

CS21: INTRODUCTION TO COMPUTER SCIENCE

Prof. Mathieson

Fall 2018

Swarthmore College

Outline Oct 12:

- Nested loops and text objects
- Go over moving box program (**box.py**)
- Text Objects (**text_move.py**)
- Nested loops (**nested_loop.py**)

Notes

- **Lab 5** due now and **Saturday** night
- **No office hours today**

Notes on Lab 5

- Okay not to have tic-tac-toe entirely finished!
- Goal: have game loop running and board being modified each turn
- If isWinner isn't fully working or the draw behavior is not completely correct – will not be a major issue
- Getting help: **post on Piazza!** Try to keep questions conceptual with minimal code
- If you really have a stubborn bug, okay to do a private Piazza post – try to avoid emailing individual instructors or ninjas (since the class size is so large)

Informal quiz (discuss with a partner)

parameter
constructor
function
int
Circle
float
data
getter
method
Point

- 1) What is the code below doing?
- 2) The type of **click** is _____.
- 3) The type of **click.getX()** is _____ and the type of **dot.getCenter()** is _____.
- 4) **getX()** and **getCenter()** are examples of _____. They do not take in any _____. They return _____.
- 5) True or False: if a graphics object is not visible on the graphics window, it does not exist.

```
click = win.getMouse()  
dot = Circle(click, 20)  
dot.draw(win)
```

Informal quiz (discuss with a partner)

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1) What is the code below doing?

Constructing and drawing a circle centered at the user's click.

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False!

```
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dot.draw(win)
```

Nested Loops, Text Objects

clock

for h in range(10, 12):

for m in range(0, 60, 20):

print("the time is %i: %i" % (h, m))

output?

ⓐ

	<u>h</u>	<u>m</u>
the time is	10	0
" " "	10	20
" " "	10	40
" " "	11	0
" " "	11	20
" " "	11	40

```
message = Text(<Point>, <str>)  
message.setSize(<int>)  
message.setText(<str>)
```

type(click)

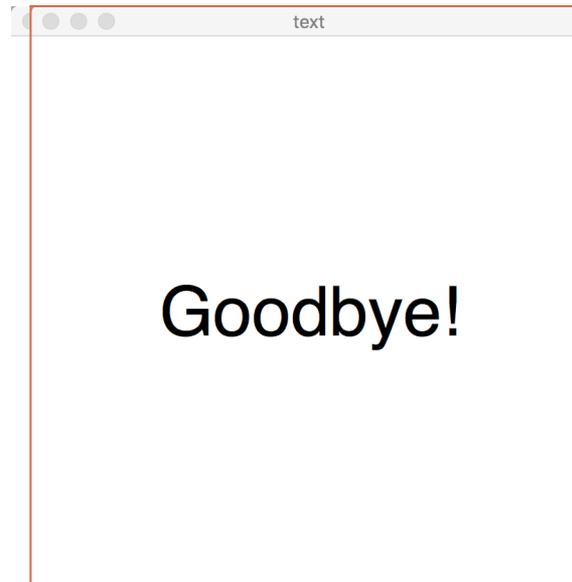
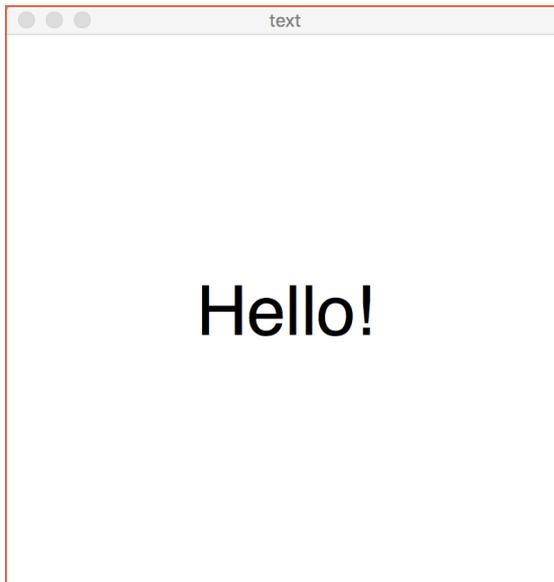
↳ graphics.Point

↳ Point(...)
constructor



Example of creating a text object

```
>>> from graphics import *
>>> win = GraphWin("text", 400, 400)
>>>
>>> message = Text(Point(200,200),"Hello!")
>>> message.draw(win)
Text(Point(200.0, 200.0), 'Hello!')
>>> message.setSize(26)
>>> message.setSize(34)
>>> message.setSize(50)
>>> message.setText("Goodbye!")
```



Notecard feedback

(thank you!)

