TSYS School of Computer Science

Teacher Workshop
May 7, 2011

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Challenge

- The number of Computer Science majors dropped 40-50% nationwide between 2001-2008
- The percentage of women has dropped to about 10%
  - From a high of about 40% in the early 80s
- Projections of 46% job growth over the next 10 years!
- "Computer Science major is cool again"
- "Want a job? Get a computer science degree"

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The 10 fastest-growing jobs between now and 2018
http://careerplanning.about.com/

1. **Biomedical Engineers**	6. **Environmental Engineers**
2. **Network Systems and Data Communications Analysts**	7. **Computer Systems Software Engineers**
3. **Financial Examiners**	8. **Survey Researchers**
4. **Athletic Trainers**	9. **Personal Financial Advisors**
5. **Computer Applications Software Engineers**	10. **Market Research Analysts**

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Occupation Total Job Openings 2008–2018

- Elementary school teachers 597,000
- Accountants and auditors 498,000
- Secondary school teachers 412,000
- Middle school teachers 251,000
- Computer systems analysts 223,000
- Computer software engineers, applications 218,000
- Network systems and data communications analysts 208,000
- Computer software engineers, systems software 153,000

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Top 10 best jobs
http://money.cnn.com/magazines/moneymag/bestjobs/

- MONEY Magazine and Salary.com researched hundreds of jobs, considering their growth, pay, stress-levels and other factors. These careers ranked highest.
  - 1. **Software Engineer**
  - 2. College professor
  - 7. **Computer IT analyst**

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Challenge

"Finding a way to attract new talent to develop the new systems and applications that are becoming available from major vendors and startups alike may be the biggest technological issue we face for the rest of the decade."

Editorial Director Eric Lundquist, eweek.com, May 7, 2007.

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Challenge

- Professionals in computing say that you should like:
  - Problem solving
  - Working with others in a team
  - Being creative
  - Problem solving
  - Problem solving

Myth

- Only geeks do well in computing
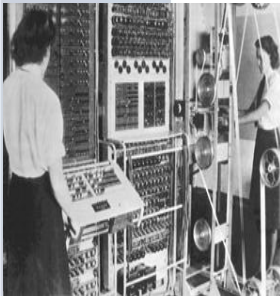

July 21, 5:43 pm: The nerds meet the geeks

Computers in the 1940s

- **Trick questions:**
  - **How many computers in this picture?**
  - What was the average weight of a computer in the early 1940's?

- Who is in Computer Science?

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- At Google, Amazon, and Microsoft

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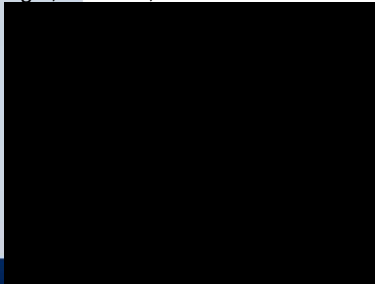
Myth

Computer Science is boring!

- – Programming iPhone/iPad
- – Programming XBox360, Surface
- – Poetry on Demand
- – Mobile Programming for Androids
- – Solar System Simulations

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What Computing Was in 70-80s
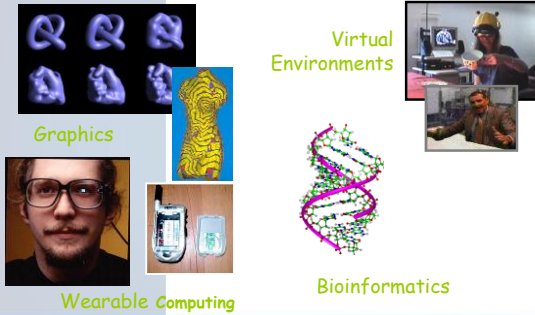
What Computing is Today

Graphics

Virtual Environments

Wearable Computing

Bioinformatics

What Computing is Today

Ubiquitous Computing

Databases

Google Image Search

Information Security

High Performance Simulation

Academic Programs in Computer Science

- **Bachelor of Science in Computer Science**
  - **Systems**
    - designed for students who plan on continuing to a graduate program in Computer Science or who want a more traditional and theoretical degree
  - **Applied**
    - less theoretical with a focus on mainframe programming and web programming
  - **Games**
    - designed for students who plan on continuing to a graduate program in Computer Science or who want to work in the gaming, modeling, and simulation industry
- Minor Computer Science (18 semester hours)

