CompSci 101
Introduction to Computer Science

Dec 6, 2016

Prof. Rodger

Announcements

- RQ done!
- Assign 8 due today
- APT 10, Assign 9 – due Friday(Monday)
- Final Exam:
  - Sec 01 Mon Dec 19 2pm, LSRC B101
  - Sec 02 Thur Dec 15 7pm, BIO Sci 111
  - Get accommodations?
  - Room for some to take final with the other section
  - Must fill out form by THIS FRIDAY, Dec 9.

Calculate Your Grade

- From "About" tab on course web page

Labs	10%
Reading Quizzes	5%
Class/Group work	5%
Apts	10%
Programming Assignments	10%
APT Quizzes	5%
Two Midterm Exams	30%
final exam	25%

More on Grades

- Lecture – ignore the first two weeks (drop/add period), plus drop 4 points
- Reading Quizzes – will drop 30 points
  - Lots of problems with Sakai this semester
  - Check your grades to make sure they copied over – fill out duke oit help form if they are wrong
- Lab – drop 6 points (each lab is 4 pts)
  - 44 pts total– 38 pts is 100%

More Announcements

- Regrades for Exam 2 – submit by Fri. Dec 9
- Be a UTA for CompSci 101
  - Rewarding and Learning Experience
  - Apply: http://www.cs.duke.edu/csed/uta
- Last Lab this week

- Today:
  - More on Recursion, Regex
  - More on Sorting and analyzing it

Provide Comments on UTAs

- Lab UTAs
- Any other UTAs who helped you?

- See announcement in Sakai
  - Anonymous Feedback for course
  - Anonymous feedback on UTAs

Regex Questions
bit.ly/101f16-1206-1

Review Recursion and Regex
bit.ly/101f16-1206-2

Dictionary Comprehension

- List comprehension - builds a new list
- Dictionary comprehension - builds a new dictionary

- Format
  d = { key:value for key in somelist if ....}

:

Example: From Exam 2 –
dict of Actors to list of movies: (movie in, num minutes in)

```
def dictActorsToMovies(data):
    d = {}
    for item in data:
        if item[1] not in d:
            d[item[1]] = [(item[0],item[4])]
        else:
            d[item[1]].append((item[0],item[4]))
    return d
```

```
def dictActorsToMovies(data):
    d = {item[1]:[] for item in data}
    for item in data:
        d[item[1]].append((item[0],item[4]))
    return d
```


Example: Assignment 8
ReadFood: Initialize dictionary ratingsdict

- Compute number of restaurants, say **n**
- Create **alldata** – list of

[[name1,ratings1], [name2, ratings2], [name3,ratings3], …]

[[‘JoJo’, [‘Skillet’,1,’McDonalds’,1,’Tandoor’,3, ’PandaExpress’,3]], …

- Then create dictionary:
  ratingsdict = {person[0]:[0]*n for person in somelist}

- Then update dictionary by processing **alldata**

Sorting

- In python:
  - alist = [8, 5, 2, 3, 1, 6, 4]
  - alist.sort() OR result = sorted(alist)
  - Now alist OR result is [1, 2, 3, 4, 5, 6, 8]
- How does one sort elements in order? How does “sort” work?

Selection Sort

- Sort a list of numbers.
- Idea:
  - Repeat til sorted
    - Find the smallest element in part of list not sorted
    - Put it where it belongs in sorted order.
      - Swap it with the element where it should be
- Sort example

Sorted, won't move final position	???

Selection Sort http://bit.ly/101f16-1206-3

- Sort the list of numbers using Selection Sort.
- The body of the loop is one pass.
- Show the elements after each pass.
- 9, 5, 1, 4, 3, 6

Code for Selection Sort

```
def selectsort(data):
    for i in range(len(data)):
        mindex = minindex(i)
        data[i],data[mindex] =data[mindex],data[i]
```


One Cookie Per Person! Netflix - Recommender