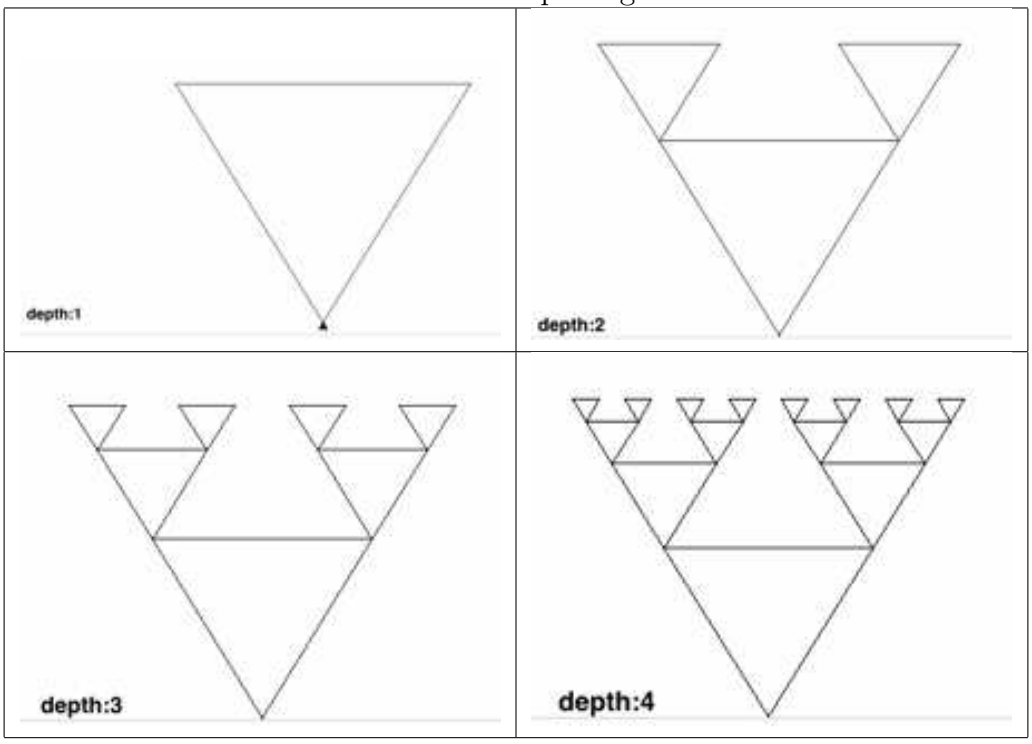
Computer Science I CSCI-141
Shrinking Triangles Homework

1 Problem

Write functions and compose a program that draws figures like the pictures shown below. When run, the program must **first prompt** for the recursion *depth*. Assume that *depth* will always be a non-negative number.

Table 1: Example Figures



- If $depth < 1$, draw nothing.
- If $depth == 1$, draw a single triangle with sides of $size$ units, where size is any reasonable value for display.
- If $depth == 2$, draw the same triangle as for $depth == 1$, and draw two half-sized triangles at the upper left and upper right corners of the full-sized triangle.
- If $depth == 3$, draw the same triangles as for $depth == 2$. In addition draw four quarter-sized triangles at the upper left and upper right corners of the two half-sized triangles.
- If $depth >= 4$, continue to draw following the pattern just described.

1.1 Submission and Grading

- 70%: Recursive implementation producing the expected pictures. **Failure to use recursion incurs a 50% penalty.**
- 15%: Most of your functions have some sort of **pre-conditions** and **post-conditions**. These conditions are the necessary states of affairs before and after the function executes. For each function, write a *docstring* comment that identifies all the **pre-conditions** and **post-conditions** that apply to that function. For example, if a function expects the turtle to be pen-up and facing North, you should have a line of text in the function's docstring that looks like the one in this definition fragment:

```
def someFunction():
    """
    ...
    pre-conditions: turtle is pen-up, facing North.
    ...
    """
```

- 10%: Correct `input()` usage and conversion to integers.
- 5%: Correct style, with docstrings for each function.

Put your program code with the appropriate docstring documentation into a file called `triangles.py` and submit that file to the MyCourses dropbox for this assignment.

If you wish to title your window or draw text on the screen, please refer to the functions title() and write() in the turtle documentation:

`http://docs.python.org/3/library/turtle.html`