

Objectives

- Lab 3 Feedback, Discussion
- Lab 4
 - Variety of problems
 - Two more challenging problems

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Lab 3 Feedback

- More difficult problems
- Took off for insufficient testing
- Took off for poor naming, style, comments

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Beatles Lyrics Problem

- Using two `for` loops, a variable with value "She loves you," and another variable with value "yeah", print out the Beatles lyrics...

```
sly = "She Loves You,"
yeah = "yeah"

#prints the line three times
for line in xrange(3):
    print sly,

    # print 2 yeahs, with commas
    for ycount in xrange(2):
        print yeah + ", ",

    print yeah # closes the fence post

print "Yea-aahh!"
```

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Common Issue

- Using loops for statements that should only be executed once

```
#prints the line three times
for line in xrange(3):
    sly = "She Loves You,"
```

What is the difference between executing this in the loop and just executing once outside the loop?

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Common Issue

- Using loops for statements that should only be executed once

```
#prints the line three times
for line in xrange(3):
    sly = "She Loves You,"
```

What is the difference between executing this in the loop and just executing once outside the loop?

Result is the same
But in loop, executes two more times, not changing
→ extra, unnecessary assignment

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Common Issue

- Using same variable for different purposes
 - Will cause problems/confusion later

```
game = 0
for x in xrange(NUMSIMS+1):
    x = random.randint(MIN, MAX)
    game += 1
```

The purpose of x has changed:
x is the counter for the loop
x is the random number for determining who won

Separate purposes → separate variables

Another issue: don't need the `game` variable...

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Common Issue

- Instead of

```
game = 0
for x in xrange(NUMSIMS+1):
    x = random.randint(MIN, MAX)
    game += 1
```

- This is better:

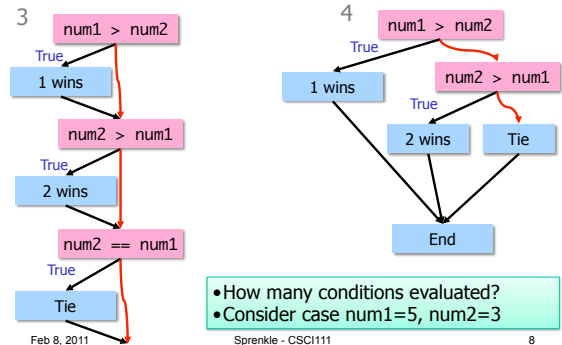
```
for game in xrange(NUMSIMS+1):
    outcome = random.randint(MIN, MAX)
```

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Problem 3, 4 Efficiency

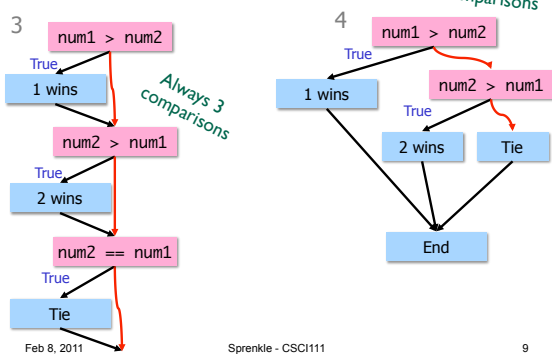


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Problem 3, 4 Efficiency

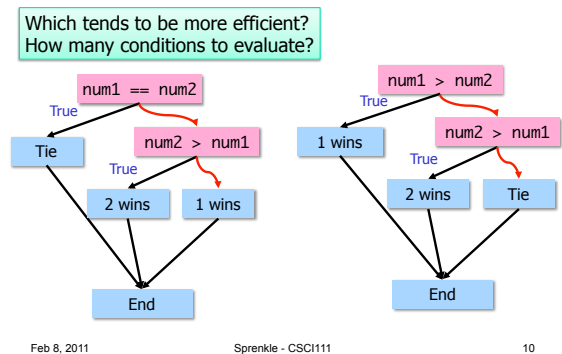


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Problem 4 Efficiency



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OO Terminology Summary

Term	Definition	Examples
Class	A data type. Defines the data and operations for members of the class	string, TV, GraphWin
Object	An <i>instance</i> of a specific class	animal, myTV, window
Method	Operations you can call on an object	setBackground(<color>), getWidth()
Constructor	Special method to create an object of a certain type/class	GraphWin(), str(1234)

Always need to create/construct an object before using it.

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OO Hints

- Use API to do work for you
 - Call appropriate methods for the type/class of object
- Always need to create/construct an object before using it
- Keep in mind the type of the object that you're dealing with

Object Name	Type
rect	Rectangle
win	GraphWin
upper_left_pt	Point

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Lab 4 Overview

- Advanced `for` loop
- Use `sys` module
- Indefinite loops (`while`)
- Object-oriented programming using a third-party library
 - Creates a `.pyc` file
 - Causes printing havoc