```
        else
        { printf("%d is a leap year", yr);
        }
    }
    else
    { printf("%d is not a leap year", yr);
    }
    getch();
}
```

Program 3:- To check whether the character is vowel or consonant.

Algorithm:

Step 1: START

Step 2: [Take Input] Read character 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: STOP

Code:

```
#include<stdio.h>
#include<conio.h>
void main()
{   char a;
    clrscr();
    printf("Enter the alphabet:");
    scanf("%c", &a);
```

PRACTICAL NO. 4

Aim: Programs to demonstrate the use of looping statements.

Program 1: To print even numbers between 1-50 using while loop.

Algorithm:

Step 1: Start

Step 2: Initialize two variable as static variables where lim=50 and counter variable equal to 2.

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

Step 4: Increment the counter variable by 2 every time to get the even numbers to be displayed.

Step 5: Display the appropriate output.

Step 6: Stop.

Code:

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

```
for(i=0; i<10; i++)
{   if(A[i]==item)
    {  found=1;
       break;
    }
}
if (found==1)
{  printf("The element found at position %d", i);
}
else
{  printf("The element not found in the array");
}
getch();
}
```

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

Program 2:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    float base, height, area;
    printf("Enter the base of triangle: ");
    scanf("%f", &base);
    printf("Enter the height of triangle:");
    scanf("%f", &height);
    area = (0.5 * base * height);
    printf("The area of the triangle is %f", area);
    getch();
}
```

Program 3: To print the sum of all even numbers between 1 to n using for loop.

Algorithm:

Step 1: Start.

Step 2: Initialize three variables out of which two are static and one is dynamic. i=2, sum=0, lim

Step 3: Use for loop to calculate the sum of all even numbers between 1 to n.

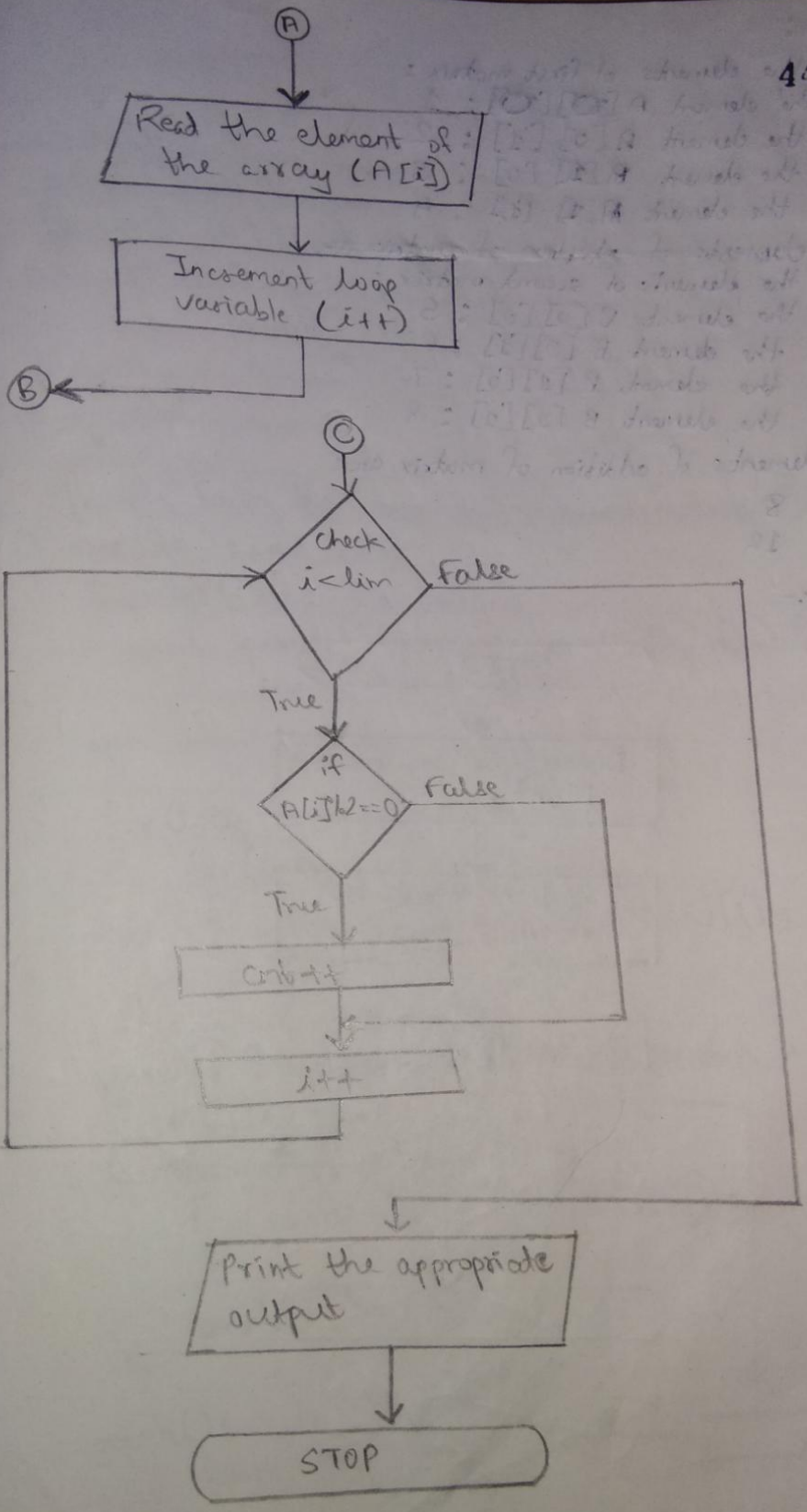
Step 4: Increment by 2 everytime and add it with previous number.

Step 5: Display the sum of all those numbers.

Step 6: Stop.

Code:

