Title: Mathematical Operation in C.

Objective:

The main objectives of this lab are to

- Learn about calculating the area of circle using local and global variable.
- Learn about calculating power and square root of any integer number.

Theory:

Generally we do mathematical operation in c with a header file that is called math.h . Under this header file there are several library functions. I will discuss all of them with a very short description.

The C <math.h> header file declares a set of functions to perform mathematical operations such as: sqrt() to calculate the square root, log() to find natural logarithm of a number etc.

C acos()
computes arc cosine

C acosh()
computes arc hyperbolic cosine

C asin()
computes arc sine

C asinh()
computes the hyperbolic of arc sine of an argument

C atan()
computes the arc tangent of an argument

C atan2()
computes the arc tangent of an argument.

C atanh()
computes arc hyperbolic tangent

C cbrt()
computes cube root of a number

C ceil()
computes the nearest integer greater than argument

C cos()
computes the cosine of an argument.

C cosh()
computer hyperbolic cosine.

C exp()
computes the exponential raised to the argument

C fabs()
computes absolute value

C floor()
calculates the nearest integer less than argument

C hypot()
computes hypotenuse

C log()
computes natural logarithm of an argument.

C log10()
computes the base 10 logarithm of an argument.

C pow()
Computes power of a number

C sin()
compute sine of a number

C sinh()
computes the hyperbolic sine of an argument.

C sqrt()
computes square root of a number

C tan()
computes tangent

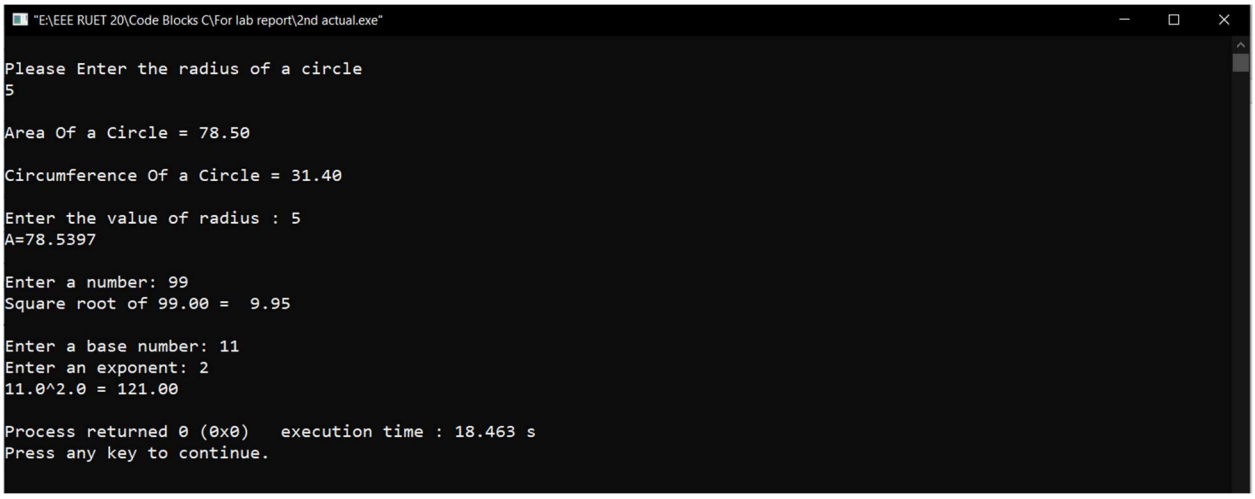
C tanh()
computes the hyperbolic tangent of an argument

Source Code:

```
1. ///  Calculating the area of circle using global variable.
2.
3. #include<stdio.h>
4. #include <math.h>
5. #define PI 3.14
6.
7. int main()
8. {
9.     float radius, area, circumference;
10.
11.         printf("\nPlease Enter the radius of a circle\n");
12.         scanf("%f",&radius);
13.
14.         area = PI*radius*radius;
15.         circumference = 2* PI*radius;
16.
17.         printf("\nArea Of a Circle = %.2f\n", area);
18.         printf("\nCircumference Of a Circle = %.2f\n",
    circumference);
19.
20.     ///  Calculating the area of circle using local variable.
21.
22.         double R, A;
23.         double pi= 3.14159;
24.         printf("\nEnter the value of radius : ");
25.         scanf("%lf", &R);
26.         A = pi * R * R;
27.         printf("A=%.4lf\n", A);
28.
29.     /// Calculating power and square root of any integar
    number.
```

```
30.
31.         double number, squareRoot;
32.
33.         printf("\nEnter a number: ");
34.         scanf("%lf", &number);
35.
36.         // computing the square root
37.         squareRoot = sqrt(number);
38.
39.         printf("Square root of %.2lf =  %.2lf\n", number,
    squareRoot);
40.
41.
42.         double base, exp, result;
43.         printf("\nEnter a base number: ");
44.         scanf("%lf", &base);
45.         printf("Enter an exponent: ");
46.         scanf("%lf", &exp);
47.
48.         // calculates the power
49.         result = pow(base, exp);
50.
51.         printf("%.1lf^%.1lf = %.2lf\n", base, exp, result);
52.
53.
54.         return 0;
55.     }
```

Output:



Discussion and Conclusion:

In this program, I work on a Header file named <Math.h>. In the first section I work with global and local variable to find the radius of a circle. Next section I work on power function and squire root function. It takes input from the user and display the result.