

CompSci 6

Introduction to Computer Science

Sept. 20, 2011

Prof. Rodger

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

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

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

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)?

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*

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
```

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?

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?

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
```

Example 3

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

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

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?