```
#include<stdio.h>
#include <conio.h>
void main()
{       int i=0, lim, sum=0;
        clrscr();
        printf("Enter upto which no. the sum should be found :");
        scanf("%d", &lim);
        for (i=2; i<=lim; i=i+2)
        {       sum = sum + i;
        }
        printf("Sum of all even numbers upto %d is %d", lim, sum);
        getch();
}
```


A
Read the element of the array (A[i])
Increment loop variable (i++)
B
C
Check i<lim
False
True
if A[i]%2==0
False
True
cnt++
i++
Print the appropriate output
STOP

Output:

The largest number is 100

PRACTICAL NO. 2

Aim :- Write programs to show the use of different types of operators.

Prog Code :-

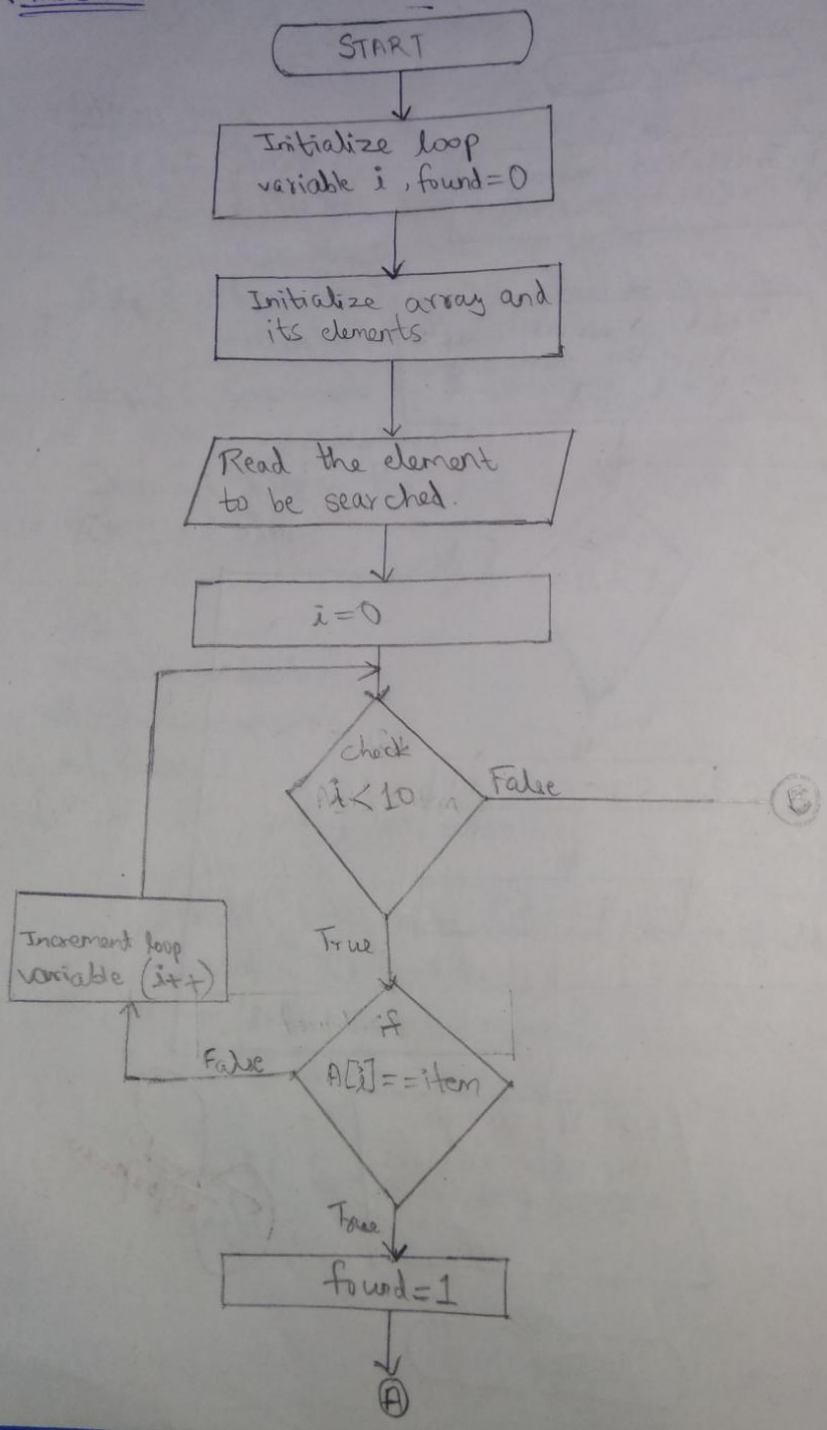
Program 1 :- To demonstrate the use of arithmetic operators.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int n1, n2, add, diff, prod, div;
    clrscr();
    printf("*********Demonstration of Operators*********");
    printf("Enter 1st number:");
    scanf("%d", &n1);
    printf("Enter 2nd number:");
    scanf("%d", &n2);
    add = n1+n2;
    diff = n1-n2;
    prod = n1*n2;
    div = n1/n2;
    printf("Addition of given two numbers is %d", add);
    printf("\nSubtraction of given two numbers is %d", diff);
    printf("\nProduct of given two numbers is %d", prod);
    printf("\nDivision of given two numbers is %d", div);
    getch();
}
```

Output:

Enter the element to be searched : 26
The element found at position 3

Flowchart:-

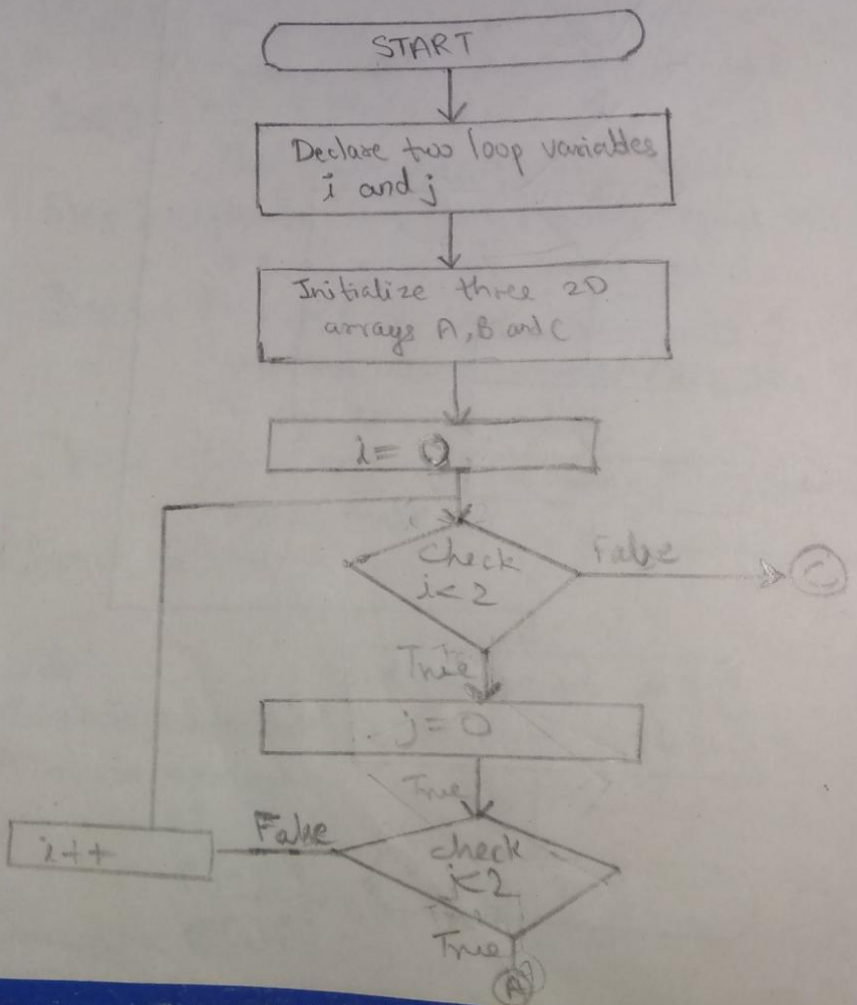


Output:

Enter the elements of first matrix:
Enter the element A[0][0] : 1
Enter the element A[0][1] : 2
Enter the element A[1][0] : 3
Enter the element A[1][1] : 4
~~The elements of addition of matrix are~~
Enter the elements of second matrix:
Enter the element B[0][0] : 5
Enter the element B[0][1] : 6
Enter the element B[1][0] : 7
Enter the element B[1][1] : 8
The elements of addition of matrix are:

6 8
10 12

Flowchart:-



Output:-

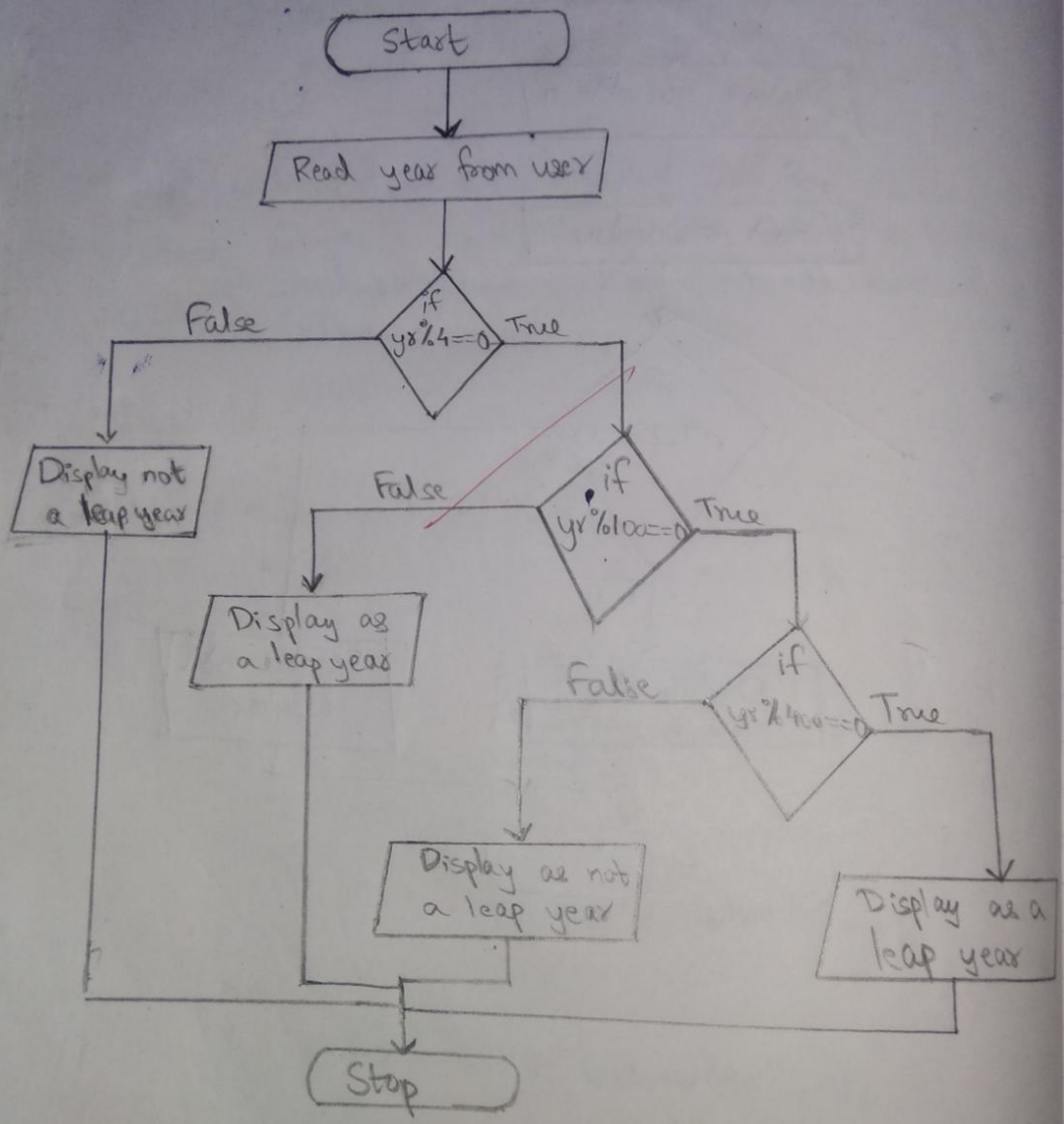
******* Demonstration of Datatypes *******
Enter your roll number: 1773
Enter your name: Ritik Vishwakarma
Enter your mobile number: 7045551339
Enter your percentage: 62
Enter the grade you got: B
Your roll number is 1773
Your name is Ritik Vishwakarma
Your mobile number is 7045551339
Your percentage is 62.000000
Your grade is B

