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CPADS Assignment #2

1. Open Pycharm making sure to select the Python 3.x interpreter. Create a new project named **CS100-Assignment2**. Right click on **CS100-Assignment2** in the left sidebar and select **New->Python File**. Name the file **drawPyramid**. Type the following code **exactly** as shown *copying* the **drawSquareFromCenter()** function code from **CS100-Lab2**.

```
import turtle

def drawSquareFromCenter(turtle,x):...

def drawRowWithSquares(turtle, size, numBlocks):
    # TODO: Complete function to draw a row with numBlocks squares
    drawSquareFromCenter(turtle,size)

# TODO: Add function to draw pyramid

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

    # Get user input
    size = int(input('Enter size: '))
    blocks = int(input('Enter number of blocks for bottom row: '))

    # Draw graphics
    # Comment out to draw pyramid
    drawRowFromSquares(bob,size,blocks)

    # Uncomment to draw pyramid
    #drawPyramid(bob,size,blocks)

    # Press any key to exit
    input('Press enter to exit')

main()
```

As provided, the program should prompt the user to enter a size for the squares and the number of blocks for the bottom row of the pyramid. It will then simply draw a single square.

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2. Complete the function called **drawRowWithSquares()** to construct a row of ***numBlocks*** boxes of size ***size*** using **drawSquareFromCenter()** and an appropriate **for** loop. You **MUST** return the cursor to the original starting position once the boxes have been drawn. Note: The example below shows what the figure would look like for **drawRowWithSquares(bob,100,4)**.

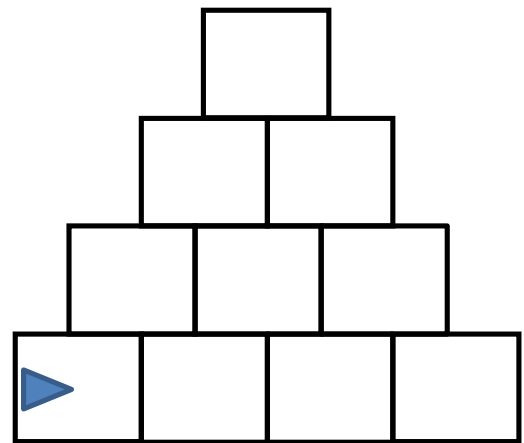
Hint: USE YOUR STRATEGY FROM LAB ACTIVITY 4!



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3. **Add** a new function named **drawPyramid()** that uses the **drawRowWithSquares()** function (from problem 2), and an appropriate **for** loop to draw a pyramid with the base row having **blocks** boxes and each subsequent row having one fewer box until the top row only contains one box as shown in the figure below. The rows are all centered on each other. Figure out how to return the cursor back to its original position relative to the number of rows that were drawn.

Hint: USE YOUR STRATEGY FROM LAB ACTIVITY 4!



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4. **(Challenge)** Consider what changes would be necessary to your **drawPyramid()** function to draw the following figure consisting of a pyramid of *equilateral triangles*. You only need to draw the shaded triangles. Recall that an equilateral triangle has the property that all three sides are the same length (thus all three interior angles are 60 degrees).

Hint: THINK about what differences there are between this problem and the previous one! Then derive a STRATEGY to incorporate these differences. Lastly, add appropriate code to implement your STRATEGY without deleting any existing code, simply comment out any unnecessary lines!

