

Resources for CS Teachers and Students

Kip Irvine

FIU Tapestry Workshop, July 2013

Overview

- Career Advice for Students
- NCWIT
- CSTA
- ACM
- Inspirational Sites
- Online Learning

What should career
counselors be telling
students?

...

Mapping Degrees to Jobs

- BS Computer Science
 - Software engineer, software test developer
 - Pathway to CS research

most technical
- Bachelors Degree in IT
 - Network engineer, web/mobile developer, database admin, system admin, software test developer, information security
- BS Management Information Systems
 - Systems Analyst, IT Manager

least technical

Applications Software Developer

- BLS says employment of software developers will grow **30%** from 2010 to 2020, much faster than the average for all occupations. (271,000 more jobs)
- 2012 median pay was \$93,280 per year
- Requires a B.S. in Computer Science
- Can lead to a graduate research or teaching degree

What do software developers create?

- Interactive, database-driven Web sites
- Mobile apps (*enterprise*)
- Business applications
- Large scale designs (software architects)
- Research-oriented software
- Automated tests
- Games and digital animation

Network & Computer Systems Administrator (IT)

- Average pay \$76,320
- **28%** job growth, 2010-2020
- Required education: Bachelor degree in Information Technology, or Associate degree with Industry experience
- Ability to analyze complex software interactions, understand security weaknesses, manage other people

Computer Support Specialists (IT)

- Average pay \$50,130
- 18% job growth, 2010-2020
- Required education: Certification, Associate degree, or Bachelor degree in information technology
- Good problem solvers, occasional coding (scripting), good customer skills

New Career!

User Experience Designer



- Understanding users needs, expectations, and motivations
- Helping users learn to be productive and reach their goals
- **Having fun!**
- Create beautiful, yet functional designs
- Role models:
 - Debra Davis, Lauren Martin (Ultimate Software)

National Center for Women in Technology

(NCWIT) Works to correct the imbalance of gender diversity in technology and computing because gender diversity positively correlates with a larger workforce, better innovation, and increased business performance.



Lucy Sanders

NCWIT

CEO and Co-founder




Joanne M. Cohoon

NCWIT

Senior Research Scientist

<http://www.sts.virginia.edu/stshome/tiki-index.php?page=Joanne%20Cohoon>

NCWIT Programs

- *Aspirations in Computing* 
- Regional [Celebrations of Women in Computing](#)
- *Counselors for Computing*
 - *webinar, talking points, EdJobsMap ([link](#))*
- Heroes campaign
 - magazine-style [audio interviews](#)

Aspirations in Computing

- Mission: increase female participation in technology careers by providing encouragement, visibility, **community**, leadership opportunities, scholarships, and internships
- High school students, selected for their computing-related achievements and interests.
 - academic history, plans for education, IT aptitude, leadership
 - local and national
- Opportunities for you:
 - application reviewer, affiliate award host, committee member, or speaker

Partnerships with universities.

Awards for educators!

Aspirations in Computing Educator Award

- To identify outstanding educators who play a pivotal role in helping to encourage the young women to continue exploring their interest in computing and technology
- Selected from the educators who endorse Aspirations Award applicants

Claribel Perez | Bayamon, Puerto Rico

2011 Puerto Rico Affiliate

Academia Santo Tomas de Aquina





- Innovation Grants
- Curriculum Standards K-12
- Professional development
 - Annual Conference
 - Industry certification
 - Teacher workshops
- Advocacy tools and activities
 - for the new CS Principles Course
 - CSEdWeek conference
 - Salon: *Sourcing the C in STEM: Making the Critical Connection Between Computer Science Education and Jobs* (go to time 08:00)

Looking for Inspiration



readwrite.com

Role Models (code.org)

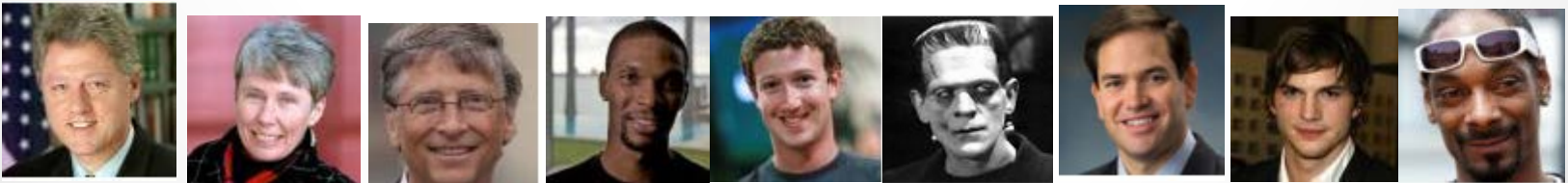
Role models in industry, government and education.

Tutorials for the classroom

CodeHS is a computing class in a Box

[CS Unplugged](#) curriculum (binary search demo)

Who likes coding?



Free Online Courses

- Coursera
 - [Computer Science 101](#) by Nick Parlante, Stanford Univ.
- EdX.org (many advanced courses, specific dates)
- Udacity.com – take the [CS 101 course](#) anytime
- Khan Academy (khanacademy.org)
- [Google's Python Class](#)
- Codecademy.org ([Learning Python](#))

Skills Practice:

- [Codingbat.com](#) – practice problems in Java and Python

Computer Science Principles Course

...

CS Principles

- Proposed AP course and exam
- Five pilot sites selected
- Recruitment focuses on minority and female student enrollment

- Metropolitan State University of Denver (contact Jody Paul)
- University of California, Berkeley (contact Dan Garcia)
- University of California, San Diego (contact Beth Simon)
- University of North Carolina at Charlotte (contact Tiffany Barnes)
- University of Washington (contact Larry Snyder)

<http://www.collegeboard.com/html/computerscience/>

http://www.collegeboard.com/prod_downloads/computerscience/1_Annotations-08-21-12_Id.pdf

CS Principles

- Central themes
 1. creative nature of computing
 2. use of technology for solving computational problems.
 3. Focus on people and society, not just machines and systems
- Implementing the courses
 - novel content and engaging pedagogy
 - opportunities to communicate and collaborate



- UC Berkeley (bjc.berkeley.edu)
- Computer Science Principles pilot course
 - 6-week summer course for teachers, \$1K stipend
- For non-CS majors at the high school junior through undergraduate freshman level.
 - SNAP! language (based on Scratch)
 - Big ideas of computing (abstraction, design, recursion, concurrency, simulations...)
 - Relevance to society, digital privacy, security, legal issues
 - free online book: *Blown to Bits*

What you Can Do

- Ask your students (and parents) to watch the code.org videos
- Educate your school career counselors about the types of computer software jobs
 - show them the NCWIT **Counselors in Computing**
- Partner with a university in your area to establish a local NCWIT Aspirations in Computing award
 - encourage your female students to apply
- Join CSTA and learn about their curriculum guidelines
- Encourage all your students to try one of the online intro to CS courses