

An Overview of Computer Science and Engineering



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Three tracks in the undergraduate CSE program

- Computer Science
 - Software oriented
- Computer Engineering
 - Hardware oriented
- Information Systems
 - Systems oriented

Hmmmm.....



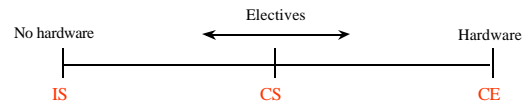
Three tracks in the undergraduate CSE program

- Key differences
 - CE has full engineering core
 - CS and CE have same math and physics
 - IS has reduced math and physics
 - IS has no hardware courses
 - CS and CE are accredited (by CSAB and ABET)
 - No accreditation standards exist for IS curricula anywhere
 - » Accreditation standards are under work by IEEE and ACM



Three tracks in the undergraduate CSE program

- A graphical view of the differences
 - More or less hardware
 - Flexibility of electives



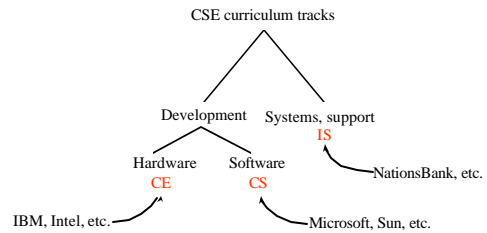
Which track is right for me?

- There really is *not that much* difference
 - In the end analysis all are a “computer science” degree
- However, a good way to choose is to look at possible career paths



Which track is right for me?

- A tree of career paths



Specialist versus generalist

- The pyramid of job opportunities and salary

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Specialist versus generalist

- Specialist** jobs typically are...
 - Very competitive to obtain
 - Some require a M.S. or Ph.D.
 - Geographically constrained
 - High pressure and long hours
 - Very high pay
 - Very challenging
 - Professionally rewarding

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Specialist versus generalist

- Generalist** jobs typically are...
 - Easier to obtain
 - Not geographically constrained
 - Moderate pressure and hours
 - Lower pay
 - Possibly less challenging

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Examples of a specialist job

- CPU designer**
 - Job - design and develop processors for computers
 - Education - not a likely "entry level" position
 - Location - Silicon Valley, California
 - Hours - 80 hours per week (you choose working hours)
 - Pay - low six figures plus yearly bonuses
 - Your work "changes the world"
- Operating System designer**
 - Job - design and develop operating systems
 - Education - not a likely "entry level" position
 - Location - west coast
 - Hours - 80 hours per week (you choose working hours)
 - Pay - low six figures plus yearly bonuses
 - Your work "changes the world"

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Examples of a generalist job

- System integrator**
 - Job - build computer systems for large companies
 - Education - some entry level opportunities
 - Location - any large city
 - Hours - 60 hours per week (lots of travel)
 - Pay - five figures plus yearly bonuses
- End user support**
 - Job - keep users up and running and happy (!)
 - Education - entry-level opportunities
 - Location - any large city
 - Hours - 50 hours per week
 - Pay - five figures plus modest yearly bonuses


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A day in the life of a developer


5:00am - Get up
 5:30 -- Commute (traffic is always bad in California)
 6:30 -- First status meeting of the day (project is late, again, boss is yelling)
 7:00 -- "Real work" at desk (debug code written late last nite)
 9:00 -- Cruise the web for a few minutes, but...
 9:05 -- Panic call from the field, customer is going to another vendor
 11:00 -- Off the phone (whew!) and some real work again
 12:00pm -- Down to the vending machine (eat in the office, as always)
 2:15 -- Find the bug in the program (a real stupid bug!), late to a meeting
 3:15 -- Find that marketing has changed objectives, once again
 3:30 -- Share rumors that project is to be canceled
 3:35 -- Share rumors that this year's bonus will be double last year's
 4:30 -- Finished writing another module and off to the lab
 7:30 -- End-of-day status meeting (boss is still yelling)
 8:00 -- Start commute home
 9:00 -- Do more work at home, pass-out at keyboard

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A day in the life of a developer




