

CompSci 101

Introduction to Computer Science



Sept 13, 2016

Prof. Rodger

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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

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Announcements

- Reading and RQ5 due next time
- Assignment 2 due Thursday
- 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

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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
- Fill out form to request extension

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Submitting an APT – APT tab

- Test – get it working
- Submit – run it one time here and see the green
- Finish – complete README for each APT
- Check your grade – “check submissions” link

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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? Thursday 11:59pm + 121 minutes
 - If you can't submit on your computer, copy your file to another computer (Link?) and submit with websubmit on that computer

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Completing and Turning in Lab

- Lab is due Sunday night following lab
- You should complete it (unless items marked optional)
- If you miss lab you still need to do it and turn it in – max 3 of 4 points
- Ok to miss a few labs, I'll drop a few lab points at end of semester

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Lab this week

- Always **read the reading** for the week **before lab**
- String splicing
 - Word = "go duke"
 - print word[3:5] + word[0]
- Making decisions – if
- Lists – ["orange", "kiwi", "lemon"]

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Why is this person so important to this course?



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Use Python Tutor

- Debug/trace your code
- Doesn't work with input files

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Review Functions

www.bit.ly/101f16-0913-1

```
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  
    print answer  
  
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)
```

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Assignment 2

- Questions?
- Demo



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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

2015: Brent Waters



Solve an APT - Pancakes
bit.ly/101f16-0913-2



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APT Pancake:

<http://bit.ly/pancakes101>

- 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



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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

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Pancake Problem

- Work through the 7 step process....

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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

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How to teach pancake Flipping

- http://www.youtube.com/watch?v=W_gxLKSsSIE
 - Is this computer science? <http://bit.ly/zykOrh>
 - For longer, more complex robotic tasks
 - <http://www.youtube.com/watch?v=4usoE981e7I>



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