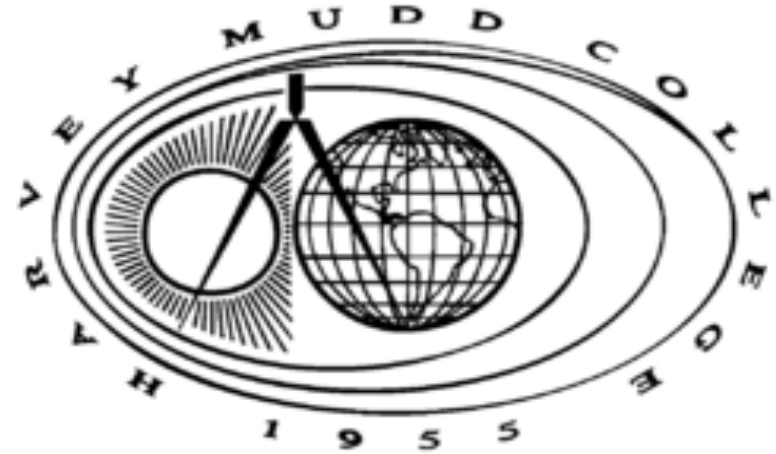
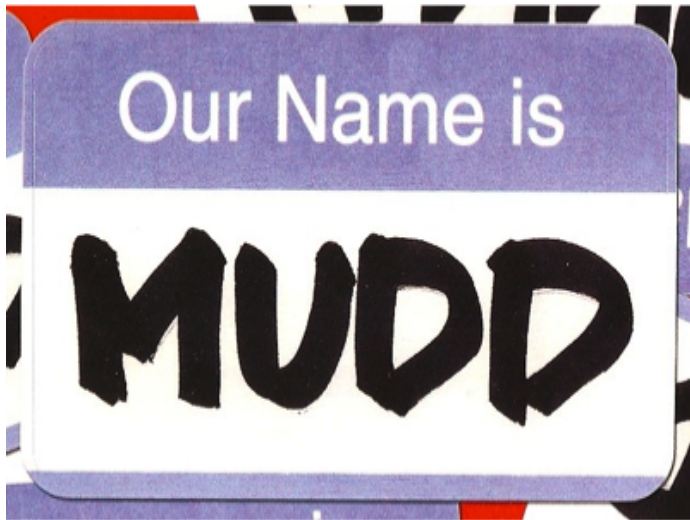


Welcome!
MyCS: *Middle-*
years' Computer Science



July 11- July 15, 2011



- Housekeeping: where? and when?
- Introductions: who?
- Welcome: what? (1) CS, (2) ECS, and (3) MyCS
- Account information, Google Docs, binders, etc.
- Go!

Housekeeping and Schedule

- Restrooms are around two corners...
- We will keep each day to the same, rough times:

Monday *8:15 - 9:00am breakfast at the dining hall*

Morning session (9:00—12:00)

- Welcome
- MyCS and its curriculum: What is computing? What is a computer?
- Coffee break
- Morning lab: Computer deconstruction
- Break-out and report back session

Lunch (12:00—12:45)

*at dining hall or provided
from a local restaurant*

Afternoon session (12:45—3:45)

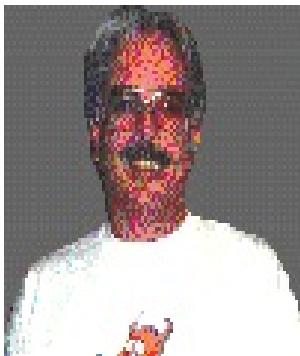
- Data visualization: representing data beautifully
- What is programming?: PBJ, Lightbot, Scratch
- Computer intelligence: The Turing test
- Summary, brainstorm, and feedback

***Friday: Field trip to
Google Irvine***

Introductions

- Surveys and sharing around the room...
- Use our shared "[Hello...](#)" Google form
 - [Our Survey!](#)
- Logins to get there: mycspair1, mycspair2, ...
 - [passwd](#): csisfun!

1994!



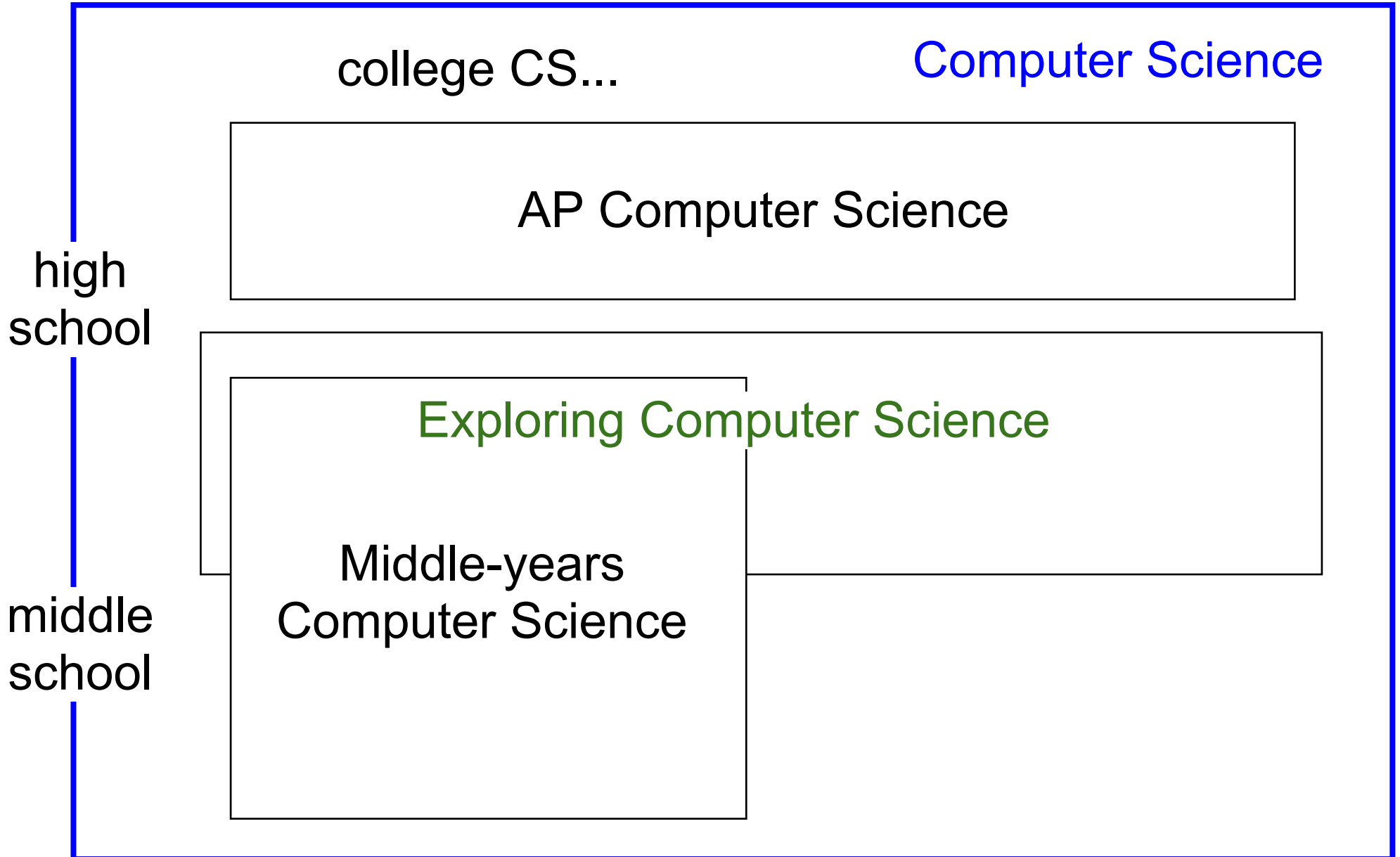
mudd_harvey2



mudd_harvey

CS, ECS, and MyCS

CS, ECS, and MyCS



CS, ECS, and MyCS

Computer Science's 'Sputnik Moment'?

Will the surge of students into the field continue, raising American educational achievement along the way?

Debaters



Remember the Tech Bust?

