AP Computer Science Welcome

Adapted from Ms. Martin's "Welcome" slides by Mr. Bergquist, September 2011

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What Role do you want to have in Computer Science?

- Consumer pays to enjoy (consume)
 Playing games, socializing, sharing videos, shopping, finding news & scores online.
- User <u>uses</u> computers & applications in their job
 - Creates documents, enters data and runs reports, designs promotional material.
- Developer <u>develops</u> solutions with computers

 creating new applications, using computers to
 solve research problems, connecting users.

Computer Science

- So what Science is CS?
 - \circ Engineering
 - Mathematics
 - Art
 - Magic?



- Computers are tools used to solve problems and are used practically everywhere
- CS is still a young field, especially relative to other sciences and is still defining itself
- Key is: it's about using an analytical processes to solve problems and create applications (tools)

CS myths

- Computer scientists drink Mountain Dew and eat Cheetos all day
- They have all been programming since the age of 5
- All their jobs have been outsourced





(I'm sure these guys are very nice)

Kayur Patel UW PhD Candidate HCI

Jonathan Lester UW PhD Candidate Ubicomp

OR SALE

Yaw Anokwa UW PhD Candidate ICTD

Katie Neuser Microsoft SDET Marty Stepp UW Lecturer

Ben Weintraub iPhone Software Engineer

Travis Kriplean UW PhD Candidate Human-Computer Interaction

Elena Ursachii Amazon Software Engineer Elisa Celis UW PhD Candidate Theory

What do Computer Scientists do?

- Research to make computers faster, smaller, cooler, cheaper
- Making animated flesh look real
- Inventing approaches to solve math problems
- Creating advertising platforms on the web
- Creating interactive art installations

From: Ed Lazowska's presentation "Why Computer Science?"

The past thirty years ...

Life Changers

The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.



From: Ed Lazowska's presentation "Why Computer Science?"

The past thirty years

Welcome to

TimesPeople

Search Business

THE DOUNT

By Phirlus (CHBO) Published March 7, 2002

Life Changers

1. internet, broadband

3. Mobile phones

7. Microprocessors

8. Fiber optics

14. GPS devices

17. Microfinance

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9. Office software

4. E-mail

Life Changers

The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.

- 1. Internet, broadband
- 2. PC and laptop computers
- 3. Mobile phones
- 4. E-mail
- DNA testing and sequencing
- Magnetic resonance imaging
- Microprocessors
- 8. Fiber optics
- 9. Office software
- 10. Laser/robotic surgery
- 11. Open-source software
- 12. Light-emitting diodes
- 13. Liquid crystal display
- GPS devices
- 15. E-commerce and auctions
- 16. Media file compression
- 17. Microfinance
- 18. Photovoltaic solar energy
- Large-scale wind turbines
- 20. Internet social networking

TimesPeople Lets You Share and Discover the Best of NYTimes.com HOME FAGE TODAYS PAPER VIDED MOST POPULAR TIMES TOPICS My Account Welcome, lazowska Log Out 1 Samp Al Witnes one The New York Times Business WORLD U.S. N.Y./ REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION ARTS STYLE TRAVEL. JOBS REALESTATE AUTOS **Financial Tools** More in Business > Media & World Markets Economy DealBook Energy & Select a Financial Too Advertising Business Money Environment ancestry.com discover » Advertise on Writenes.com Next Article in Business (22 of 29) + Internet, Mobile Phones Named Most Important Inventions News for Education Professionals Whether This? FROM INTIMES.COM FT FAM Colleges Sweat Out Admissions This Year In response to the shouted-out question, "What are some of the greatest A Marc Schumer Say's Schools and State Will Get Some Stimulus Money This inventions of all time?," nearby office workers in a recent informal survey Month th remains gave the following answers: the wheel, the engine, the ballpoint pen, diapers Districts Pursue School-Cooing Plans to Save Money SHARE and the cheese Danish. Tarents Size Transes Over Prep School's Shutdown **Bottoral Candidates Anticipate Bard Time** ARTICLE TODAY A panel of eight judges from the Wharton Linked School of the University of Pennsylvania NOW EVERYWHERE The top innovations of the last was required to go back only 30 years -30 years, according to judges at the Wharton School of the not to the dawn of history - when asked a University of Pennsylvania. Smith MBA at Maryland similar question. So its answers, of course, Fulltime, Partime, Executive MBA Top ranked, Four locations were very different. warmulterrithoand udulrites 2. FC and laptop computers Business Admin. School Achieve an Administration Degree. Start lowards a new career In the survey, the Internet was voted the biggest innovation of the last three decades, followed by computers, mobile phones and today' 5. DNA testing and sequencing e-mail. The survey was sponsored by Knowledge@Wharton, the www.Granten.edu 6. Magnetic resonance imaging school's business publication, and PBS's "Nightly Business Make B-School A Reality Full GMAT Prep Online & Guaranteed To Raise Your Score. Ge Report." Knewtoni www.Kinewton.com/GMM Good, important choices all, but for classic, long-lasting appeal, 10. Laser/robolic surgery they still can't beat the wheel. PHYLLIS KORKKI 11. Open-source software 12. Light-emitting diodes 13. Liquid crystal display Advertise on MYTImes co 15. E-commerce and auctions 16. Media file compression 18. Photovoltaic solar energy 19 Large-scale wind turbines 20. Internet social networking The Weekender THE NEW YORK TIME FRIDAY, SATURDAY, SUNDAY A version of this article appeared in print on March 8, 2023, on page BUD of the Next Article in Business (22 of 25) p ONLY 57 PER WEEK

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The past thirty years ...

