

Invite your friends to take CS10 next sem!

The Beauty and Joy of Computing



Calendar?

Slip days

Lecture #25 Summary & Farewell



UC Berkeley EECS
Sr Lecturer SOE
Dan Garcia

Lab this week is
Survey (0:20),
online final
(1:30)

Register
Iclicker,
then turn
in during
lab or dis

BJC Art or Poem
Submit this at final for extra credit!

GOOGLE GLASSES, NEXT "IT"?

Google's "Project Glass" hopes to bring all services from Android to a display you carry with you on your glasses. Next big thing?



Discussion this week is important –
course feedback + summary

You can make a video for extra credit
next week, but it's due **Saturday!**



I must own & wear these glasses!!!

- a) Strongly disagree
- b) Mildly disagree
- c) Neutral
- d) Mildly agree
- e) Strongly agree





Administrivia: Become active!

- **With-BYOB Exam details**
 - No exam handed out unless you've filled in both HKN + our survey
 - No "study sheets" needed / allowed since you have access to BYOB
- **Final Exam details**
 - Only bring pen{,cil}s, **three** 8.5"x11" handwritten sheets (writing on both sides).
 - Leave backpacks, books, calculators, cells & pagers home!
 - Everyone must take ALL of the final!
 - Bring your "Beauty and Joy of Computing" Art/Poem for extra credit!
- **If you did well in CS10 and want to be on staff?**
 - Usual path: **Lab Assistant** ⇒ **Reader** ⇒ **TA**
 - LA: sign up w/Jenny Jones (jennyj@eecs.berkeley.edu) anytime
 - I strongly encourage anyone who gets an B or above in the class to follow this path...





Clickers were worth the time spent

- a) Strongly Agree
- b) Moderately agree
- c) Neutral
- d) Moderately disagree
- e) Strongly disagree





Exciting Future Implications

- In computing, need to revisit chronic unsolved problem
 - Easy parallel programming
- Implications for apps:
 - HUGE Computing power available in cell phone, car
 - On-body health monitoring
 - Google + library of congress
- As devices shrink...
 - The need for great HCI (human-computer interfaces) critical as ever! (voice, gesture)
- Natural language processing?
- Interact by motion!
- 3D displays?
- Personal Robotics?
- Self-driving cars?
- 3D Printing?
- Optical/quantum computing?
- Personal air vehicle?
- Space travel?
- Computer displays in glasses?
- Flexible displays?
- Brain-machine interfaces?
- Energy!





Taking advantage of Cal Opportunities

- “The Godfather answers all of life’s questions”
 - Heard in “You’ve got Mail”
- Why were we the #2 Univ in the WORLD?
 - Research, reseach, research!
 - Whether you want to go to grad school or industry, you need someone to vouch for you!
 - ...as is the case with the Mob
- Techniques
 - Find out what you like, do lots of web research (read published papers), hit OH of Prof, show enthusiasm & initiative
- <http://research.berkeley.edu/>
- <http://researchmatch.heroku.com/>

So said the 2004 ranking from the “Times Higher Education Supplement”





Opportunities Next Semester

- **CS61A** (1st course in CS major)
 - Structure and Interpretation of Computer Programs
- **CS9 series** (learn a second language)
 - I would recommend Python next, CS9H
- **GamesCrafters** (Game Theory R & D)
 - Develop SW, analysis on 2-person games of no chance. (e.g., go, chess, connect-4, nim, etc.)
 - Req: Game Theory / SW Interest
- **MS-DOS X** (Mac Student Developers)
 - Learn to program Macintoshes.
 - Req: Interest. Owning a mac helps, not required.
 - Taught as a DeCal by MS-DOS X veterans
- **UCBUGG** (Recreational Graphics)
 - Develop computer-generated images, animations.
 - Req: 3D interest
 - Taught as a DeCal by UCBUGG veterans





Dan's Research Projects

CS Illustrated

Blocks as Data

Most blocks take in data as arguments and output data.

In the block editor:

- sum-of-sq x y
- report $x * x + y * y$

Now call the block...

- sum-of-sq 3 4

25

Improve CS10/Snap!

Snap! Build Your Own Blocks, Alpha

UC Berkeley EECS ... CS 10 (155 unread) ... VOME + Privacy G... Uploads - YouTube ... Snap! Build ...

berkeley.edu/inspire/snap.html#openhttp://snap.berkeley.edu/resources/berkeley/

Tools

- Motion
- Control
- Looks
- Sensing
- Sound
- Operators
- Pen
- Variables
- Scripts
- Customize
- Sounds

Scripts

```

move 40 steps
turn 15 degrees
turn 15 degrees
point in direction
point towards
go to x: 0 y: 0
go to
goto 40 steps to x: 0 y: 0
change x by
set x to
change y by
set y to
if on edge, bounce
x position
y position
direction
  
```

Ensemble

Computing Portal
Connecting Computing Educators

ensemble

HOME COLLECTIONS COMMUNITIES TECHNOLOGIES LOGIN CONTRIBUTE RESOURCES ABOUT

Welcome to ensemble, a new site for computing educators.
Here you will find a vast array of resources, communities and technologies to aid your teaching.
You can also contribute! Upload, discuss, comment, rate, tag, suggest, resources and technologies.

