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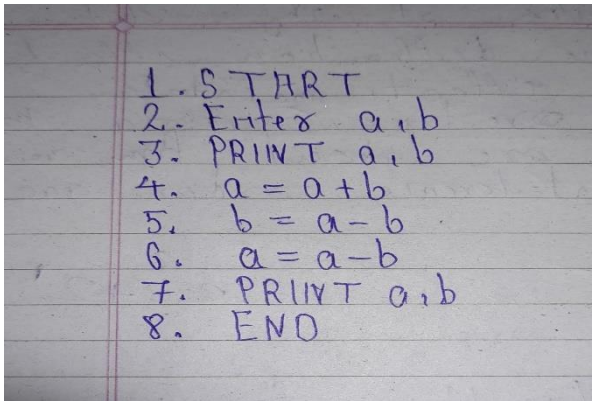
# Experiment No. 1

Write a program to swap two variables values with and without using third variables. Write algorithm and draw flowchart for the same.

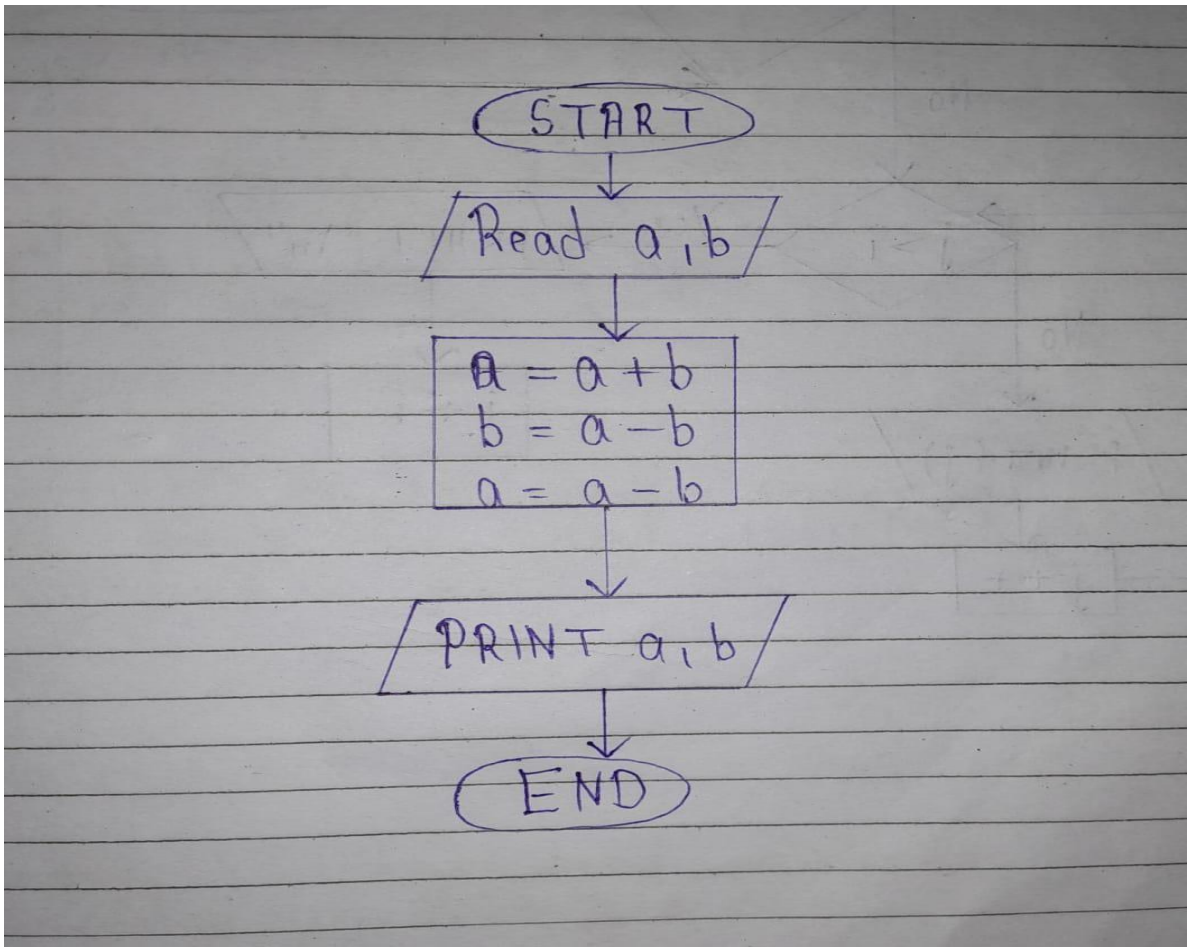
**Aim :**

Swapping of two number with and without using third variable

**Algorithm :**



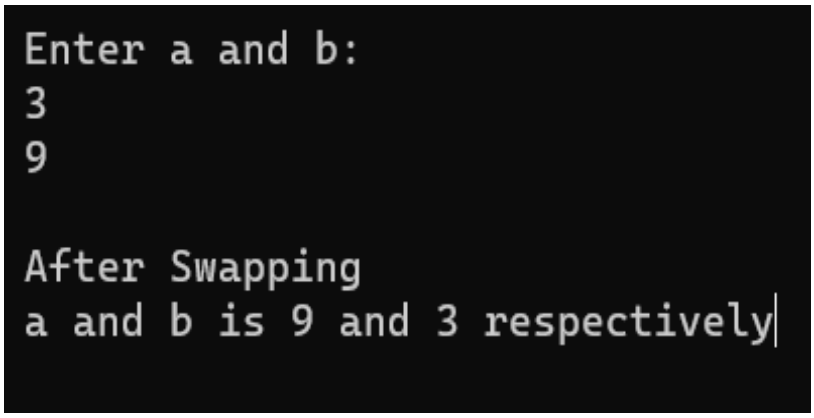

