CSE 231 Spring 2017

Programming Project #2

Assignment Overview

This assignment involves coding and testing of a program that uses Turtle to draw multiple squares.

This assignment is worth 20 points (2% of course grade), and must be completed before 11:59 PM on Monday, January 23th.

Background

Part of the Logo programming language, Turtle graphics (http://en.wikipedia.org/wiki/Turtle_graphics) is one of the oldest graphics programs. It is a 2D graphics package that uses a Cartesian coordinate system and a "turtle" which has a pen attached to its body. The turtle can move around the plane, drawing as it goes. The Python "turtle" module is an implementation of the original package (see Appendix B of the text or the reference pages at http://docs.python.org/3.3/library/turtle.html).

Program Specifications

Your program must prompt the user for the number of squares to draw. The number should be greater than zero. If user enters 0 or a negative number, the program should print an error message and halt. We will test your program using a number in the range [1,10]. Your program should draw all the squares centered at (0,0).

The side of the largest square should be 400, your program should reduce the size of the squares by a number of your choice. Just keep in mind that your program should be able to draw at least 10 squares.

All the squares should be filled with random colors (line and fill color). We provide a function that randomly picks and returns a color. Check `proj02.py` and run it to observe how it works.

Note that if your program draws the smallest square first, the other squares are going on top of it, that's why you have to start with the largest square.

Deliverables

The deliverable for this assignment is the following file:

`proj02.py` -- your source code solution

Be sure to use the specified file name and to submit it for grading via the **handin system** before the project deadline

Assignment Notes:

1. To clarify the project specifications, sample output is appended to the end of this document.
2. Items 1-6 of the Coding Standard will be enforced for this project.
3. The file named `turtle_sample.py` in the project directory contains a program which illustrates the use of Turtle for drawing a few shapes.
4. "Hour of code" exercise can be a great help for this project. The link was emailed to you and it is on the course website.

Getting Started

- *Solve the problem using pencil and paper first.* You cannot write a program until you have figured out how to solve the problem. This first step can be done collaboratively with another student. However, once the discussion turns to Python specifics and the subsequent writing of Python, you must work on your own.

- Use Anaconda Spyder to create a new program. Use the required file name (`proj02.py`).

- Write a simple version of the program, e.g. input 1 and draw one square. Run the program and track down any errors.

- Use the **handin** system to turn in the first version of your program.

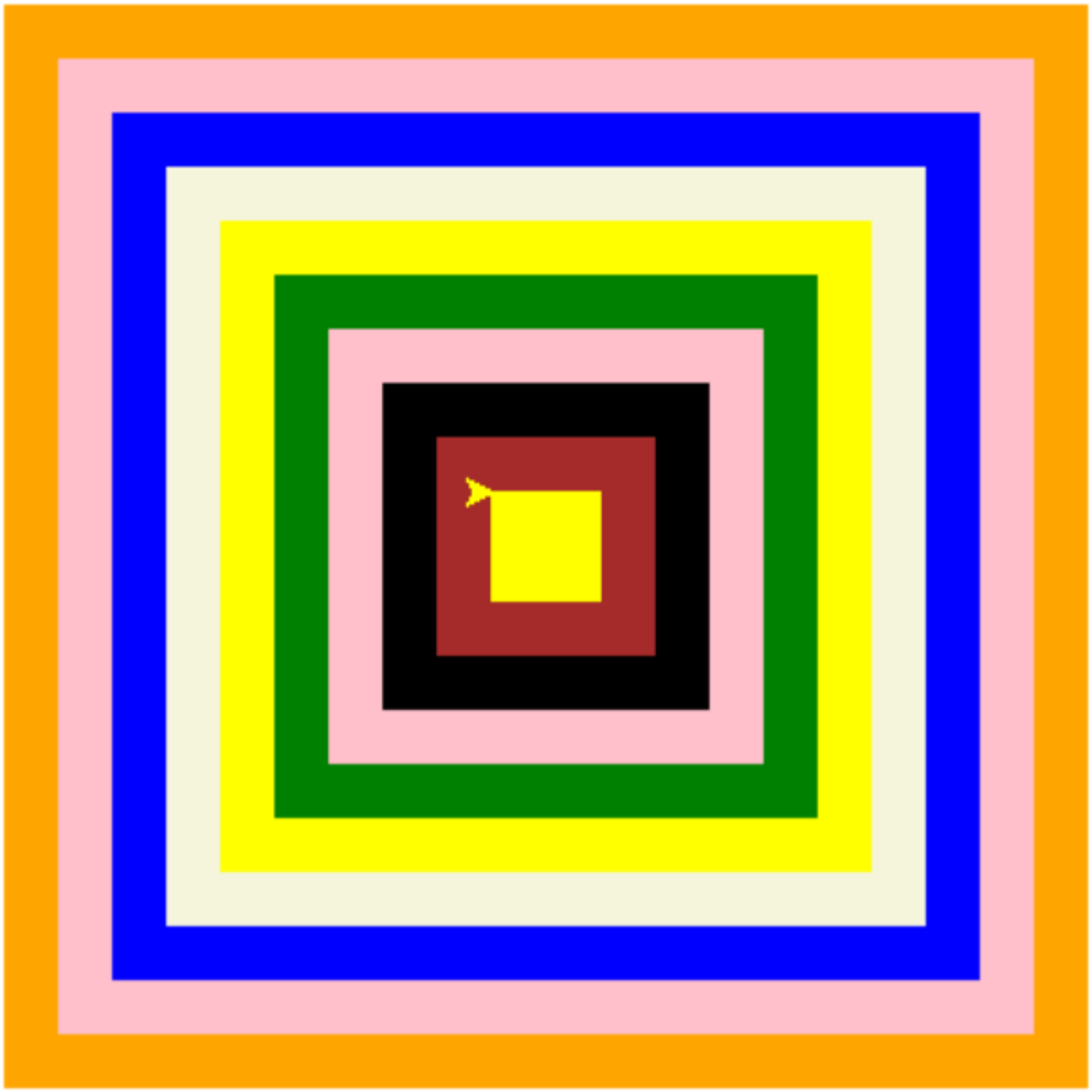
- Cycle through the steps to incrementally develop your program:

    - Edit your program to add new capabilities.
    - Run the program and fix any errors.

- Use the **handin** system to submit your final version.

Sample Output

The following is the sample output when the user input is 10.



Scoring Rubric

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Computer Project #2 Scoring Summary


General Requirements

  __0__   (5 pts)  Coding standard
                     Source code format
                     Source code header and descriptive comments
                     Mnemonic identifiers (variables and symbolic
constants)

Program Implementation

  __0__   (10 pts) Drawing and filling the squares


  __0__   (5 pts) Error checking and halting
                  2 pts for halting


TA Comments
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Educational Research

When you have completed the project insert the 5-line comment specified below.

For each of the following statements, please respond with how much they apply to your experience completing the programming project, on the following scale:

1 = Strongly disagree / Not true of me at all
2
3
4 = Neither agree nor disagree / Somewhat true of me
5
6
7 = Strongly agree / Extremely true of me

*********Please note that your responses to these questions will not affect your project grade, so please answer as honestly as possible.**********

Q1: Upon completing the project, I felt proud/accomplished

Q2: While working on the project, I often felt frustrated/annoyed

Q3: While working on the project, I felt inadequate/stupid

Q4: Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this course.

Please insert your answers into the bottom of your project program as a comment, formatted exactly as follows (so we can write a program to extract them).

Questions
Q1: 5
Q2: 3
Q3: 4
Q4: 6