

Plan for the week

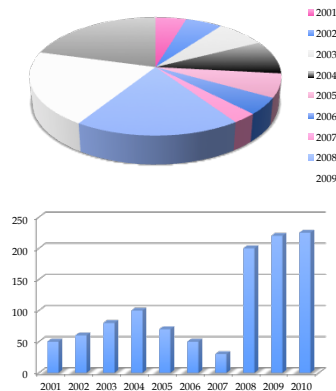
- **Plan for this week**
 - Get test back, review, look for problems/weaknesses
 - How to address these?
 - Assignments and APTs, reviewing concepts
 - Dictionary: new Python structuring mechanism (set,list)
- **Walkthrough for Jotto assignment**
 - Start today in class (perhaps?), Wednesday
- **What is Computer Science? Why study it?**
 - The future belongs to those who can process information?

Jotto: The Program Architecture

- **You write `jotto_model.py`**
 - This is the guts, brains, state of the program
 - Keeps track of how the game is progressing
 - Functions communicate via global state
 - Maintain state *between* function calls
- **We provide two views: command-line and GUI**
 - Allow you to *view* and *control* the model
 - Both view-controllers: `jotto_commandline.py` and `jotto_gui.py` know about the model, but model doesn't know about them
 - atypical MV/MVC

Model View Controller (MVC)

2001	50
2002	60
2003	80
2004	100
2005	70
2006	50
2007	30
2008	200
2009	220
2010	225



What are global variables?

- **Accessible to all functions in a module**
 - Declared as `global varname` in functions
 - Mandatory for *writing* global variables
 - Good idea for *reading* global variables
 - Defined at 'top' of module for reading code
- **Why are global variables a bad idea?**
 - Very difficult to reason about correct code
 - Very difficult to extend, modify code
 - Non-locality makes maintenance difficult

From 10,000 ft to 1 km: Dictionaries

- **What is a dictionary? By example**
 - 152.3.140.1 is www.cs.duke.edu
 - 157.166.224.26 is cnn.com
 - 68.71.209.235 is espn.go.com
- **A collection of (key,value) pairs**
 - Look up a key, get an associated value
 - Update the value associated with a key
 - Insert a (key,value) pair
 - Loop over the keys, access pairs or value

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A Python view of dictionaries

- **A collection of (key,value) pairs that is similar syntactically to a list**
 - A list can be accessed by index: a[3]
 - A dictionary can be accessed by key: d["cat"]
- **The key in a dictionary must be immutable**
 - Essentially because key converted to number and number used as index (to find value)
- **Finding the value associated with a key is very fast**
 - Essentially doesn't depend on # keys!

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Python syntax for dictionaries

- **Create a dictionary:**
 - `d = {}`
 - `d = {"apple":3, "guava":37}`
 - `d = dict([("owen":62.5) ("bob":73.9)])`
 - `d["apple"] = 5`
- **Coding with Dictionaries**
 - `d.items()`, `d.keys()`, `d.values()`
 - `d.get("key")`:
 - `d` similar to `d.keys()` in code, e.g., `x in d`

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Alma Whitten

- **Google: Engineering Lead for Privacy, Director for Privacy**
 - Across marketing and engineering
 - Why Johnny Can't Encrypt



"It's more and more the case that every individual is going around with a cheap yet powerful data-capture device, and the ability to connect that device to powerful data services. ... We need to

Build powerful information tools that are equally available to everyone, and if we are sufficiently transparent about (those tools and how they use data), then the outside world gets to say, yes, it's worth it, we want those tools."

http://news.cnet.com/8301-30684_3-20021090-265.html

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