**Flowchart :**

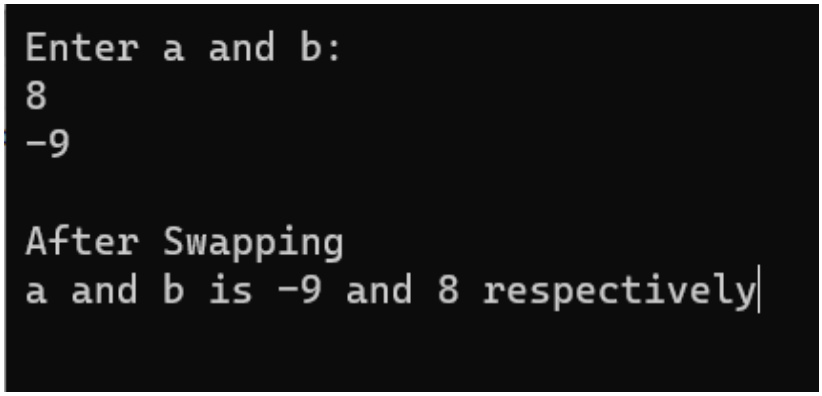


**Code :**

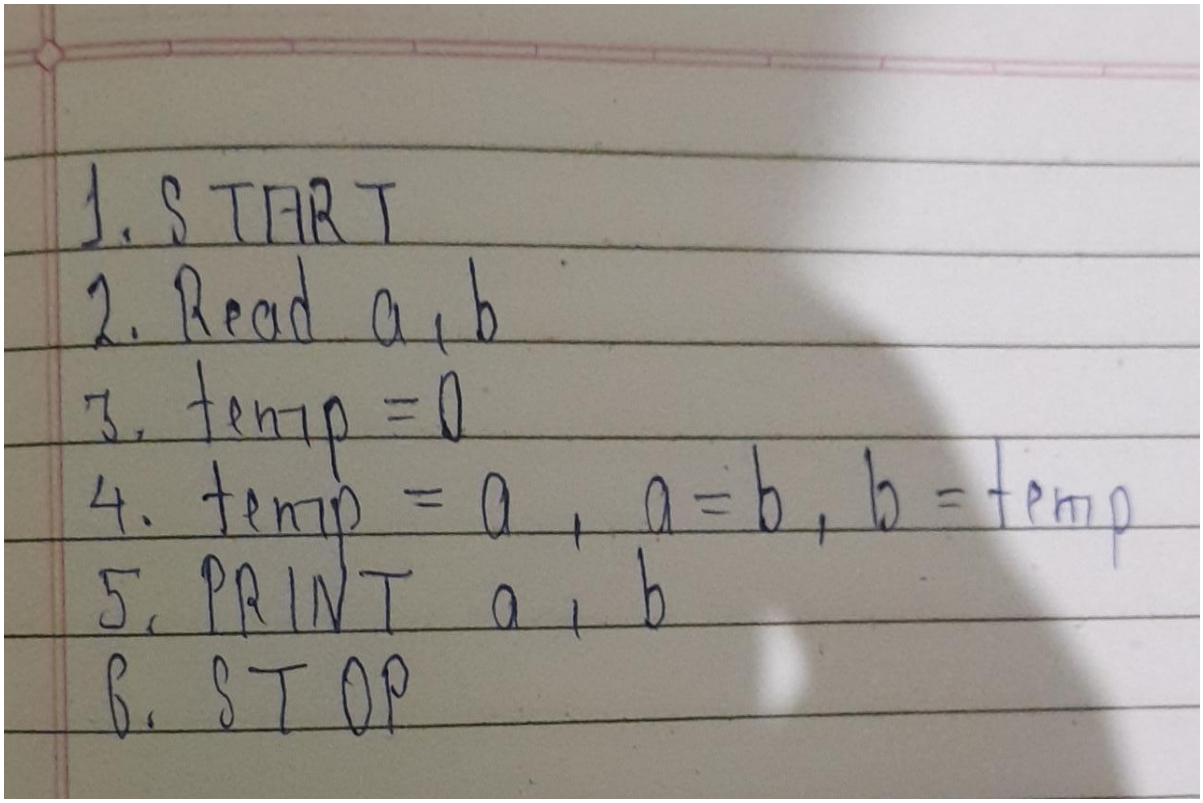
```
#include<stdio.h>
#include<conio.h>
void main()
{
   int a,b;
   clrscr();
   printf("Enter a and b:\n");
   scanf("%d %d",&a,&b);
   a=a+b;
   b=a-b;
   a=a-b;
   printf("\n After Swapping\n a and b is %d and %d respectively",a,b);
   getch();
}
```

