

CMSC 143: Introduction to Object-Oriented Programming with Robots

## Lab 5: Etch-A-Sketch

Due March 3, 2010



Submit a copy of your python program (`cmsc143_lab5_LASTNAME.FIRSTNAME.py`) on moodle. Your program should have your name, email, and the date at the top of the file as a comment.

You are creating an etch-a-sketch program. I've provided you with a working program (`etch-a-sketch 1.0`), but you have to add a few features to create version 2.0. Your program should let the user provide a rough sketch, and then by selecting a button on the gamepad, your program should redraw the sketch in an inventive manner in a new window. The `random` module might be useful, and don't forget to add color!

You'll need to complete:

1. A function `drawCircles(sketch, win)` that uses circles to redraw the sketch in a new window.
2. A function `drawLines(sketch, win)` that uses lines to redraw the sketch in a new window.
3. A function `drawPolygons(sketch, win)` that uses polygons to redraw the sketch in a new window.
4. A function `drawPoints(sketch, win)` that uses points to redraw the sketch in a new window.
5. Draw a circle to indicate the current drawing cursor.
6. `Button[6]` prevents drawing and only moving the cursor.
7. **EXTRA:** `Button[4]` erases the last point (`undraw()`) and returns the cursor to the previous location.

### Learning Objectives

- Work with graphics.
- Create objects.
- Use lists.
- Interface design.

```

from myro import *
import random

width = 500
height = 500

win = GraphWin("JoyDraw", width, height)

cursor = Point(width/2.0, height/2.0)
cursor.draw(win)

sketch = []
keepGoing = True

while keepGoing:

    status = getGamepadNow()
    dx,dy = status["axis"]
    buttons = status["button"]

    if abs(dx) > 0.01 or abs(dy) > 0.01:
        cursor.move(dx, dy)
        point = cursor.clone()
        point.draw(win)
        sketch.append(point)

    if buttons[0]:
        w = GraphWin("Lines", width, height)
        drawLines(sketch, w)

    if buttons[1]:
        w = GraphWin("Polygon", width, height)
        drawPolygons(sketch, w)

    if buttons[2]:
        w = GraphWin("Points", width, height)
        drawPoints(sketch, w)

    if buttons[3]:
        w = GraphWin("Circles", width, height)
        drawCircles(sketch, w)

    if buttons[5]:
        keepGoing = False

wait(.001)

```

