CSC 111:
Intro to Computer Science through Programming

Spring 2017
Prof. Sara Mathieson

Admin

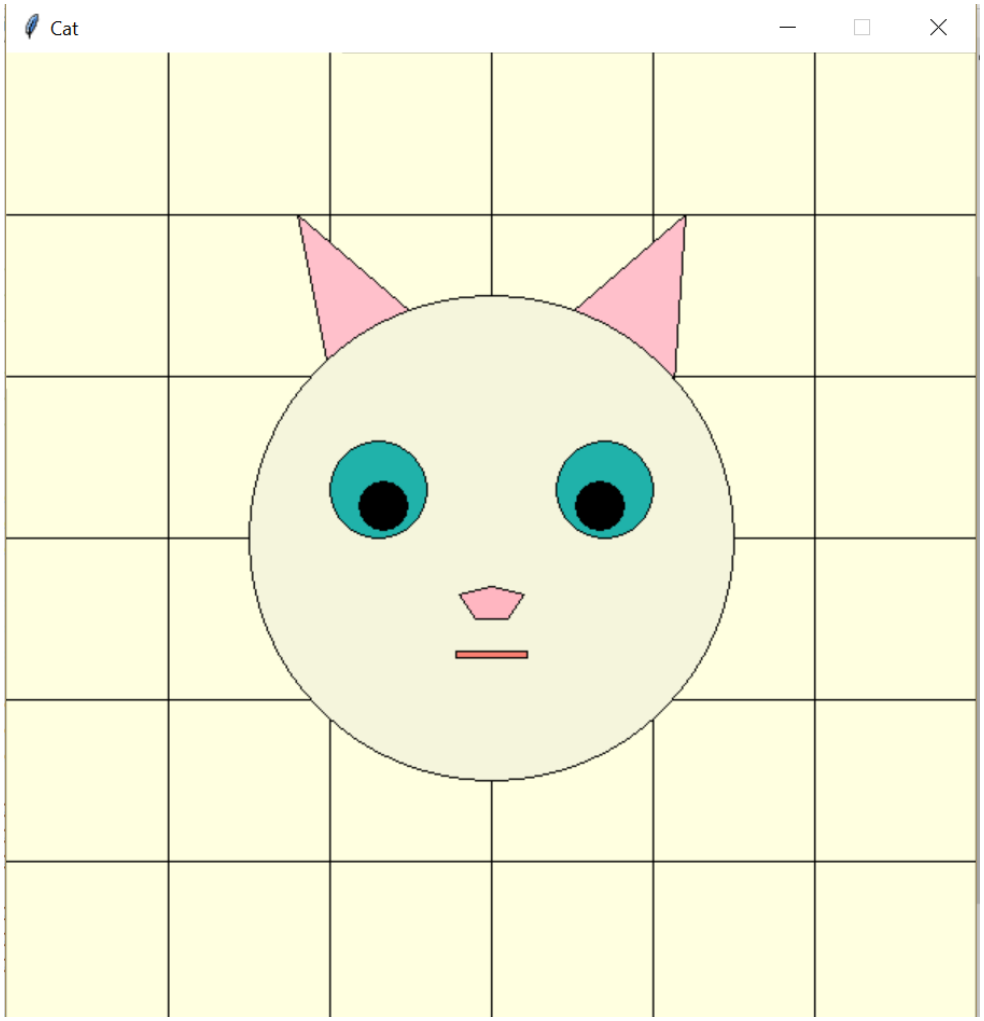
- Homework 6 is out, due March 28
- No transcripts for graphics (screenshots instead)
- **Office hours Thursday: 11am-1pm in Ford 015**
- I will be away next week at a conference, but there will still be class, lab, and homework as usual (but no office hours)
- Please less code on Piazza!

Outline: 3/22

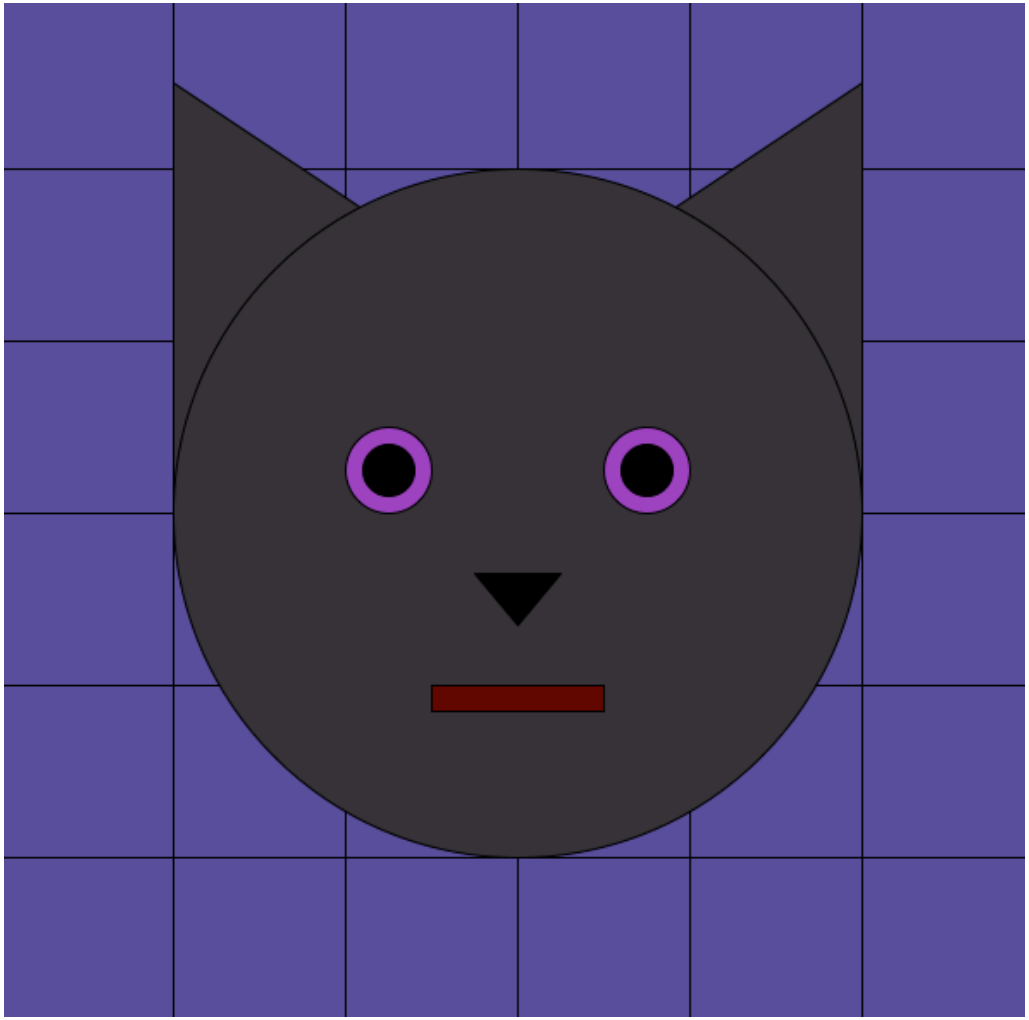
- Recap last time
- Colors in graphics (RGB) + coding extras
- Animated graphics
- While loops
- Introduce Lab 6