**Output :**

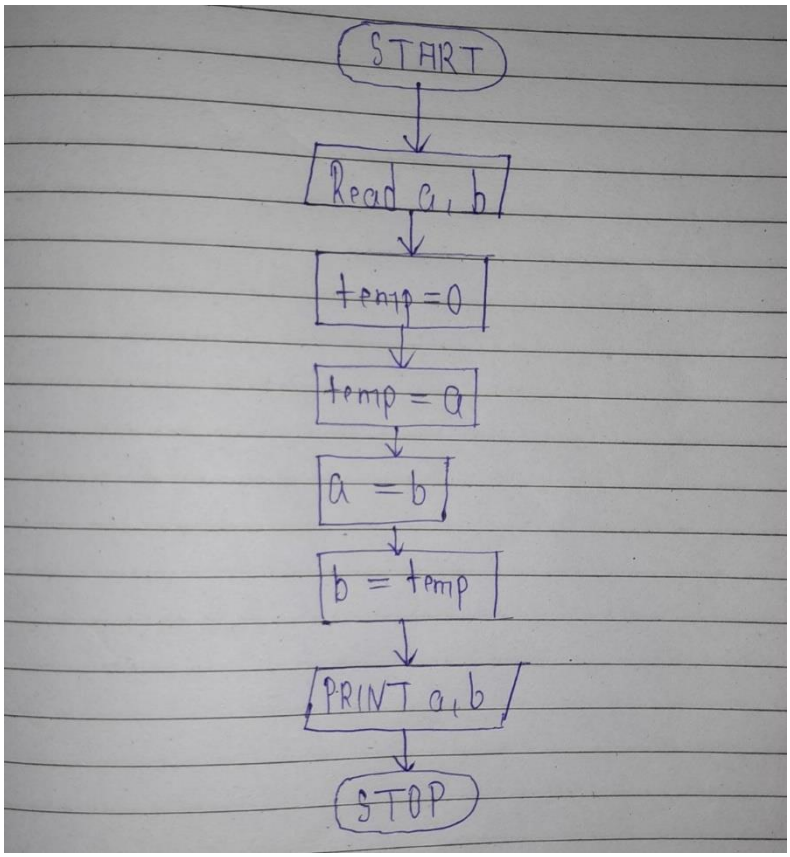


**Algorithm :**



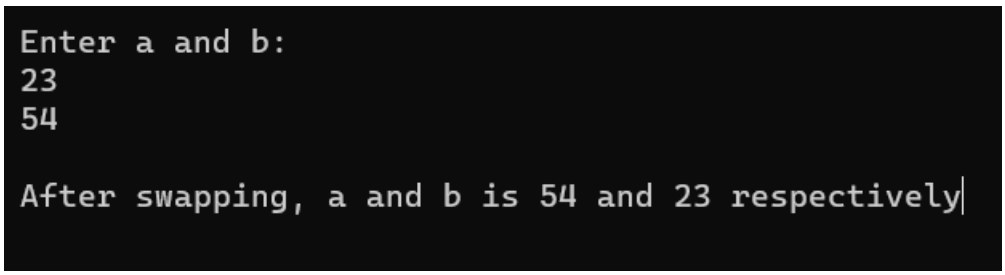

**Flowchart :**



**code :**

```
#include<stdio.h>
#include<conio.h>
void main()
{
   int a,b,temp=0;
   //clrscr();
   printf("Enter a and b:\n");
   scanf("%d %d",&a,&b);
   temp=a;
   a=b;
   b=temp;
   printf("\nAfter swapping, a and b is %d and %d respectively",a,b);
   getch();
}
```

**output :**




**Conclusion:**

We understand that the use of variable , operator and swapping of the number.

# Experiment No. 2

Write a program to check odd or even number: (a) using modulus operator (b) using conditional operator.

