

PRACTICAL : 01

AIM : Program to understand the basic datatype I/o-

Program - 1 :

Source code :

```
#include <stdio.h>
#include <conio.h>
void main()
{
    char name[50];
    char add[50];
    int roll-no;
    char grade;
    char mob[10];
    clrscr();
    printf("****demonstration of
dataTypes ****");
    printf("Enter your name: \n");
    gets(name);
    scanf("%c", name);
    printf("enter your address: \n");
    Scanf("%s", &add);
    printf("enter your roll no: \n");
    Scanf("%d", &rollno);
    printf(" enter your grade: \n");
    Scanf("%s", &grade);
    printf("enter your mobile number: \n");
    Scanf("%d", &number);
    printf("\n Student Name: %s", name);
    printf("\n Student address: %s", add);
    printf("\n student rollno: %d", rollno);
```

```
Pointf("In student grade : %c", grade);
Pointf("In student mobile no : %d", mob);
getch();
}
```

Output :

**** Demonstration various datatypes ****

Name of the student

26

Priyanka Kumari

Address of the student

Mumbai

Roll no. of the student

1757

Grade of student

A

Mobileno :

7250476956

Student name : Priyanka Kumari

Student address : Mumbai

Student rollno : 1757

Student grade : A

Student Mobileno : 7250476956

Program 2 :

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

(for calculation)

(if a & b = 1) then

(if a & b = 3) then

(sum & b = 2)

sum + sum = b

(if a & b = 5) then

(else

sum - sum = d

(if a & b = 7) then

(d = a/b)

*sum * sum = sum*

(if a & b = 9) then

*(sum * sum = v)*

sum / sum = v

(if a & b = 11) then

(else

35
Output:

Enter the side

12

Area of square 144

Practical-02

a. AIM: WAC 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();
}

```

Output:

Enter 1st number: 8

28

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

#Logical Operators :

```

#include <stdio.h> // Header file for standard input output
#include <conio.h> // Header file for cursor control
Void main()
{
    int x,y,z,value1,value2,value3,
    value4, value5;
    clrscr(); // Clears the screen
    printf("Enter 1st Value : ");
    scanf("%d", &x); // Input for 1st value
    printf("Enter 2nd Value : ");
    scanf("%d", &y); // Input for 2nd value
    printf("Enter 3rd value : ");
    scanf("%d", &z); // Input for 3rd value
    value1 = (x < y) && (z > y); // Logical AND operation
    printf("Value 1 is : %d\n", value1);
    value2 = (x == y) && (z < y); // Logical AND operation
    printf("Value 2 is : %d\n", value2);
    value3 = (x < y) || (z == y); // Logical OR operation
    printf("Value 3 is : %d\n", value3);
    value4 = !(x == y); // Logical NOT operation
    printf("Value 4 is : %d\n", value4);
    value5 = (x == y);
    printf("Value 5 is : %d\n", value5);
    getch();
}

```

85

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

Statement for taking

5 random no's ranging

from 0 to 1000000

Scanning 5 no's from user

Value 2 is scanned & 30 written on it

Value 1 is scanned & 30 written on it

Ternary operator

#include <stdio.h>

#include <conio.h>

Void main()

{

int a=100, b=200, c=50, big;

clrscr();

big = a>b || a>c ? a : b;

printf("The biggest number is :

"%d", big);

}

;(x > c ? "b" : "c")

;(b > a ? "a" : "b")

;(c > b ? "c" : "b")

;(x < c) bb. (x > x) = 1

;(b > a ? "a" : b < a ? "b" : "a")

;(x > a ? "a" : a < x ? "x" : "a")

;(c > b ? "c" : b < c ? "b" : "c")

;(x > c ? "x" : c < x ? "c" : "x")

;(a > b ? "a" : b < a ? "b" : "a")

;(x > -x ? "x" : -x > x ? "-x" : "0")

;(x > 0 ? "positive" : x < 0 ? "negative" : "zero")

(x == -x) = zero

;(x > 0 ? "positive" : x < 0 ? "negative" : "zero")

;(1 > 2 ?

)

Output:

The biggest number is 100.

30

30 : 30 more to 100
30 more to 130

20 : 20 more to 100
20 more to 120

10 : 10 more to 100

PRACTICAL-3

AIM: Decision statements

Q Write a program to find out odd & even numbers:

ALGORITHM:

Step 1: Start

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

Step 3: Check if $\text{Number} \% 2 == 0$ 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
```

Output:

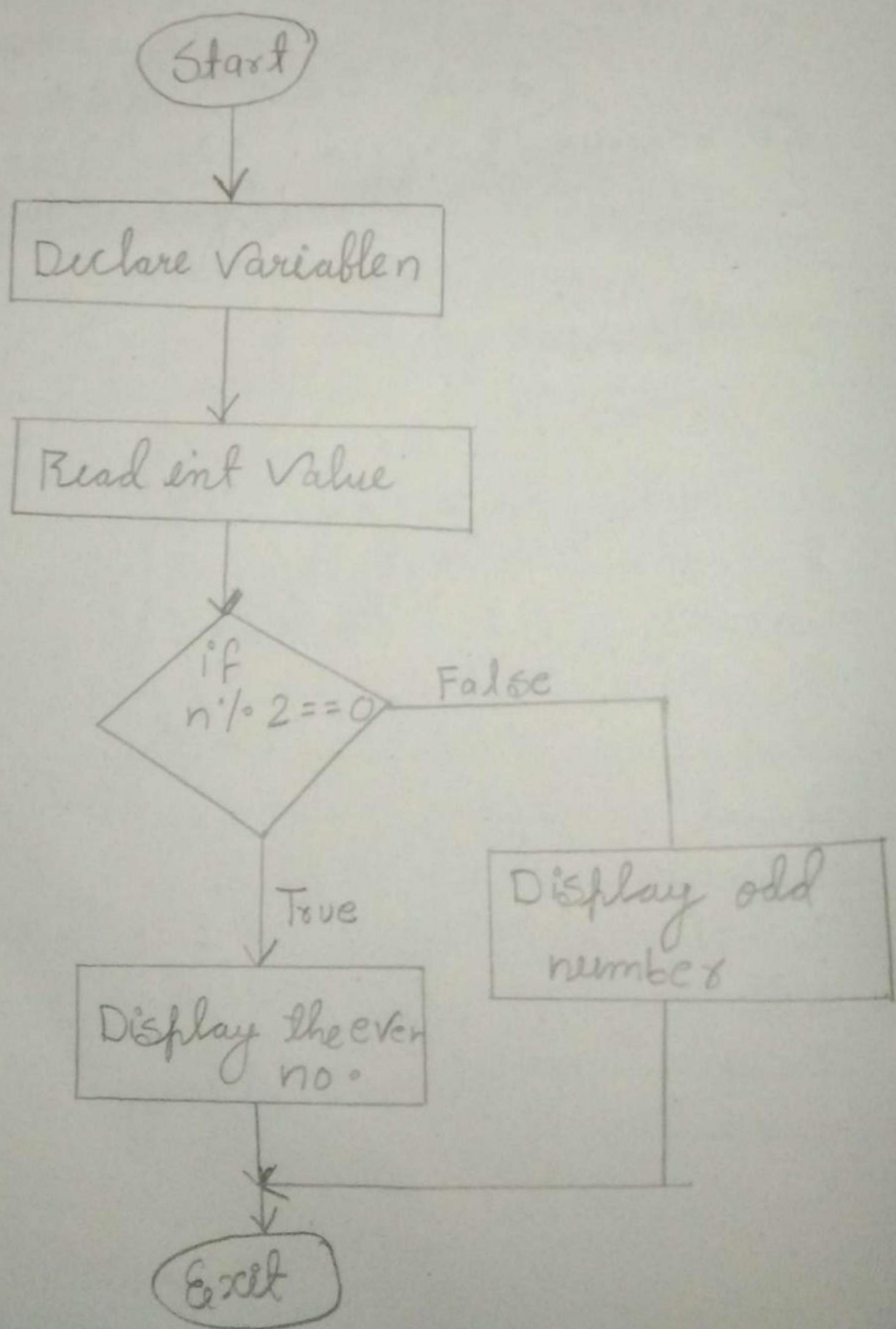
Enter a number : 26

Even number

Enter a number : 53

Odd number

FLOWCHART:



```

2   itermates nolatso
3   printf("odd Number!");
3   getch();
3

```

= Write a program to find the entered year is a leap year or not! [Input year] : 1992
 -> 1992 is 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 $year \% 100 = 0$ print Leap year or NOT A LEAP year. #

Step 4 : Exit

Source code:

```

#include <stdio.h>
#include <conio.h>
Void main()
{
    int year;
    clrscr();
}