Norman Matloff, computer scientist, University of California, Davis



Software as Self-Expression

Jeannette M. Wing, computer scientist, Carnegie Mellon University



Thinking Beyond the Bubble

Vivek Wadhwa, entrepreneur and columnist



Change the Cowboy Culture

Zeynep Tufekci, sociologist, University of Maryland, Baltimore County



Encourage More Hackathons

Jonathan Zittrain, Harvard Law School



Grass Roots, Not Government

Chris Wiggins, co-founder, hackNY.org

It Starts in High School

Updated June 16, 2011, 02:20 AM

John M. Staudenmaier, S.J., was editor in chief of *Technology and Culture* from 1995 to 2010. He is assistant to the president for mission and identity at the University of Detroit Mercy.

Like her counterparts in many universities, [Katy Snyder](#), the associate academic dean of our Engineering and Science College, has recognized, and redesigned the curriculum for, a new breed of students.

"High school graduates come to computer science programs without much sense of what it takes to move from a skilled IT consumer enthusiast to a skilled and disciplined IT creator," she said, when I asked her about The Times article. The curricular energies the story describes respond directly to the opportunities for young people for whom social media navigation feels as natural as breathing.

Don't use introductory computer science courses as filters to wash out students but as launching pads.

We are now in an era of computer science.

CS, ECS, and MyCS

UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

Home | Subject Areas | Database & Tools | Publications | Economic Releases | Beta

Occupational Outlook Handbook, 2010-11 Edition

Overview of the 2008-18 Projections

Table 1. Occupations with the fastest growth

Occupations	Percent change	Number of new jobs (in thousands)	Wages (May 2008 median)	Education/training category
Biomedical engineers	72	11.6	\$ 77,400	Bachelor's degree
Network systems and data communications analysts	53	155.8	71,100	Bachelor's degree
Home health aides	50	460.9	20,460	Short-term on-the-job training
Personal and home care aides	46	375.8	19,180	Short-term on-the-job training
Financial examiners	41	11.1	70,930	Bachelor's degree
Medical scientists, except epidemiologists	40	44.2	72,590	Doctoral degree
Physician assistants	39	29.2	81,230	Master's degree
Skin care specialists	38	14.7	28,730	Postsecondary vocational award
Biochemists and biophysicists	37	8.7	82,840	Doctoral degree
Athletic trainers	37	6.0	39,640	Bachelor's degree
Physical therapist aides	36	16.7	23,760	Short-term on-the-job training
Dental hygienists	36	62.9	66,570	Associate degree
Veterinary technologists and technicians	36	28.5	28,900	Associate degree
Dental assistants	36	105.6	32,380	Moderate-term on-the-job training
Computer software engineers, applications	34	175.1	85,430	Bachelor's degree
Medical assistants	34	163.9	28,300	Moderate-term on-the-job training
Physical therapist assistants	33	21.2	46,140	Associate degree
Veterinarians	33	19.7	79,050	First professional degree
Self-enrichment education teachers	32	81.3	35,720	Work experience in a related occupation
Compliance officers, except agriculture, construction, health and safety, and transportation	31	80.8	48,890	Long-term on-the-job training

SOURCE: BLS Occupational Employment Statistics and Division of Occupational Outlook

Two of the fastest growing detailed occupations are in the computer specialist occupational group. Network systems and data communications analysts are projected to grow 53 percent from 2008 to 2018. Demand for these workers will increase as organizations continue to adopt the newest technologies. The growing reliance on wireless networks will create demand for network systems and data communications analysts as well. Computer applications software engineers also are expected to grow rapidly from 2008 to 2018. Expanding Internet technologies have spurred demand for these workers, who can develop Internet, intranet, and Web applications.

<http://www.bls.gov/oco/ocos303.htm>

Where is the growth?

CS, ECS, and MyCS



CS is exciting! but who will **consume** vs. **create** ?

<http://www.nytimes.com/2011/06/11/technology/11computing.html?scp=2&sq=computer%20science&st=cse>

CS, ECS, and MyCS

From page 5...

Version 4.0

Course Overview

Goals

Exploring Computer Science is designed to introduce students to the breadth of the field of computer science through an exploration of engaging and accessible topics. Rather than focusing the entire course on learning particular software tools or programming languages, the course is designed to focus the conceptual ideas of computing and help students understand why certain tools or languages might be utilized to solve particular problems. The goal of *Exploring Computer Science* is to develop in students the computational thinking practices of algorithm development, problem solving and programming within the context of problems that are relevant to the lives of today's students. Students will also be introduced to topics such as interface design, limits of computers and

ECS's Goal: to democratize CS

This curriculum has been developed for a culturally, linguistically, and socially diverse group of students in Los Angeles Unified School District. District-wide, student ethnicities include .3% American Indian, 3.7% Asian, .4% Pacific Islander, 2.3% Filipino, 73.0% Latino, 10.9% African American, 8.8% White, and .6% Other or multiple responses. Over 38% of students are English-language learners, with most English language learners' students speaking Spanish as their primary language. Furthermore, 74% of students qualify for free or reduced lunches.

Everyone should have a chance to help author and understand the computation we use everyday.

CS, **ECS**, and MyCS

Numbers of **LA Unified** students taking ECS

2009	306
2010	922
2011	1377
2012	2000+

Puerto Rico and **Chicago** are beginning this fall.

We are working to bring this to the I.E.

CS, ECS, and MyCS

MyCS is an ECS-based course we are developing for middle-school and "middle-years" audiences.

what

- engaging CS ideas and activities
 - hands-on skills, emphasizing *creativity with CS*
 - can be spliced with technology courses, typing courses, and other existing electives
-

how

- we started with the ECS curriculum
- we are investigating what will work in *one term*
- your input will be crucial in developing MyCS

CS, ECS, and MyCS

This week, our goal is to present the **computer science** that makes up the *what*:

what

- engaging CS ideas and activities
- hands-on skills, emphasizing *creativity with CS*
- can be spliced with technology courses, typing courses, and other existing electives

And learn from the group more about the *how*:

how

- we started with the ECS curriculum
- we are investigating what will work in *one term*
- your input will be crucial in developing MyCS

Day One

Human Computer Interaction

(hand out ECS folders)

The ECS Curriculum

and our schedule...

Unit 1: Human Computer Interaction

Days 1-2: What is computing?

Days 3-4: Computer Parts

Days 5-7: Explore the web & search engines

Days 8-9: Computers & communication

Day 10: Telling a Story with Data

Days 11-14: Computer tools- Visualizing data

Days 15-16: The concept of a computer program

Days 17-19: Computer Intelligence

morning

afternoon

Unit 2: Problem Solving

Unit 3: Web Design

Unit 4: Introduction to Programming

Unit 5: Computing Applications

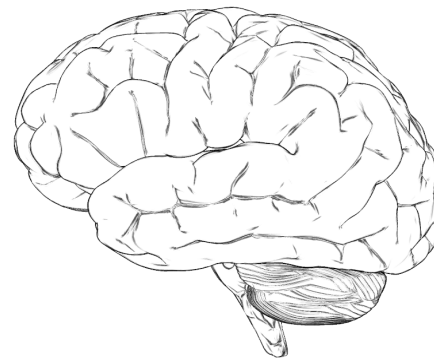
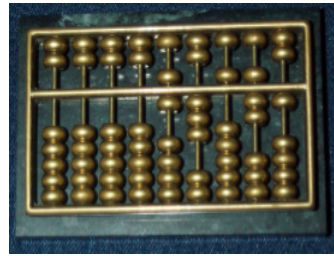
Unit 6: Robotics

Natural place
to start:

What is computing?

What is a computer?

- (1) For each of these items, decide if it's a computer or not.
- (2) Think of 2 *other* items that **are** computers.
- (3) Think of 2 *other* items that **are not** computers.
- (4) Brainstorm 3 attributes/traits of computers and non-computers.



Computer? Or, not a computer?

