Advanced Programming in Python (AI 853)

Assignment 04

Due Date: 29/11/2022

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Discipline: Robotics and Intelligent Machines Engineering (RIME)

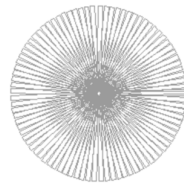**Submitted to: Dr. Muhammad Jawad Khan**

SCHOOL OF MECHANICAL AND MANUFACTURING ENGINEERING (SMME)

DRAWING A CIRCLE USING TURTLE LIBRARY

CODE:

```python
# -*- coding: utf-8 -*-
"""
Created on Tue Nov 29 11:43:31 2022

@author: billu
"""

import turtle
x= turtle.Turtle ()
def circle(angle):
        x.forward(100 )
        x.right(angle )
        x.forward(5 )
        x.right(angle )
        x.forward(100 )
        #x.right(angle )
        #x.forward(100 )"""
        x.right(angle+1)
for i in range(90):
    circle(90)
```

RESULTS:

MATH LIBRARY FUNCTIONS:

math.acos()	Returns the arc cosine of a number
math.acosh()	Returns the inverse hyperbolic cosine of a number
math.asin()	Returns the arc sine of a number
math.asinh()	Returns the inverse hyperbolic sine of a number
math.atan()	Returns the arc tangent of a number in radians
math.atan2()	Returns the arc tangent of y/x in radians
math.atanh()	Returns the inverse hyperbolic tangent of a number
math.ceil()	Rounds a number up to the nearest integer

math.comb()	Returns the number of ways to choose k items from n items without repetition and order
math.copysign()	Returns a float consisting of the value of the first parameter and the sign of the second parameter
math.cos()	Returns the cosine of a number
math.cosh()	Returns the hyperbolic cosine of a number
math.degrees()	Converts an angle from radians to degrees
math.dist()	Returns the Euclidean distance between two points (p and q), where p and q are the coordinates of that point
math.erf()	Returns the error function of a number
math.erfc()	Returns the complementary error function of a number
math.exp()	Returns E raised to the power of x
math.expm1()	Returns $E^x - 1$
math.fabs()	Returns the absolute value of a number
math.factorial()	Returns the factorial of a number
math.floor()	Rounds a number down to the nearest integer
math.fmod()	Returns the remainder of x/y
math.frexp()	Returns the mantissa and the exponent, of a specified number
math.fsum()	Returns the sum of all items in any iterable (tuples, arrays, lists, etc.)
math.gamma()	Returns the gamma function at x
math.gcd()	Returns the greatest common divisor of two integers
math.hypot()	Returns the Euclidean norm
math.isclose()	Checks whether two values are close to each other, or not
math.isfinite()	Checks whether a number is finite or not
math.isinf()	Checks whether a number is infinite or not
math.isnan()	Checks whether a value is NaN (not a number) or not
math.isqrt()	Rounds a square root number downwards to the nearest integer
math.ldexp()	Returns the inverse of math.frexp() which is x * (2**i) of the given numbers x and i
math.lgamma()	Returns the log gamma value of x
math.log()	Returns the natural logarithm of a number, or the logarithm of number to base
math.log10()	Returns the base-10 logarithm of x
math.log1p()	Returns the natural logarithm of 1+x
math.log2()	Returns the base-2 logarithm of x
math.perm()	Returns the number of ways to choose k items from n items with order and without repetition
math.pow()	Returns the value of x to the power of y
math.prod()	Returns the product of all the elements in an iterable
math.radians()	Converts a degree value into radians
math.remainder()	Returns the closest value that can make numerator completely divisible by the denominator
math.sin()	Returns the sine of a number
math.sinh()	Returns the hyperbolic sine of a number
math.sqrt()	Returns the square root of a number
math.tan()	Returns the tangent of a number
math.tanh()	Returns the hyperbolic tangent of a number
math.trunc()	Returns the truncated integer parts of a number

NUMPY LIBRARY FUNCTIONS:

numpy.shape()	The elements of the shape tuple give the lengths of the corresponding array dimensions.
numpy.type()	describes how the bytes in the fixed-size block of memory corresponding to an array item should be interpreted.
numpy.arange()	Makes an array from 0 to the number added as an argument.
arr = np.array([1, 2, 3, 4, 5, 6, 7]) print(arr[-3:-1])	Slices the array backwards starting from the first element entered to back.
Arr=np.arange(4). reshape((2, 2)) print arr print arr.T • print np.dot(arr.T, arr) • print np.dot(arr, arr.T)	Multiplies the 2 matrices.