Graphics!

Using graphics in Python

- Many programming languages include a *library* for computer graphics.
    - A library is a pre-written collection of functions usually centered around a theme (graphics, networking, math, sound, etc)
    - Using libraries (rather than starting from scratch) enables you to write programs faster.
    - Libraries are centered around functions because we know functions are abstractions of algorithms.

The "canvas"

- All graphics in Python are drawn in a separate window called the ***canvas***.

- The canvas is laid out similarly to the Cartesian plane, but with a flipped y-axis.
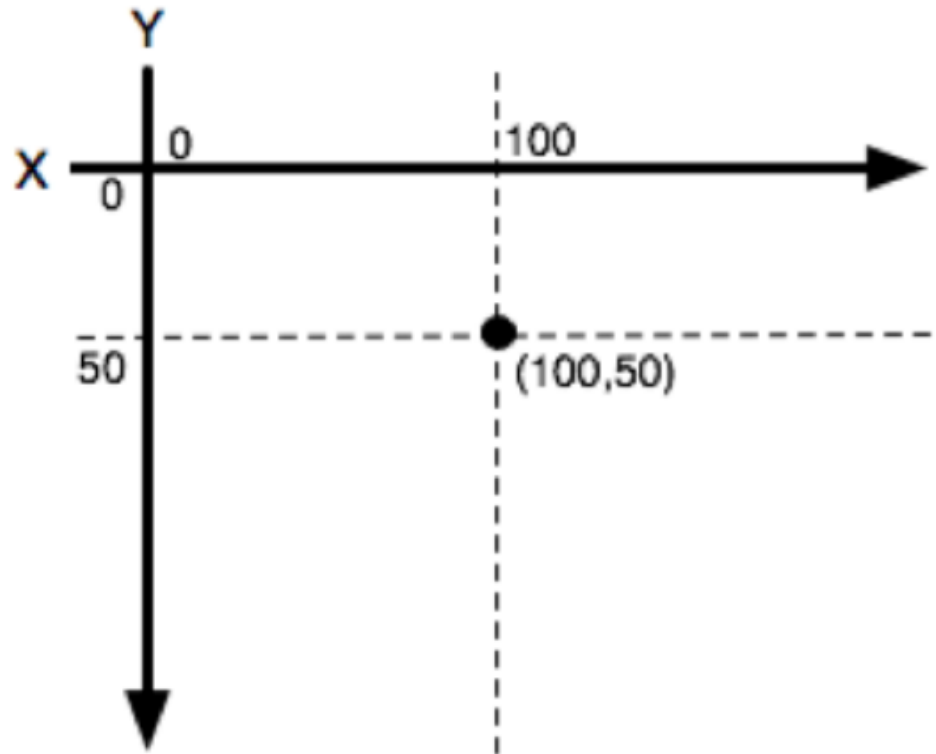
File setup

- On the desktop, look for a folder named Lastname_Firstname.
- Inside that folder, make a subfolder called cs141. (From now on, save everything in this cs141 folder!)
- Go to the class webpage (google Phil Kirlin)
- Under "Resources," right click & save the files cs1graphics.py and simplegraphics.py ***to your cs141 folder!***
- In Python, from now on, when you save a file, save it to this folder.

- Go to the class webpage (just google Phil Kirlin).
- Download the files **cs1graphics.py** and **simplegraphics.py**. Save each file into the same folder where you store your Python projects. This is important!
  - Do this by right-clicking each file and choosing "Save Link As" or something similar.
- Make a new Python file and type in the following program:

```
from simplegraphics import *

def main():
    open_canvas(500, 500)
    draw_circle(250, 250, 50)
    close_canvas_after_click()

main()
```
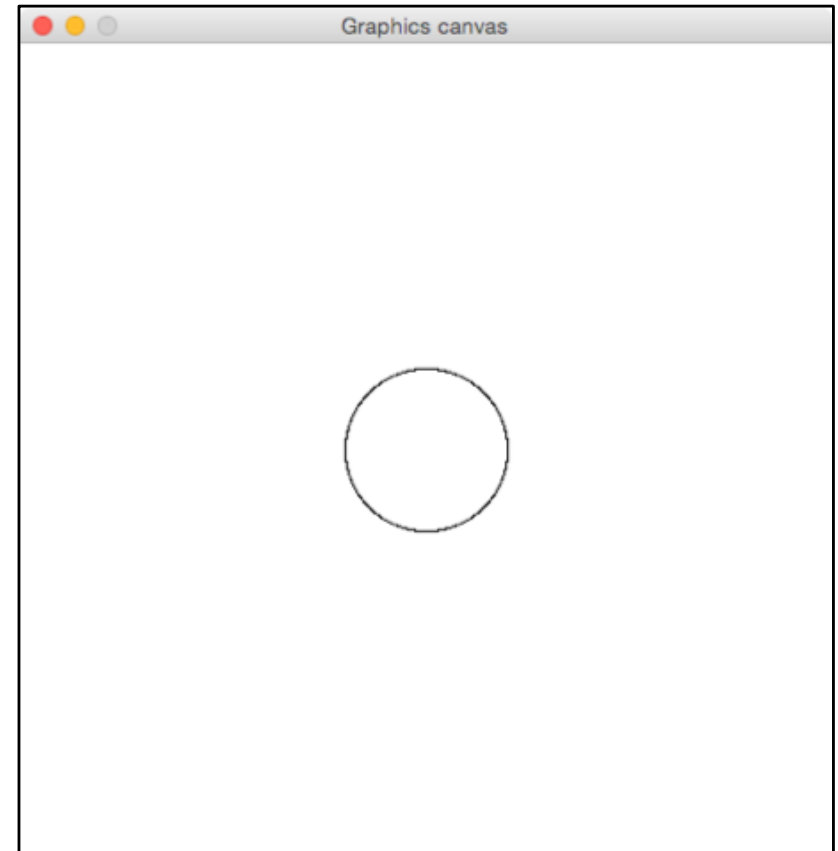
- If you see the picture to the right, you're all set! (Click the window to close it.)
- Experiment with the other functions on the handout.
- Try writing programs to draw the following pictures:
  - a landscape (mountains, trees, houses, a cityscape, or something like that)
  - a self-portrait
  - a depiction of the solar system
  - the Mona Lisa
  - something else of your choice