```

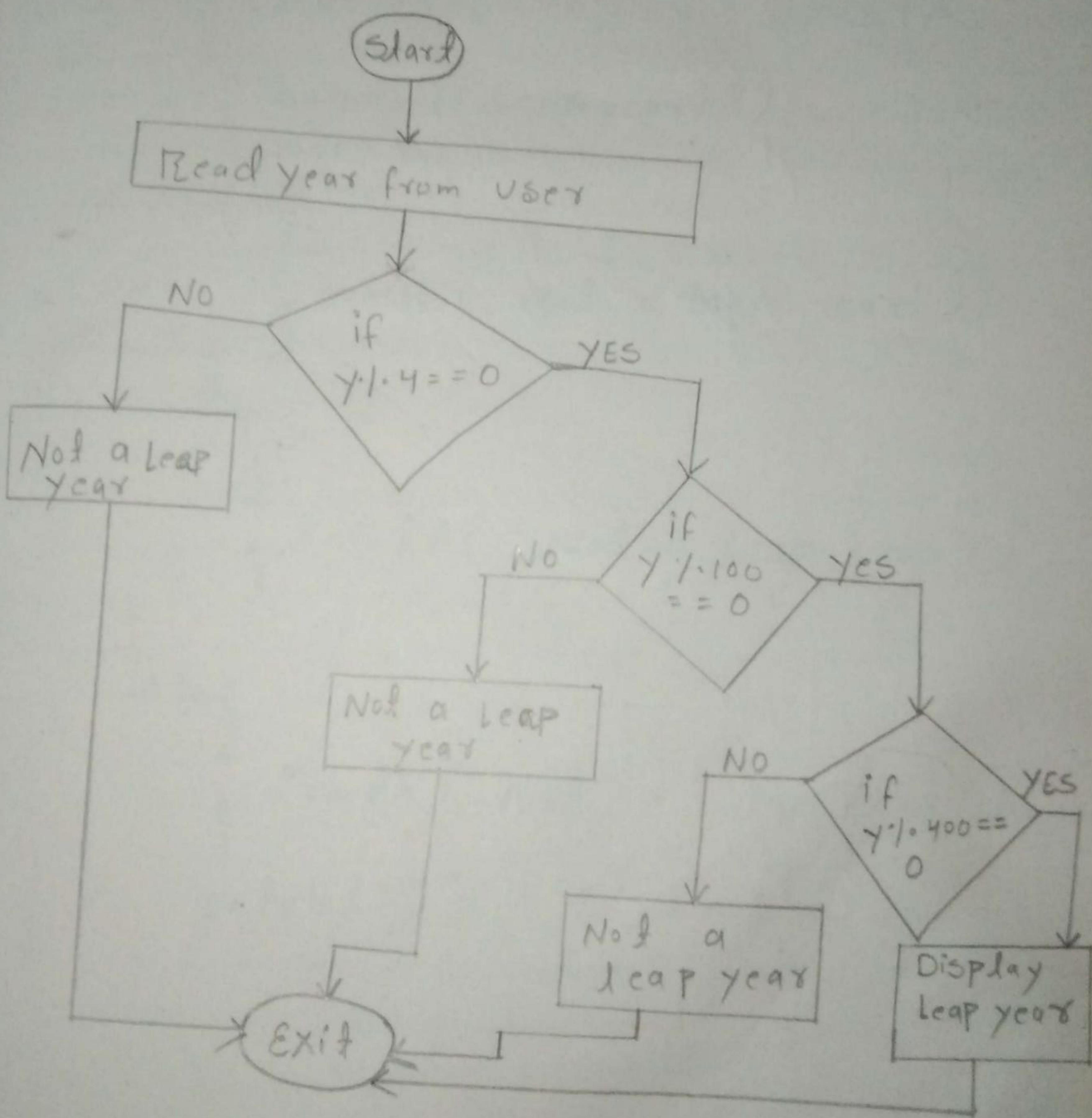
Output:

32

Enter a year : 2019
Not a Leap year

Enter a year : 2020
Leap year

Flowchart:



```

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");
}
else
    printf("Not a leap year");

getch();

