CompSci 101
Introduction to Computer Science

January 28, 2016

Prof. Rodger
Names, Types and Values

• bit.ly/101sp16-0126-2
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 – LTIJ
  – Solving problems – 7 Step process
  – Decisions - if, Boolean
  – Strings
How many ways can I run Python in this course?

• Eclipse
  – Complete program
  – Interactive Console
  – APT

• Online textbook
  – Beware Python 3 (‘/’ (2.7) vs ‘//’ (3))

• Python Tutor
How to get Help in this class

• Piazza
• Consulting hours (Sunday-Thursday nights)
• Office hours (Prof, Tas)
• What happens if my laptop breaks and I can’t use my eclipse? Do I stop programming?
  – Clusters, Python Tutor, websubmit, borrow
• What happens if you send Prof. Rodger an email?
  • 35 support people vs. 1 person, may take awhile to answer
Submitting an Assignment

• Use Ambient – submit
  – Submit History – files submitted should be listed!
  – Alternative – use web submit
  – Tuesday midnight means Tuesday 11:59pm + 121 minute
  – 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?
def duplicate(word, num):
    return word * num

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

def duplicate3(word, num):
    return 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
Assignment 2

- Questions?
- Demo
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-vcErOPofQ

● **ACM Hopper award given for contributions before 35**
  2010: Craig Gentry: [http://www.youtube.com/watch?v=qe-zmHoPW30](http://www.youtube.com/watch?v=qe-zmHoPW30)
  2011: Luis von Ahn
  2013: Pedro Felzenszwab
  2014: Sylvia Ratnasamy
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
Solve an APT - Pancakes
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Problem Solving to Code

7 Step Process

1. Work small example 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….
How to teach pancake Flipping

- [http://www.youtube.com/watch?v=W_gxLKSsSIE](http://www.youtube.com/watch?v=W_gxLKSsSIE)
  - For longer, more complex robotic tasks
    - [http://www.youtube.com/watch?v=4usoE981e7I](http://www.youtube.com/watch?v=4usoE981e7I)
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
LastNameFirst APT

http://www.cs.duke.edu/csed/pythonapt/lastnamefirst.html

Answer Questions here:

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