Outputs:

Enter the year : 2020

2020 is a leap year

Flowchart:

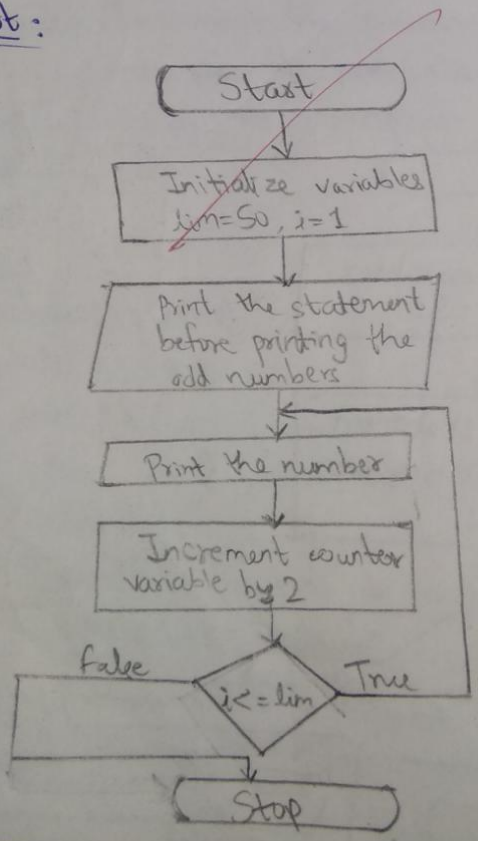


Output :

Odd numbers between 1 and 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 NO. 5

Aim:- Programs to demonstrate the use of array.

Program 1 :- To search for an element in the array.

Algorithm :

Step 1 :- START

Step 2 :- Initialize loop variable, item search variable and a found variable equal to 0.

Step 3 :- Initialize an array and its elements.

Step 4 :- Read the number to be searched in array.

Step 5 :- Use for loop to iterate through the elements of the array to check for the item.

Step 6 :- Check whether elements of array is equal to the item to be searched and subsequently assign found = 1 and come out of the loop.

Step 7 :- Check if found is equal to 1, print the element found else print the element not found.

Step 8 :- STOP

Code:

```
#include <stdio.h>
#include <conio.h>
void main()
{   int A[10], i, item, found=0;
    A[10]={4,19,1,26,73,33,27,13,16,20};
    clrscr();
    printf("Enter the element to be searched:");
    scanf("%d",&item);
```

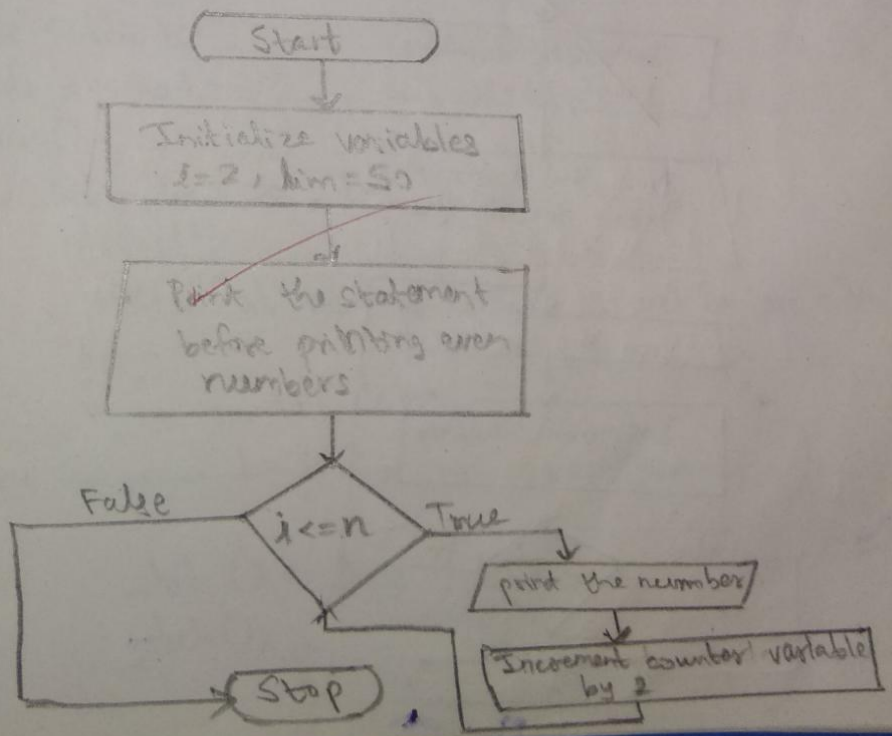
```
if (a=='a'||a=='e'||a=='i'||a=='o'||a=='u'||
    a=='A'||a=='E'||a=='I'||a=='O'||a=='U')
{
  printf("Entered alphabet is vowel");
}
else
{
  printf("Entered alphabet is consonant");
}
getch();
}
```

Output:

The even numbers between 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:



```
clrscr();
printf("Enter the elements of first matrix :");
for(i=0;i<2;i++)
{  for(j=0;j<2;j++)
   {  printf("Enter the element A[%d][%d]:",i,j);
      scanf("%d",&A[i][j]);
   }
}
printf("Enter the elements of second matrix :");
for(i=0;i<2;i++)
{  for(j=0;j<2;j++)
   {  printf("Enter the element B[%d][%d]",i,j);
      scanf("%d",&B[i][j]);
   }
}
for(i=0;i<2;i++)
{  for(j=0;j<2;j++)
   {  C[i][j]=A[i][j]+B[i][j];
   }
}
printf("The elements of addition of matrix are :");
for(i=0;i<2;i++)
{  for(j=0;j<2;j++)
   {  printf("%d \t",C[i][j]);
   }
   printf("\n");
}
getch();
}
```

```
    getch();
}
```

Program 2 : To print odd numbers between 1 and 50 using do while loop.

