

Programming Project: Graphics Objects and Sending Messages

Collaboration: Solo! Work on this programming project by yourself with help from section leaders or Rick only

Due: Monday 7-Nov by 9:00 pm

Turn in: Turn in three files to the ISTA 130 D2L drop box named Project 8: GraphicsObjects

Grading: 100 points. There are no assertions this time. Simply match the expected graphical output.

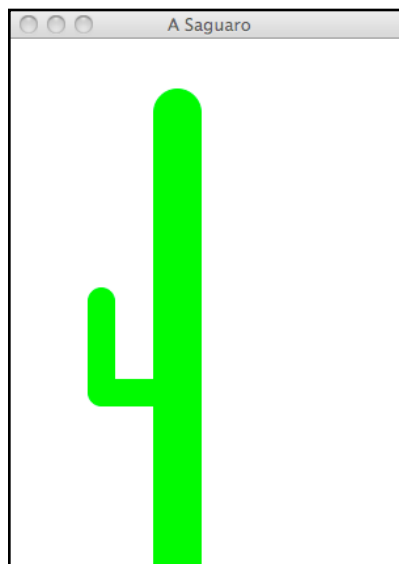
Required File: You need to place <http://mcsp.wartburg.edu/zelle/python/graphics.py> into your working folder

Zelle's Graphics Documentation <http://mcsp.wartburg.edu/zelle/python/graphics/graphics/index.html>

This assignment gives you a chance to practice writing programs with Graphics objects using Zelle's graphics.py. You will also generate random numbers using `randrange` (p.271), use decision structures, and a loop. At the beginning of each program include a comment block with the information listed below where you have filled in the correct information for the appropriate parts. Two lines of Python code needed by each are provided:

```
# Developer: [Your name]
#
# SL: [Your SL's name here]
#
# File: [programName.py]
#
# Due: Monday 7-November-2011 by 9:00 pm
#
# Purpose: [A one or two sentence description of what the program does.]
#
from graphics import *
win = GraphWin('A Saguaro', 300, 400)
```

Problem 1: Write a Python program named `saguaro.py` that uses Zelle's graphics library to draw a crude representation of a saguaro cactus using `Rectangle` and `Circle` objects in a window of at least 300x400 with an appropriate title. Your saguaro must have at least one arm. Use `Rectangle` objects to form the body and arm(s) of the cactus. Use `Circle` objects to give a rounded appearance. Don't worry about drawing any needles (unless you want to)! Here is an example of what your saguaro might look like (but it is okay for it to look different!):

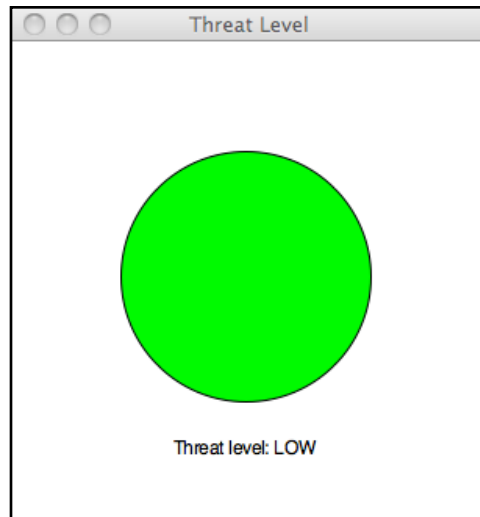


Problem 2: Write a graphics program named `threatLevel.py` using Zelle's graphics library that illustrates the various colors of the (now retired) Security Threat Level code. Your program should:

- Display a circle (or other shape of your choosing) in the middle of a graphics window of size 300x300 with the title "Security Threat Level";
- Randomly generate a number between 1 and 5 representing the current threat level

- fill the circle/shape with the appropriate color for that threat level where
 - 5: SEVERE - 'red'
 - 4: HIGH – 'orange'
 - 3: ELEVATED – 'yellow'
 - 2: GUARDED - 'blue'
 - 1: LOW - 'green'

Draw a `Text` object at the bottom indicating the level by name (high, medium high, etc. and any message you want to associate with it) and display the text in the appropriate color for the level. (no user input on this one) As an example, if the level is 5, the following display would be shown:



Problem 3: Write a Python 3 program named `polkadots.py` that uses Zelle's graphics library to randomly size, position, and color 1,000 circles in a graphics window of size 500x500 with the title "Polkadots". The radii should be from 10-50, inclusive, and there should be seven possible colors – pick your favorites! (no user input or tests on this one) The screen shot below shows how your window might look after your program runs. Rainbow colors 'red' 'orange' 'yellow' 'green' 'blue' 'violet' `color_rgb(75, 0, 130)` #indigo