Recap
(+ examples)

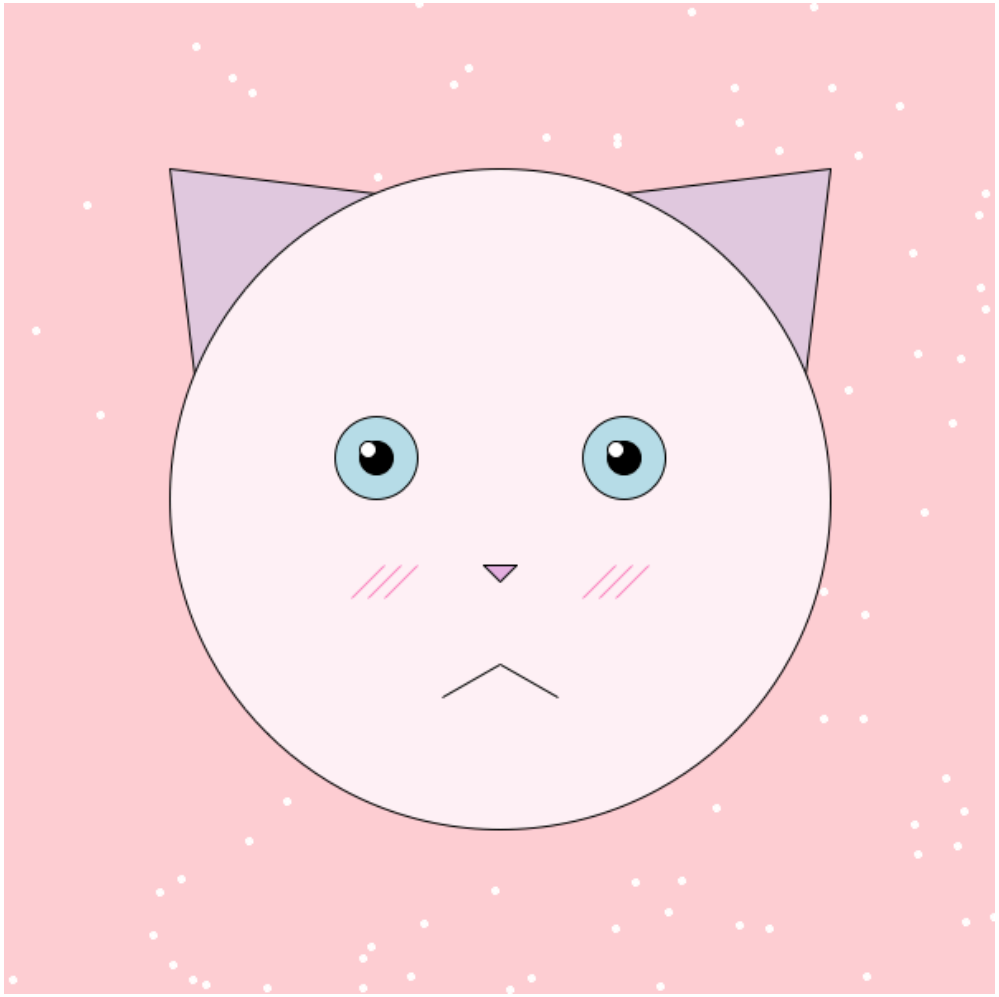
Deniz



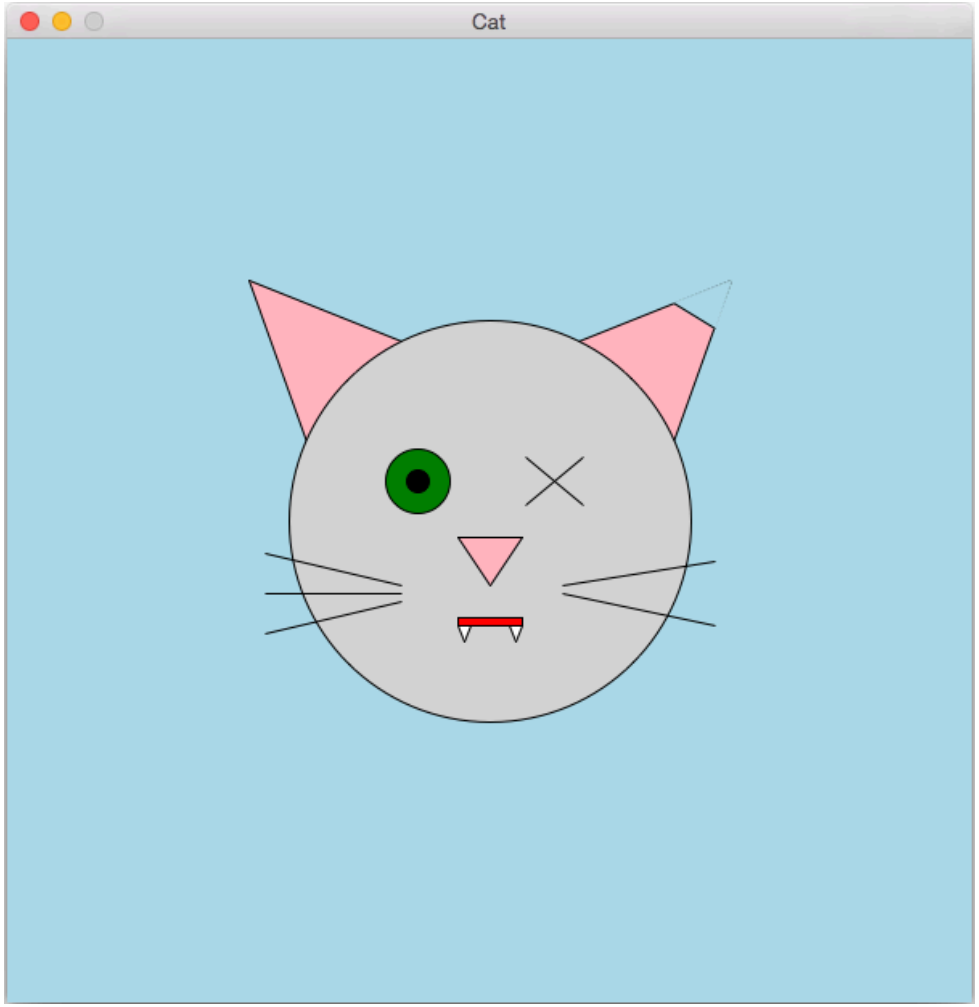
Serena



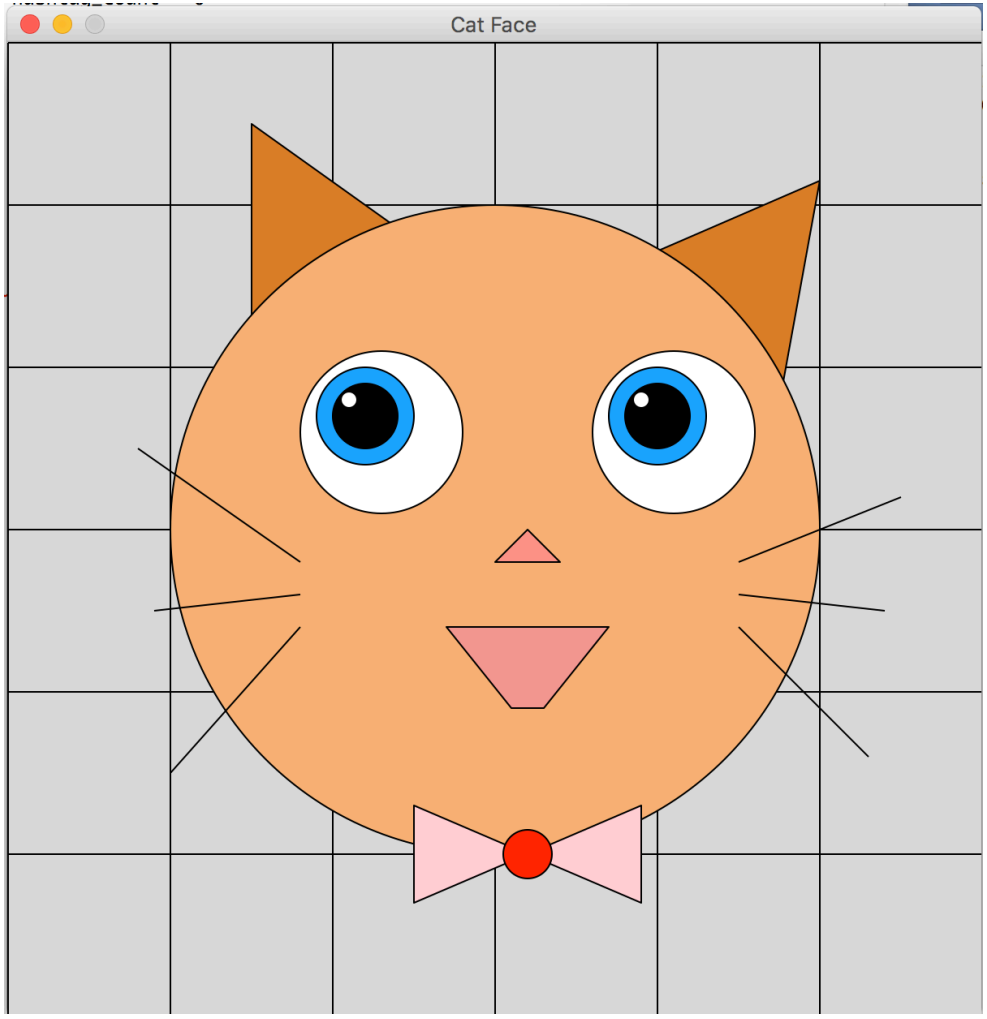
Michaela and Jessica



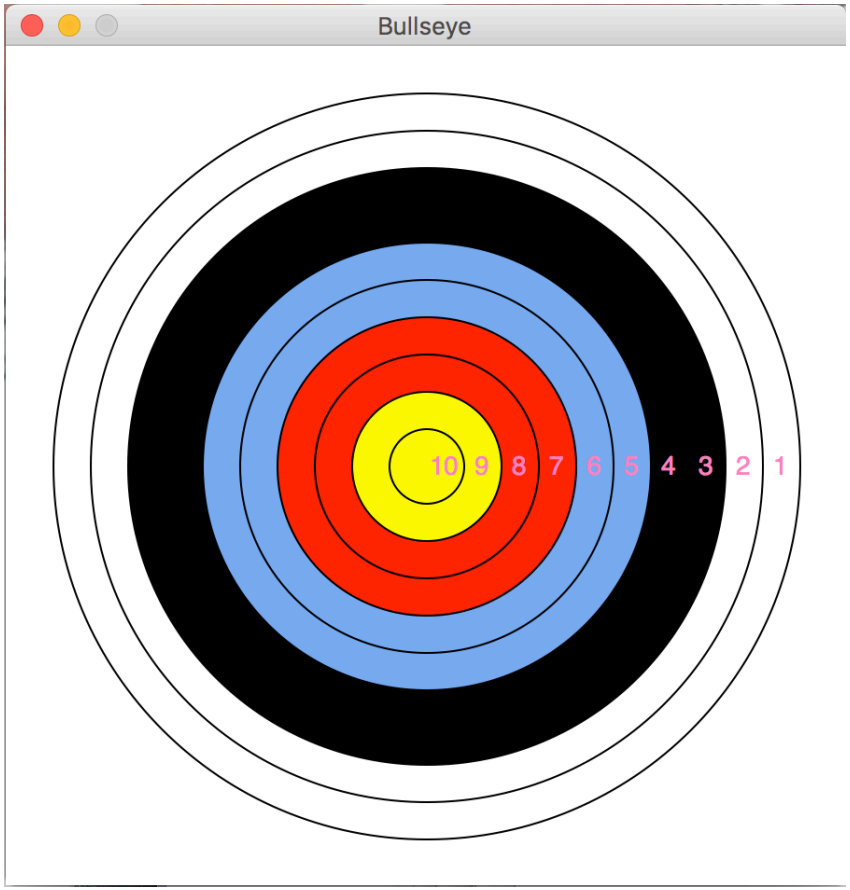
Mae



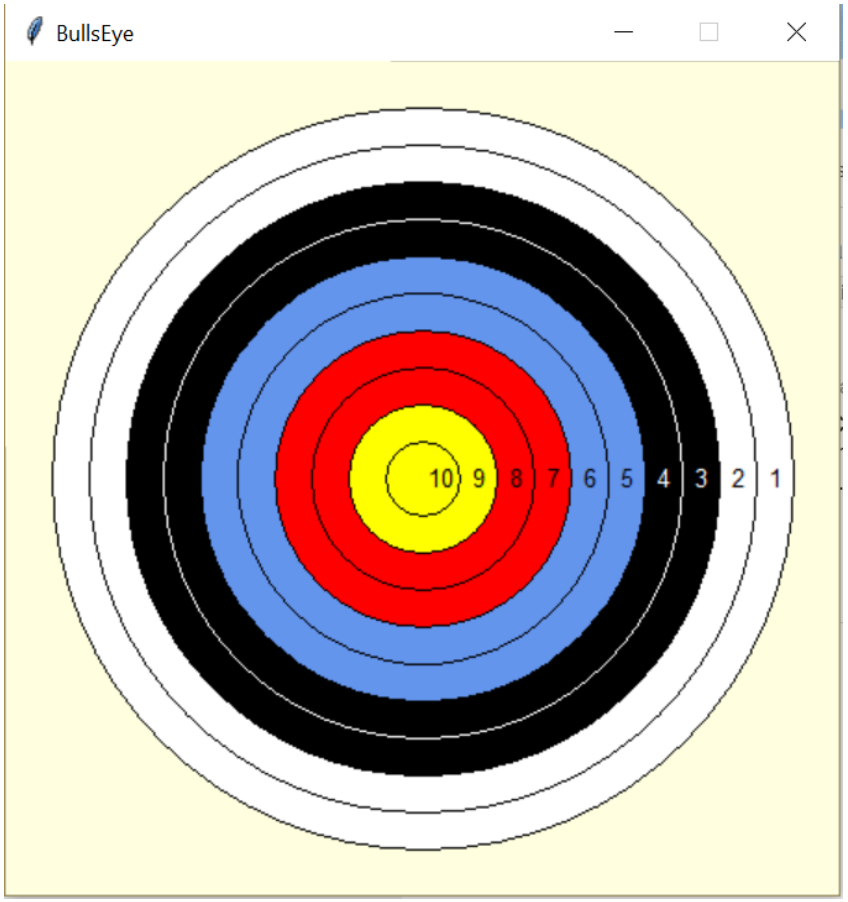
Mai



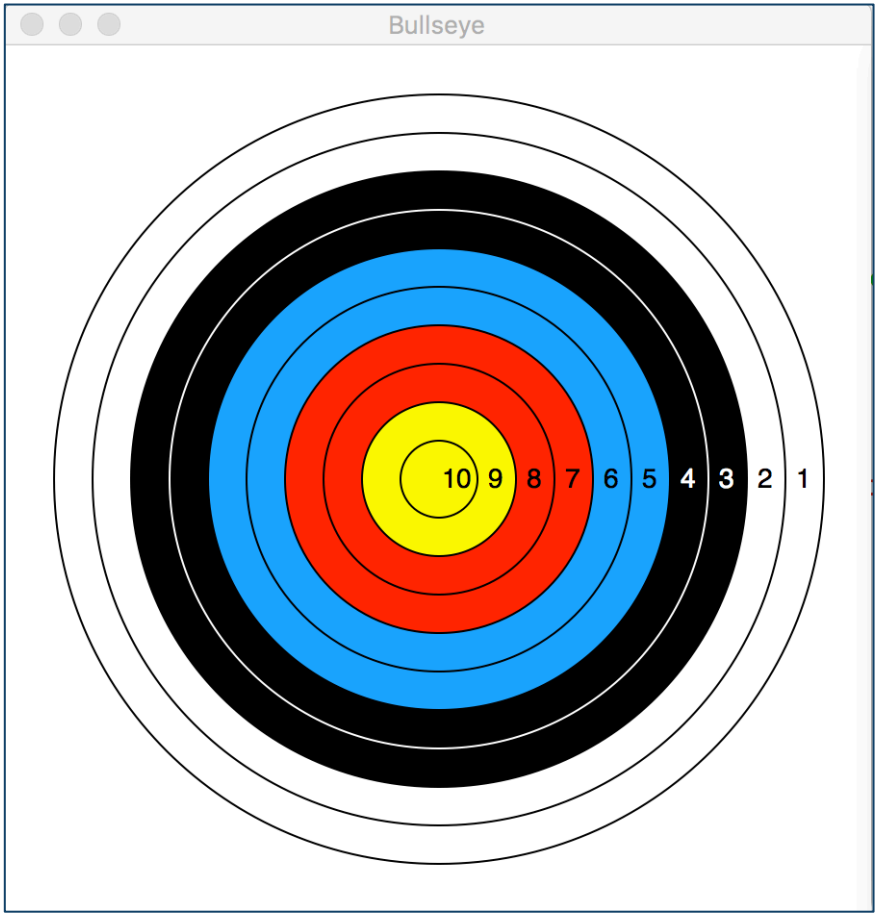
Mai



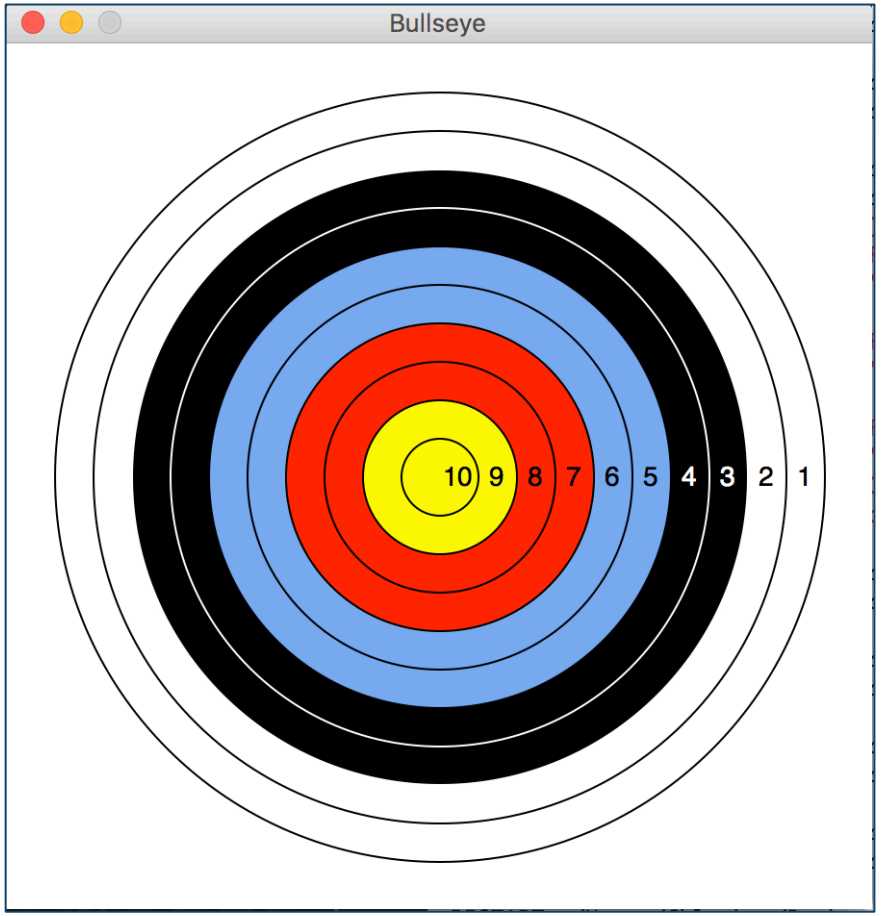
