LAB 2

1. Write a program to check if two numbers are equal **without** using arithmetic operators or comparison operators.
2. Program to find Maximum and minimum of two numbers without using any loop or condition.
3. Write a C program that accepts 4 real numbers from the keyboard and prints out the difference (using 4-decimal places) of the maximum and minimum values of these numbers.
   Test data and expected output:
   Enter four numbers: -1.5 2 7.5 11.2 Difference is 12.7000

4. Write a C program that accepts a real number x from the keyboard and prints out the corresponding value of sin(1/x) using 4-decimal places.
   Test data and expected output:
   Enter value of x: 0.5 Value of sin(1/x) is 0.9093
   Enter value of x: 0 Value of x must be nonzero: try again

5. Write a C program that accepts (from the keyboard) a positive integer less than 1000 and prints out the sum of the digits of this number.

   Test data and expected output:
   Enter a +ve no less than 1000: -4
   Entered number is out of range

   Enter a +ve no less than 1000: 1234
   Entered number is out of range

   Enter a +ve no less than 1000: 546
   Sum of the digits of 546 is 15

6. A decimal number between 0 and 32 exclusive can be expressed in binary system as x4x3x2x1x0, where xi's are either zero or one. Write a C program that accepts (from the terminal) a decimal number in the above range and prints out the equivalent binary representation with leading bit 1.

   Test data and expected output:
   Enter a +ve no less than 32: -5
   Entered number is out of range

   Enter a +ve no less than 32: 21

Binary equivalent of decimal number 21 is 10101

Enter a +ve no less than 32: 14
Binary equivalent of decimal number 14 is 1110

Enter a +ve no less than 32: 35
Entered number is out of range

7. A positive decimal fraction can be expressed in binary system as 0.x1x2x3x4⋯, where xi's are either zero or one. Write a C program that accepts (from the keyboard) a positive decimal fraction a (0 < a < 1) and prints out at most first four bits of the equivalent binary representation. If the binary representation continues after four bits, then it appends the binary representation with ⋯.

   Test data and expected output:
   Enter a +ve decimal fraction less than 1: .875
   Binary equivalent of 0.875000 is 0.111
   Enter a +ve decimal fraction less than 1: -0.1
   Entered number is not a +ve decimal fraction less than 1
   Enter a +ve decimal fraction less than 1: 1.2
   Entered number is not a +ve decimal fraction less than 1
   Enter a +ve decimal fraction less than 1: 0.525
   Binary equivalent of 0.525000 is 0.1000...

8. Write a C program that accepts coordinates of two-dimensional points A and B and prints out (using two decimal places) the distance between A and B. It also prints out the coordinates (using two decimal places) of the midpoint of A and B.
   Test data and expected output:
   Enter coordinates of points A: -1 3
   Enter coordinates of points B: 2 -1
   Distance between A and B is 5.00
   The coordinates of midpoint of A and B are (0.50,1.00)
9. Program to divide an integer by 4 without using '/' operator.