What is a computer / computing?

two more computers

- Computer
- calculator
- abacus (?)
- mike/brain

two more *non*-computers

- number one...
- two

traits/characteristics defining a computer

-
- Able to make
decisions/critical thinking
-
- three

traits that mean something is NOT a computer

- not a decision making tool
- no critical thinking involved
- three

Robyn / Johnny

What is a computer / computing?

two more computers

- nearly anything

two more *non*-computers

- furniture
- cooked food

traits/characteristics
defining a computer

- ability to receive information
- process information
- output information

traits that mean something
is NOT a computer

- inanimate
- unchanging

Susan / Patrick

What is a computer / computing?

two more computers

- number one... iPod
- two... Car

two more *non*-computers

- number one... desk
- two... pencil

traits/characteristics defining a computer

- number one... input
- two... output
- three... data storage

traits that mean something is NOT a computer

- number one... static
- two... manipulatable
- three... "does not compute"

Jen / Cheryl

What is a computer / computing?

two more computers

- Digital TV Remote
- Roller Coasters

two more *non*-computers

- Analog Clock
- Magic Eight Ball

traits/characteristics defining a computer

- A computer is system designed to be accessed by a user and which relies on a defined set of mathematical rules to interpret, display, and/or manipulate data that said system interprets numerically, despite the actual, physical nature of the data.

Chris / Jodi

traits that mean something is NOT a computer

- Cannot be accessed/ used by an external user
 - What about our own organs? Are we 'users' of them? We're not really sure how that plays in.
- Does not rely on a program (set of rules) to operate.

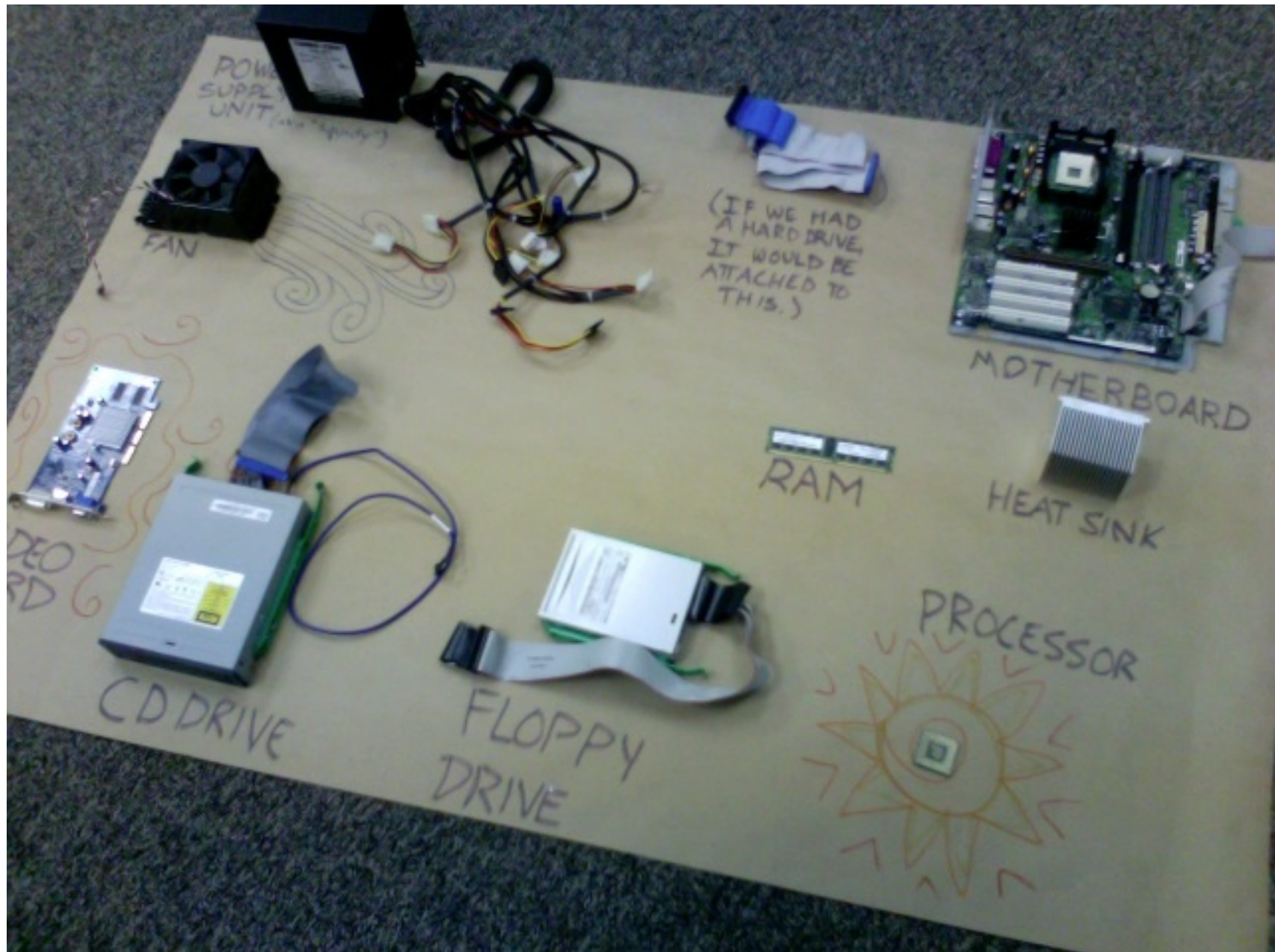
Customized Coffee Break



Unit 1 Lab: Computer Parts and Search Engines

- **Goal:** Learn about the parts of the computer and compare search engines' utility
 - What is a search engine?
- **Task:** Use Google, Wikipedia, and Encyclopedia Britannica to look up the parts of a computer -- *while taking it apart*

... you should get something like these computer entrails...



- (1) Find each component in your computer,
 - (2) remove and/or identify it, and
 - (3) write a label on your large paper
- (... what's it for? and what different options or sizes are there for that component)

For this list, use only Google:

- Memory
- Hard Drive
- Transistor
- Jumper block

- (1) Find each component in your computer,
 - (2) remove and/or identify it, and
 - (3) write a label on your large paper
- (... what's it for? and what different options or sizes are there for that component)

For this list, use Wikipedia:

- Motherboard
- Power Supply
- Capacitor
- Inductor

- (1) Find each component in your computer,
 - (2) remove and/or identify it, and
 - (3) write a label on your large paper
- (... what's it for? and what different options or sizes are there for that component)

For this list, use Encyclopedia Britannica:

- Processor
- Video Card
- LED
- Heat sink
- Crystal oscillator

Other parts of computers that you won't find ***IN*** the computer

- Speakers
- Monitor
- Modem
- Keyboard
- Operating System
- Mouse

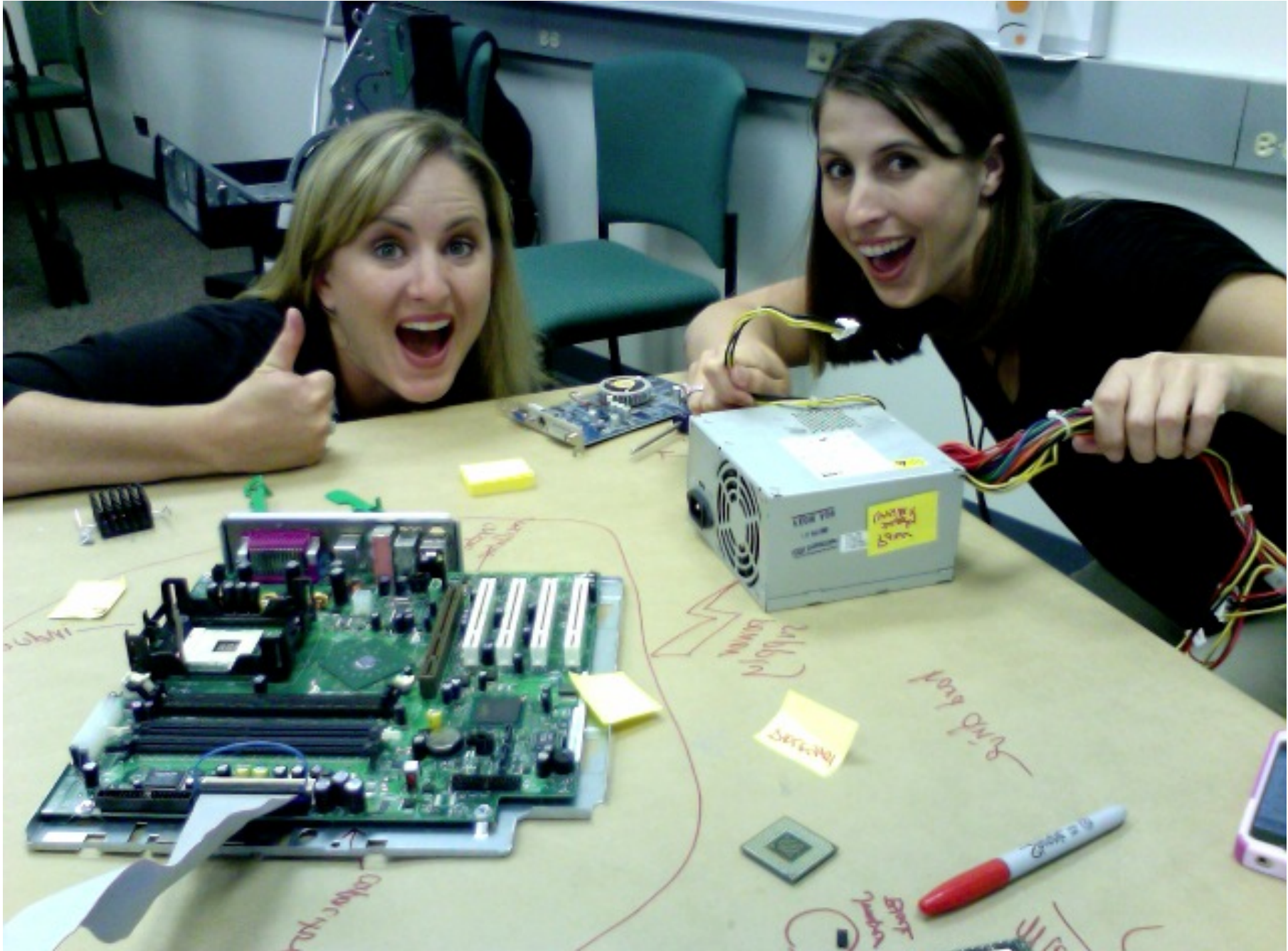
Which of these is not like the others?

Follow up:

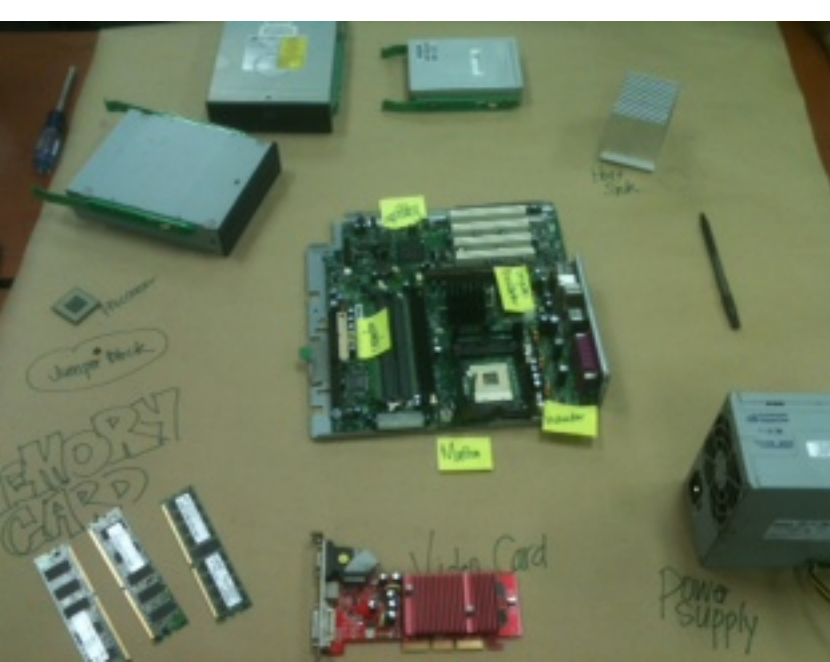
For what tasks would each website be useful?

Take a picture of your deconstructed computer, and add it to this Google doc!

Gallery / Gallery walk



COMPUTER PARTS





Other activities / context

Which will students say has
more influence on them?

Hardware vs. Software

Computer buying project

Computer Buying Project Sample Rubric

Group Members Names: (up to 4)

Do you have?	Points Possible	Yes	No	Points Earned
Product				
Title with group members' names	5			
Interview scenario is described	10			
Computer comparison chart with at least 4 options	10			
Chart has specifications of options	5			
Options on chart fit your scenario	10			
Show justification for your computer choice	10			
Your choice fits the scenario	10			
Visuals of your choices (pictures or video of choices)	10			
Computer Components Checklist	5			
Presentation				
Present all required parts of project	10			
All group members participate	5			
Able to answer questions	10			
Extra Credit				
Project exhibits creativity above and beyond	Up to 10			
TOTAL:	100 + 10			

pages 32-35

Web 2.0 activities

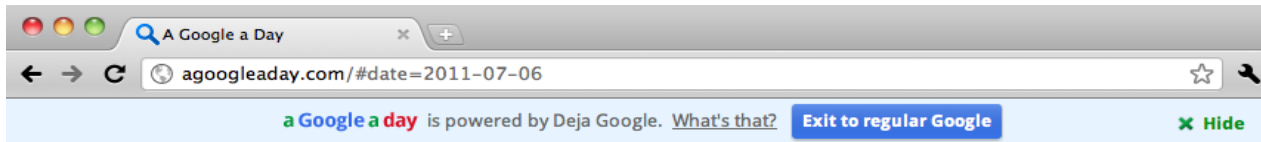
Resources:

- Sample Scavenger Hunt
- The Wayback Machine: <http://www.archive.org>
- Google Maps (including StreetView): <http://maps.google.com>
- Wikipedia: <http://www.wikipedia.org>
- Encyclopedia Britannica: <http://www.britannica.com>
- Mapquest: <http://www.mapquest.com>
- Internet Movie Database: <http://www.imdb.com>
- Switchboard: <http://www.switchboard.com>
- Yellow Pages: <http://www.yellowpages.com>
- How Stuff Works: <http://www.howstuffworks.com>
- YouTube: <http://www.youtube.com>
- Howcast: <http://howcast.com>
- <http://www.delicious.com>
- <http://www.stumbleupon.com>
- <http://www.wordle.net>
- <http://www.tadalist.com>
- The white nationalist site on Martin Luther King, Jr.: <http://www.martinlutherking.org>
- Website Evaluation Rubric

pages 36-39

Web scavenger hunt?

A Google a Day -- try today's and then last Thursday's & Friday's



Google

Google Search

I'm Feeling Lucky

July 6, 2011

You're floating effortlessly at 1,312 feet below sea level. Which two countries surround you?

Enter your answer

Submit

Share | Follow

a Google a day

03

04

05

06

07

About

Hide

Sample Scavenger Hunt

In your group, use the internet to find the following items. For each item in

1. A picture of the mayor of your town or city
2. A bus schedule
3. The address of the Chamber of Commerce for your town or city
4. A map of your state—and you have to point out where your town is
5. A copy of the front page of your town's or city's web site
6. Something in writing that tells how many people live in the city
7. A picture of any historical landmark in the city
8. A picture of your congressman
9. A program or flyer from a local arts event
10. The names of all the city council members
11. Something that gives information about your local hospital
12. A list of schools in your town or city
13. The phone number of the local police department
14. Anything with the colors or mascot of a local college or community
15. A picture of the state flag
16. A picture of the state bird
17. A schedule of activities or a pamphlet from a local nursing home or
18. A sticker or button from a local election
19. A list of safety tips from the local fire department
20. A speech by your governor

ECS version on page 39

Are search-engine
skills are worth
developing?

Other ways to do so?

Thoughts? Lunch!