Deniz



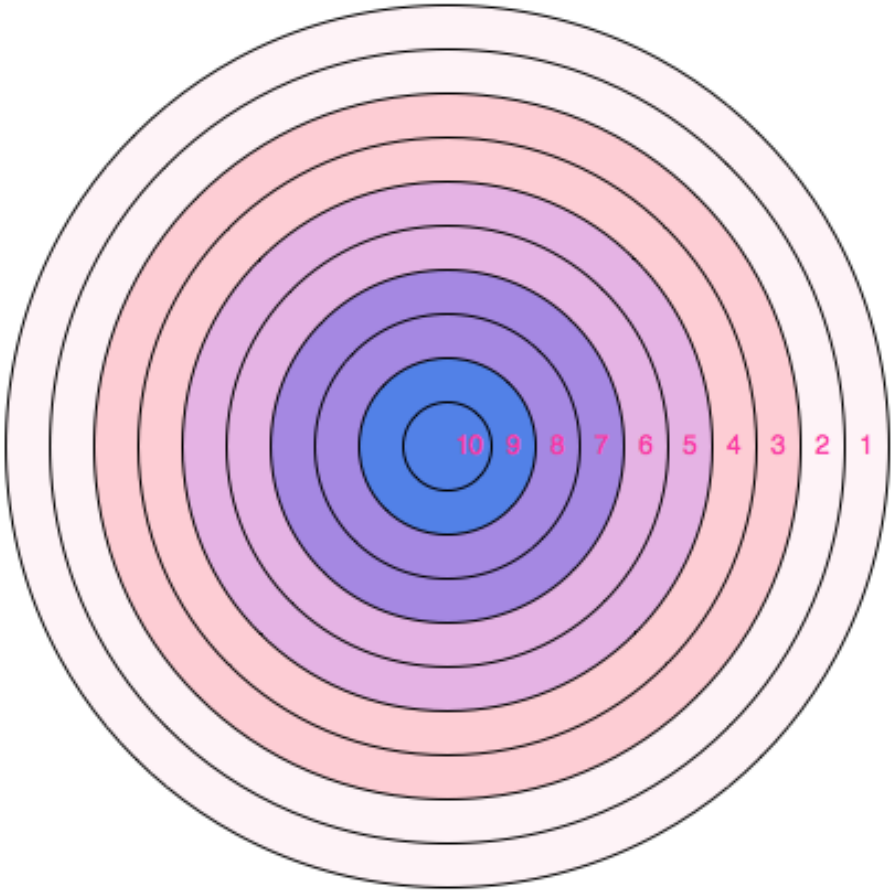
Eve



Chloe

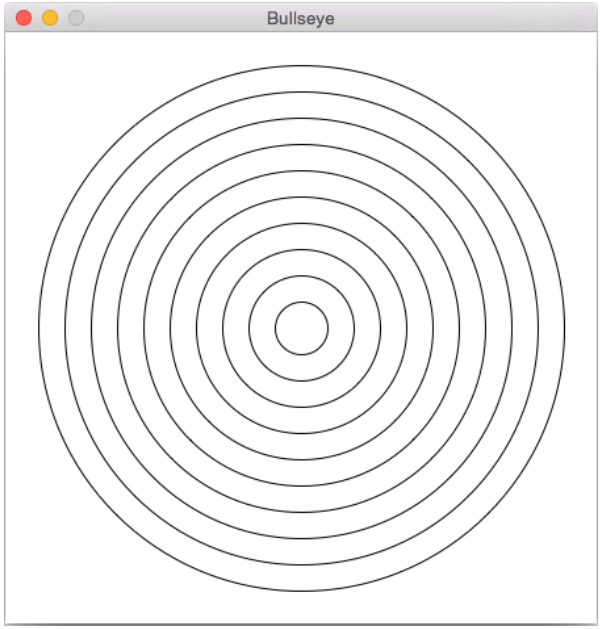


Michaela and Jessica



Bullseye code

Setting up a few constants can make it easier to get the math right later on.




```
# set up contstants to be used throughout our program
width = 450
height = 450
max_r = 200 # max radius