New to ensemble?
Click here to get started!

Browse Collections Explore Communities Discover Technologies

Improve codepath

codepath current question question list how it works about log out

Challenge: Once is Enough (#17)
A new question will be released in 1 day, 23 hours and 59 minutes.

If you remove all letters, spacing and punctuation from the following passage every time except for the first time they appear, what phrase are you left with?

[View link](#)

Submit

No hints are currently available for this question.

DanGarcia

10% of available questions answered

Questions Answered
2 of 20

Guesses per Question
1.0

Fastest Answer
1 hours, 27 minutes and 28 seconds

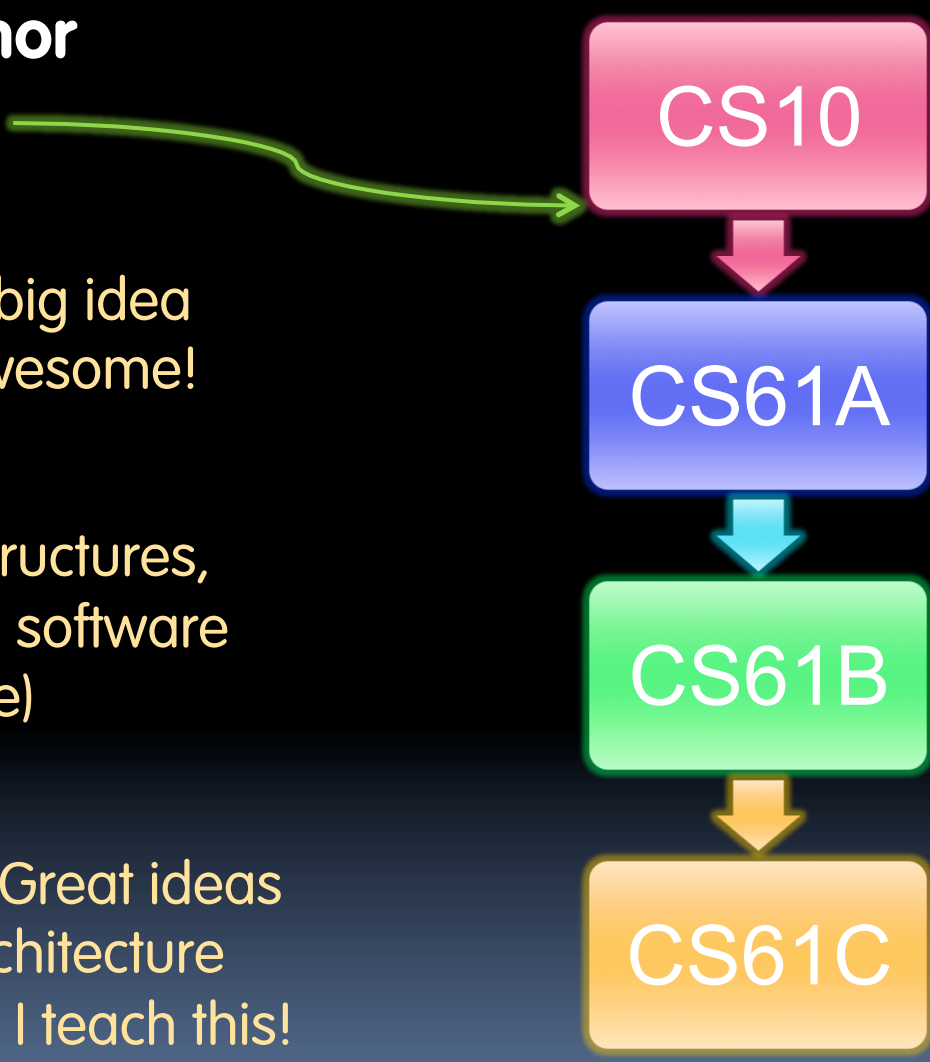
Hardest Question Answered
Number Conversion answered by 58.0%





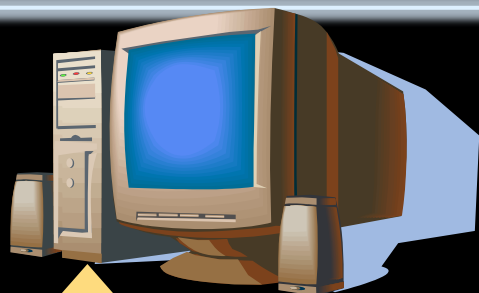
Ok, I'm hooked! Where do I go next?