**Aim:**

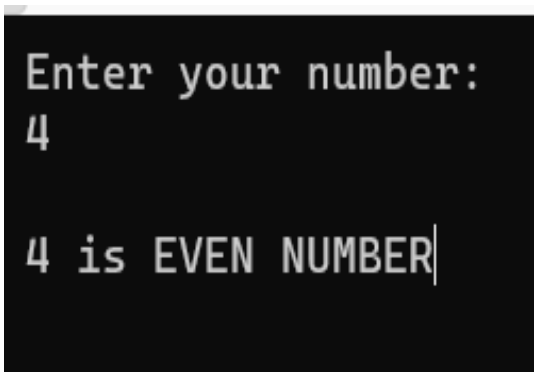
Check odd or even number

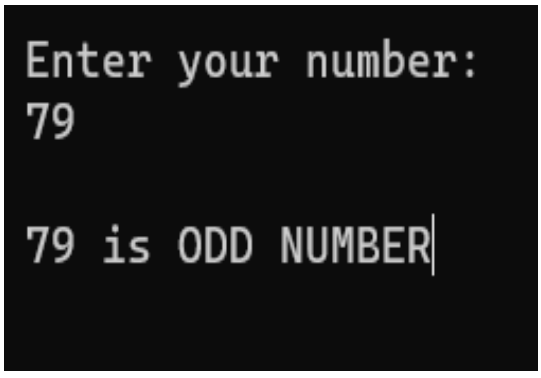
**A ) Using modulus operator**

**Code :**

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

**Output :**



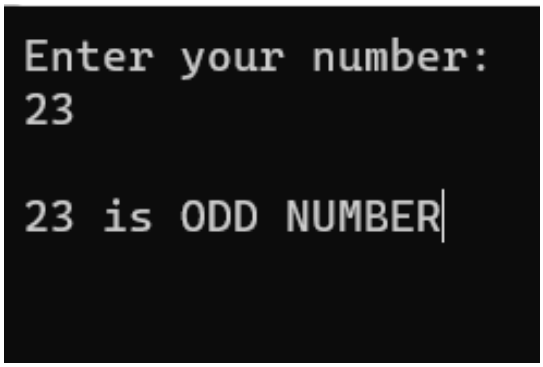



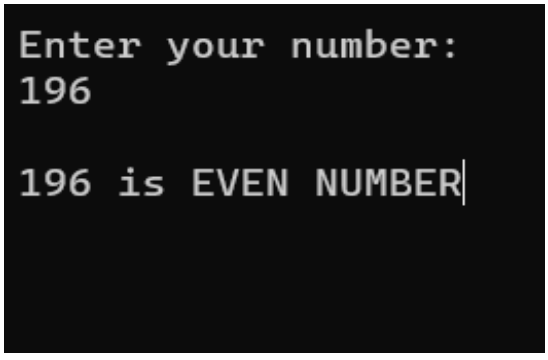
**B ) Using conditional operator**

**Code :**

```
#include<stdio.h>
#include<conio.h>
void main()
{
   int num;
   //clrscr();
   printf("Enter your number:\n");
   scanf("%d",&num);
   (num%2==0)?printf("\n%d is EVEN NUMBER",num):printf("\n%d is ODD
NUMBER",num);
   getch();
}
```

**Output :**




**Conclusion :**

We understand that the use of modulus operator and conditional or ternary operator in a above program.