```

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

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')
    {
    }
```

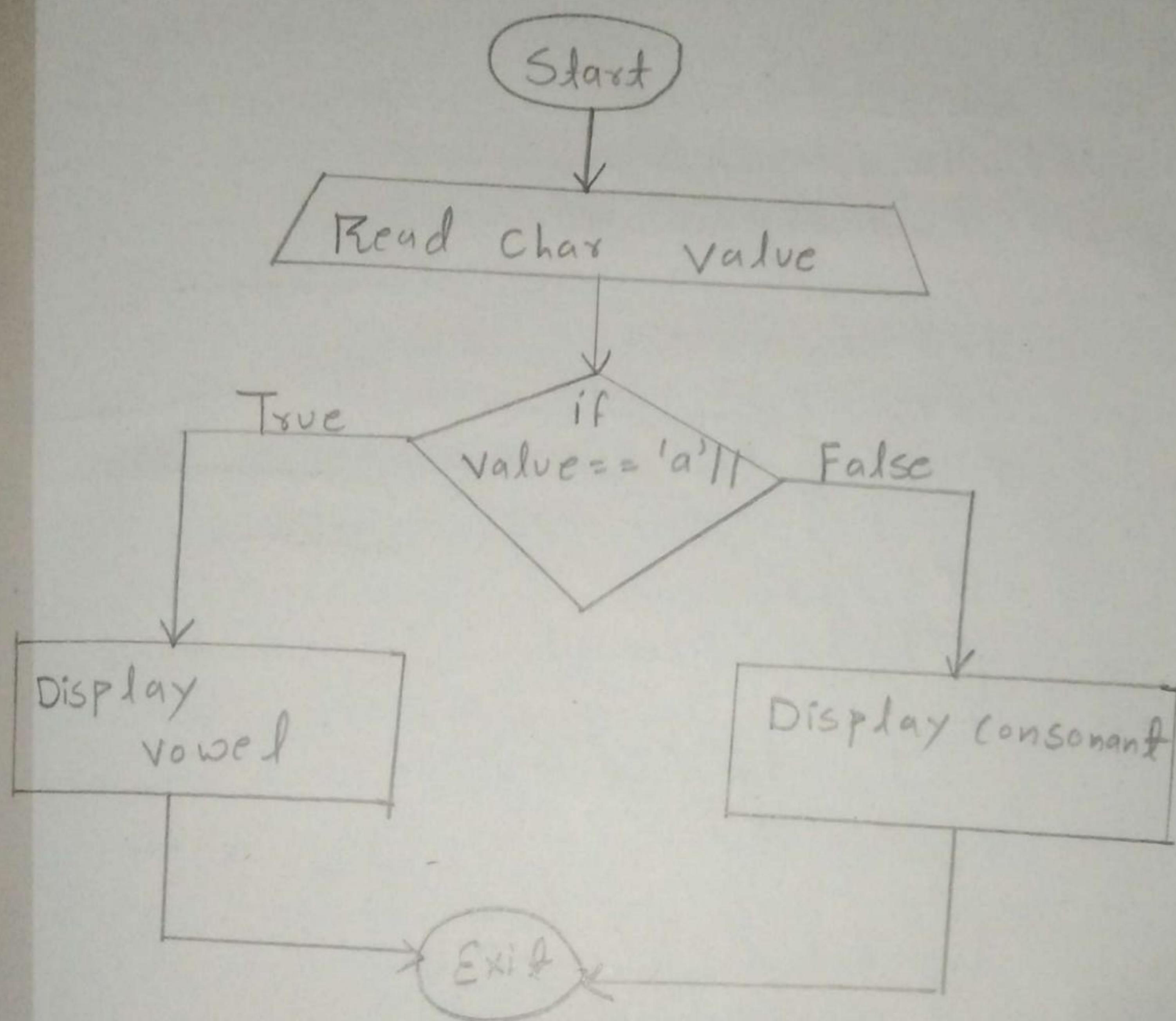
OutPut:

Enter a alphabet : o
vowel

34

Enter a alphabet : ze
consonant

FLOWCHART:



```
    printf (" Vowel");  
}  
else  
{  
    printf (" Consonant");  
}  

```

Practical-05

Aim: Loops statements

- * Write a program to print even numbers from 1 to 50 using while loop.

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

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 up to the range 50.
- Step 4: Adding 2 to current even number will

Output:

All even number from 1 to 50 are

36

2

4

6

8

10

12

14

16

18

20

22

24

26

28

30

32

34

36

38

40

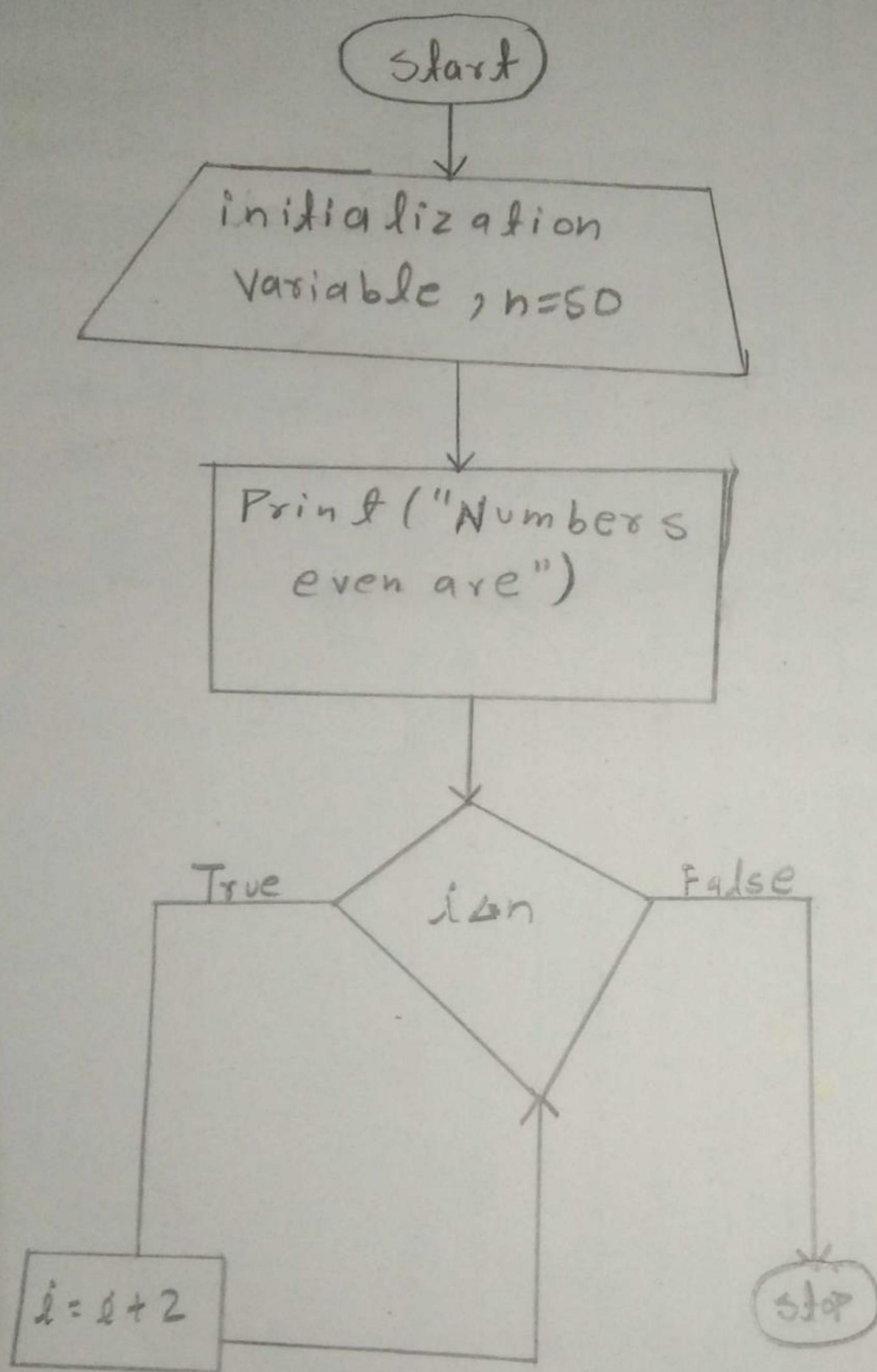
42

44

46

48

50



* Write a C program to print odd number return 1 to 50 using do while loop.

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();
}
```

Algorithm :

Step 1 : Start

Step 2 : Initialize two variable $n=5 i=1$.

Step 3 : Use do while loop for tasks
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 .

Step 6 : Display the appropriate output.