Algorithm :

Step 1 : Start
Step 2 : Initialize two static variables lim=50, and counter variable = 1.
Step 3 :- Use do while loop for iterating through 1 to 50 for displaying odd numbers.
Step 4 : Increment the counter variable by 2 everytime.
Step 5 : Display the appropriate output.
Step 6 : Stop.

Code :

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

Program 3:- To demonstrate the use of ternary operator.

```
#include <stdio.h>
#include <conio.h>
void main()
{   int a=100, b=50, large;
    clrscr();
    large = a>b ? a : b;
    printf("The largest number is %d", large);
    getch();
}
```

PRACTICAL NO. 1

Aim: Programe to understand the basic datatypes and I/O.

Source code:

Program 1:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int roll;
     char name[30];
     char grade;
     long int mob;
      float per;
     printf("******Demonstration of Datatypes*****");
     printf("Enter your roll number:");
      scanf("%d",&roll);
     printf("Enter your name:");
      gets(name);
     printf("Enter your mobile number:");
      scanf("%ld",&mob);
     printf("Enter your percantage:");
      scanf("%f",&per);
     printf("Enter the grade you got:");
      scanf("%c",&grade);
     printf("Your roll number is %d",roll);
     printf("Your name is %s",name);
```

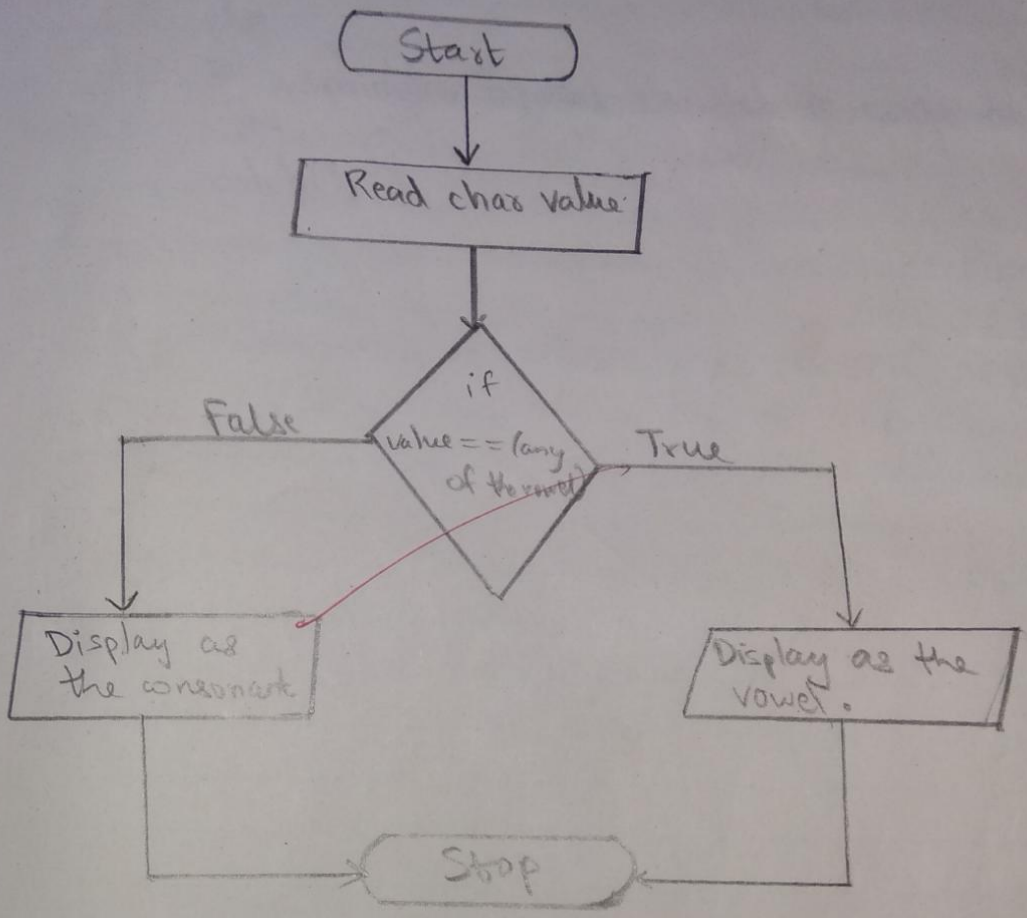
Program 2:- To demonstrate the use of logical operators.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int x,y,z, v1,v2,v3,v4,v5;
    clrscr();
    printf("Enter first value:");
    scanf("%d",&x);
    printf("\nEnter second value:");
    scanf("%d",&y);
    printf("\nEnter third value:");
    scanf("%d",&z);
    v1=(x<y) && (z>y);
    v2=(x==y) && (z<y);
    v3=(x>y) || (z==y);
    v4=!(x==y);
    v5=(x==y);
    printf("Boolean value of (x<y) AND (z>y) is %d",v1);
    printf("Boolean value of (x==y) AND (z<y) is %d",v2);
    printf("Boolean value of (x>y) OR (z==y) is %d",v3);
    printf("Boolean value of !(x==y) is %d",v4);
    printf("Boolean value of (x==y) is %d",v5);
    getch();
}
```

Output:

Enter a alphabet : z
Entered alphabet is consonant

Flowchart:



PRACTICAL NO: 3

Aim:- Programe to demonstrate the use of decision statements.