Academic Programs in Computer Science

- **Bachelor of Science in Information Technology**
  - provides students with a combination of knowledge, hands–on experience, and application of theory.
  - The curriculum emphasizes quantitative and communication skills as well as providing a basic foundation in understanding the business process and the role of Information Technology in supporting that process.
- **Computer Science Teacher Endorsement**

Computer Science Teacher Endorsement

– CPSC 6105 – Fundamental Principles of Computer Science
CPSC 6106 – Fundamentals of Computer Programming and Data Structures
CPSC 5135G - Programming Languages
CPSC 5157G - Computer Networks
EDUT 5125G - Methods of Teaching Computer Science
EDUT 5455G. Practicum in Computer Science

Quality of Academic Programs

- Undergraduate curriculum modeled after ACM Computing Curriculum with input from industry

- Our curriculum in Information Assurance and Computer Security has been recognized by the National Security Agency (NSA) as meeting their criteria for training Information Systems Security Professionals and Information Systems Security Officers.

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Quality of Academic Programs

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Students are educated to be:

- Software Engineers / Architects
  - (Most Satisfying Job Rating by CNN Survey 4/13/07)
- Computer Programmers / Software Developers
  - Java, C++, VB, C#, .NET, COBOL, Assembler,...
- Game & Simulation Programmers
- Computer and Network Security Specialists
- Web Developers
- Systems Analysts
- Database Administrators
- Network Managers

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Computer Science Students

- Approximately 300 undergraduates
- TSYS Foundation Scholarships
- Student research opportunities
- Variety of internship and coop opportunities
- Study-abroad opportunities
- ACM Student Chapter
  - Programming Competition
  - Invited Speakers
  - Educational Tours
- Columbus Regional Technology Center (Incubator)

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Student research opportunities

- Simulation & Modeling
- Wireless and Network Security
- Malware Detection
- Forensics
- Game Programming
- Mobile Applications
- Embedded Computing
- Robotics/mechatronics
- Software Evaluation
- Legacy Code Transformation
- Ubiquitous Computing

Internship and coop opportunities

- TSYS
- AFLAC
- Synovus
- Columbus Waterworks
- Ft. Benning Simulation Battle Lab
- Ft. Benning Virtual Soldier Lab
- Ft. Benning Martin Army Hospital
- Columbus Ledger-Enquirer
- Wellpoint
- Georgia Power
- Omega Training

- What else should students study in H.S.?

  - Mathematics
  - Science (chemistry, physics, computer science)
  - Writing and Speech classes
  - Foreign Language classes

- Computer engineering: will typically involve software and hardware and the development of systems that involve both software, hardware, communications
- Computer science: currently the most popular of the computing disciplines, tends to be relatively broad and with an emphasis on the underlying science aspects.
- Information systems: essentially this is computing in a business context
- Information technology: computing in support, and will tend to involve a study of systems (perhaps just software systems, but perhaps also for instance systems in support of learning, of information dissemination, etc.)
- Software engineering: based on software and involves employing certain ideas from the world of engineering in building reliable software systems

How can you help us?

- Encourage your students to take math, science, and computer science
- Encourage more girls and underrepresented minorities to study computer science
- Encourage ALL students to take Computers in the Modern World
- Encourage your school to offer AP-CS
- Encourage your school to offer AP – CS Principles
- "REMIND Everyone that there is a 'C' in STEM"

How we can help you?

- – Support you with talks to your students
- – Be a resource where/when needed
- – Provide Summer CS4HS Workshop
- – Provide CS Teacher Endorsement
- – Offer workshops for Girl Scouts/Girl Inc.
- – Offer summer camps for kids
- – ….
- JOIN CSTA (http://www.csta.acm.org/)

The PC of tomorrow

- MIT Media Lab's "Sixth Sense":
  http://video.computerworld.com/services/player/
  bcpid1351827287?bctid=14706015001

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