

Programming as a Career

Andrew Kuchling



I work as a programmer
Teacher has kindly allowed me to come &
Talk about what I do,
& what programming is like as a career

I'll talk for 15 minutes, and then do Q&A.
Ask questions at any point;
Just raise your hand & I'll get to you.

First, a bit about my background...



I'm originally from Quebec in Canada:
Went to a high school called Chateauguay Valley
Regional in a rural area.



Then went to McGill U. in Montreal
Started out in physics;
After 3 semesters switched to comp. Sci.
Finished my BSc. In 1995
Moved to Washington DC area in 1996
Have worked at 6 different companies in my career

I'll talk about my current employer:

Cox Media Group Digital



Cox Enterprises is best known as a cable provider. It's a large company, 22K employees.

I work for the digital division of Cox Media Group.

Media Group owns media properties in radio, TV, and printed media.

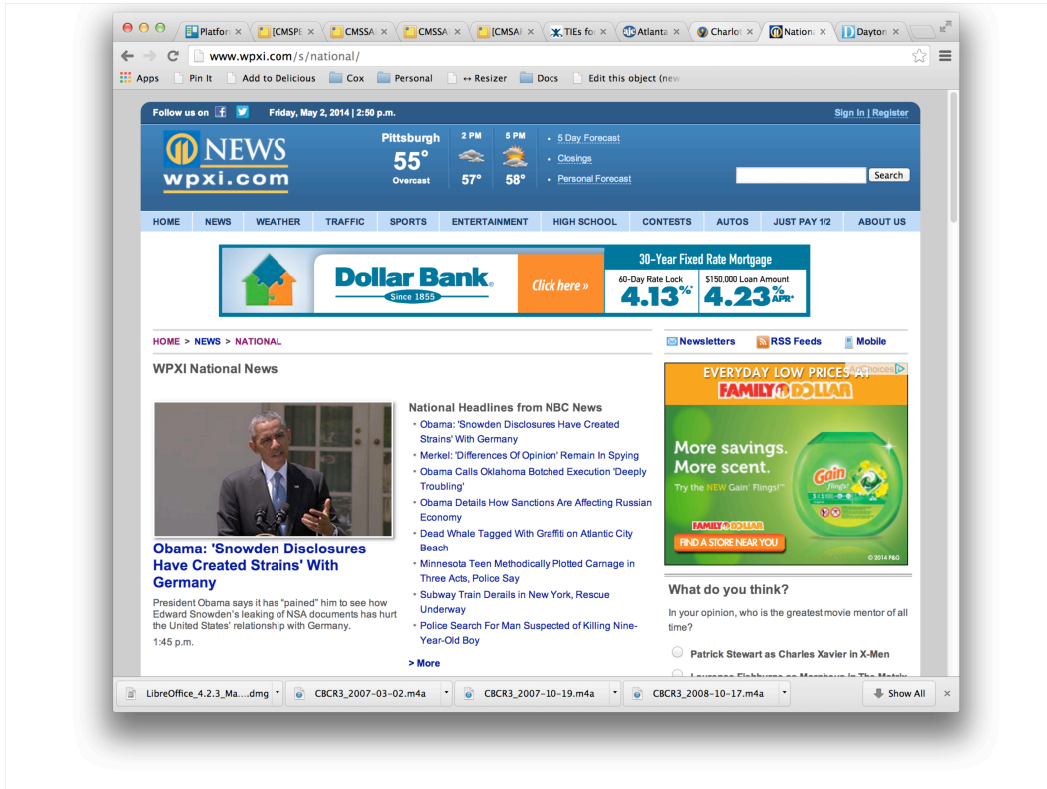
For example:

<p>WAPE-FM 95.1 WAPE</p>  <p>Format: CHR Market: Jacksonville, FL Frequency: 95.1 FM</p> <p>contact us advertise with us website</p>	<p>WHJX-FM HOT 106.5</p>  <p>Format: Urban AC Market: Jacksonville, FL Frequency: 106.5 FM</p>
<p>WJGL-FM 96-9 The Eagle</p>  <p>Format: Classic Hits Market: Jacksonville, FL Frequency: 96.9 FM</p> <p>contact us advertise with us website</p>	<p>WJGL-HD2 Power 106-1</p>  <p>Format: Hip Hop Market: Jacksonville, FL Frequency: 106.1 FM</p> <p>contact us advertise with us website</p>
<p>WOKV 104.5 FM Newstalk WOKV</p>  <p>Format: Newstalk Market: Jacksonville, FL Frequency: 104.5 FM, AM 690</p> <p>contact us advertise with us website</p>	<p>WXXJ-FM X102.9</p>  <p>Format: Alternative Market: Jacksonville, FL Frequency: 102.9 FM</p> <p>contact us advertise with us website</p>

We own 87 radio stations ...
... in various markets around the US

e.g. here are our 6 radio stations in Jacksonville FL.
Can see we span all sorts of styles (news/talk, hip-hop, pop, etc.)

We don't own any stations in DC area.
Closest would be ...



two of our 19 TV stations:

WPXI, an NBC station in Pittsburgh ...

www.wsoc.tv.com/ap/ap/texas/education-theme-for-first-ladys-san-antonio-trip/nfnHM/

Friday, May 2, 2014 | 2:55 p.m.

Charlotte 66° Broken Clouds

2 PM 66° 5 PM 69°

5-Day Forecast
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HOME NEWS WEATHER TRAFFIC 9 INVESTIGATES SPORTS GOCAROLINAS FAMILY HEALTH MARKETPLACE WSOC-TV/TV64

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Updated: 2:46 p.m. Friday, May 2, 2014 | Posted: 2:46 p.m. Friday, May 2, 2014

Education theme for first lady's San Antonio trip

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By MICHAEL GRACZYK
The Associated Press

SAN ANTONIO — First lady Michelle Obama has kicked off a new initiative she calls "Reach Higher" to encourage students to commit to their education beyond high school.

Obama unveiled her campaign Friday at a college signing day in San Antonio. She led more than 2,000 high school students in a pledge to enroll, persevere and graduate from college.

She's urged them to commit to their future and their education. She's also appealing to parents to read more to their younger children. And she wants businesses to make more summer job opportunities for kids in college and more foundations to offer

FILE - First lady Michelle Obama answers questions during the White House's annual "Take Our Daughters and Sons to Work Day," in this April 24, 2014 file photo taken in the East Room of the White House

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- Teacher reprimanded for spanking student on

... and WSOC, an ABC affiliate in Charlotte NC



Finally, 4 newspapers:

Big one: AJC

Also: Austin TX American-Statesman

Palm Beach Post, FL

Dayton Daily News, in Ohio.

Where do programmers come into this?

Change story
History View on site →

Headline:

Subhead:

Slug:

One-off byline:

Byline Source:

Text you enter here will display below the byline and overwrite any source attribution that may be associated with this content.

Source:

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Where the story occurred, was written or filed. Do not include the dash. Examples: ATHENS, Ga. or OAKLAND, Calif.

Story:

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Format
HTML

Urbana University has struggled financially throughout much of its 164-year history, but years of lean enrollment and a series of failed business decisions in the past decade, combined with a crippling recession, meant the university was unable to take on more debt to survive into the next year.

As Urbana officials began negotiations with Franklin University on a buy out, five banks agreed to take millions of dollars in losses to eliminate mounting debt and allow the transaction to occur.

Words: 1707

I work on a software system called Medley:

- * the content management system used to post news items/weather data/traffic reports/etc.

- * you can't purchase Medley in a store or install it as an app

- * Cox runs it on a bunch of servers & uses it internally.

- * (most programmers work on internal code like this)

For example:

- * this is the editing screen for a news story.

- * can enter/change the headline, byline, story text, etc.

<change>


Financial missteps, debt led to sale of university

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By **Matt Sanctis**
Staff Writer

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Bill Lackey
Dr. Kirk Peterson is president at Urbana University. Bill Lackey/Staff

Urbana University has struggled financially throughout much of its 164-year history, but years of lean enrollment and a series of failed business decisions in the past decade, combined with a crippling recession, meant the university was unable to take on more debt to survive into the next year.

