

# “Career Day”

at

Mishawaka High School

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By

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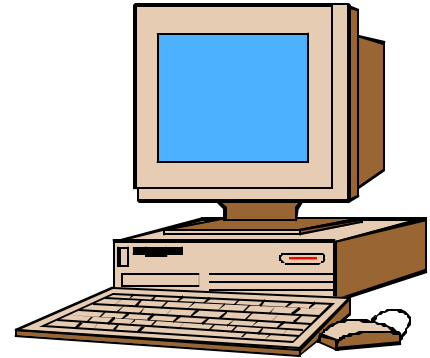
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# Careers in Computer Science

## Outline:

- 1) The profession
- 2) Basic functions
- 3) Typical work day
- 4) Hours
- 5) Equipment and tools
- 6) Professional requirements
- 7) Opportunities for transfer and promotion
- 8) Advantages and disadvantages of working in the computer field
- 9) Things you should do to prepare yourself
- 10) Character and ethics
- 11) Where can you find additional information



# The Profession

## What do Computer Scientists do?

- “ Teach and Research
- “ Program computers  
(Solve problems, play games, )
- “ Analyze and design systems
- “ Design and Administer Databases
- “ Design and Administer Computer Networks
- “ Design Security Mechanisms
- “ Consult  
(Help others solve their problems)



# Basic Functions

- “ Problem Solving
- “ Trouble Shooting
- “ Programming
- “ Design of New Systems
- “ Maintenance of Old Systems
- “ Automating Business and Manufacturing Processes
- “ Help Organizations:
  - “ Manage their Data
  - “ Improve their Products
  - “ Improve their Service



# Typical work day

## " **Programmer**

- " Learn about specific programming languages, specific computers and specific operating systems.
- " Communicate with system analysts and other programmers (work in a team)
- " Implement the solution developed by the system analysts.
- " Write, Test and Document programs

## " **Systems Analyst**

- " Read trade magazines and keep up with new information
- " Interview users and collect facts
- " Identify and understand their problems
- " Develop solutions for their problems
- " Communicate your design to the system owners and system builders (programmers)



- “ **Professor:**
- “ Preparation for Class:
  - “ Read books, papers, journals
  - “ Prepare lecture
  - “ Develop good examples to explain the concepts
  - “ Grade assignments
  - “ Develop new assignments and tests
- “ Meet with students (office hours, class and laboratory)
- “ Meet with other professors and administrators

# Hours

- “ Usually 9 to 5 or longer (some times 60 or 70 hours per week!)
- “ Some companies have flexible hours
- “ Opportunity to work from your home office and telecommute!



# Equipment and Tools

- “ Computers
  - “ Microcomputers (PC's)
  - “ Workstations
  - “ Mini Computers
  - “ Mainframes
  
- “ Programming Languages
  - “ C++, Java, Basic, COBOL, etc.
  
- “ Set of pre-fabricated algorithms & data structures
  - “ Building Blocks for developing systems
  
- “ 4GL's
  - “ Powerful and easy to use tools for designing new applications
  
- “ CASE tools
  - “ Computer Aided Software Engineering tools
  - “ CASE tools are similar to CAD systems for Designing Parts



# Professional Requirements

## " Training and Education:



### " Formal Education:

- " Certificate Programs (4 to 6 courses in CS, 1 English course)
- " Associate of Science (7 courses in CS, some Math. and English)
- " Bachelor of Science (about 14 courses in CS, 3 courses in Math., 122 credits all together.)
- " Master of Science (about 12 more courses and one or two years of research)
- " Doctorate (Ph.D.) (about 10 or more courses and two to three years of additional research)

### " Informal Education:

- " Seminars and Conferences
- " Studying on your own



# Opportunities for Transfer and Promotion

- “ Excellent opportunities for travel
- “ Excellent opportunities for promotion
- “ Phenomenal job growth (According to BLS, Information Technology jobs will double in the next 10 years)



- “ This trend should continue for a while:
  - “ U.S. economy is changing from an industrial economy to an information technology economy. *You can help Indiana make this transition.*



# Opportunities and Challenges of Working in the Computer Field

## " **Opportunities:**

- " Exciting work
- " High technology toys
- " Opportunity to help advance information technology
- " Help improve peoples life's
- " Help companies become more efficient and provide better service

## " **Challenges:**

- " It is challenging to keep up with advances in technology
- " Similar to many other disciplines, computer science is a challenging discipline and requires dedication and hard work.
- " As with any other technology, computers can be used the wrong way



# Things You Should do to Prepare Yourself

- “ Take as many Mathematics, English and Computer Science courses as you can before starting college.
- “ Play as many video games as your parents allow you to play, however think about the following:
  - “ How each object is moved on the screen?
  - “ How the scenes change so fast?
  - “ How does the joystick work?
  - “ How does the video game keep track of your score?
  - “ How would you improve the game?
- “ Think of problems and try to come up with steps to solve them.
- “ Improve your language skills
- “ Learn to work in a team
- “ Ask your teachers to explain why something is so?



# Character and Ethics

- “ Computer professionals are faced with many situations where they must make ethical decisions and show good judgment.
  
- “ Examples:
  - “ Building systems which effect human life  
(space shuttle, medical systems, process control systems, etc.)
  - “ Computer security and privacy issues  
(Banks, schools, hospitals, etc.)
  - “ Computer Crime
  
- “ Computer professional are trusted with tremendous amount of sensitive data.



# Where to find additional Information About Computer Science

- “ <http://www.cs.iusb.edu> (Computer Science Department’s home page)
- “ [hhakimzadeh@iusb.edu](mailto:hhakimzadeh@iusb.edu) (Send me an e-mail)
- “ Your high school Guidance Counselor
- “ Your high school and local libraries
- “ IUSB library