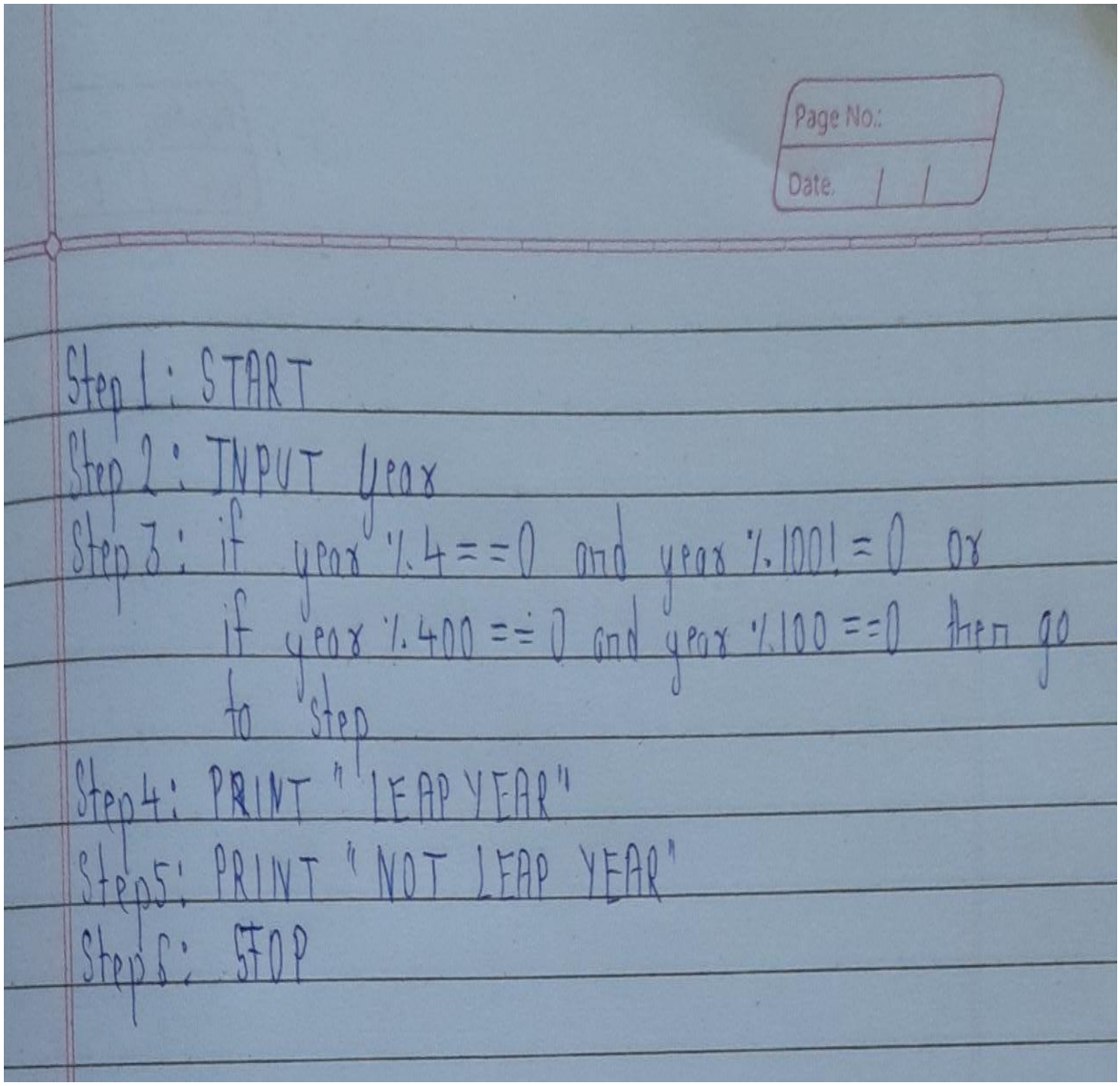
# Experiment No. 3

Design and develop a C program to read a year as an input and find whether it is leap year or not. Also consider the end of the centuries. Write algorithm and draw flowchart for the same.