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Despite the financial hit, bank leaders and elected officials in Champaign County said closing the university would have done far more damage to a community that is slowly recovering from the Great Recession. Local officials have estimated the university, which employs about 400, has a \$31 million economic impact on the region.

Numerous issues in the past decade led to the financial crisis, said Kirk Peterson, Urbana University president.

Traditional vs. Roth is not a famous legal battle.
Get the facts about traditional and Roth IRAs with Vanguard.
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women's fair
YOUR CUSTOMERS WILL BE THERE, WILL YOU?
[CLICK TO RESERVE YOUR BOOTH!](#)

Trending right now

1. Dayton Mall store to close for renovations
2. What do voters in John Boehner's Ohio district think of him?
3. 3 hurt in I-70 rollover crash blamed on goose
4. Daily Sudoku
5. Bacon Fest returning to the Fraze in Kettering

Hot topics

- URBAN NIGHTS - this FRIDAY in downtown Dayton

On public site, the story looks like this.
Note that the story is within a page design: ads, Sidebars, etc.

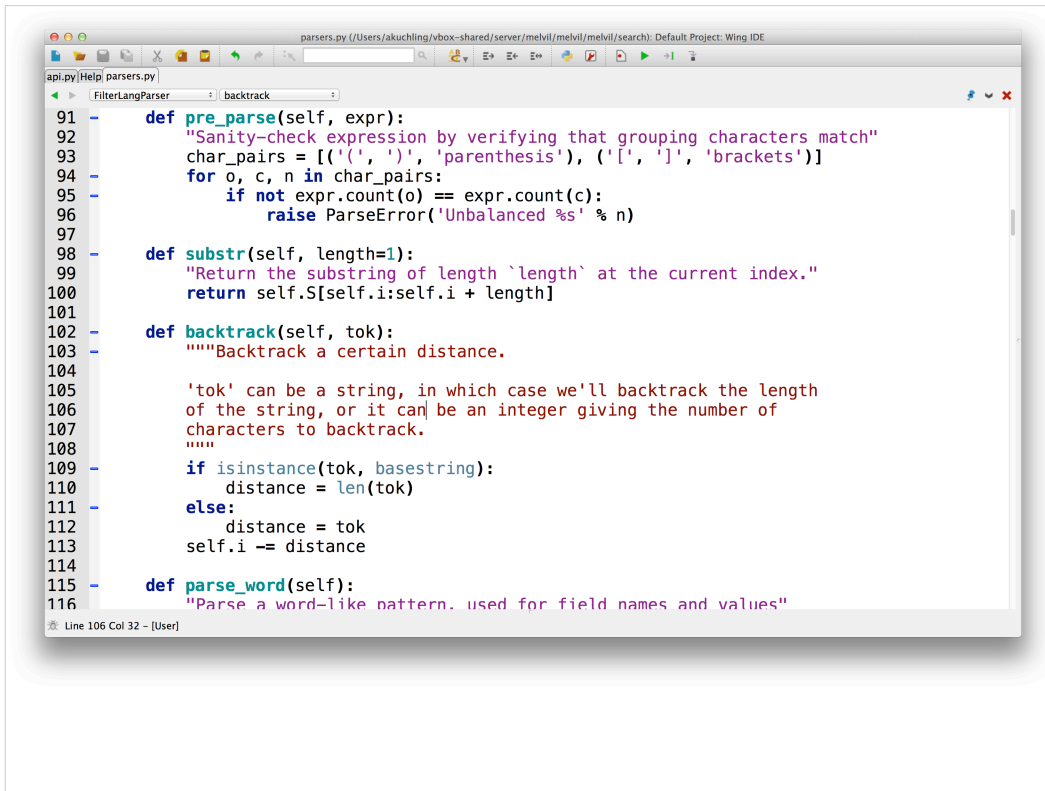
- * my group is around 100 people
- * we have (~40 or so) developers and engineers
- * includes web designers;
- * front-end people who write JavaScript embedded in these pages
- * back-end people who write Python that generates pages, returns data used by JavaScript
- * operations staff who manage the servers.



