CompSci 101
Introduction to Computer Science

Oct 3, 2017

Prof. Rodger

"All your troubles are due to those 'ifs'," declared the Wizard. If you were not a Flutterbudget you wouldn't worry."

- The Emerald City of Oz by Frank Baum

Announcements

- Test 1 is Thursday, Oct 5!
  - You must take the exam in your lecture section
  - Accommodations for test 1? Should have already filled out form on website
- Assignment 4 due TODAY
  - Late penalty 10% extended through Friday, Oct 6
- See Regrades form on website
- No labs this week
- Consulting hours this week
  - Ask UTAs to go over exam questions, etc.

Exam logistics

- Exam is in the regular classroom
- Only need a pen or pencil
- No calculator, smart watch, electronics, scratch paper
- Will give you a reference sheet of Python information with the test (see resources page)
- Closed book, closed notes, closed neighbor
- Covers lecture, lab and assigned reading, assignments, apts
- Have put old quizzes back up as quiz review
  - This is NOT for a grade, for studying only

The best way to study

- Write code on paper!
  - Don’t spend time debugging!
- Resources page has old tests and solutions
  - Try writing code, then look at solutions
- Rewrite an APT
- Rewrite code we did in lecture
- Rewrite code we did in lab

What we have not done

- Test 1 from Fall 2014 on we have covered everything.
- If looking at old exams, note we **have not done** the following:
  - List comprehensions
  - Code in square brackets such as

    y = [w for w in alist]

  There may be other things…. If it looks strange, it might be we haven't done it….

Not covered on the exam

- While loops
- Writing files
- Turtles

Understand

- What is the difference between:
  - [ ] and ( )
  - w = and w +=
  - print value and assigning value to a variable
  - When do you print? When do you return?
  - Does a function print or return?
- if, for, range, strings, lists
  - Understand format and how they work
  - Looping over items VS looping over index
- Parameters vs arguments

Writing functions with formulae

bit.ly/101f17-1003-1

Writing functions with formulae

- Using extra variables: can be really smart
  - Helps in making each line simple
  - Easy to correct if you've made a mistake

- See `triangleArea`, what about other math symbols and formula?
  - What do +, -, *, /, % do?
  - What about math.sqrt or 5**0.5 or math.sin …

APT Quiz 1 Solns on today's date

Problem Statement

In this problem we will be looking at words in a phrase. Your task is to count the number of words in the phrase that start and end with a different vowel. For example, consider the phrase "usa will unite the entire world". The word "usa" starts with the vowel "u" and ends with the vowel "a", so this word would be counted. The words "will" "the" and "world" do not start and end with a vowel, so they are not counted. The world "unite" starts with "u" and ends with "e", different vowels, so it is counted. The word "entire" starts and ends with a vowel but they are the same vowel, so it does not count. Thus there are only two such words.

Specification

```
filename: DifferentEnds.py

def countVowelWords(phrase):
    '''
    Given a string parameter
    phrase, return the number of words
    in phrase that start with and end with
    a different vowel.
    '''

    # you write code here
```

Write function *countVowelWords* that has one string parameter: `phrase`. This function returns an integer representing the number of words in phrase that start and end with a different vowel. If the same word appears more than once in a phrase and it starts and ends with different vowels, then it is counted every time it appears. For the phrase "usa go usa", this function would return 2.

1.
```
phrase =  "usa will unite the entire world"

returns: 2
```

APT: WhichSubjects

Problem Statement

Given a phrase, your task is to create a new phrase that includes only those words from the original phrase that do not have digits in them nor the characters ":" or "-".

You might use this method for example to extract out the subjects of the courses that someone is taking. For example if the phrase is:

`"CompSci 101 TuTh1:25pm Econ 101 MW10:05am"`

Then you would return the string "CompSci Econ". You would not include words that have digits, ":" or "-", so in this case you would not include any of these words: "101", "TuTh1:25pm", "101", and "MW10:05am".

Specification

```
filename: WhichSubjects.py

def computeSubjects(phrase):
    '''
    Given the string phrase, return a phrase
    that includes all the words from phrase that do
    not contain a digit or "-" or ":". Those words must
    be in the same order they were in  phrase.
    '''

    # you write code here
```

Write function *computeSubjects* that has one string parameter `phrase`. This function returns a string of the words from phrase, in the same order, that do not have a digit, ":", or "-".

You may want to consider writing a helper function.

1.
```
phrase =  "CompSci 101 TuTh1:25pm Econ 101 MW10:05am"


returns: "CompSci Econ"
```

Accumulating in a loop

- If you are going to return a string
  - Initialization, return value, how to "build it"
- If you are going to return an int (counter)
  - Initialization, return value, how to "build it"
- If you are going to return a list
  - Initialization, return value, how to "build it"

Counting 'a's in a string, 'fox' in a list?

- What Python functions/methods help
  - If you forget, how can you recreate yourself?
  - See exam Python reference sheet

Basic List/file Processing

bit.ly/101f17-1003-2

Review Old Exam Questions