CS100   Fall 2017

Name _____

CPADS Lab Activity #4

1. Open Pycharm making sure to select the Python 3.x interpreter. Create a new project named **CS100-Lab4**. Right click on **CS100-Lab4** in the left sidebar and select **New->Python File**. Name the file **pinwheelCompute**. Type the following code **exactly** as shown *copying* the **drawSquareFromCenter()** function code from **pinwheel.py** in **CS100-Lab3**

```
import turtle

def drawSquareFromCenter(turtle,x):...

def main():
    # Create turtle
    bob = turtle.Turtle()

    # Get user input
    size1 = int(input('Enter size for first square: '))
    size2 = int(input('Enter size for second square: '))
    size3 = int(input('Enter size for third square: '))
    size4 = int(input('Enter size for fourth square: '))

    # Draw graphics
    # TODO: Move to center of first square
    drawSquareFromCenter(bob,size1)

    # TODO: Move to center of second square
    drawSquareFromCenter(bob,size2)

    # TODO: Move to center of third square
    drawSquareFromCenter(bob,size3)

    # TODO: Move to center of fourth square
    drawSquareFromCenter(bob,size4)


    # Press any key to exit
    input()

main()
```

The program should prompt the user to enter four sizes for the squares and simply draw all of them concentrically about the origin.

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2. Complete the program by adding code in the sections marked **TODO** that computes movement to the centers of each square **USING** the variables **size1**, **size2**, **size3**, **size4**. You **MUST** move in the following manners:

1. **Square 1:** Move to the center using a forward, right turn, forward procedure returning back to the origin after drawing the square
2. **Square 2:** Declare a variable for the direct distance to the center, turn 45 degrees, move forward, draw the square, and then move back to the origin.
3. **Square 3:** Declare two variables **x** and **y** and compute the center coordinates assuming the turtle begins at the origin. Use the **setposition(x,y)** turtle command to move, and then draw the square. **DO NOT** return to the origin.
4. **Square 4:** Declare three variables **dx**, **dy,** and **dist**.
   - Compute the x and y distances from the center of the third square to the center of the fourth square
   - Compute the distance and angle to go *directly* from one center to the other (Hint: Use the tangent function to calculate the angle)
   - Use one turn and one forward command to move to the center of the fourth square (Hint: Consider what direction the cursor is facing after finishing drawing the third square to determine the proper angle and direction to turn)
   - Draw the square and move back to the origin.

Hint: ***USE A STRATEGY TO FIGURE OUT THE PROPER COMPUTATIONS!***