sep = 20 # separation between concecutive circles

# set up the window
win = GraphWin("Bullseye", width, height)
win.setBackground("green")

# center of the circles
center = Point(width/2,height/2)

# for loop over the target rings
#for r in range(max_r,0,-sep): # alternative for loop
for i in range(10):

    # set up the circles
    radius = max_r - i*sep
    c = Circle(center, radius)
    c.setFill(color_lst[i])
    c.draw(win)

    # set up the numbers as text
    # maximum x coordinate is 225+200-10 = 415
    max_x = width/2 + max_r - sep/2
    p = Point(max_x - i*sep, height/2)
    score = Text(p, str(i+1)) # use Text constructor
    score.setSize(14)
    score.draw(win)
```

Colors in Graphics
(+ doc strings and assignment)

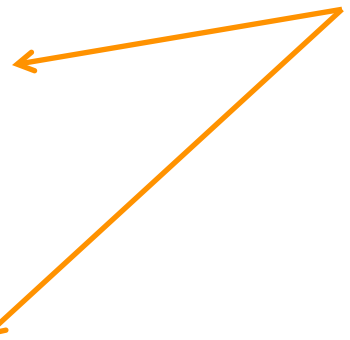
Assignment by addition

```
>>> lst = [3,9,12,1]
```

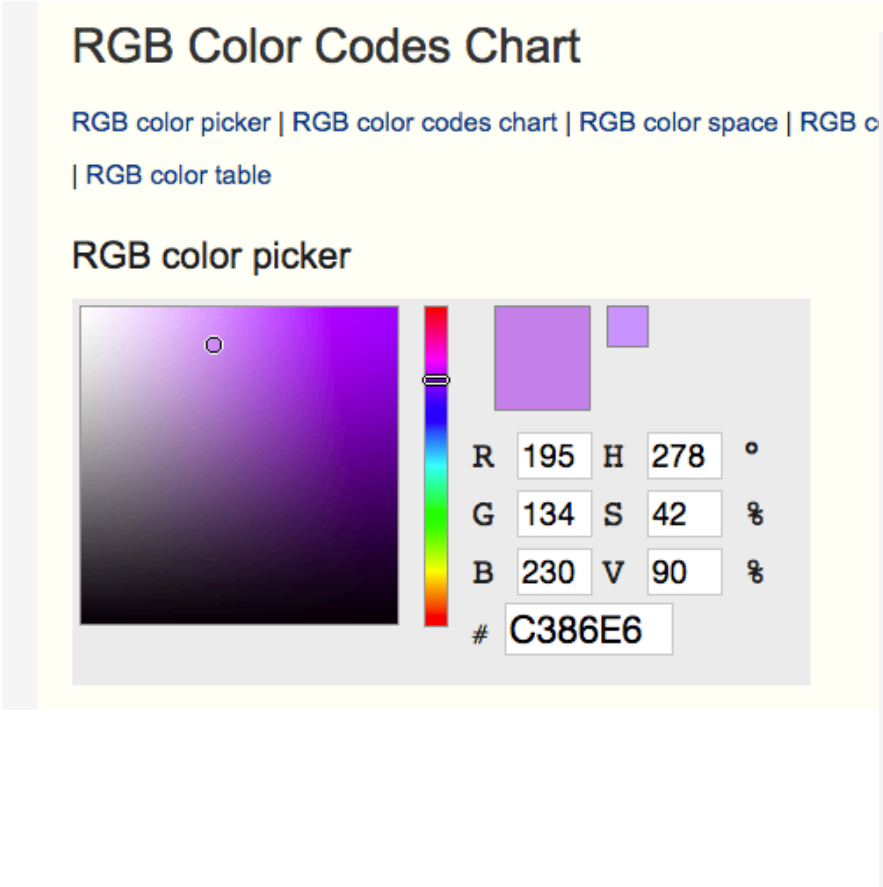
```
>>> s = 0
>>> for l in lst:
        s = s + l
```

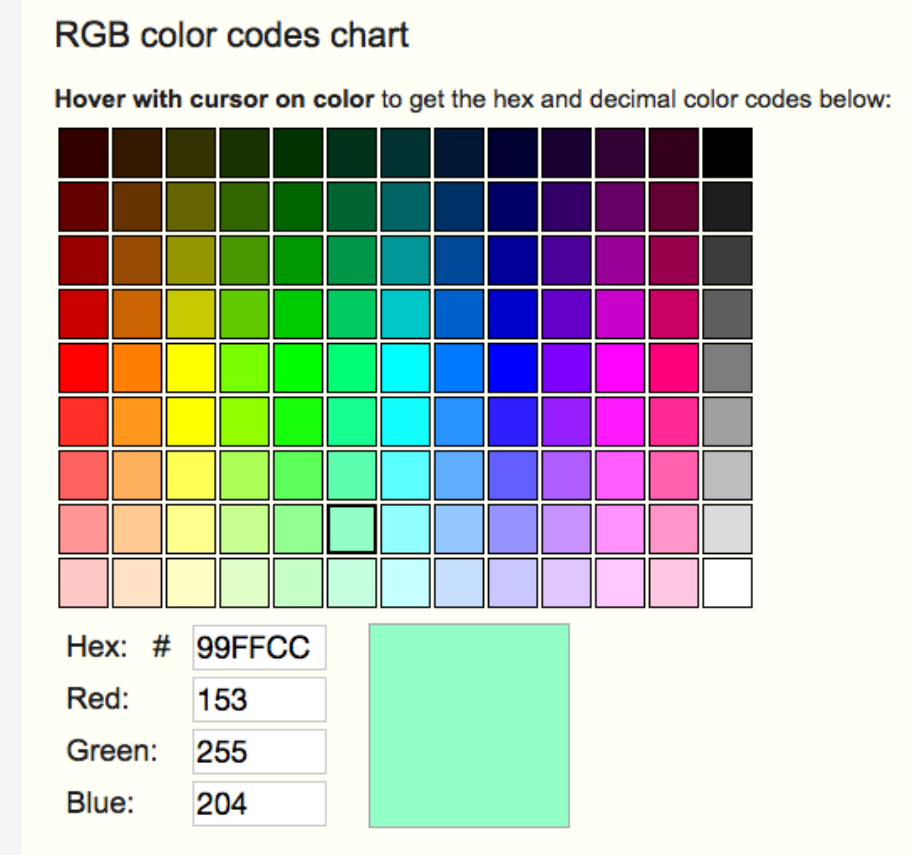
```
>>> s = 0
>>> for l in lst:
        s += l # assignment by addition ("plus equals")
```