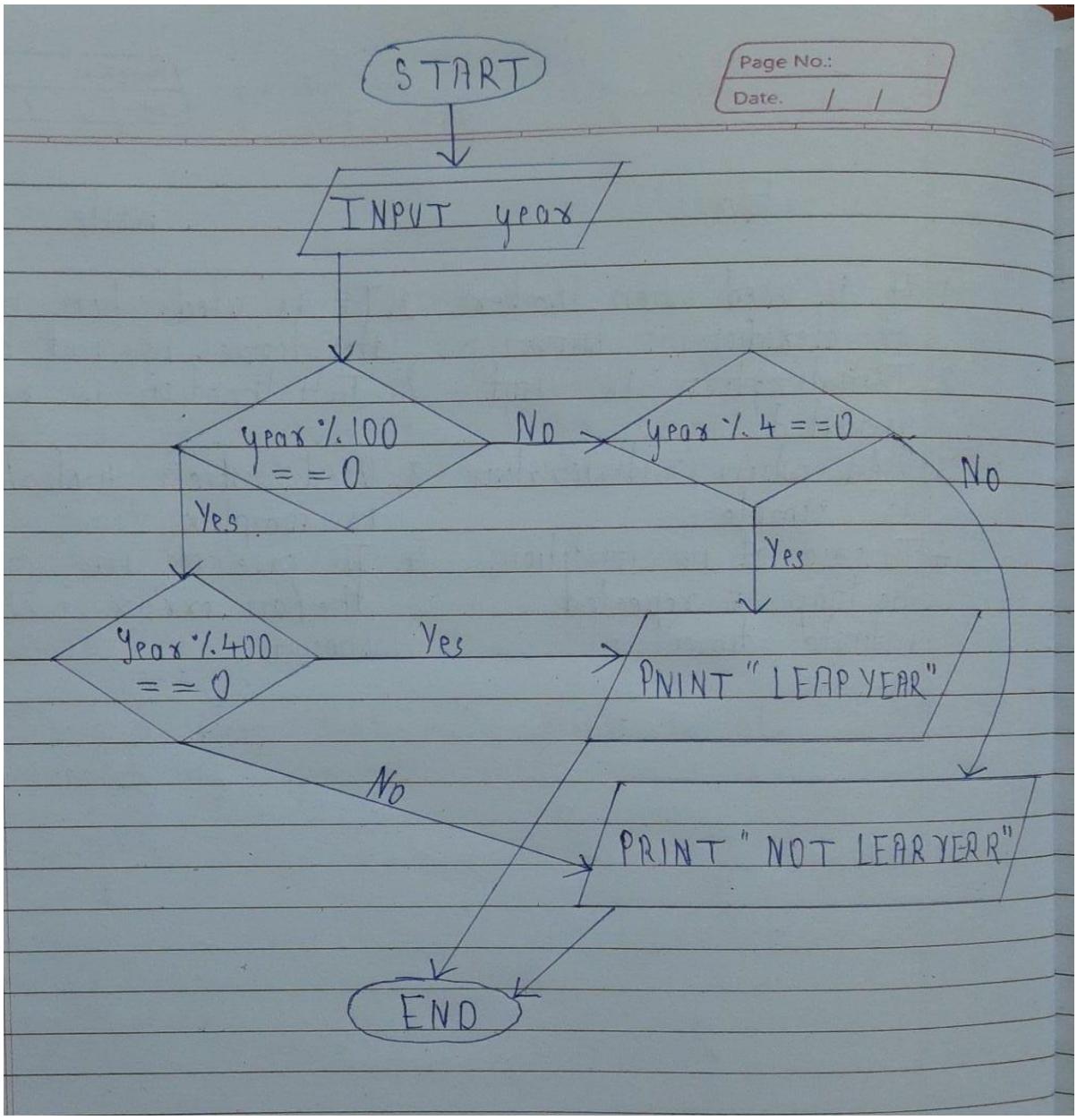
**Aim :**

Check Leap year or not

**Algorithm :**



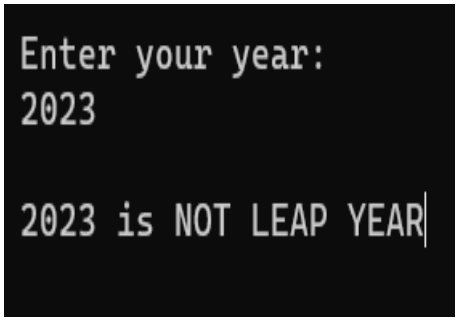
**Flowchart :**

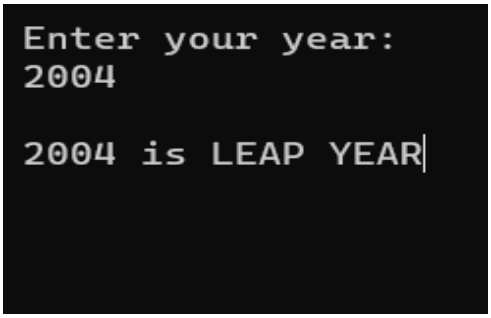

START
INPUT year
year %.100 == 0
No
year %. 4 == 0
No
Yes
Yes
year %.400 == 0
Yes
PRINT "LEAP YEAR"
No
PRINT "NOT LEAR YEAR"
END

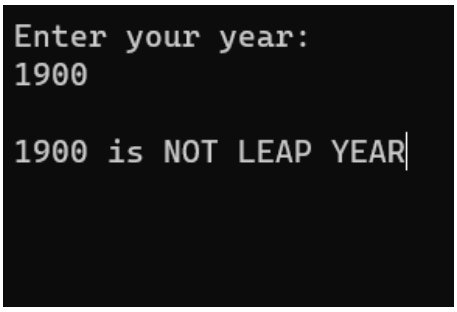
**Code :**

```
#include<stdio.h>
#include<conio.h>
void main()
{
   int year;
   //clrscr();
   printf("Enter your year:\n");
   scanf("%d",&year);
   if((year%100==0 && year%400==0) || (year%100!=0 && year%4==0))
      printf("\n%d is LEAP YEAR",year);
   else
      printf("\n%d is NOT LEAP YEAR",year);
   getch();
}
```

**Output :**




**Conclusion :**

We understand that the use of if else statement in above program.

## Experiment No. 4

Write a C program to find the sum of individual digits of a 3-digit number.

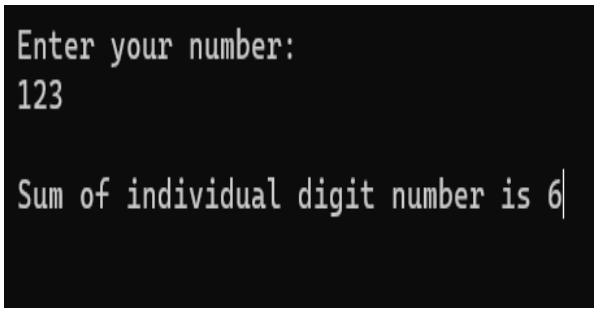
**Aim** :

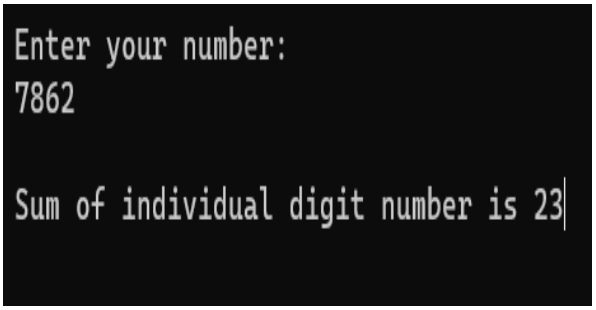
sum of individual digits of a 3-digit number

**Code :**

```
#include<stdio.h>
#include<conio.h>
void main()
{
   int num,sum=0,rem;
   //clrscr();
   printf("Enter your number:\n");
   scanf("%d",&num);
   while(num>0)
   {
      rem=num%10;
      sum+=rem;
      num/=10;
   }
   printf("\nSum of individual digit number is %d",sum);
   getch();
}
```

**Output:**




**Conclusion:**

We understand that the concept of while loop and some other operator.