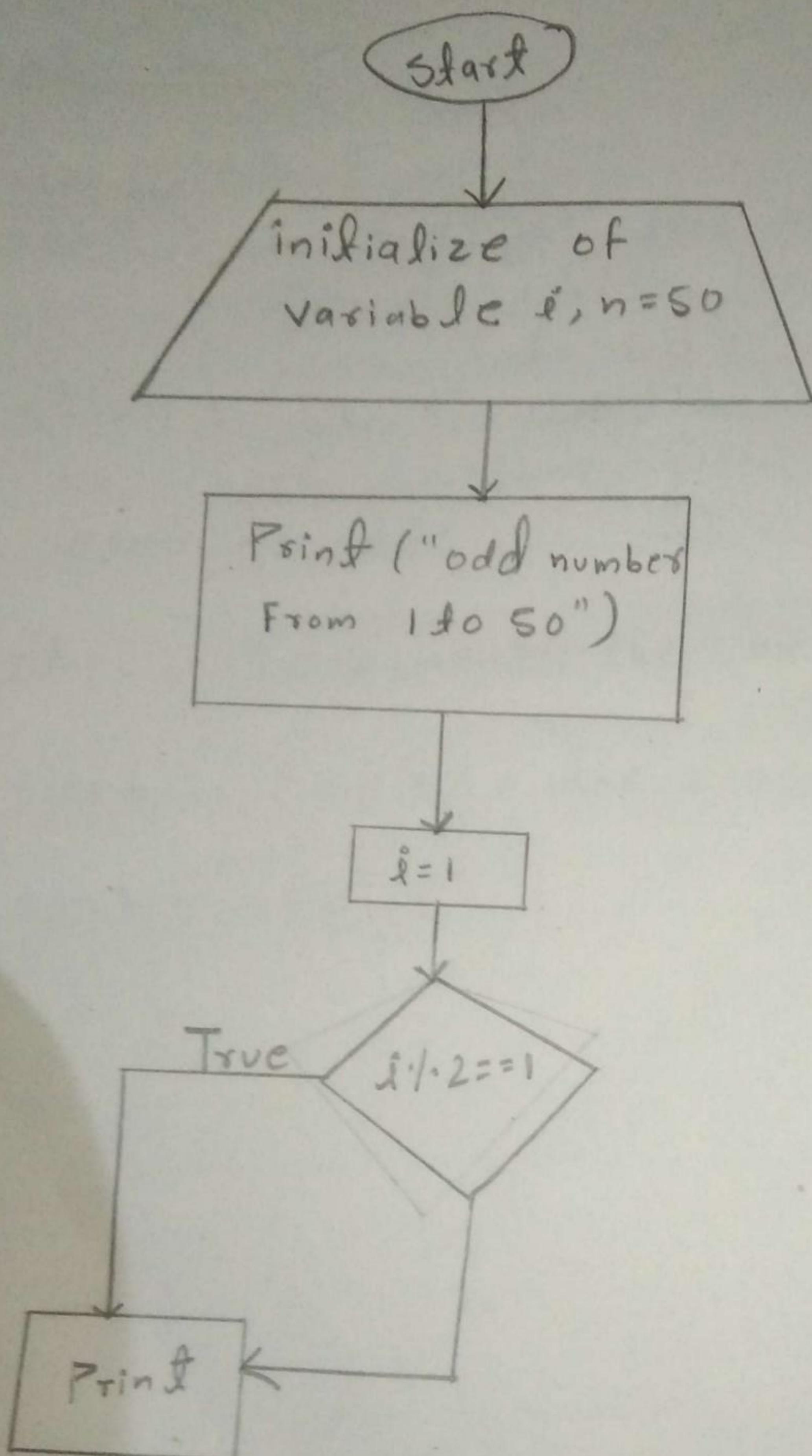
Step 7 : Stop

Output :

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

38

Q5:



* Write a C program to print sum of all even numbers return 1 to 100 using for loop.

Source codes

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

(RE)

Algorithm:

Step 1 : Start

Step 2 : Initialize the variable of
and one is dynamic $i=2$,
 $sum=0$; n ;

