

CompSci 6

Introduction to Computer Science

Sept. 20, 2011

Prof. Rodger

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Announcements

- Read for next time Chap. 7
- Reading Quiz on Blackboard
 - Due before class next time
- Apt-one due today, apt-two out today
- First exam in two weeks

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Top 10 List – Surviving CompSci 6

10. Ask Questions
9. Read the Book
8. Visit your professor in her office
7. Learn how to spell Rodger
6. Start early and keep working until it is correct

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Top 10 List (cont)

5. Read the CompSci 6 bulletin board - Piazza
4. Attend class – Be on time!
3. Disconnect (email, facebook, chat, text) and focus/think about what you are doing
2. Seek help when stuck (1 hour rule)
1. Keep number for Randy's Pizza handy

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How do we solve?

- Given a list of names and ages, how do we figure out the names who get youth discount (under 21)?
- [[‘Mo’, 18], [‘Bess’, 26], [‘Ed’, 21], [‘Z’, 19]]
- How do we modify it to get the names to give discounts to both youths and senior citizens (65 and older)?

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Processing lists

- Creating a list
 - range(x, y, z) - returns a list of numbers from x up to but not including y, with z the increment
 - empty list []
 - enumerate – returns a list of pairs (index, list item)
- Traversing a list
 - for x in list
- Changing a list
 - append, insert, remove
 - myList[index] = newValue - change item in myList at position *index*

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Processing lists

```
words = ['computer', 'science', 'cool']
for w in words:
    w = w.capitalize()
print words

for (i,v) in enumerate(words):
    words[i] = v.capitalize()
print words

for x in enumerate(words):
    print x
```

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While loops

- Repetition when you stop a loop based on a condition
- Example: Repeat in chess until someone wins. When will that be?
- Example: Does the letter ‘o’ appear at least three times in a string? Count the number of ‘o’s in the string and print out 3 if there are 3 or more, otherwise print the number of ‘o’s
- What if the string is very long? Can we stop early if we counted three ‘o’s?

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Example

```
title = "the goose is on the loose"
count = 0
pos = 0
while (count < 3 and pos < len(title)):
    if title[pos] == 'o':
        count += 1
    pos += 1
print count
```

Does this loop stop early?

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Example 2

```
title = "the goose is on the loose"
count = 0
for i in range(0, len(title)):
    if title[i] == 'o':
        count += 1
    if count >= 3:
        break
print count
```

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Example 3

```
title = "the goose is on the loose"
count = min([title.count('o'), 3])
print count
```

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How to Solve an APT

- Steps
 1. Think, write on paper, sketch out solution
 2. Translate problem-solving to Python
- Both steps are hard
 - More experience with Python, step 2 easier
 - The more you know the power of the language, the more step 2 can influence step 1
- Step 1 is key, without it you won't get anywhere

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Problem Solving - APT

- Txt Msg
 - If word is all vowels, return the word
 - Vowels are “aeiou” only
 - If word has a consonant, write only consonants that do not have a consonant before them.
- Example: “a computer science quiz”
 - “a cmtr sn qz”
- What do we do first?
 - How do we know if a word is all vowels?
 - How do we know if a character is a vowel?