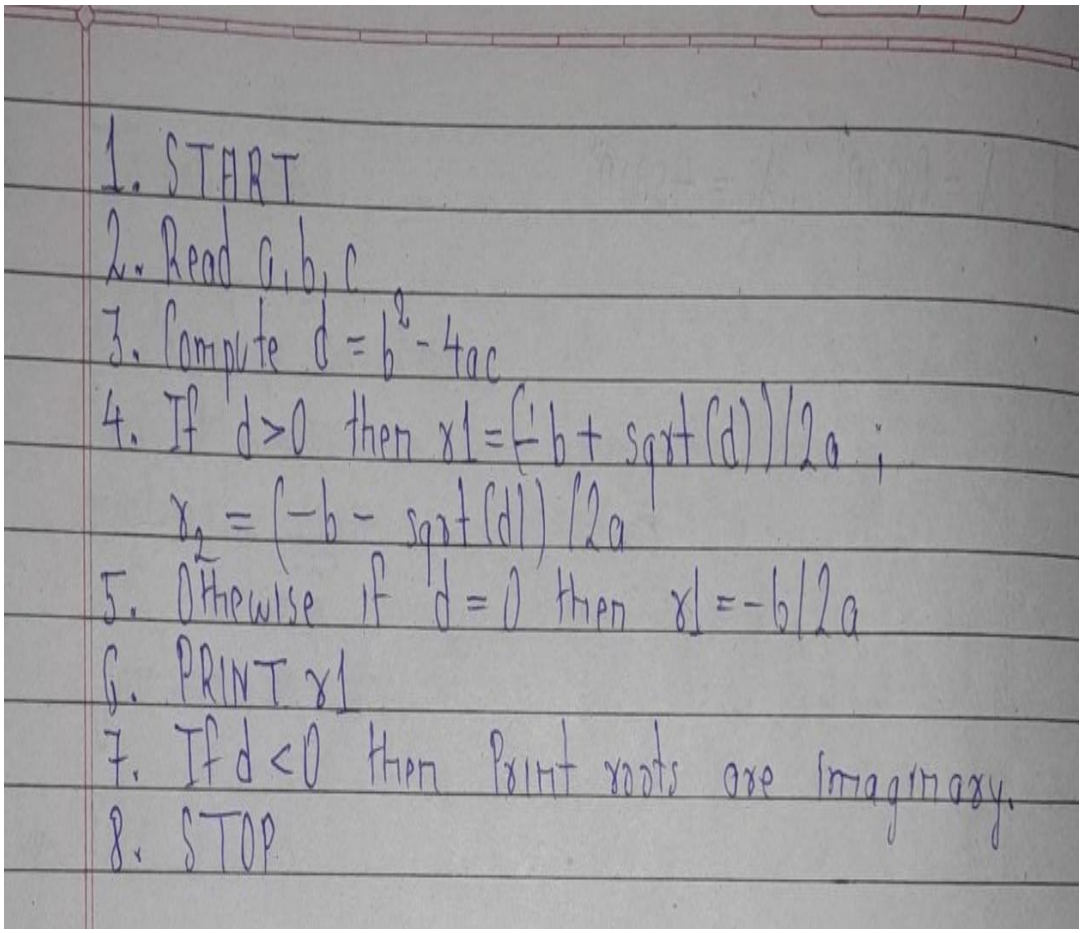
# Experiment No. 5

Design and develop a flowchart or an algorithm that takes three coefficients (a, b, and c) of a Quadratic equation (ax2 +bx+c=0) as input and compute all possible roots. Implement a C program for the developed flowchart/algorithm and execute the same to output the possible roots for a given set of coefficients with appropriate messages.

