EECS 12 Fall 2013

Assignment 3

Due: October 19th, 6:00PM

Festival Tree
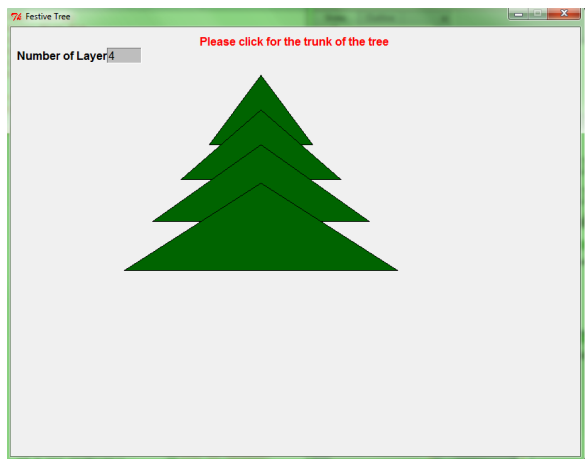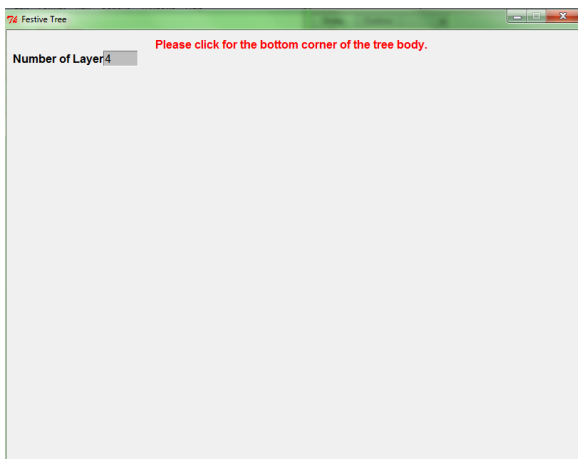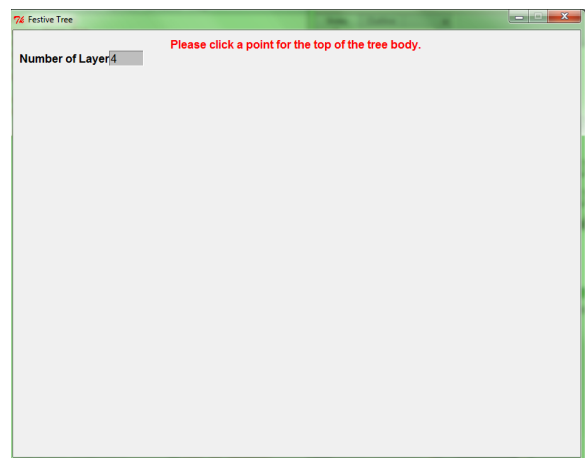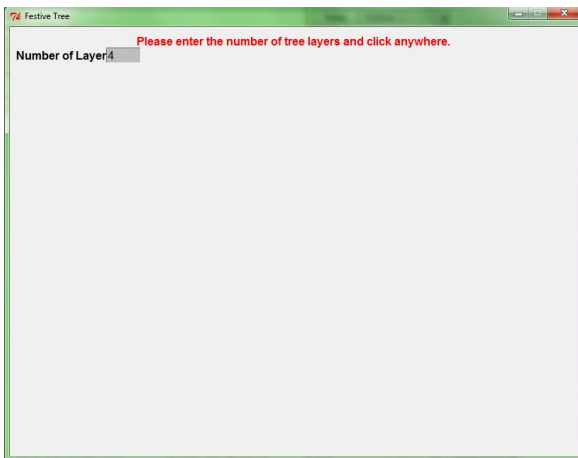
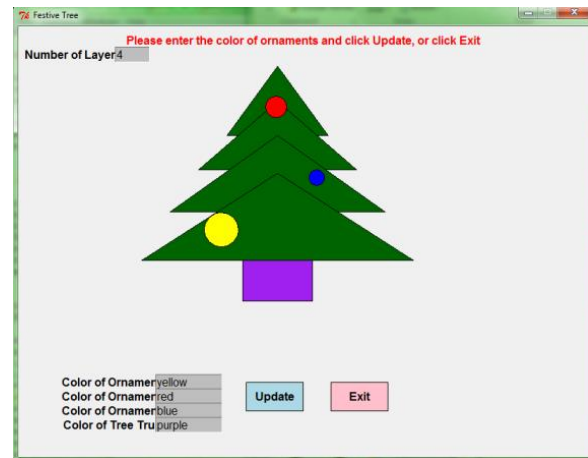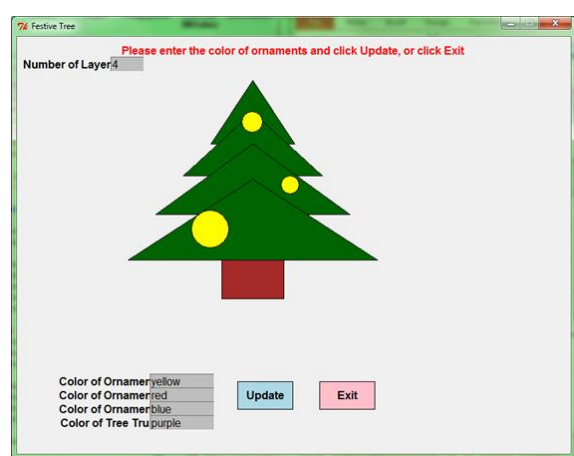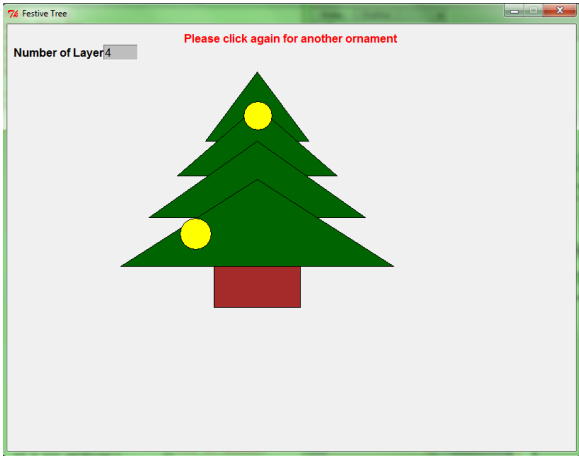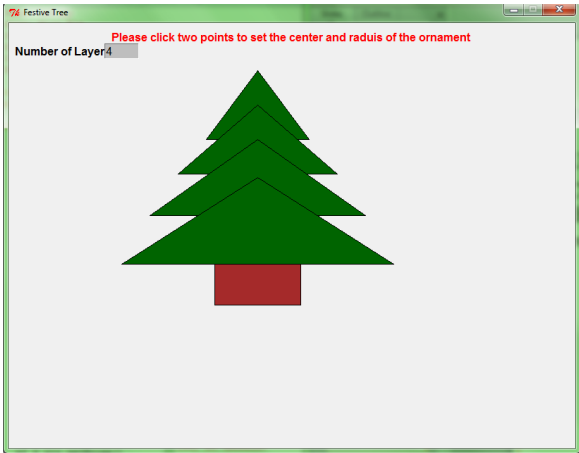Problem: Write a program that lets the user draw a festival tree using GUI.

