Announcements

- Reading and RQ5 due next time
- Assignment 2 due Tuesday
- APT 1 is due today, APT 2 out today
- Catch up Schedule on main web page

Today –
- Solving problems – 7 Step process
- Decisions - if, Boolean

Assignment 2

- Questions?

Submitting Assignment 2

- Use Ambient/eclipse
  - Check if submitted with Submit History – files submitted should be listed!
  - Alternative submit – use websubmit – on assign tab
  - What time is it due? Tuesday 11:59pm
  - If you can’t submit on your computer, copy your file to another computer (Link?) and submit with websubmit on that computer
Why is this person so important to this course?

- Have you donated yet?

Top 10 list for surviving in CompSci 101

10. Read the book and Ask questions
9. Eat lots of pizza
8. Learn how to spell Rodger
7. Understand what you turn in
6. Follow the 7 step process

Top 10 list (cont)

5. Check Piazza every day
4. Visit your prof in her office
3. Learn how to debug your programs
2. Seek help (one hour rule!)
1. Start programming assignments early
Names, Types and Values

• bit.ly/101s17-0126-1

How many ways can I run Python in this course?

• Eclipse
  – Complete program
  – Interactive Console
  – APT
• Online textbook
  – We are using Python 2.7
  ‘/’ (2.7) vs ‘//' (3)
• Python Tutor

Review Functions

```
def duplicate(word, num):
    answer = word * num
    return answer

def duplicate2(word, num):
    answer = word * num
    print answer

def duplicate3(word, num):
    answer = word * num
```

1. `print duplicate("Go", 3)`
2. `print duplicate2("Go", 5)`
3. `print duplicate3("Go", 2)`
4. `duplicate("Go", 5)`
5. `duplicate2("Go", 4)`
6. `duplicate3("Go", 2)`

Use Python Tutor

• Debug/trace your code
• Doesn’t work with input files
Grace Murray Hopper (1906-1992)

- “third programmer on world’s first large-scale digital computer”
  - US Navy: Admiral

“It’s better to show that something can be done and apologize for not asking permission, than to try to persuade the powers that be at the beginning”

https://www.youtube.com/watch?v=1-vcErOPoQfQ

ACM Hopper award given for contributions before 35

2010: Craig Gentry: http://www.youtube.com/watch?v=qe-zmHoPW30
2011: Luis von Ahn
2013: Pedro Felzenszwalb
2014: Sylvia Ratnasamy
2015: Brent Waters

APT Pancake:


- How do you solve this problem?
  - First steps: are there simple cases that can be solved immediately?
    - What are these for the pancake problem?
  - Sometimes it helps to know if you are on track, should you use Python to check your paper and pencil work?
- Get specific, solve for 5, not N
  - Fix one parameter, vary the other
  - Identify the cases and continue

APT: Pancakes

Problem Statement

You’re a short-order cook in a pancake restaurant, so you need to cook pancakes as fast as possible. You have one pan that can fit capacity pancakes at a time. Using this pan you must cook numCakes pancakes. Each pancake must be cooked for five minutes on each side, and once a pancake starts cooking on one side it has to cook for five minutes on that side. However, you can take a pancake out of the pan when you’re ready to flip it after five minutes and put it back in the pan later to cook it on the other side.

Write the method, minutesNeeded, that returns the shortest time needed to cook numCakes pancakes in a pan that holds capacity pancakes at once. See the examples.

Solve an APT - Pancakes

bit.ly/101s17-0126-3
Problem Solving to Code
7 Step Process
1. Work small examples by hand
2. Write down what you did in words (algorithm)
3. Find Patterns (generalize algorithm)
4. Work another example by hand (does your algorithm work? If not, go back to 2)
5. Translate to code
6. Test several cases
7. Debug failed test cases

Pancake Problem
• Work through the 7 step process….

Three pancakes in a two-cake pan…
• Number of cakes in the system
  – First 5 minutes
  – Second 5 minutes

Three pancakes in a two-cake pan…
• Number of cakes in the system
  – Third 5 minutes
• How many minutes to cook all three pancakes?
How to solve problems with different cases?

• Keep score in a video game?
  – Different points for different tasks?
• Translate a book from English to Spanish?
  – Different words, different rules
• Identify proteins in strands of DNA?
  – Start codon: atg  Stop Codon: tag
• Different cases with Pancake APT?

• In Python use: if, else ,elif