Step 3 : Use for loop for check the
Condition satisfy the given
range

Step 4 : Add current even number

Step 5 : Display the appropriate output

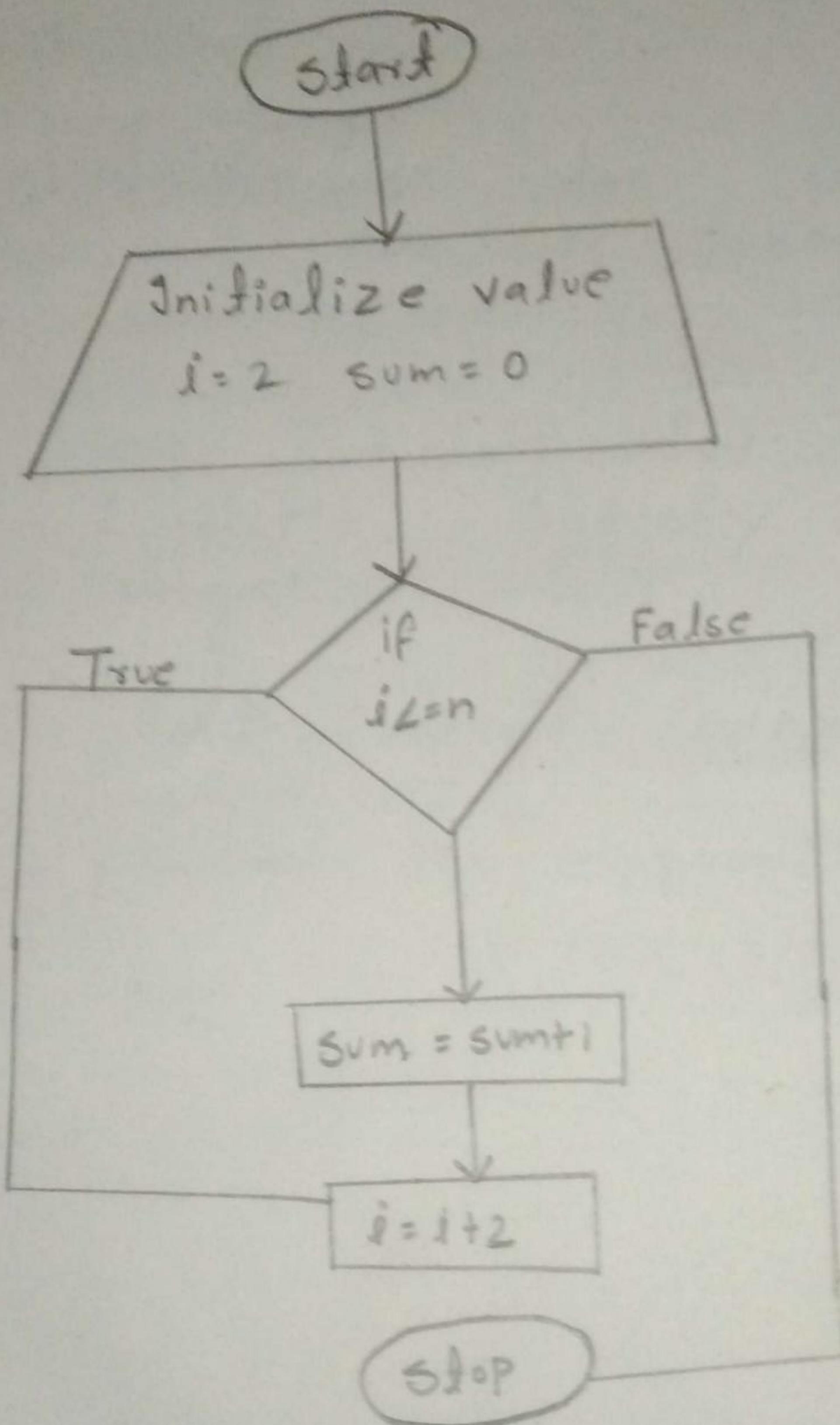
Step 6 : Stop

Output:

Enter the range 10.

Sum of all even number up to the range are = $\frac{40}{30}$

Op



Basics of Array

Write a program in C to read array elements from the user and display them.

Source code:

```
#include <stdio.h>
#include <conio.h>
Void main()
{
    int a[15], size, i;
    clrscr();
    printf("Enter the size of array you want : \n");
    scanf("%d", &size);
    for(i=0; i<size; i++)
    {
        printf("\nEnter the value of a[%d]\n", i);
        scanf("%d", &a[i]);
    }
    printf("The array elements are : ");
    for(i=0; i<size; i++)
    {
        printf("In a[%d] = ", i);
        printf("%d", a[i]);
    }
    getch();
}
```

Algorithm:

Step 1 : Declare a array of any size.

Step 2 : Accept the number of elements user want to enter in array.

Step 3 : Use for loop to accept the array elements from the user.

Step 4 : Again use for loop to display array elements.

Output:

Enter the size of array you want : 5 42

Enter the value of a[0] element : 11

Enter the value of a[1] element : 12

Enter the value of a[2] element : 13

Enter the value of a[3] element : 14

Enter the value of a[4] element : 15

The element of array are :

a[0] = 11

a[1] = 12

a[2] = 13

a[3] = 14

a[4] = 15

Fibonacci Series Using Array

* Write a program in C to develop fibonacci series using array.

Algorithm :

Step1: Declare a array of anysize of data type int.

Step2: Accept a value from user till you want to display the fibonacci series.

Step3: Initialize first element of array to 0, ~~starts~~ and second element to 1 as series starts from 0 and 1.

Step4: Use for loop to develop fibonacci series

Step5: Display the series using printf() function.

Source code:

```
#include <stdio.h>
#include <conio.h>
Void main()
{
    int a[20], term, i, j;
    clrscr();
    printf("enter the number of terms:");
    scanf("%d", &term);
    a[0] = 0;
    a[1] = 1;
    printf("%d", a[0]);
    printf("%d\n", a[1]);
    for (i = 2; i < term; i++)
    {
        a[i] = a[i - 1] + a[i - 2];
        printf("\n%d", a[i]);
    }
    getch();
}
```

Output:

enter the number of terms : 7

0
1
1
2
3
5
8

46

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

& Write a 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("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]\nno. element:", i, j);
            scanf("%d", &a[i][j]);
        }
    }
    printf("The displayed matrix is:\n");
    for(i=0; i<row; i++)
    {
        for(j=0; j<col; j++)
            printf("%d ", a[i][j]);
        printf("\n");
    }
}
```

```
for (j=0; j<col; j++)  
{    printf ("%d %d", a[i][j]);  
    if (j==col-1)  
        printf ("\n");  
    getch();
```

Algorithm:

Step 1: Start

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

Step 3: Display "Enter no. of row"

Step 4: Scan the same

Step 5: Use for conditional for
accessing the array elements

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

Step 7: Stop

Practical-06

49

Aim: Programs on functions.

- (1) WAP to find factorial of a number using function.