- More practice problems and solutions (I will do solutions as I have time – feel free to ask if there are specific problems you would like solutions for)
- Lots of new material every day, have to integrate in lab
- Functions and stacks are confusing – hopefully getting better
- Understand well: loops, if/else, accumulators

Programs & practice

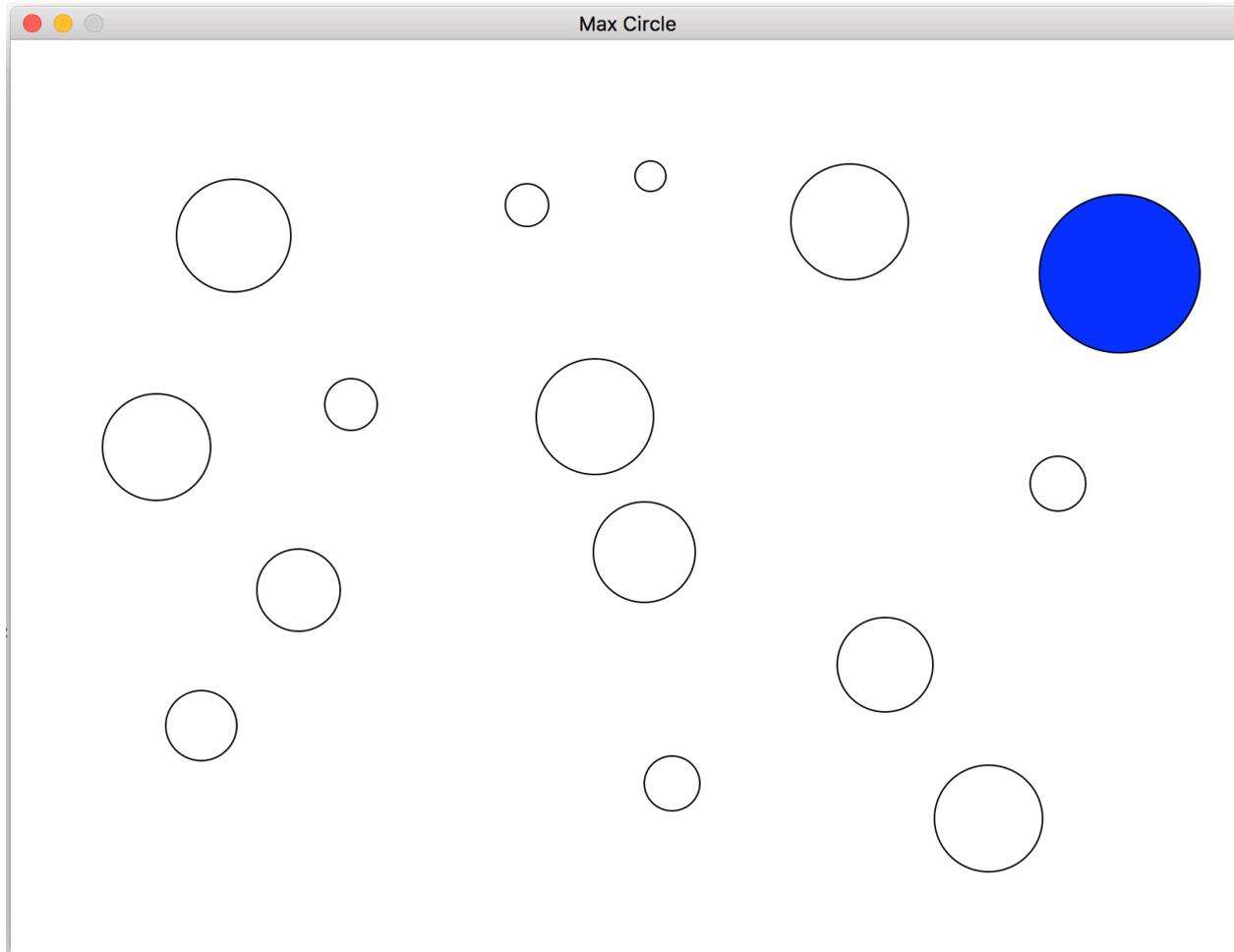
twelve_days.py

```
On the 1 day of Christmas my true love sent to me  
1 partridge in a pear tree.
```

