Program Arcade GamesWith Python And Pygame

Lab 6: Loopy Lab

Each part of this lab is worth 5 points.

6.1 Part 1

Write a Python program that will print the following:

```
10
11 12
13 14 15
16 17 18 19
20 21 22 23 24
25 26 27 28 29 30
31 32 33 34 35 36 37
38 39 40 41 42 43 44 45
46 47 48 49 50 51 52 53 54
```

Tips for Part 1

- Generate the output for part one using two **`for`** loops, one nested.
- To start, go back to chapter 6 and remember how to create a triangle of asterisks. Recreate that.
- Then create a new variable. Don't use i, j, row, or column, or whatever you already used. Set it to your starting value. Print that.

This problem requires a bit of an "a-ha" to get. Make sure to ask around if you have problems. My students often find it to be one of the harder problems in this course.

6.2 Part 2

Create a big box out of *n* rows of little o's for any desired size n. Use an **`input`** statement to allow the user to enter the value for n and then print the properly sized box.

```
E.g. n = 3
oooooo
o    o
oooooo

E.g. n = 8
oooooooooooooooo
o              o
o              o
o              o
o              o
o              o
o              o
oooooooooooooooo
```

Tip: Break this problem into parts. First, draw the first line with the proper number of o's:

```
oooooo
```

Then, draw the last line too:

```
oooooo
oooooo
```

Then, print an o between them:

```
oooooo
o
oooooo
```

Then repeat it:

```
oooooo
o
o
o
o
oooooo
```

Then add another one:

```
oooooo
oo
oo
oo
oo
oooooo
```

Then add spaces:

```
oooooo
o    o
o    o
o    o
o    o
oooooo
```

6.3 Part 3

Print the following for any positive integer n. Use an **input** statement to allow the user to enter the value for n and then print the properly sized box.

```
E.g. n = 3

1 3 5 5 3 1
3 5     5 3
5         5
5         5
3 5     5 3
1 3 5 5 3 1

E.g. n = 5
1 3 5 7 9 9 7 5 3 1
3 5 7 9     9 7 5 3
5 7 9         9 7 5
7 9             9 7
9                 9
9                 9
7 9             9 7
5 7 9         9 7 5
3 5 7 9     9 7 5 3
1 3 5 7 9 9 7 5 3 1
```

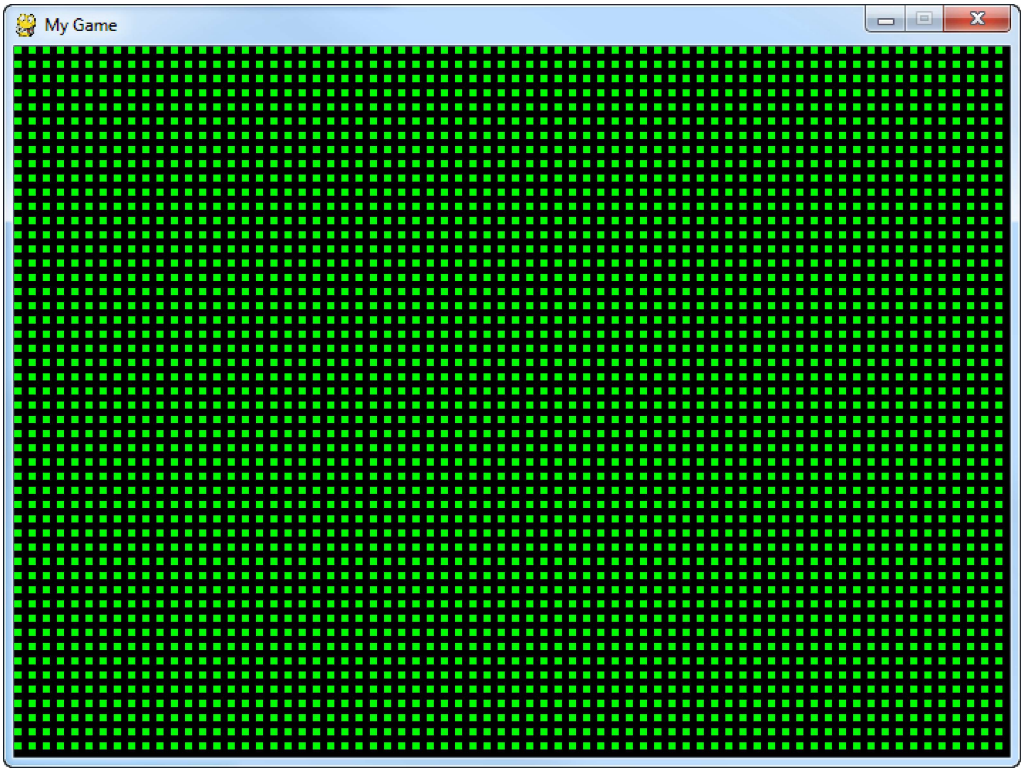
Don't worry about handling the spacing for multi-digit numbers. Chapter 20 covers this if you want to look ahead, but it isn't needed.

This part of the lab is difficult. Skip to part 4 if you aren't interested in the challenge.

6.4 Part 4

Start with the pygame template code:
pygame_base_template.py (python_examples/f.php?file=pygame_base_template.py)

Use nested **for** loops to draw small green rectangles. Make the image look like Figure 27.1.



(labs/looping/grid.png)
Figure 27.1: Pygame Grid

Do not create the grid by drawing lines, use a grid created by rectangles.

If this is too boring, create a similar grid of something else. It is OK to change the color, size, and type of shape drawn. Just get used to using nested `for` loops to generate a grid.

Some students feel the need to add a zero to the offset in the lab. Remind yourself that adding zero to a number is kind of silly.
