

**ETGG1801 — Game Programming Foundations 1**  
**Lab 3 — Loops and Painting in Python/Pygame**  
**Due on 9/28/2015 by 7:45pm**

**Overview**

In this lab, you will be using while loops to fill the screen with images of Pac-man, and to implement a simple paint program.

**Tasks**

1. Write a python program that fills the screen with a repeating image of Pac-man
  - The user should be asked to **input** the following attributes for Pac-man:
    - **radius**
    - **angle** of the triangle forming the mouth
    - **direction** Pac-man is facing
  - The program must use a **while** loop to fill the screen with Pac-men
  - Have the window remain open for 5 seconds and then close.
2. Use python to implement a simple paint program
  - For drawing, the user should be able to select:
    - **four** different brush shapes: circle, square, triangle, and a custom brush shape
    - **eight** different brush colors
    - **three** different brush sizes (small, medium and large)
  - Have a palette on the screen displaying the colors, brush shapes and sizes. The user should be able to left-click in the palette to change these attributes. The user must not be able to draw inside the palette.
  - Have a canvas on the screen for the user to paint on. When the user left-clicks inside the canvas, draw the selected brush shape with the current size and color. When the user right-clicks, erase that portion of the canvas using the current brush shape and size (the color will be the background color).
  - Allow the user to clear the canvas by pressing the “Backspace” key.
  - Allow the user to close the window by clicking the window’s close button or by pressing the “Escape” key.

**Bonus**

Allow the user to save the drawing by pressing the 's' key. You should use the **pygame.image.save** function to save the surface.