Program 1:- To check whether entered number is odd or even.

Algorithm:

Step 1:- Start.
Step 2:- [Take Input] Read a number from the user.
Step 3:- Check if number is completely divisible by 2 then print even number else print odd number.
Step 4:- Exit.

Code:

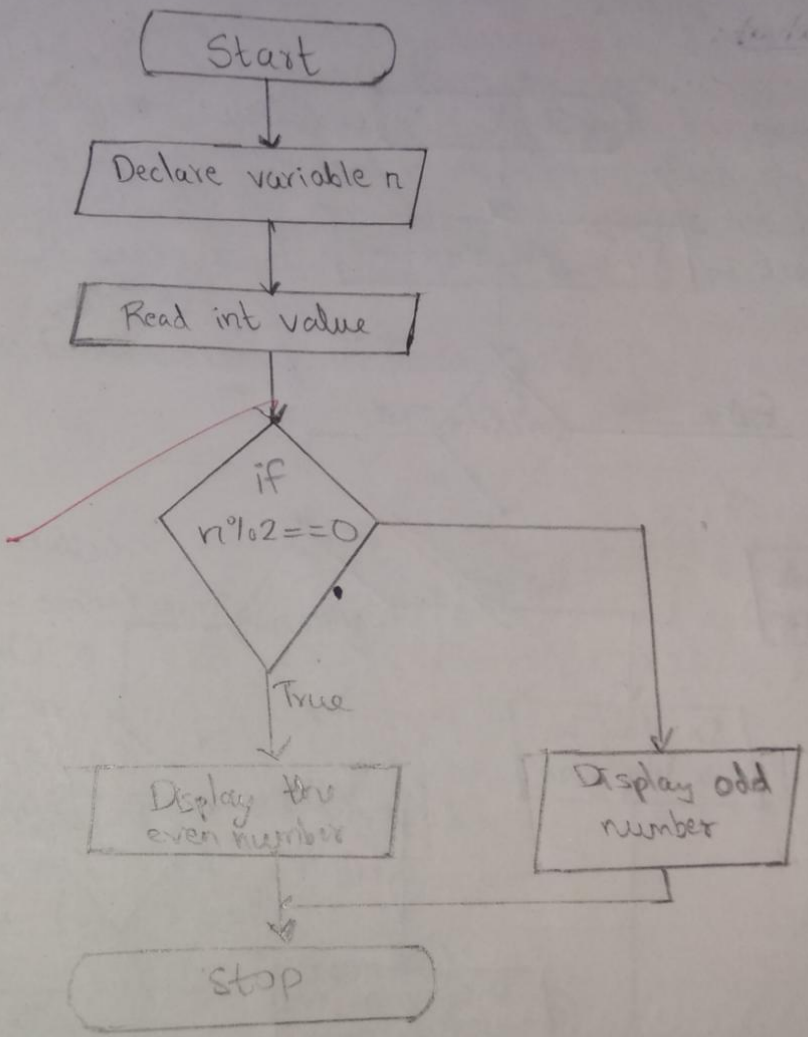
```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n;
    clrscr();
    printf("Enter a number:");
    scanf("%d",&n);
    if(n%2==0)
    {
        printf("%d is even number",n);
    }
    else
    {
        printf("%d is odd number",n);
    }
    getch();
}
```

Output:

Enter a number : 5

5 is odd number.

Flowchart:



```
        {cnt++;
        }
    }
    printf("There are %d even numbers in the array", cnt);
    getch();
}
```

Program 3:- Perform addition on matrices of order 2×2.

Algorithm:

Step 1: START

Step 2: Initialize two loop variables i and j.

Step 3: Initialize three 2D integer arrays for matrix A, B and C (sum of A and B).

Step 4: Use for loop till i and j equal to 2 to read the elements of first matrix.

Step 5: Use for loop till i and j equal to 2 to read the elements of second matrix.

Step 6: Now, use for loop to add the elements of first and second matrix and store it in the third array variable.

Step 7:- Use for loop to display the elements of third matrix.

Step 8:- STOP.

