s \t %d \t %f", S1.name, S1.rollno,
                                 S1.per);
   getch();
}
```

Output:

```
Enter student Name : adarsh
Enter Rollno : 1755
Enter percentage : 73
Name    Rollno    per
adarsh  1755      73.000000
```