Exploring Computer Science

Unit 1: Human Computer Interaction

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morning

afternoon

Unit 2: Problem Solving

Unit 3: Web Design

Unit 4: Introduction to Programming

Unit 5: Computing Applications

Unit 6: Robotics

Data Visualization

Data Visualization

There's been a flu outbreak! You ask some of your students who got them sick, and collect the following data:

Student	Who got him/her sick?
Ben	Isabella
Isabella	Samantha
Luis	Isabella
Alice	Evan
Evan	Samantha

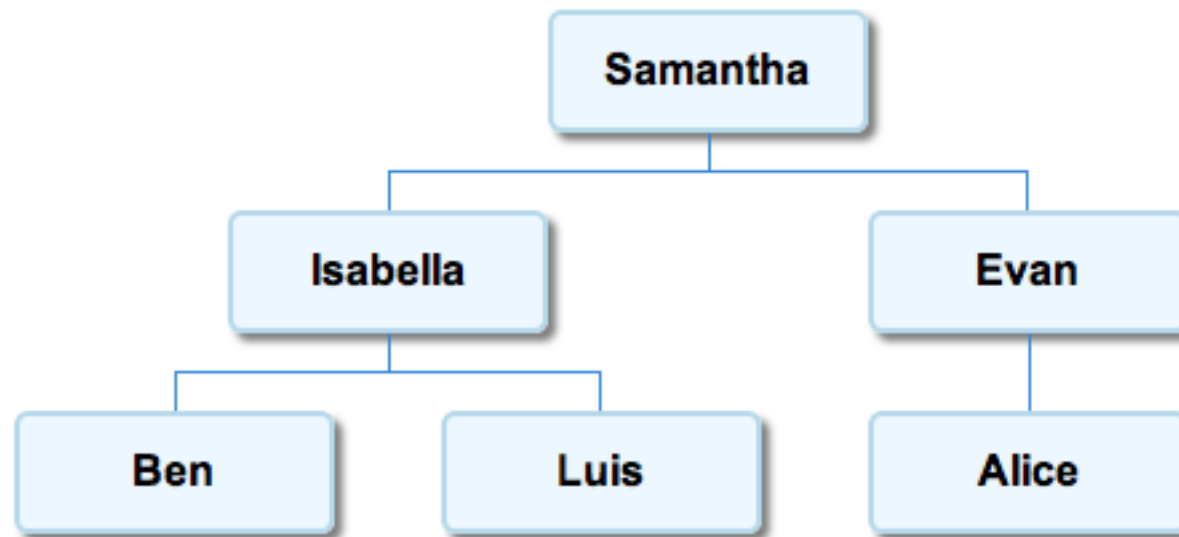
Who is the source of the flu outbreak?

What is another way of representing this data?

Draw a diagram on paper that shows the relationships in this data.

Data Visualization

One way we might think about representing this data is in a tree:



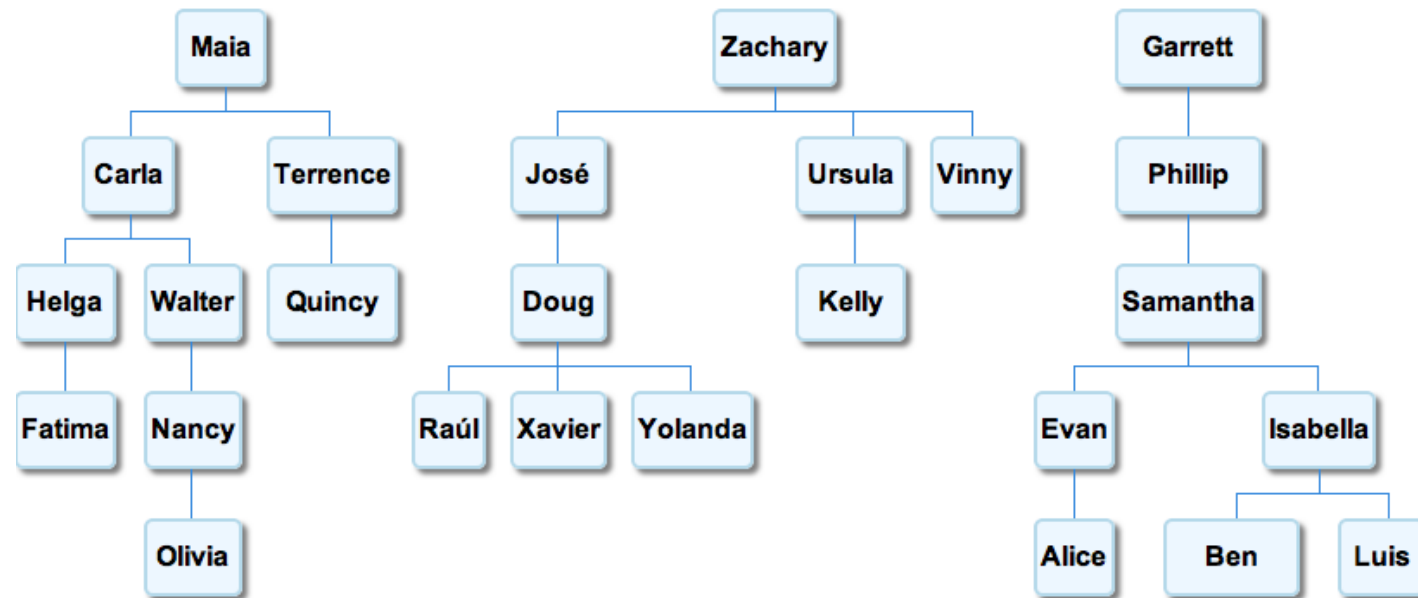
Data Visualization: Scaling

What if we're tracking flu transmission across...

the entire class?

the whole school?

the whole country?



Computers are key to processing large amounts of information and making them easy for us to understand.

Google's Public Data Explorer

Public Data Explorer is a resource for visualizing large sets of freely-available data, which initially looks like this:

