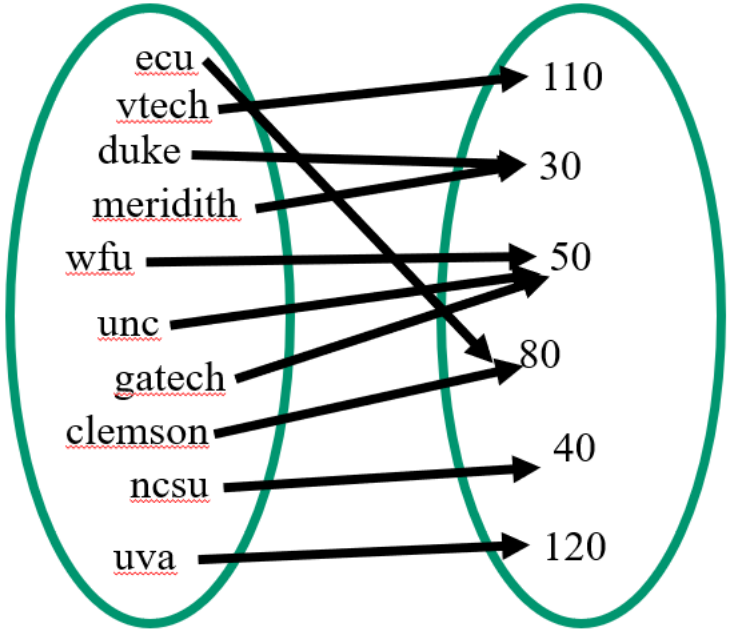
CompSci 101
Introduction to Computer Science



November 9, 2017

Prof. Rodger

Announcements

- Assign 7 due Monday
- APT 7 due Tuesday
- Exam 2 Thursday, November 16
  - See practice exams from Fall 16 and Spring 17

- Today:
  - More problem solving with dictionaries
  - Finish problem from last time

Be in the know….
ACM, compsci mailing lists

- Association of Computing Machinery (ACM)
  - Professional organization for computer science
  - Duke Student ACM Chapter – join for free
- Join duke email lists to find out info on jobs, events for compsci students
  - lists.duke.edu – join lists:
    - compsci – info from compsci dept
    - dukeacm – info from student chapter

Review Dictionaries

- Map keys to values
  - Counting: count how many times a key appears
    - Key to number
  - Store associated values
    - Key to list or set
- Get all
  - Keys, values or (key,value) pairs
- What question do you want to answer?
  - How to organize data to answer the question

Dictionary problems
Number of students in Photo clubs
bit.ly/101f17-1109-1

```
d = {'duke':30, 'unc':50, 'ncsu':40}


d['duke'] = 80
d.update({'ecu':40, 'uncc':70})
print  d.values()
```

Dictionary problems – part 2
bit.ly/101f17-1109-2

- Consider the Python dictionary below maps schools to number of students in the Photo Club at their school

d = {'duke':30, 'unc':50, 'ncsu':40, 'wfu':50, 'ecu': 80, 'meridith':30, 'clemson':80, 'gatech':50, 'uva':120, 'vtech':110}

Dictionary to answer which schools have X students? … which schools have groups of students 1-49, 50-99, etc?

Inverted Dictionary bit.ly/101f17-1109-3

- Start with dictionary of keys to values
  - *Schools to number of students*
- Use it to build an inverted dictionary of values to keys (actually list of keys)
  - *Number of students to list of schools*
- Lets look at the code

Dictionary Song problem
bit.ly/101f17-1109-4

songs = [*"Hey Jude:Let it be:Day Tripper"*,
"Let it be:Drive my car:Hey Jude",
"I want to hold your hand:Help!:Day Tripper",
"Born to run:Thunder road:She's the one",
"Hungry heart:The river:Born to run",
"The river:Thunder road:Drive my car",
"Angie:Start me up:Ruby Tuesday",
"Born to run:Angie:Drive my car"]

Building the dictionary d

"Hey Jude:Let it be:Day Tripper"

APT EmailsCourse
bit.ly/101f17-1109-5

You are given a list of strings of course information, where each string is in the format "coursename:person:email". Your task is to determine the course with the most people and to return the emails of those people in the largest course. The emails should be returned as a string with the emails in alphabetical order. If there is more than one largest course, return the emails of such course that comes first in alphabetical order.

```
["CompSci 100:Fred Jack Smith:fjs@duke.edu",
  "History 117:Fred Jack Smith:fjs@duke.edu",
  "CompSci 102:Arielle Marie Johnson:amj@duke.edu",
  "CompSci 100:Arielle Marie Johnson:amj@duke.edu",
  "CompSci 006:Bertha White:bw@duke.edu",
  "Econ 051:Bertha White:bw@duke.edu",
  "English 112:Harry Potter:hp@duke.edu",
  "CompSci 100:Harry Potter:hp@duke.edu"]

Returns "amj@duke.edu fjs@duke.edu hp@duke.edu"
```

Step 1 – Work small example by hand

```
["CompSci 100:Fred Jack Smith:fjs@duke.edu",
  "History 117:Fred Jack Smith:fjs@duke.edu",
  "English 112:Harry Potter:hp@duke.edu",
  "CompSci 100:Harry Potter:hp@duke.edu"]
```