I work remotely from Bowie; my boss is in Atlanta. About $\frac{1}{2}$ our developers don't live in Atlanta (they're in MD, VA, IN, ME, travelling)

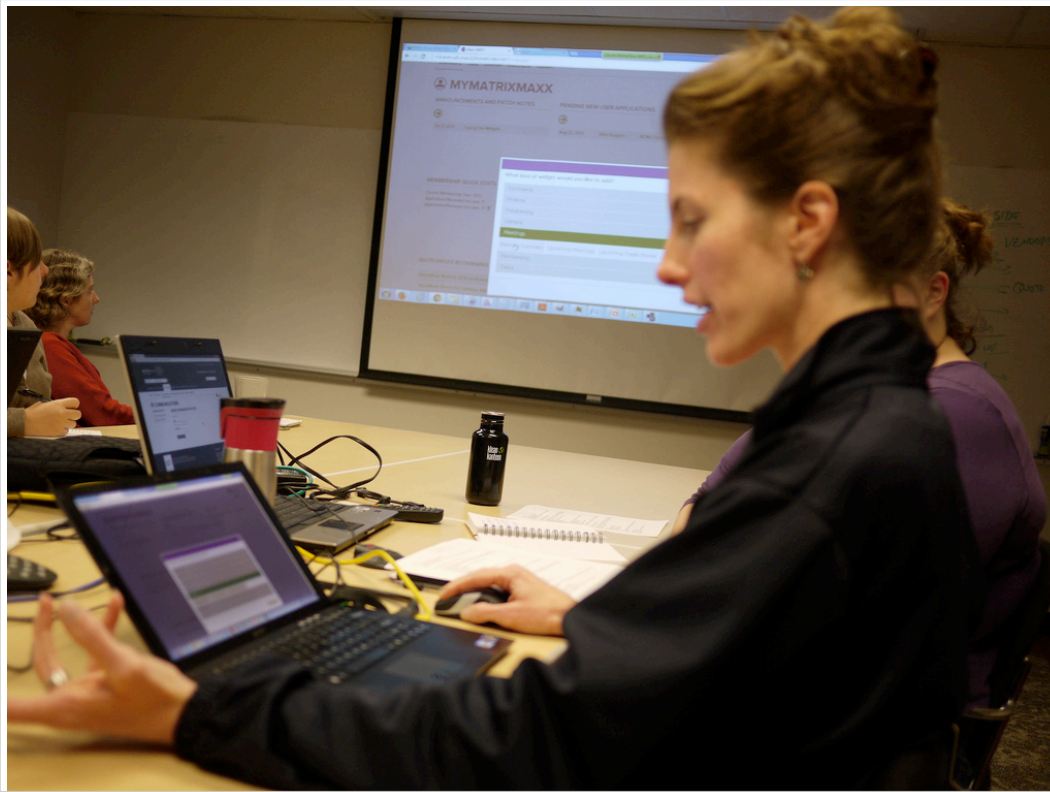
Usually I have a small # of ongoing tasks at any given time
fixing a bug (this page doesn't work);
writing some new feature (we want to display charts);
talking to people (what sort of charts do we need?);
researching a question (how do we draw charts?);
investigating a problem (why is this page slow?).

May need to switch tasks quickly if there's a crisis.



```
parsers.py (/Users/akuchling/ybox-shared/server/melvil/melvil/search): Default Project: Wing IDE
api.py | Help | parsers.py
FilterLangParser | backtrack
91 - def pre_parse(self, expr):
92     "Sanity-check expression by verifying that grouping characters match"
93     char_pairs = [(('(', ')', 'parenthesis'), ('[', ']'), 'brackets')]
94     for o, c, n in char_pairs:
95         if not expr.count(o) == expr.count(c):
96             raise ParseError('Unbalanced %s' % n)
97
98 - def substr(self, length=1):
99     "Return the substring of length `length` at the current index."
100     return self.S[self.i:self.i + length]
101
102 - def backtrack(self, tok):
103     """Backtrack a certain distance.
104
105     'tok' can be a string, in which case we'll backtrack the length
106     of the string, or it can be an integer giving the number of
107     characters to backtrack.
108     """
109     if isinstance(tok, basestring):
110         distance = len(tok)
111     else:
112         distance = tok
113     self.i -= distance
114
115 - def parse_word(self):
116     "Parse a word-like pattern. used for field names and values"
```