Estimates of Monthly Retail and Food Services Sales by Kind of Business: 2007														
[Estimates are shown in millions of dollars and are based on data from the Monthly Retail Trade Survey, Annual Retail Trade Survey, and administrative records]														
NAICS Code	Kind of Business	Jan. 2007	Feb. 2007	Mar. 2007	Apr. 2007	May 2007	Jun. 2007	Jul. 2007	Aug. 2007	Sep. 2007	Oct. 2007	Nov. 2007	Dec. 2007	TOTAL
	NOT ADJUSTED													
	Retail and food services sales, total	329,877	324,252	375,221	359,533	392,530	377,686	373,303	388,904	354,829	369,553	378,740	427,251	4,451,679
	Retail sales and food services excl motor vehicle and parts	263,139	254,716	291,199	282,115	307,195	297,710	294,064	304,113	281,233	294,985	311,314	358,109	3,539,892
	Retail sales, total	296,159	291,031	336,852	322,846	354,087	339,110	334,649	349,970	317,943	331,857	342,712	388,582	4,005,798
	Retail sales, total (excl. motor vehicle and parts dealers)	229,421	221,495	252,830	245,428	268,752	259,134	255,410	265,179	244,347	257,289	275,286	319,440	3,094,011
	GAFO(1)	82,253	81,421	92,302	87,327	93,929	92,082	90,344	98,347	87,949	91,186	107,280	144,430	1,148,850
441	Motor vehicle and parts dealers	66,738	69,536	84,022	77,418	85,335	79,976	79,239	84,791	73,596	74,568	67,426	69,142	911,787
4411,4412	Automobile and other motor vehicle dealers	61,172	64,066	77,478	71,316	78,694	73,383	72,728	77,933	67,506	67,793	61,269	63,349	836,687
4411	Automobile dealers	57,107	59,878	70,858	64,477	70,582	66,050	66,271	71,423	62,471	62,908	57,284	59,151	768,460
44111	New car dealers	50,931	53,158	63,477	57,645	63,292	59,104	59,398	64,016	55,797	56,247	51,262	53,380	687,707
44112	Used car dealers	6,176	6,720	7,381	6,832	7,290	6,946	6,873	7,407	6,674	6,661	6,022	5,771	80,753
4413	Automotive parts, acc., and tire stores	5,566	5,470	6,544	6,102	6,641	6,593	6,511	6,858	6,090	6,775	6,157	5,793	75,100
442,443	Furniture, home furn, electronics, and appliance stores	17,527	16,781	18,008	16,284	17,750	17,638	17,681	19,095	17,203	17,414	21,072	25,733	222,184
442	Furniture and home furnishings stores	8,811	8,431	9,427	8,567	9,287	9,190	9,213	9,890	8,902	9,087	10,028	10,502	111,335
4421	Furniture stores	4,852	4,904	5,197	4,691	5,023	4,898	4,881	5,214	4,883	4,751	5,077	5,001	59,372
4422	Home furnishings stores	3,959	3,527	4,230	3,876	4,264	4,292	4,332	4,676	4,019	4,336	4,951	5,501	51,963
44221	Floor covering stores	1,749	1,574	1,944	1,801	1,924	1,957	1,905	2,094	1,778	1,980	1,810	1,611	22,127
442299	All other home furnishings stores	2,087	1,842	2,157	1,932	2,190	2,178	2,261	2,417	2,097	2,196	2,978	3,768	28,103
443	Electronics and appliance stores	8,716	8,350	8,581	7,717	8,463	8,446	8,468	9,205	8,301	8,327	11,044	15,231	110,849
44311	Appl., TV, and other elect. stores	6,770	6,558	6,623	5,928	6,619	6,580	6,574	7,138	6,400	6,425	8,726	11,973	86,314
443111	Household appliance stores													17,805
443112	Radio, T.V., and other elect. stores													68,509
44312	Computer and software stores													20,546
444	Building mat. and garden equip. and supplies dealers	2												21,313
4441	Building mat. and supplies dealers	2												84,193
44412	Paint and wallpaper stores													10,169
44413	Hardware stores													20,559
445	Food and beverage stores	4												48,867
4451	Grocery stores	3												91,842
44511	Supermarkets and other grocery (except convenience) stores	3												68,630
4453	Beer, wine, and liquor stores	2												38,312
446	Health and personal care stores	1												37,411
44611	Pharmacies and drug stores	1												12,297
447	Gasoline stations	3												51,966
448	Clothing and clothing access. stores	1												21,592
4481	Clothing stores	1												61,779
44811	Men's clothing stores													8,781
44812	Women's clothing stores													40,337
44814	Family clothing stores													84,611
44819	Other clothing stores													12,055
4482	Shoe stores													26,828
44831	Jewelry stores	1,710	2,338	2,013	1,967	2,086	2,241	2,067	2,183	2,039	2,180	2,811	6,567	31,032
451	Sporting goods, hobby, book, and music stores	6,566	5,375	6,522	5,934	6,510	6,867	6,666	8,100	6,659	6,285	7,713	11,770	84,967
45111	Sporting goods stores	2,210	2,180	2,981	2,749	3,100	3,394	3,179	3,394	2,722	2,580	2,947	4,507	35,943
45112	Hobby, toy, and game stores	960	987	1,202	1,076	1,061	1,109	1,114	1,091	1,110	1,283	2,204	3,247	16,444
451211	Book stores	2,222	1,040	1,029	931	1,135	1,162	1,221	2,330	1,579	1,129	1,227	2,179	17,184
452	General merchandise stores	40,936	40,972	46,419	45,026	47,892	47,131	45,856	48,383	43,968	46,299	54,328	71,518	578,728
4521	Department stores (excl. L.D.)	14,115	14,441	16,533	16,091	16,926	16,306	15,654	17,286	15,253	16,355	20,879	29,553	209,392
452112	Discount dept. stores	9,228	9,135	10,592	10,125	10,702	10,466	10,195	11,129	9,629	10,425	13,125	17,734	132,505
452111	Department stores(excl. discount department stores)	4,887	5,306	5,941	5,966	6,224	5,820	5,459	6,157	5,624	5,930	7,754	11,819	76,887
4521	Department stores (incl. L.D.)(2)	14,440	14,760	16,909	16,446	17,298	16,665	15,999	17,658	15,583	16,704	21,322	30,157	213,941
452112	Discount dept. stores	9,389	9,290	10,801	10,312	10,900	10,683	10,387	11,337	9,811	10,620	13,360	18,036	134,926
452111	Department stores(excl. discount department stores)	5,051	5,470	6,108	6,134	6,398	5,982	5,612	6,321	5,772	6,084	7,962	12,121	79,015
4529	Other general merchandise stores	26,821	26,531	29,886	28,935	30,966	30,825	30,202	31,097	28,715	29,944	33,449	41,965	369,336
45291	Warehouse clubs and superstores	23,828	23,436	26,307	25,437	27,163	27,231	26,734	27,532	25,355	26,268	29,235	36,437	324,963
45299	All other gen. merchandise stores	2,993	3,095	3,579	3,498	3,803	3,594	3,468	3,565	3,360	3,676	4,214	5,528	44,373
453	Miscellaneous store retailers	8,813	8,587	9,522	8,953	10,756	10,459	9,717	10,267	9,558	9,952	9,830	11,431	117,845
4532	Office supplies, stationery, and gift stores	3,278	3,122	3,310	2,982	3,293	3,143	3,236	3,893	3,324	3,541	3,587	4,670	41,379
45321	Office supplies and stationery stores	2,177	1,902	1,987	1,711	1,747	1,671	1,786	2,424	1,953	1,851	1,887	2,153	23,249
45322	Gift, novelty, and souvenir stores	1,101	1,220	1,323	1,271	1,546	1,472	1,450	1,469	1,371	1,690	1,700	2,517	18,130

There is a lot of meaningful data here, but it is very difficult for us to understand in this table.

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Data Visualization

We examine two industries' sales from 2007 to 2011:



Clothing and Clothing
Accessories Stores



Building Materials and
Garden Equipment

Data Visualization

Here's our data set!

December-07	30,739	22,337
April-08	17,116	28,939

We can see that neither industry is definitively leading in sales volume.

	Clothing and clothing access. stores	Building mat. and garden equip. and supplies dealers
January-07	13,946	21,966
February-07	15,171	20,827
March-07	18,043	27,313
April-07	17,101	28,929
May-07	18,484	34,256
June-07	17,305	30,235
July-07	16,905	28,547
August-07	18,876	28,304
September-07	16,795	25,285
October-07	17,647	27,435
November-07	20,580	25,879
December-07	30,739	22,337
January-08	14,231	20,632
February-08	15,921	20,435
March-08	17,866	24,072
April-08	17,116	28,939
May-08	19,102	32,184
June-08	17,049	29,550
July-08	17,400	28,956
August-08	19,056	25,765
September-08	15,917	25,454
October-08	16,835	26,131
November-08	18,792	22,001
December-08	26,802	20,966
January-09	13,489	17,883
February-09	14,723	17,362
March-09	15,590	21,896
April-09	16,251	25,378
May-09	17,283	27,425
June-09	15,466	26,865
July-09	16,066	24,581
August-09	17,681	22,117
September-09	15,655	21,974
October-09	17,094	22,024
November-09	18,369	20,683
December-09	27,199	20,018
January-10	13,321	16,166
February-10	14,913	16,404
March-10	17,431	23,203
April-10	17,087	29,140
May-10	17,787	28,815
June-10	16,194	27,911
July-10	16,907	25,183
August-10	17,960	23,722
September-10	16,229	23,288
October-10	17,433	24,196
November-10	20,024	23,603
December-10	28,586	22,339

Data Visualization

Which industry has higher overall sales?

When are each industry's peak seasons?