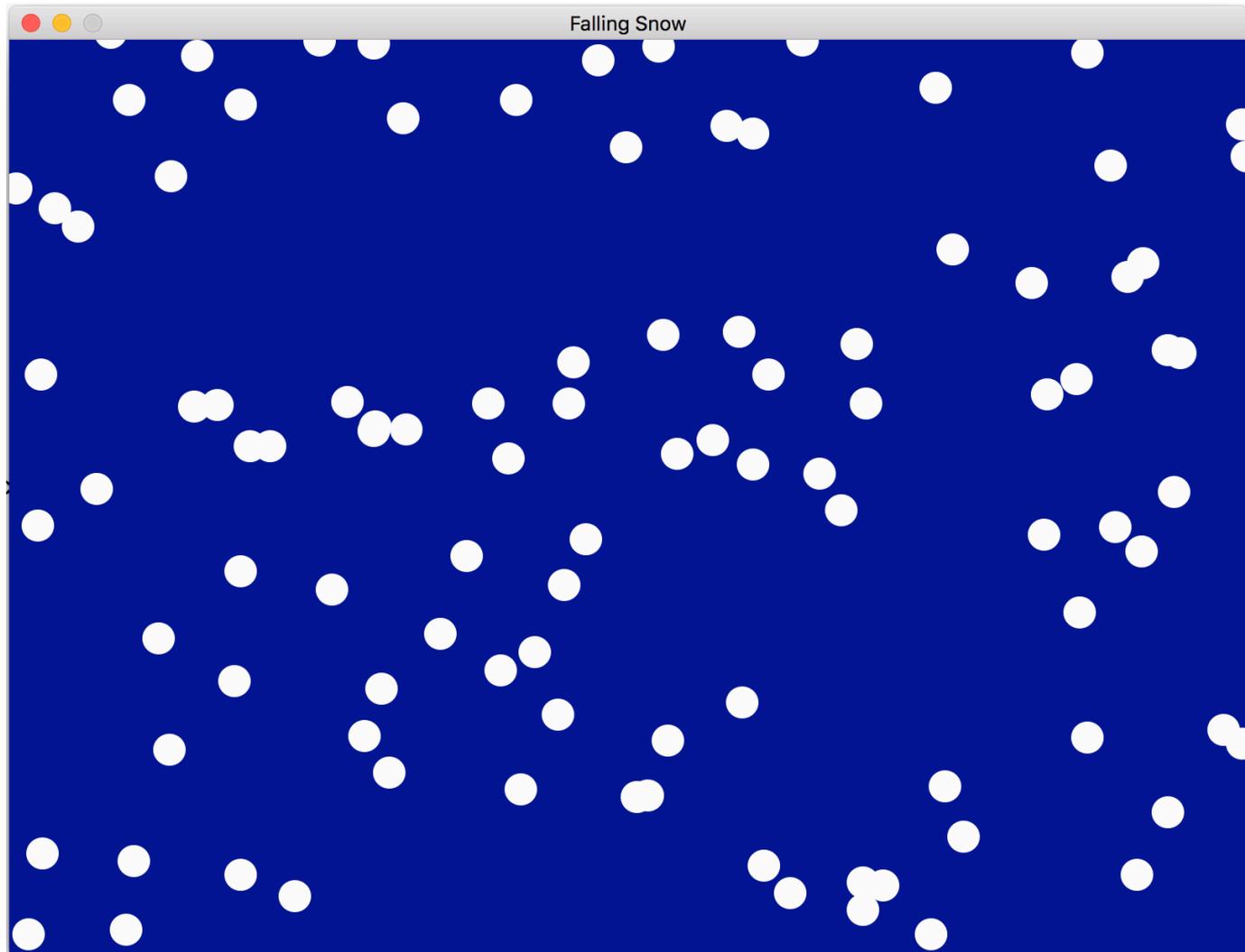
```
On the 2 day of Christmas my true love sent to me  
2 turtle doves,  
1 partridge in a pear tree.
```

```
On the 3 day of Christmas my true love sent to me  
3 french hens,  
2 turtle doves,  
1 partridge in a pear tree.
```

max_circle.py



snow_challenge.py



box.py

```
# create a text object in a random location on the window
x = random.randrange(width)
y = random.randrange(height)
corner1 = Point(x-30, y-15) # upper left
corner2 = Point(x+30, y+15) # lower right
box = Rectangle(corner1, corner2) # constructor for Rectangle class
box.setFill("brown")
box.draw(win)

# one of the VERY few times it's okay to use while True!
while True:
    click = win.getMouse() # user's click Point
    cx = click.getX()
    cy = click.getY()
    dx = cx - x # destination - source
    dy = cy - y # destination - source
    box.move(dx, dy)

    # update the center of the box
    x = cx
    y = cy
```

Lots of problems to try!

- [inclass/w06/text_move.py](#)
- [inclass/w06/nested_loop.py](#)
- [practice/twelve_days.py](#)
- [practice/max_circle.py](#)
- [practice/snow.challenge.py](#)