Assignment#5

Advanced Programming for python

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# Drawing a circle using turtle:

## Code:

import turtle as x

x.circle(50)

## Output:

Shape

Description automatically generated

# Math Library Features:

The math library includes many mathematical functions and formulas that can be used directly, rather than creating a new function by yourself. The main components of the math library are:

* Number-theoretic and representation functions
* Power and logarithmic functions
* Trigonometric functions
* Angular conversion
* Hyperbolic functions
* Special functions
* Constants

Some of the most commonly used and important functions & constants of the math library are as follows:

* Math.pi: imports the exact value of pi
* Math.e: imports the exact value of euler’s number
* Math.exp(): exponent function for calculating the exponent of any value
* Math.log(): The logarithm function calculates the log of the provided input depending on the base provided.
* Math.ceil(): returns the ceiling value of the specified number.
* Math.fabs(): returns the absolute value of the specified number.
* Math.floor(): returs the floor value of the specified number.
* Math.gcd(a, b): returns the greatest common divisor of a and b.
* Math.fsum(iterable): returns the sum of all elements in an iterable object.
* expm1(): returns (e^x)-1.
* Math.exp(x)-1: when the value of x is small, calculating exp(x)-1 may lead to a significant loss in precision

# Numpy library features:

Numpy is a tool used for working on matrices and other advanced calculations that the math library is incapable of performing.

* numpy.shape: The shape function returns the shape of the given dataframe in the form of a tuple
* numpy.dtype: Returns the datatype of the inputted dataframe.
* numpy.array: creates a matrix depending on the size of the dataframe.
* numpy.zeros: returns an array filled with zeroes
* numpy.ones: returns an array filled with ones
* numpy.arange: returns a one dimensional array filled with the number of values specified.
* numpy.dot: returns the dot product taken between two arrays
* numpy.random: a module which allows working with random numbers
* numpy.randn: creates an array filled with random values
* numpy.maximum: compares two matrices and returns a matrix filled with max values from each matrix
* numpy.reshape: reshapes the dataframe to a new size specified in the input.