Code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{   int A[2][2], B[2][2], i, j;
    int C[2][2];
```

08

Output:-

********** Demonstration of Operators **********
Enter 1st number : 50
Enter 2nd number : 25
Addition of given two numbers is 75
Subbraction of given two numbers is 25
Product of given two numbers is 1250
Division of given two numbers is 2

Program 2 :- To count no. of even numbers in an array.

Algorithm :

Step 1 : START

Step 2 : Initialize the loop variable, the variable for the limit of elements in array.

Step 3 : Initialize a count variable equal to 0 and declare an integer array.

Step 4 : Read the no. of elements user wants to enter.

Step 5 : Use for loop to read the elements of the array till the limit of elements.

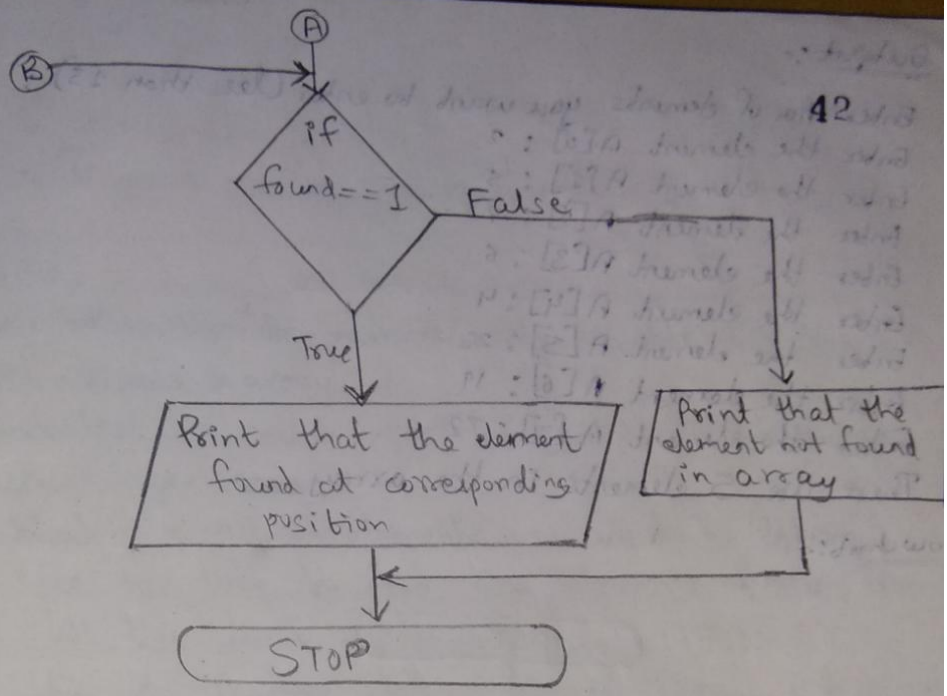
Step 6 : Use a for loop till limit of array and check whether the element of array is completely divisible by 2 and subsequently increment count variable.

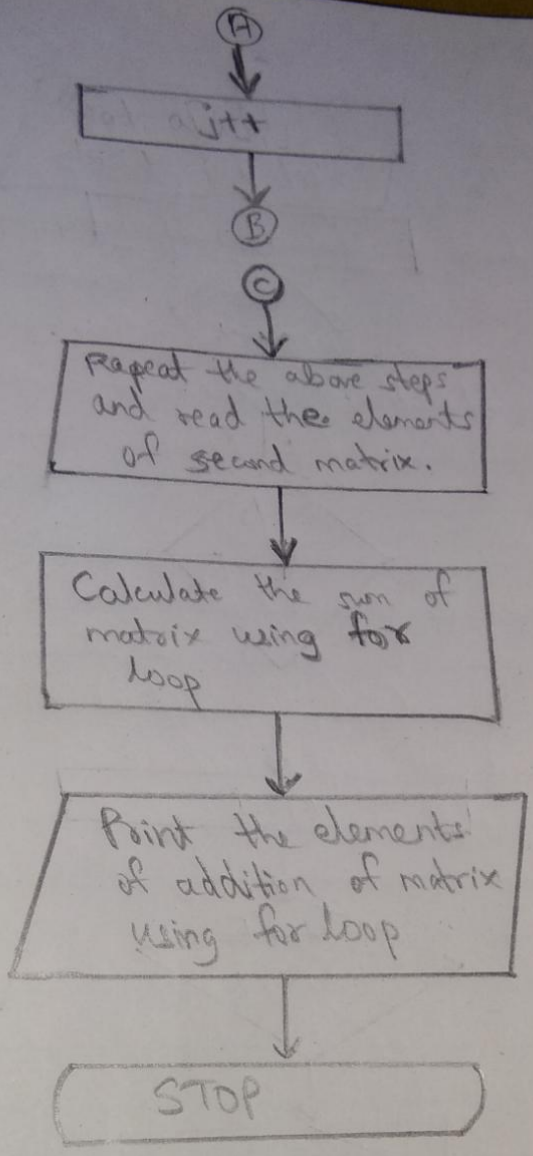
Step 7 : Print the appropriate output.

Step 8 : STOP

Code :-

```
#include<stdio.h>
#include <conio.h>
void main()
{   int A[15], i, cnt=0, lim;
    clrscr();
    printf("Enter no of elements you want to enter (less than 15)");
    scanf("%d", &lim);
    for(i=0; i<lim; i++)
    {   printf("Enter the element A[%d]:", i);
        scanf("%d", &A[i]);
    }
    for(i=0; i<lim; i++)
    {   if(A[i]%2==0)
```


A
B
if
found==1
False
True
Print that the element found at corresponding position
Print that the element not found in array
STOP


A
j++
B
C
Repeat the above steps and read the elements of second matrix.
Calculate the sum of matrix using for loop
Print the elements of addition of matrix using for loop
STOP

Output :-

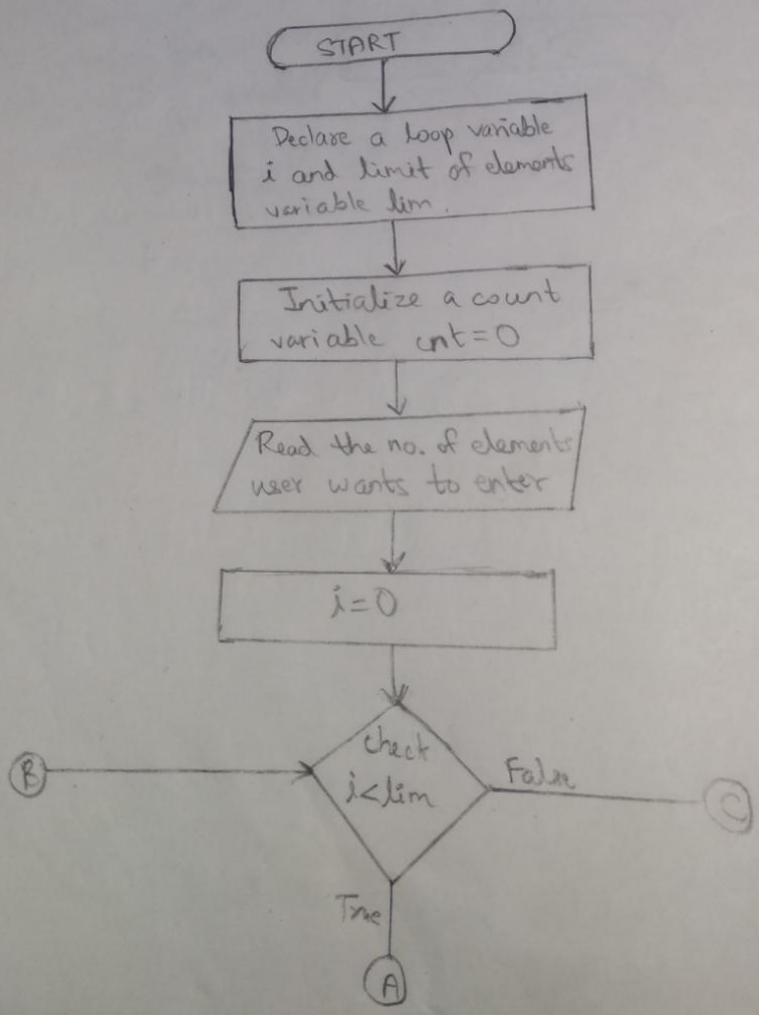
Enter the base of triangle: 10
Enter the height of triangle: 5
The area of the triangle is 25.000000

11/12/19

Output:-