Ohhhhh... I wish I could be a student again with all that spare time




KIC:RAP 017

A day in the life of an support staff




6:30am -- Get up
 7:00 -- Commute (traffic is a breeze here in Tampa)
 7:40 -- Review error logs from last night
 7:50 -- The "new guy" in accounting calls, PC crashed
 8:50 -- Back to office, only 5 emails and 4 phone messages in the last hour
 9:50 -- Email, call, and visit to resolve problems (all are minor)
 11:00 -- Work on upgrade plan for network
 12:00pm -- Have lunch with a vendor (trying to sell me something new)
 1:15 -- Boss doesn't like upgrade plan, hates XYZ-brand software
 1:16 -- Get call from irate user, why didn't fix printer than broke last nite
 2:15 -- Finish fixing printer (I wish users knew how to use these things)
 3:15 -- Scratched XYZ-brand software from upgrade plan
 4:30 -- Off to daily status meeting
 5:05 -- Share rumors that support role will be out-sourced
 6:00 -- Get home, turn-on beeper for the nite , login, and check email




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A day in the life of a support staff



Ohhhhhh... I wish I was a student and didn't have to deal with all these crazy people and unreliable systems.

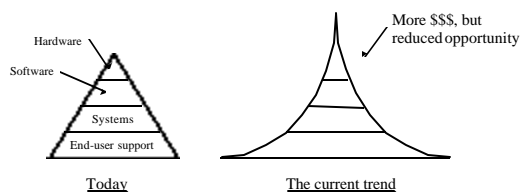



KIC:RAP 019

Career planning

Opinion Page

- The pyramid of job opportunities and salary

KIC:RAP 020


Career planning

Opinion Page

- Current trends
 - CPU design - Intel rules
 - Software - Microsoft rules
 - Systems - Compaq, HP, Sun, Dell, IBM
 - Support - Growing need
- Who does integration and support
 - Internal group?
 - Hired consultant?
 - Vendor who sells hardware and software?

Can ship off-shore

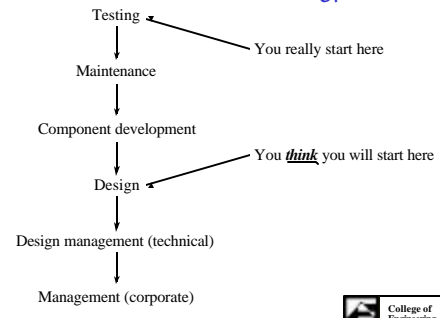

Cannot ship offshore



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Typical career path

Opinion Page

KIC:RAP 022

Some thoughts relative to a career

Opinion Page

- Upside (CS, CE, and IS)
 - High pay
 - Lots of opportunities
 - Possibility to “start your own business”
 - Rapid change is exciting
- Downside (CS, CE, and IS)
 - “Full on” or “full off” --- work very hard for very high pay
 - Rapid change is exhausting --- little stability
- Make the right career decision
 - You will (likely) have to bet your career on a *technology*
 - Understand the marketplace and make a good bet



82C:8AP 023

Admission to the CSE department

- Fulfill all course requirements (obvious!)
 - GPA is 2.6 or better in the three department entry courses
 - *Program Design, Computer Organization, and Discrete Structures*
- Buy a PC (if you can)
 - Even an old “obsolete” (dirt cheap) PC is better than nothing
 - Start “experimenting” with things
 - Learn to use the Internet
 - Learn a little HTML (writing Web pages)
 - Learn a little programming in C (many, many good books)
- Develop a strong “work ethic” relative to studying
 - Poor “study skills” sink more students than anything else



82C:8AP 024

Admission to the CSE department

- Requirements for CSE tracks
 - Completion of gate courses as shown below

Title	Number	CE	CS	IS
Computer Tools	EGN2210	Req	Req	Req
Program Design		Req	Req	Req
Computer Org		Req	Req	Req
Discrete Structure	COT3100	Req	Req	Req
Eng Statics	EGN3311	Req		
Thermodynamics	EGN3343	Req		
Electrical Systems 1	EGN3373	Req		
Engineering Statistics	EGN3443	Req		



82C:8AP 025

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Learn more about
the CSE department



82C:8AP 026