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The most recent ten years ...

- Search
- Scalability
- Digital media
- Mobility
- eCommerce
- The Cloud
- Social networking and crowd-sourcing



Business + Technology in the Exponential Economy



In the next ten years, we'll put the "smarts" in ...

- Smart homes
- Smart cars
- Smart bodies
- Smart robots
- Smart science (confronting the data tsunami)
- Smart crowds and human-computer systems
- Smart interaction (virtual



Business + Technology in the Exponential Economy



Computer science is unique in its impact and importance

- Computer science has a rich intellectual agenda
- Advances in CS accelerate the pace of discovery in nearly all other fields
- Advances in CS drive economic growth
 - Not just through the growth of the IT industry, but through productivity growth across the entire economy
- Advances in CS touch everyone's lives they change the way we live, work, learn, and communicate
- Advances in CS are inextricably linked to our ability to address our major national challenges
- Advances in CS have major public policy implications
 - Ranging from e-voting and identity management to the nature and global spread of democracy

There are jobs out the there...

Where the jobs are and aren't

Some employers are hiring, but the openings don't overlap much with the jobs most commonly lost to the economic downturn.

TOP 10 JOB OPENINGS IN PUGET SOUND REGION*	OPENINGS, JUNE 2011	
Computer-software engineers, applications	2,980	
Registered nurses	1,340	
Computer-systems analysts	1,316	
Computer and information-systems managers	1,132	
Marketing managers	740	
Customer-service representatives	680	
Sales managers	644	
Computer-software engineers, systems software	641	
First-line supervisors of retail-sales workers	620	
First-line supervisors of food preparation and serving workers	556	

* King, Snohomish, Pierce and Kitsap counties

TOP 10 JOB CATEGORIES IN WASHINGTON WITH OPPATEST LOSSES

1003 0031, 2007-2010	
-14,690	
-12,170	
·11,730	
-8,940	
ers -7,920	
-7,330	
-6,870	
-5,770	
-5,320	
-4,780	

Sources: Seattle Times analysis of WorkSource Job postings and Occupational Employment Statistics data

MARK NOWLIN / THE SEATTLE TIMES

LODG LOGT 3557 3616



Annualized Job Openings vs. Annual Degrees Gr

Plus CS Positions pay well...



Our focus is simply - Programming

- Implementation tool
- Generic enough to support all your interests
- Fun
- Creative
- Infinite...

This course is:

- Solving tricky problems
- Learning fundamentals of programming
- Mastering Java syntax
- Discovering CS application areas
- Writing lots of small to medium programs
- "AWESOME"

This course is NOT:

- Learning to use computers
- Showing off how much C++ you know
- Showing off how good you are at Half-Life
- Surfing for sports scores or latest news on the Internet
- For the weak-spirited or lazy

Why Mr. Bergquist?

• Computer Engineer for 20+ years:

- Designed computer chips for Hewlett Packard
 O Worked on the chip set to operate HP's first fiber optic connection between computer & their disc drives
- Database design & IT, creating custom applications to:
 - Deliver fresh meals & services to over 600 clients for a local non-profit and coordinate hundreds of volunteers
 - Track donations and fundraising, including raising millions of dollars by a series of Dance-A-Thon events in the 90's
 Grew our network to over 40 PC's and 8 Mac's (IT)
- Manager of Software Test Engineering at Amazon.com for third party selling projects from 1999 to 2010, including:
 - The "<u>used & new</u>" offering on product pages
 - <u>
 Merchant storefronts</u> of other sellers on Amazon.com
 - Custom website solutions for <u>Target</u> and Marks & Spencer

Care To Dance Poster, © 1998 Modern Dog manifesto Amazon.com images, © 1996-2011, Amazon.com Inc



Tomorrow

- About you

 Why are you here?
 What do you use computers for?
- Course goals
- Syllabus questions (look over it tonight)

Google Interview Questions

- You are given 8 identical looking balls. One of them is heavier than the rest of the 7 (all the others weigh exactly the same). You a provided with a simple mechanical balance and you are restricted to only 3 uses. Find the heavier ball. Can you find it with 2 uses?
- How would you cut a rectangular cake into two equal pieces if a rectangular piece has already been cut out of it? The cut piece can be of any size and orientation. You are only allowed to make one straight cut.