+ Both ways are equivalent



Colors as RGB components (red, blue, green)

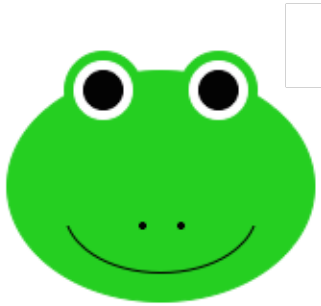




http://www.rapidtables.com/web/color/RGB_Color.htm

Docstrings (commenting functions

- Use triple double quotes
- Right below the function declaration
- Short descriptions can be on one line
- Long descriptions: each parameter on one line
- Return value on one line (if applicable)
- Specify the type of the parameters and the return value



from Homework 6

```
def draw_frog(center, message, window):
    """Draw a frog.
    center: type Point, the center position of the frog
    message: type str, the text the frog will say
    window: type GraphWin, the window on which to draw the frog
    """
    code here

def draw_frog(x,y):
    """Draw a frog at the given (x,y) position (both ints)."""
    code here
```

Animated Graphics and While Loops

DEMO

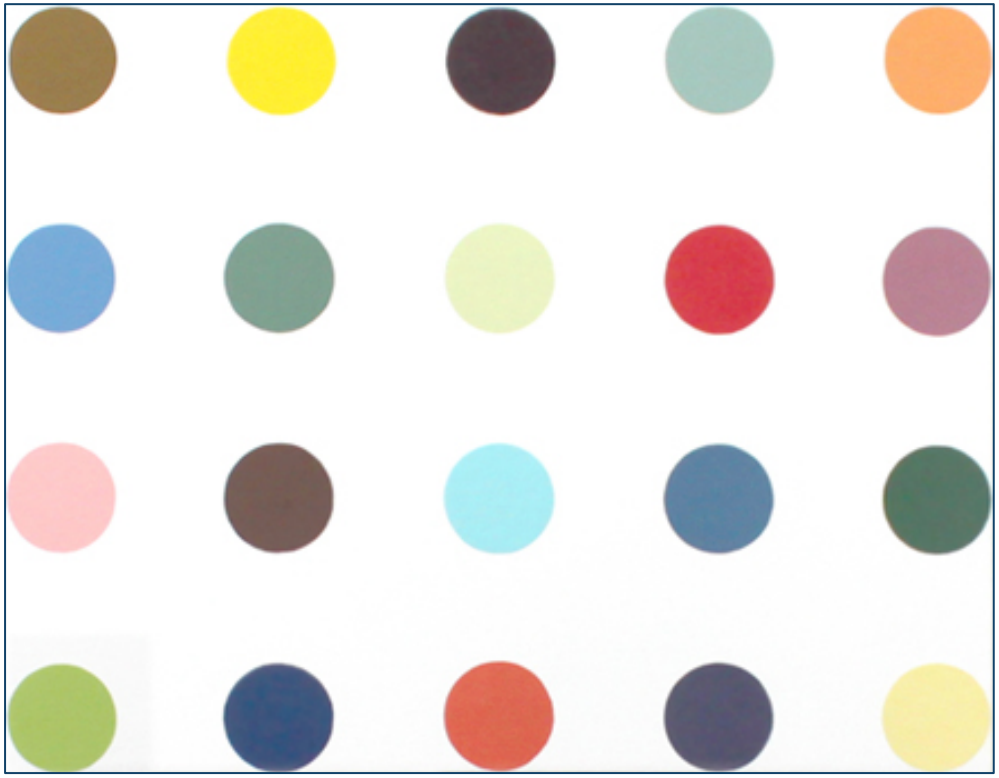
Revisit “guess my number” with while loop