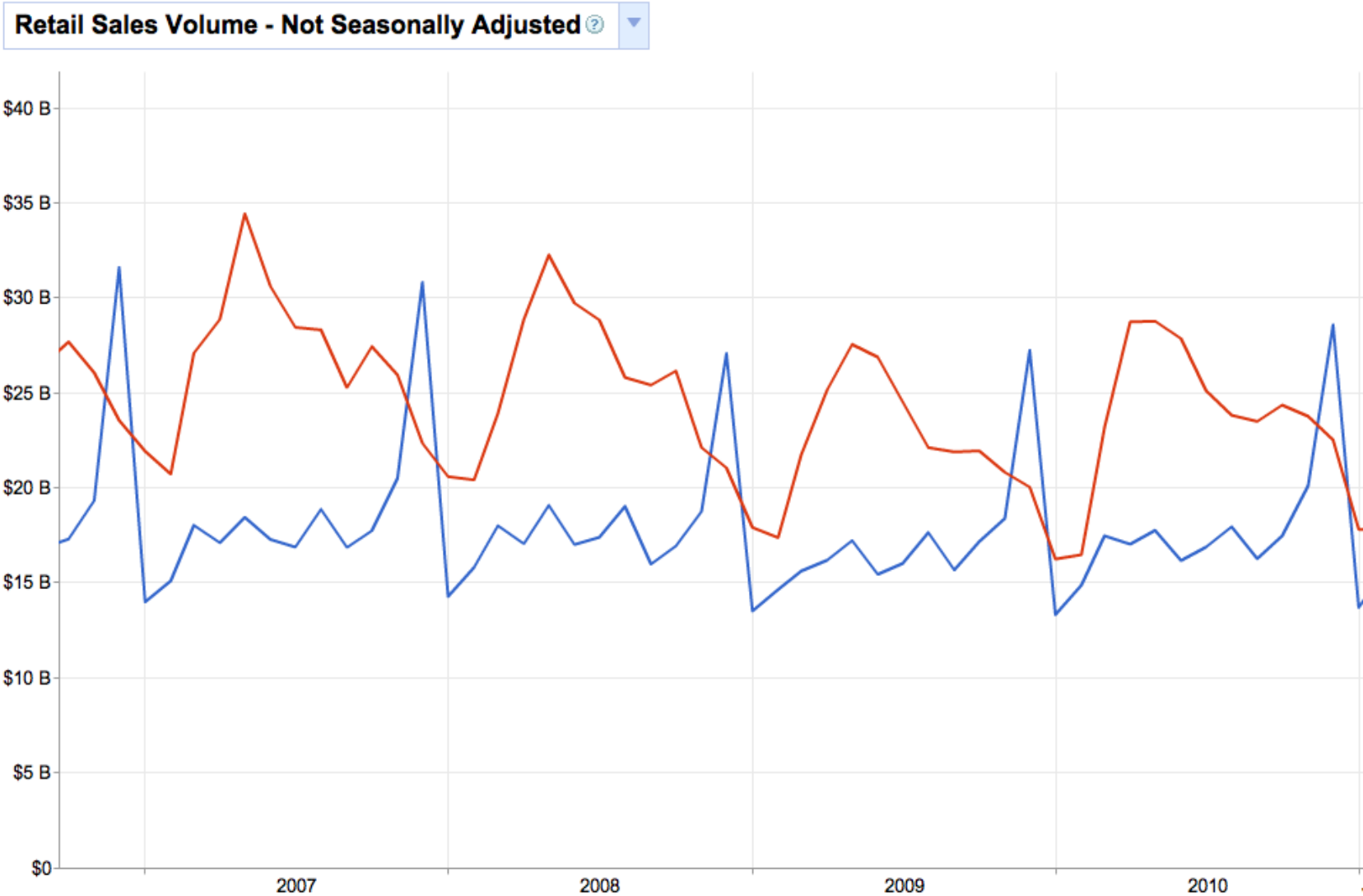
It's kind of hard to tell from looking at these tables.

We can graph to better visualize this data.

	Clothing and clothing access. stores	Building mat. and garden equip. and supplies dealers
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Data Visualization

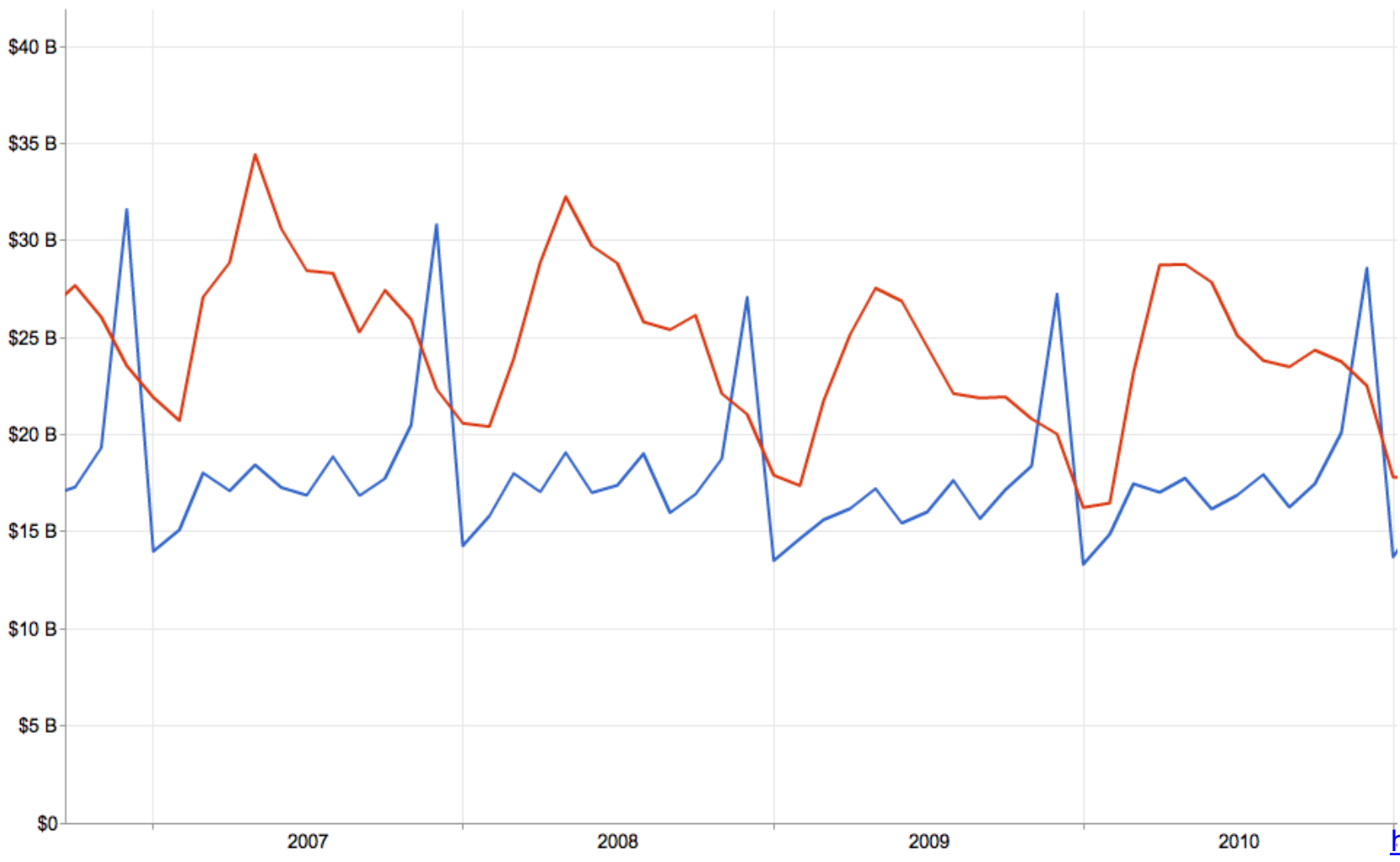
Decide with your partner which line on the graph corresponds to which retail industry. Discuss how you came to this conclusion.



Data Visualization

Decide with your partner which line on the graph corresponds to which retail industry. Discuss how you came to this conclusion.