- **CS Major / Minor**
 - You are here
- **CS61A**
 - In Python, one big idea every week. Awesome!
- **CS61B**
 - In Java, data structures, algorithms and software engineering (lite)
- **CS61C**
 - In C and MIPS, Great ideas in computer architecture (parallelism) ... I teach this!

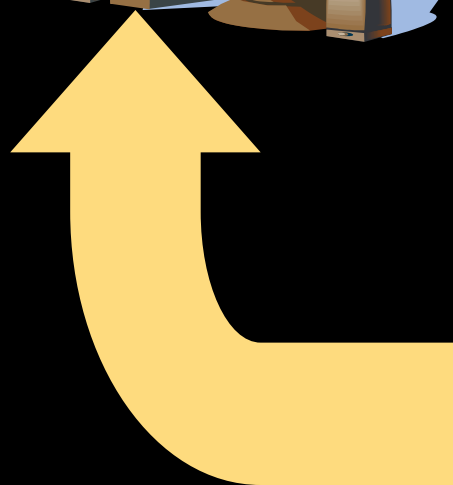




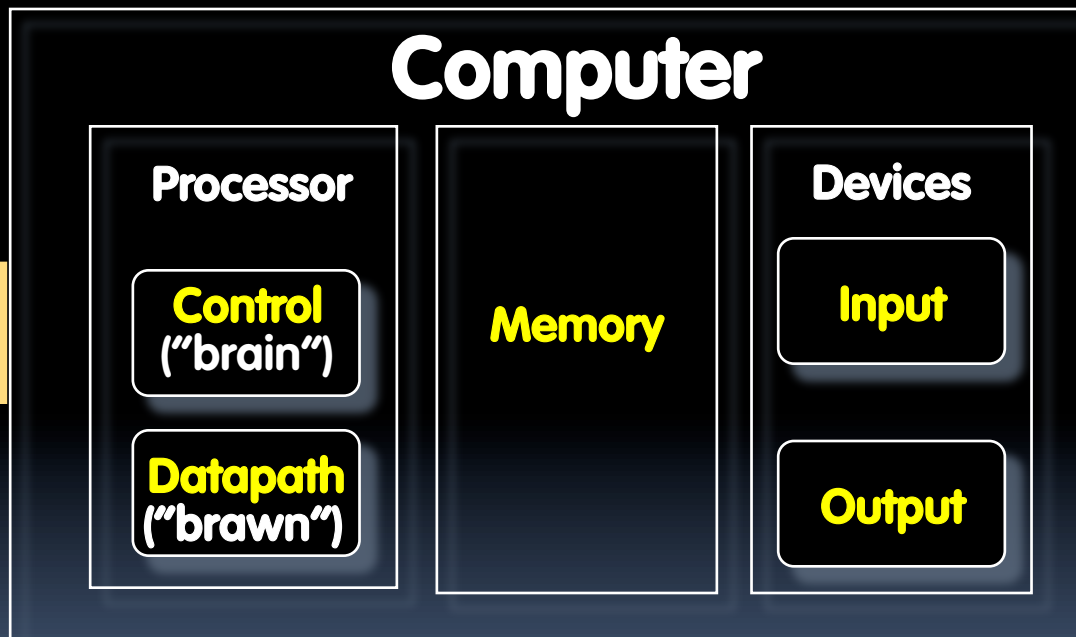
Review: 5 components of any Computer



In the future, what'll be the most important computer component?



- a) Control
- b) Datapath
- c) Memory
- d) Input
- e) Output



Peer Instruction Opinion



- “Forget cloning. Forget TVs on your wrist watch. The biggest invention of the next 100 years will be the ability to directly connect your brain to a machine, aka wet computing.” – Dan Garcia
 - A macaque monkey at Duke University can already control a robotic arm with thought.
 - DARPA interested for mind-control robots & flying
 - Virtual Reality achieved with proper I/O interfacing...



Jose Carmena, UCB EECS Prof
Research: Brain-Machine Interface
www.eecs.berkeley.edu/~carmena/





Things to remember from CS10

- **...From "Program or Be Programmed"**
 - Technology has an explicit and implicit agenda, understanding it is important.
 - Learning to program is empowering!
- **...From Blown to Bits**
 - Technology has social implications (privacy, energy, copyright, etc); try to see the big picture
 - It also often has unintended consequences!
- **Abstraction**
 - The key idea underpinning all computer science
 - ...and (in CS10) functions, HOFs





Penultimate slide: Thanks to the staff!

- (see the course website for listing & photos)





The Future for Future Cal Alumni

- What's The Future?
- New Millennium
 - Always-on internet connectivity
 - AI breakthroughs
 - HCI breakthroughs
 - Post-PC Era (power is in cloud, interface in pocket)

"The best way to predict the future is to invent it"

– Alan Kay

The Future is up to you!