```
Enter the no. of elements you want to enter (less than 15) : 8
Enter the element A[0] : 2
Enter the element A[1] : 5
Enter the element A[2] : 7
Enter the element A[3] : 6
Enter the element A[4] : 4
Enter the element A[5] : 26
Enter the element A[6] : 19
Enter the element A[7] : 72
There are 5 elements in the array.
```

Flowchart:



Output:-

```
Enter first value : 5
Enter second value : 3
Enter third value : 8
Boolean value of (x<y) AND (z>y) is 0
Boolean value of (x==y) AND (z<y) is 0
Boolean value of (x>y) OR (z==y) is 1
Boolean value of !(x==y) is 1
Boolean value of (x==y) is 0.
```

Program 2:- To check the entered year is leap year or not.

Algorithm:-

Step 1: START

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

Step 3: If year is divisible by 4 then check the year is divisible by 100 and if it is then check the year is divisible by 400 else the year is not leap year.

Step 4:- If year is divisible by 4 but not by 100, then print leap year.

Step 5: EXIT.

Code:-

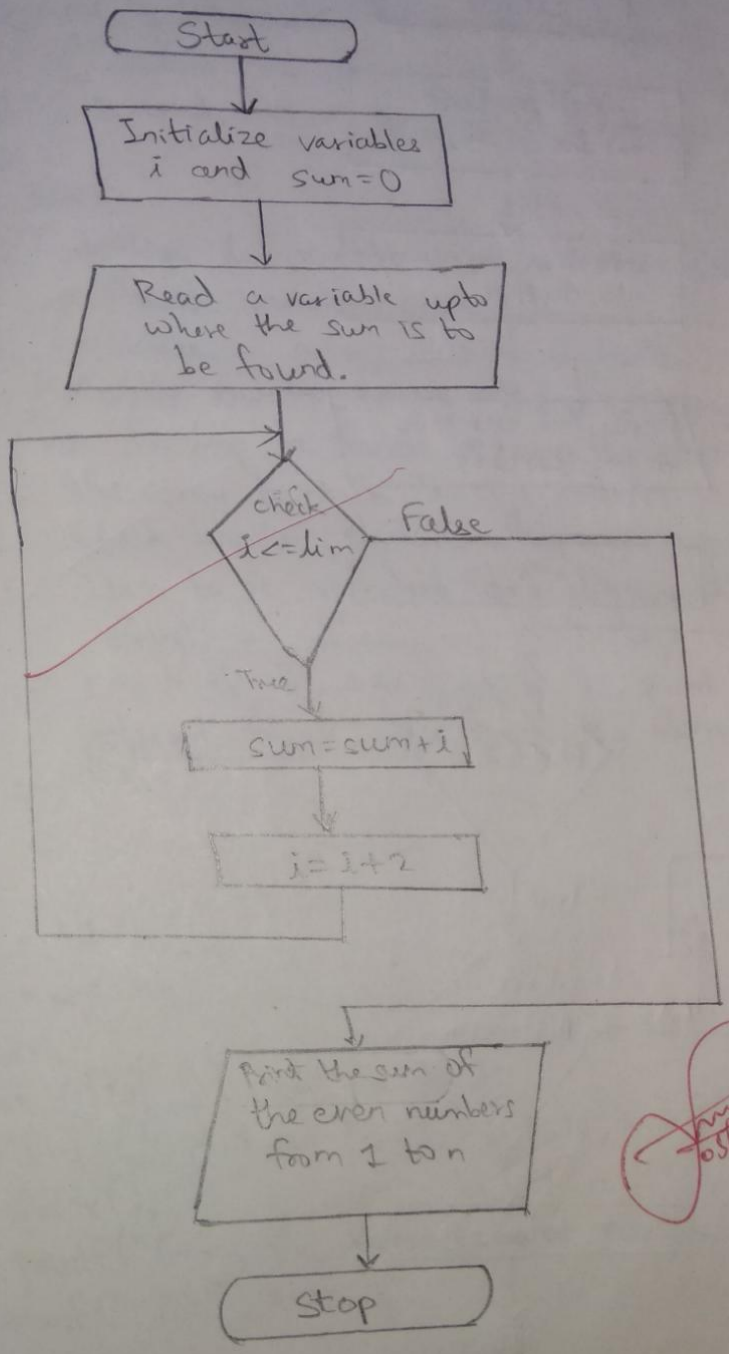
```
#include <stdio.h>
#include <conio.h>
void main()
{   int yr;
    clrscr();
    printf("Enter the year");
    scanf("%d", &yr);
    if (yr%4==0)
    {   if (yr%100==0)
        {   if (yr%400==0)
            {   printf("%d is a leap year", yr);
            }
            else
            {   printf("%d is not a leap year", yr);
            }
        }
```

Output:

Enter upto which no. the sum should be found : 20 40

Sum of all even numbers upto 20 is: 110

Flowchart :



10/02/2020