Names, Types and Values


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 – LTJJ
  - 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?

• Have you donated yet?
Top 10 list for surviving in CompSci 101

10. Ask questions
9. Eat lots of pizza
8. Learn how to spell Rodger
7. Read the book
6. Do the reading quizzes

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

Review Functions
www.bit.ly/101sp16-0128-1

```python
def duplicate(word, num):
    return word * num

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

def duplicate3(word, num):
    word * num
    print duplicate("Go", 3)
    print duplicate2("Go", 5)
    print duplicate3("Go", 2)
    duplicate("Go", 5)
    duplicate2("Go", 4)
    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
  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
bit.ly/101sp16-0128-2
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….

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

- http://www.youtube.com/watch?v=W_gxLKSsSIE
  - For longer, more complex robotic tasks
    - http://www.youtube.com/watch?v=4usol981e7I

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