Your program should follow the following steps:

1. Open a window (800x600) with a title such as "Festival Tree". Draw a text object and entry object for asking the user for the number of layers for the tree body. Ask the user to click anywhere inside the window to update the number of layers.
2. Ask the user (using a text message at the top center of the window) to select a point for the top point of the tree body. Ask the user to select another point for one of the lower corners of the tree body. Your program should not assume which lower corner of the triangle the second point corresponds to. Based on the number of layers user entered, draw a tree using triangles corresponding to the two points and set its interior color to dark green. For each additional layer of the triangle, the width should increase by 4 and the height should increase by 1.
3. Ask the user to select one point to draw the tree trunk using a rectangle. The first point corresponds to one of the bottom corners of the rectangle, and the second point corresponds to the same y-coordinate as the corner of the rectangle on the opposite of the first point. You should compute the coordinate of the second point using the points you have. Your program should not assume which eye the two points correspond to. Draw the tree trunk in brown.
4. Ask the user to select two points to draw the ornaments using a circle. The first point corresponds to the center of the ornament, and the second one corresponds to a point on the contour of the ornament. Draw 3 ornaments using the same instructions and draw them in yellow.
5. Draw text objects and entry objects for updating color of ornaments and tree trunk as shown in the lower left corner of the figure. Use the same color and format as in the figure.
6. Draw 2 buttons using rectangles; one for update and one for exit. After a rectangle is created, use a text message to display "update" and "exit" accordingly inside the rectangles.
7. Once everything is drawn, each time the user clicks inside the update button, the color of the ornaments and the tree trunk that have been drawn should be changed based on the colors entered in the entries. The user should be able to update multiple times until exit button is clicked. Once the exit button is clicked, window should be closed.

Example

- ✓ Ask the user to update the number of tree layers
- ✓ Ask the user to draw the tree body
- ✓ Draw the tree body and ask the user to set the center of the tree trunk
- ✓ Draw the tree trunk and ask the user to draw the ornaments
- ✓ Draw the ornaments
- ✓ Draw the text and entry boxes for updating color
- ✓ Draw the update and exit button
- ✓ Ask the user to either update the color or exit the program
- ✓ Once exit button is clicked, window is closed.

Festive Tree

Please click two points to set the center and raduis of the ornament

Number of Layer 4

Festive Tree

Please click again for another ornament

Number of Layer 4

Festive Tree

Please click again for another ornament

Number of Layer 4

Festive Tree

Please enter the color of ornaments and click Update, or click Exit

Number of Layer 4

Color of Ornamer yellow
Color of Ornamer red
Color of Ornamer blue
Color of Tree Tru purple

Update   Exit

Festive Tree

Please enter the color of ornaments and click Update, or click Exit

Number of Layer 4

Color of Ornamer yellow
Color of Ornamer red
Color of Ornamer blue
Color of Tree Tru purple

Update   Exit

Grading Criteria

40 point scale

6 pts: Opening a window and successfully drawing the text and entry objects

12 pts: Drawing and coloring the tree body

6 pts: Drawing and coloring the tree trunk

10 pts: Drawing and coloring the ornaments

6 pts: Successfully implementing the update and exit buttons

*If your file has syntax errors, we will take at least 20 points off.

Submission:

Submit your homework before 6pm, Oct. 19th (Saturday) to the EEE Dropbox. Submit only the python source file, with file name "hw3.py".