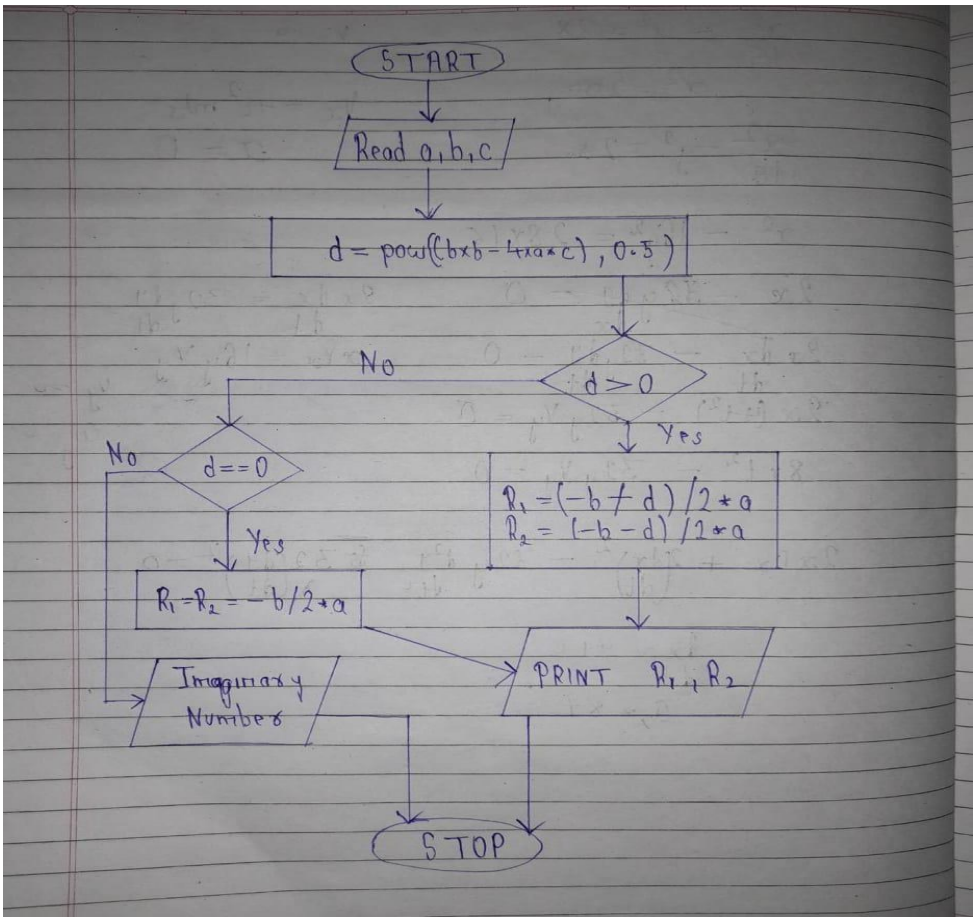
**Aim :**

To find roots of a Quadratic equation

**Algorithm :**



**Flowchart :**



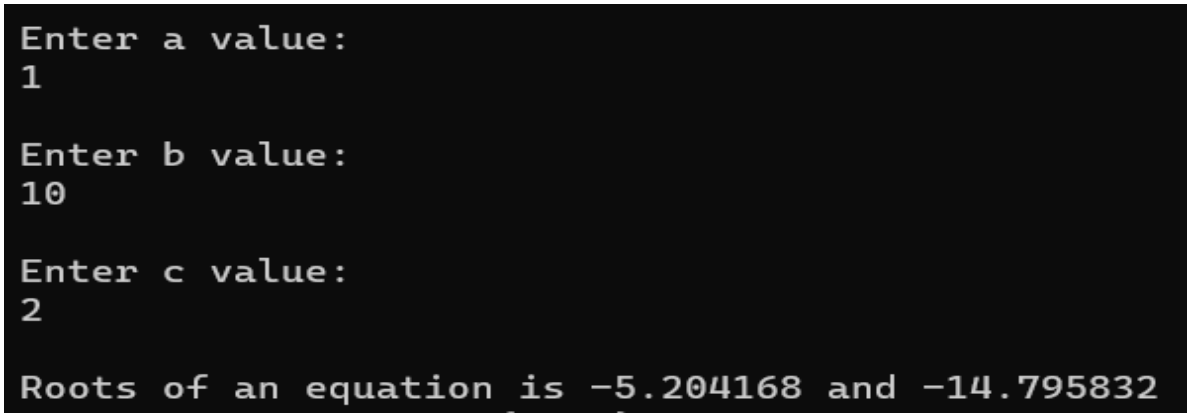

**Code :**

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
   double a,b,c,discriminant,root1,root2,real,img;
   //clrscr();
   //ax^2 + bx + c = 0
   printf("Enter a value:\n");
   scanf("%lf",&a);
   printf("\nEnter b value:\n");
   scanf("%lf",&b);
   printf("\nEnter c value:\n");
   scanf("%lf",&c);
   discriminant=b*b-4*a*c;
   if(discriminant==0)
   {
```

```
      root1=root2=-b/(2*a);
      printf("\nRoots of an equation is %0.3lf",root1);
   }
   else if(discriminant>0)
   {
      root1=(-b+sqrt(discriminant)/(2*a));
      root2=(-b-sqrt(discriminant)/(2*a));
      printf("\nRoots of an equation is %0.3lf and %0.3lf",root1,root2);
   }
   else if(discriminant<0)
   {
      real=-b/(2*a);
      img=sqrt(-(discriminant))/(2*a);
      printf("\nRoots of an equation is %0.3lf + i%0.3lf and %0.3lf -
i%0.3lf",real,img,real,img);
   }
   else
      printf("\nEnter valid number");
   getch();

}
```

**Output :**



```
Enter a value:
12

Enter b value:
5

Enter c value:
6

Roots of an equation is -0.208333 + i0.675720 and -0.208333 - i0.675720
```

```
Enter a value:
0

Enter b value:
1

Enter c value:
2

Roots of an equation is 1.#INF00 and -1.#INF00
```

```
Enter a value:
1

Enter b value:
2

Enter c value:
1

Roots of an equation is -1.000000
```

**Conclusion :**

We understand that some new library (math.h) in C programming along with how to code any problem related to maths subject.