I'll write code to implement something
Will run Medley on my laptop to verify it works



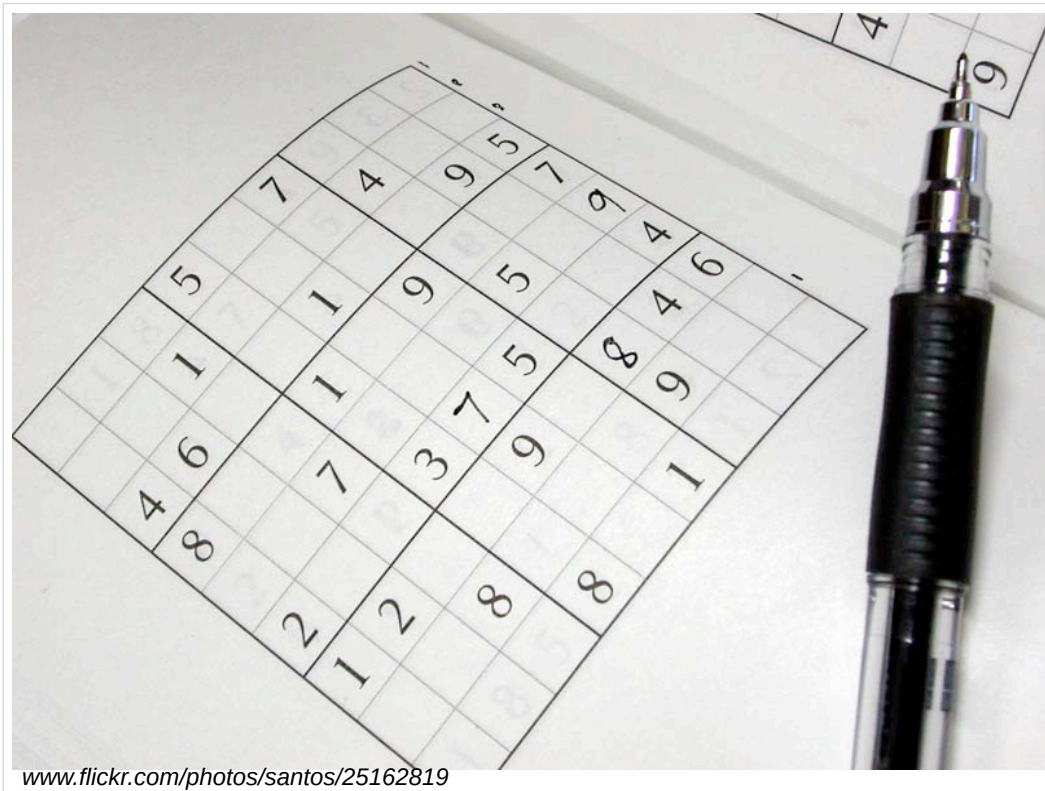
Can get a computer science degree, & find work w/
only a bachelor's.

Or get a masters or Ph.D degree (specializing in a
topic, or because you want to research or teach).

Will need to continue learning throughout career
Windows/MacOS → iOS → Android → who knows?
Tools and approaches change, but ...
there's a common core of knowledge that you learn.

Computing skills apply to many different fields:
I recently went to PyCon:
game programming; building web sites; building
mobile applications;
simulating physics; analysis of economic data,
geographic data;
psychological experiments. Even programming a
blimp for autonomous
aerial photography.
The world of computing is very large!

Can work for large established companies, smaller
stable companies, or higher-risk start-ups.
Become an employee or work as a
contractor/freelancer.



I enjoy programming work because:
It suits me well, & I'm good at it;
it can be like solving puzzles;
it's a good feeling when you make a user's life
easier, or make it possible for them to do something
they couldn't before;
pays reasonably well;
Hiring market is tight, so employers usually offer
perks (office snacks, flexible hours, conference trips).