```
#include <stdio.h>
#include <conio.h>
Void factorial (int);
Void main ()
{
    int a ;
    clrscr ();
    printf ("enter the number : ");
    scanf ("%d", &a) ;
    factorial(a) ;
}

Void factorial (int n)
{
    int i, fact = 1 ;
    for (i = 1 ; i <= n ; i++)
    {
        fact = fact * i ;
    }
    printf ("factorial is : %d ", fact) ;
    getch () ;
```

(2) Sum of digits of entered numbers

Code:-

```
#include <stdio.h>
#include <conio.h>
Void abc(int n);
Void main()
{
    int n;
    clrscr();
    printf("In 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(" In sum of digits=%d", s);
}
```

(1) Output :

enter the number : 10
factorial is : 24320 5n

(2) Output :

Enter number : 31
sum of digit : 4

(3) Write a C Program to calculate the no. of words in a string i.e no. of characters.

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

OutPut:
NG

enter a string : Priyanka Kumari saw
the entered string is : Priyanka Kumari saw
the number of words in a string is : 3

(4) Program to demonstrate to array of structure.

```
#include <stdio.h>
#include <conio.h>
Void main()
{
    Struct employee
    {
        int id;
        char name[20];
        char add[30];
    };
    Struct employee e[50];
    int size, i;
    printf("Enter how many records you want to insert:");
    scanf("%d", &size);
    for(i=1; i<size; i++)
    {
        printf("In %d enter the id----->", i);
        scanf("%d", &e[i].id);
        printf("In %d enter the name----->", i);
        scanf("%s", e[i].name);
        printf("In %d enter the address----->", i);
        scanf("%s", e[i].add);
    }
}
```

Output:

enter how many records you want to insert : 3

1. enter the id → 333

2. enter the name → Priyanka

1. enter the address → hazaribag

2. enter the id → 343

2. enter the name → Sunita

2. enter the address → borivali

the employee record

id	name	address
----	------	---------

333	Priyanka	hazaribag
-----	----------	-----------

343	Sunita	borivali
-----	--------	----------

```
printf("\n\nIn the employee records\n");
printf("Id Name Address\n");
for(i=1; i<size; i++)
{
    printf(" %d %s %s", e[i].id,
           e[i].name, e[i].add);
}
getch();
}
```

Practical : 07

Aim: Programs on Pointer

(1) Basic Program in Pointer.

```
#include <stdio.h>
#include <conio.h>
Void main()
{
    int j=10;
    int *ptr, **ptr2;
    ptr = &j;
    ptr2 = &ptr; // pointer to pointer;
    clrscr();
    printf("In the value of j=%d", j);
    printf("In the address of j=%u", &j);
    printf("In the address of ptr=%u", ptr);
    printf("In the value of j=%d", *ptr);
    printf("In the value of j=%d", **ptr2);
    getch();
}
```

(2) Write a program to swap two numbers using pointer function.

Output:

the value of $j = 10$

the address of $j = 65524$

51

the address of $\text{ptr} = 65524$

the value of $j = 10$

the value of $j = 10$

```

#include <stdio.h>
#include <conio.h>
Void swap(int *, int *);
Void main()
{
    int a, b;
    clrscr();
    printf("Enter two numbers to be
           swapped : \n");
    scanf("%d %d", &a, &b);
    printf("\n numbers before swapping
           are : \na=%d \nb=%d", a, b);
    swap(&a, &b);
    printf("\n numbers after swapping
           are : \na=%d \nb=%d", a, b);
    getch();
}

Void swap(int *x, int *y)
{
    int t;
    t = *x;
    *x = *y;
    *y = t;
}

```

Output:

enter two numbers to be swapped:

6

8

numbers before swapping are:

$a = 6$

$b = 8$

numbers after swapping are;

$a = 8$

$b = 6$

Q3> Copying one string to another using pointer.

```
# include <stdio.h>
# include <conio.h>
Void main()
{
    char s[25], *t;
    clrscr();
    printf("Enter the string : ");
    scanf("%s", ss);
    while (*ss != '\0')
    {
        *t = *ss;
        t++;
        ss++;
    }
    printf("\n");
    printf("The copied string is : %s", s);
    getch();
}
```

Output :

enter the string : Priyank9

56

the copied string is : Priyank9

Length of the string using Pointers.

```
#include <stdio.h>
#include <conio.h>
Void main()
{
    char s[25], *t;
    int len=0;
    clrscr();
    printf("enter the string : ");
    scanf("%s", ss);
    t=s;
    while(*t != '\0')
    {
        len++;
        t++;
    }
    printf("\n");
    printf("The length of a string
is : %d", len);
    getch();
}
```

Output:

enter the string: Priyank9
the length of a string is : 8