Guess my number with while loop

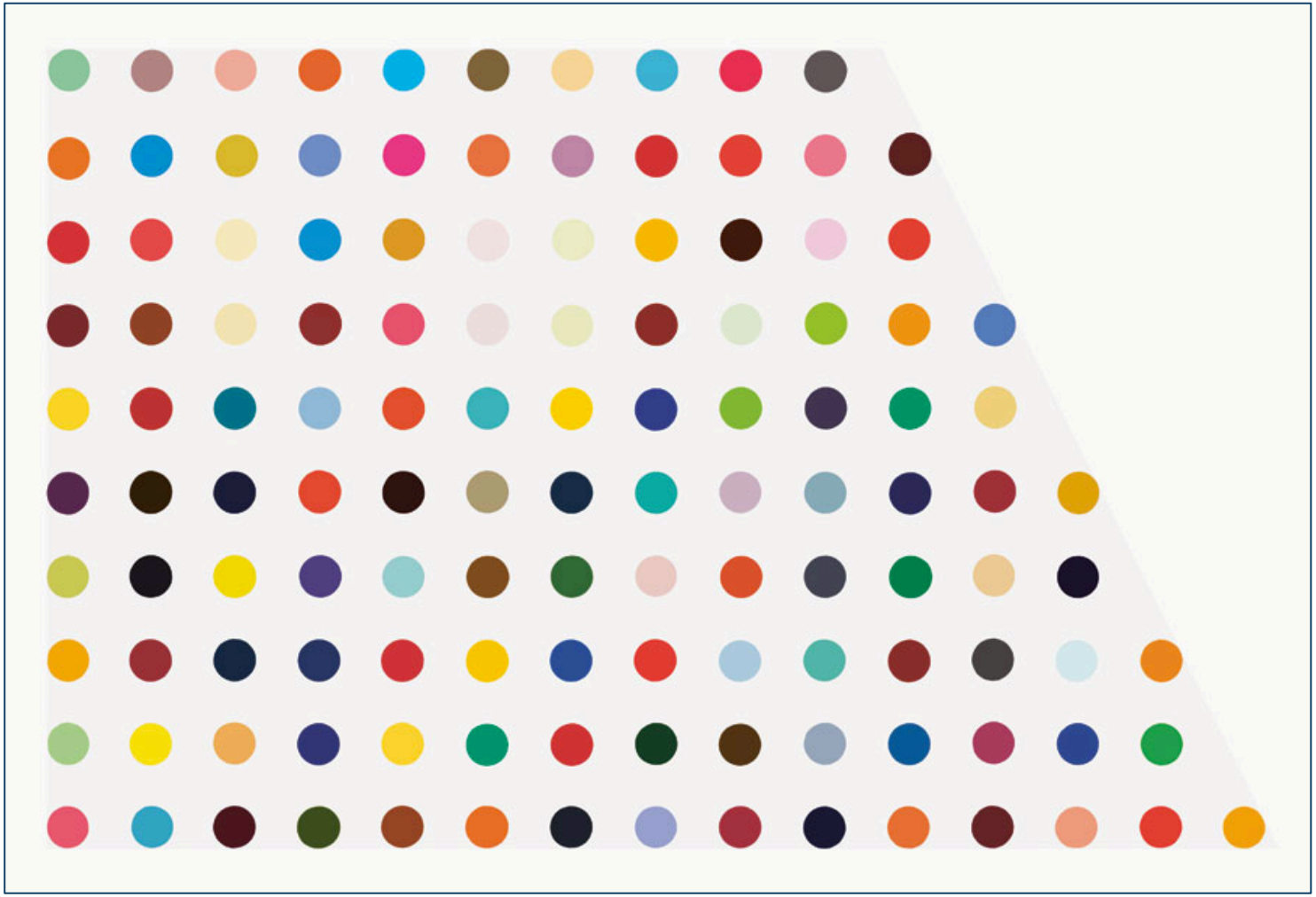
```
import random

def main():
    n = eval(input("Enter a number: "))

    guessed_number = False

    while guessed_number == False:
        guess = random.randint(0,10)
        if guess == n:
            print("you guessed it!")
            guessed_number = True
        else:
            print("try again")

main()
```

Introduction to Lab 6

Spot painting by Damien Hirst



Spot painting by Damien Hirst



Spin painting by Damien Hirst

Butterfly art by Damien Hirst

Geometric art by Sol LeWitt

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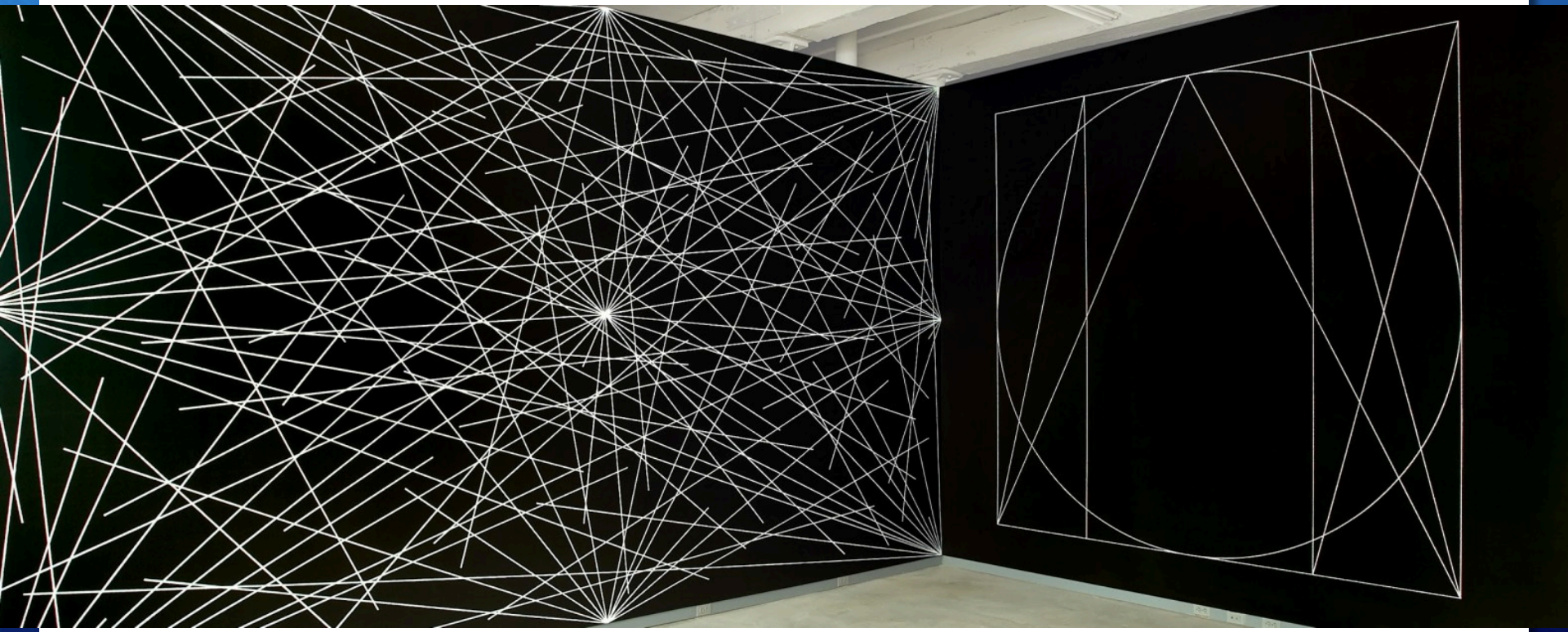

Cube sculptures by Sol LeWitt