Q & A

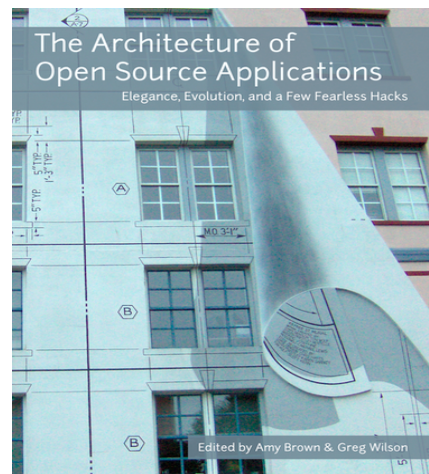
Three Interesting Things: #1

How do real programs work?

The Architecture of Open Source Applications, vols 1+2

bit.ly/arch-of-open-source

aosabook.org



First thing: a book to browse through.

School exercises are often small; how do larger programs work?

This book will tell you

Editors ask ~30 open-source software projects to describe how their system is designed.

Three Interesting Things: #2

Search for “PyCon 2014” on YouTube.

You'll find talks from a programming conference.

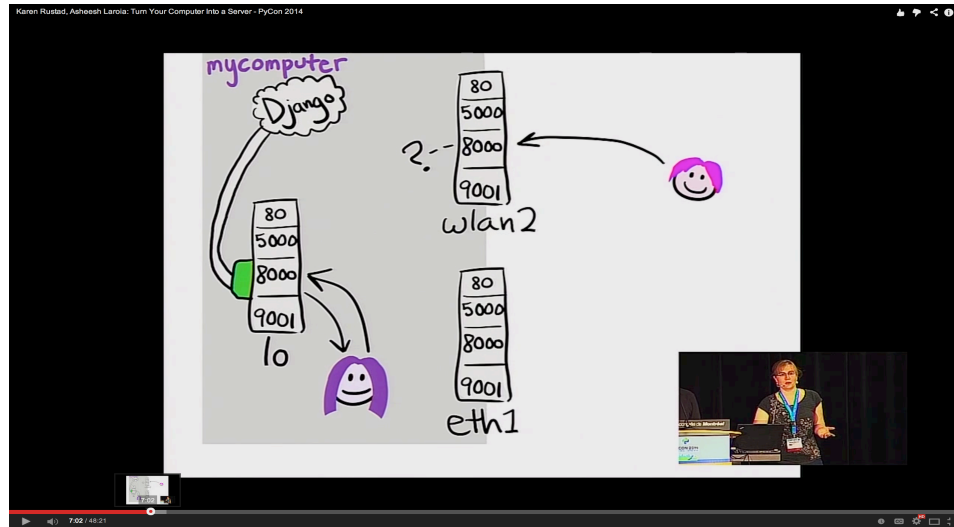
Earlier I mentioned a programming conference, PyCon.

All of the talks are recorded & posted to YouTube. To find them, search for 'pycon 2014'.

I'll highlight 2 talks...

Three Interesting Things: #2

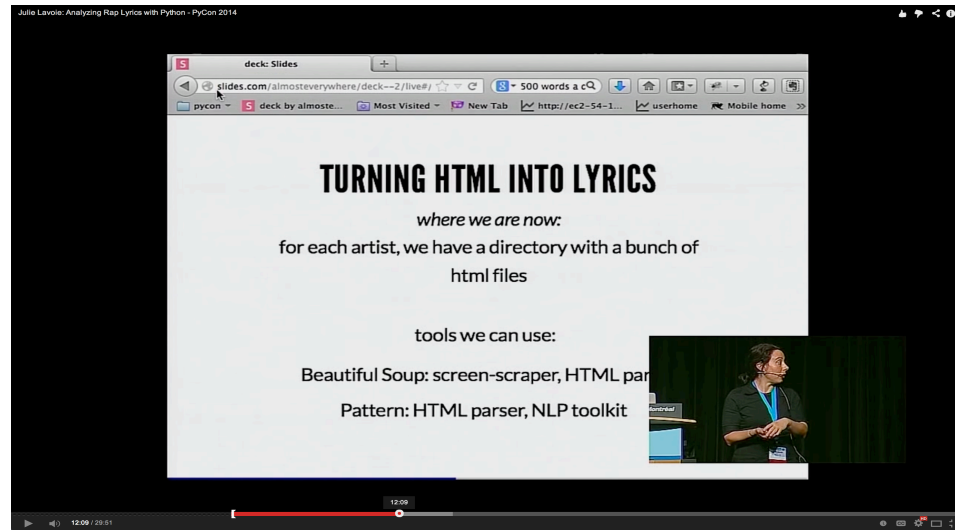
“Turn Your Computer Into a Server”



