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)

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.

```java
click = win.getMouse()
dot = Circle(click, 20)
dot.draw(win)
```
Informal quiz (discuss with a partner)

1) What is the code below doing?
   *Constructing and drawing a circle centered at the user’s click.*

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.

```python
click = win.getMouse()
dot = Circle(click, 20)
dot.draw(win)
```
Informal quiz (discuss with a partner)

1) What is the code below doing?
   Constructing and drawing a circle centered at the user’s click.

2) The type of `click` is `Point`.

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.
Informal quiz (discuss with a partner)

1) What is the code below doing?
   *Constructing and drawing a circle centered at the user’s click.*

2) The type of `click` is `Point`.

3) The type of `click.getX()` is `float` and the type of `dot.getCenter()` is `Point`.

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.

```java
click = win.getMouse()
dot = Circle(click, 20)
dot.draw(win)
```
Informal quiz (discuss with a partner)

1) What is the code below doing?
   Constructing and drawing a circle centered at the user’s click.

2) The type of `click` is `Point`.

3) The type of `click.getX()` is `float` and the type of `dot.getCenter()` is `Point`.

4) `getX()` and `getCenter()` are examples of getters. They do not take in any parameters. They return data.

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)

1) What is the code below doing? Constructing and drawing a circle centered at the user’s click.

2) The type of `click` is `Point`.

3) The type of `click.getX()` is `float` and the type of `dot.getCenter()` is `Point`.

4) `getX()` and `getCenter()` are examples of getters. They do not take in any parameters. They return data.

5) True or False: if a graphics object is not visible on the graphics window, it does not exist.

   *False!*
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?

<table>
<thead>
<tr>
<th>h</th>
<th>m</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>11</td>
<td>40</td>
</tr>
</tbody>
</table>

```
message = Text(<Point>, <str>)
message.setSize(<int>)
type(click)
```
Example of creating a text object

```python
>>> 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!")
```

Hello!

Goodbye!
Notecard feedback

• 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
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
# 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(cornner1, 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