If you write a web app and are running it
On your desktop computer or laptop, how do you
share it with a friend?
Karen Rustad & Asheesh Laroia describe enough
basic computer networking to do this.

Three Interesting Things: #2

“Analyzing Rap Lyrics with Python”



Julie Lavoie is an artist and DJ who went to an NYC course called Hacker School. She downloaded a collection of rap lyrics, and wanted to analyze them & compare different rappers. Do different rap styles write differently?

Three Interesting Things: #3

Google Summer of Code

bit.ly/google-soc-2014

How Google Summer of Code Works

-  **1. Propose a project** for approval by a mentoring open source organization
 -  **2. Code the summer away**
 -  **3. Achieve Ultimate Glory** (and get a nice paycheck)
- Google Summer of Code is a global program that offers students stipends to write code for open source projects. We have worked with the open source community to identify and fund exciting projects for the upcoming summer.

Every summer, Google runs a sort-of internship for college-level students.

Called Summer of Code.

Students can propose a project to improve a piece of open-source software.

Accepted students are paired w/ a mentor from the project

Google will pay student a stipend for the summer.

'Invent your own summer job!'

This summer's students have already been accepted;

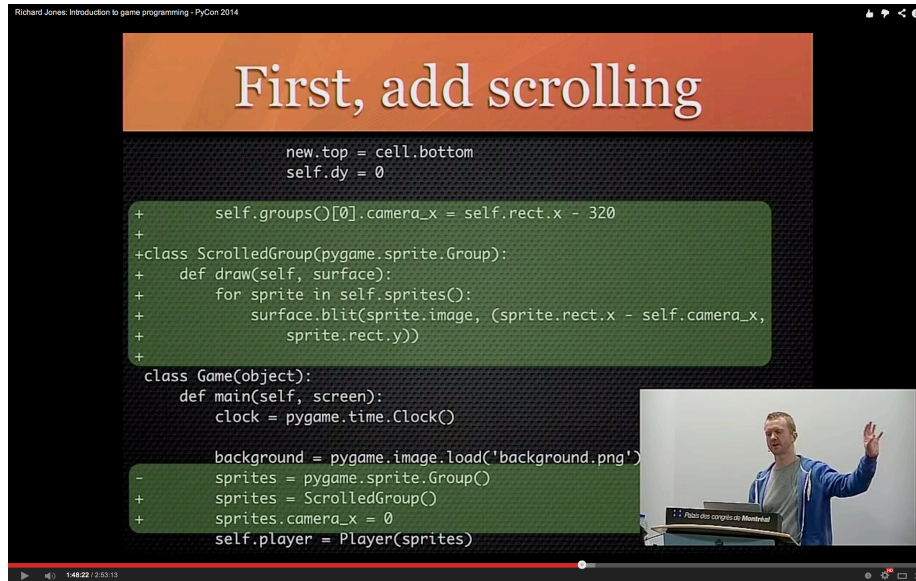
But remember it for next year!

Three Interesting Things

Arch. Of Open Source	bit.ly/arch-of-open-source
PyCon 2014 videos	bit.ly/pycon-2014-videos
Computer/Server	bit.ly/pycon-2014-server
Rap Lyrics	bit.ly/pycon-2014-lavoie
Game Progr.	bit.ly/pycon-2014-games
Google Summer/Code	bit.ly/google-soc-2014

Three Interesting Things: #2

2½-hour game programming tutorial



Bonus: The conference also features half-day tutorials.

They get recorded too.

You don't get to interact w/ teacher, but you can watch the whole tutorial for free.

Richard Jones maintains a game-graphics library called PyGame.

Tutorial showing how to write a simple game.