Retail Sales Volume - Not Seasonally Adjusted ? ▾

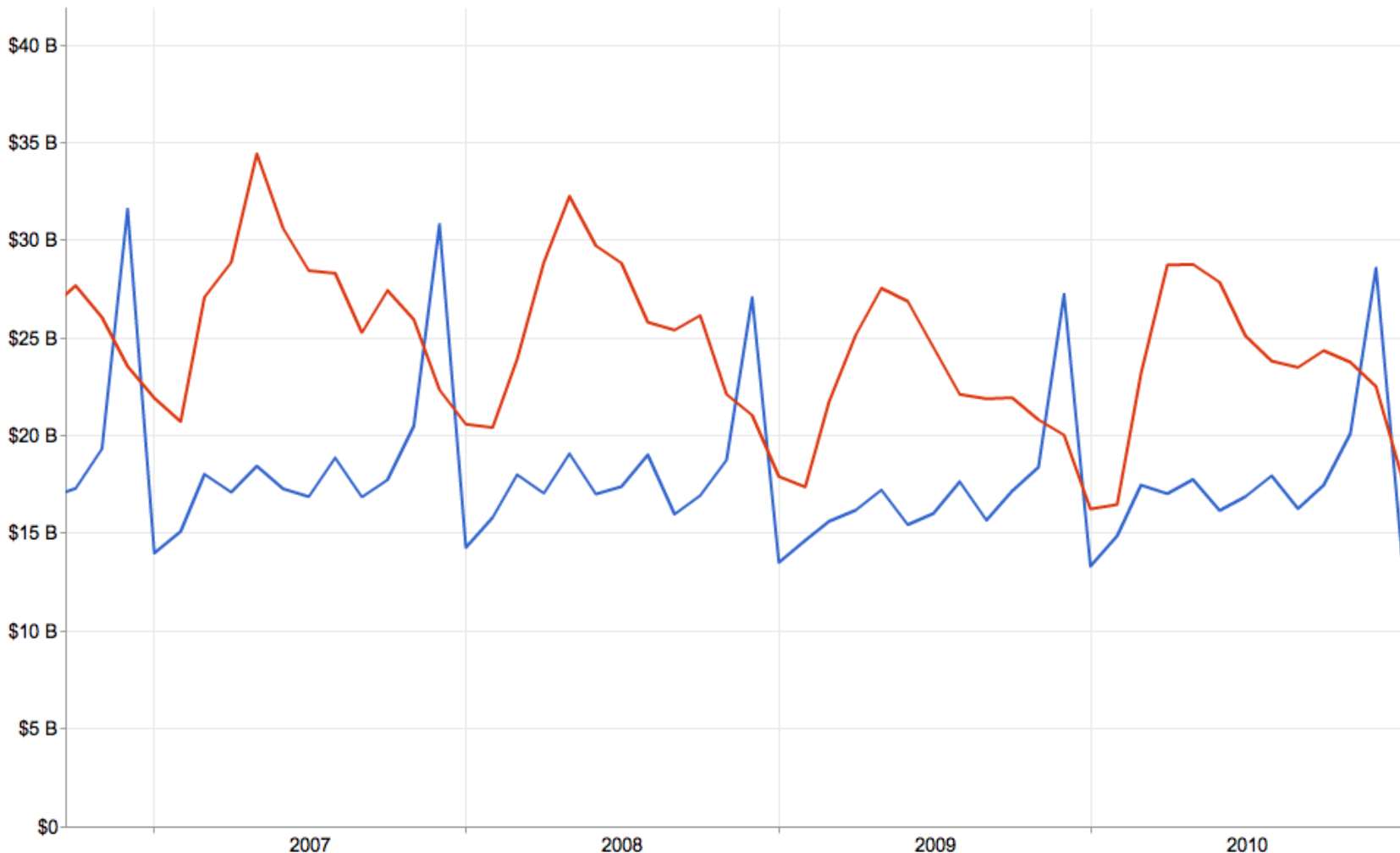


Building
Materials
and
Garden
Equipmen
t
Clothing and
Clothing
Accessories

Data Visualization

Which industry has higher overall sales?
What are each industry's peak seasons?

Retail Sales Volume - Not Seasonally Adjusted ? ▾



Building
Materials
and
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t
Clothing and
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Accessories

Examples of Data Visualization

[Google Trends](#)

[Google Public Data Explorer](#)

[States and Their Metro Areas](#)

[Zip Code Explorer](#)

[Gap Minder](#)

[We Feel Fine](#)

What is Programming?

How would you write instructions for a computer to make a peanut butter and jelly sandwich?

Write them in your journal & discuss with your partner.

What is Programming?

- Peanut Butter and Jelly results- 6min,43 sec



Light-Bot

TUTORIAL

This is
Light-Bot!

This is how you
tell him what to do!



Light-Bot Controls



Take one step forward



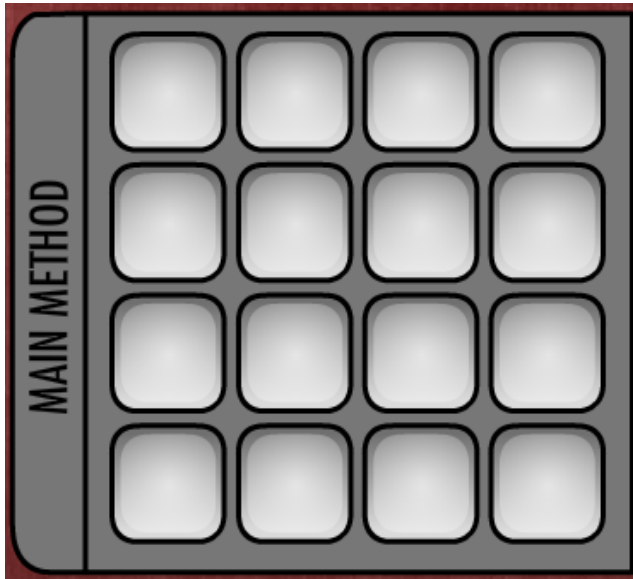
Turn clockwise/counterclockwise



Jump forward one step



Light the tile you're standing on



This is the main method, where you can place your instructions to the Light-Bot.



When you click "Run", the Light-Bot will follow your instructions, in order.



Click "Break" to stop the Light-Bot from reading instructions so you can edit them again.

Google for [LightBot2](#)...

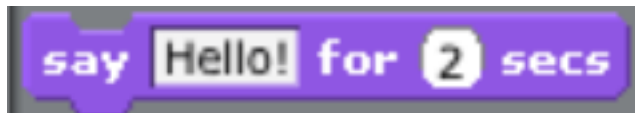
Scratch Preview: The Blocks

[moving.sb](#)
[pinball solution.sb](#)



sprite

Blocks fit together like puzzle pieces to direct sprites.



Later in the week we will be learning and using Scratch more in depth

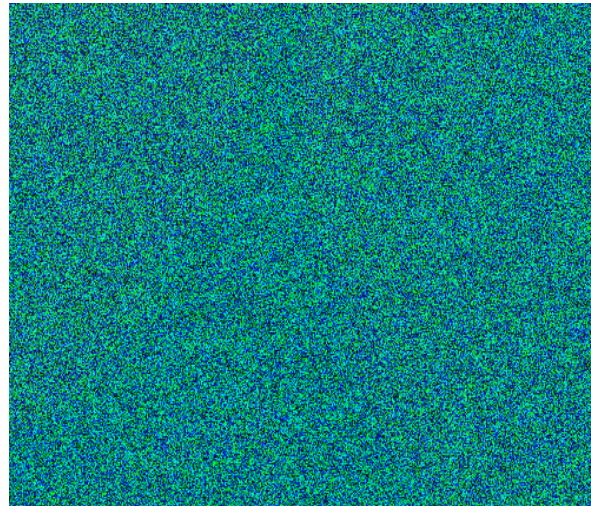
Coding on the Web

Nick Parlante, who teaches at Stanford, has created a website where you can practice manipulating images online:

[One Dimensional For-Loops](#)

[Two Dimensional For-Loops](#)

**Iron Image
Puzzle!**



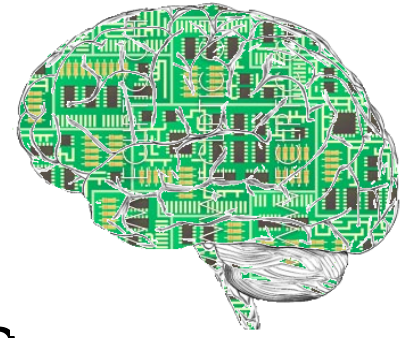
Can computers be intelligent?

Computer Intelligence Examples

- IBM's Watson
- [Eliza](#) and other chatbots ([JabberWacky](#))



Turing Test



How well a computer can mimic human intelligence?
Alan Turing wanted to know!

The Turing Test determines whether a computer's answers to questions are **distinguishable** from human answers.

You must separate **answers from a human** from **answers from a computer**.

Decide with your partner which question from the next page **you want to ask** (which would help you determine which speaker is the computer and which is the human) (Have a backup!).

Turing Test Questions

1. What is the name of Bart Simpson's baby sister?
2. What do you think of Roald Dahl?
3. Are you a computer?
4. What is the next number in the sequence 3, 6, 9, 12, 15?
5. What do you think of nuclear weapons?
6. What is 2×78 ?
7. What is the square root of 2?
8. Add 34957 to 70764.
9. Do you like school?
10. Do you like dancing?
11. What day is it today?
12. What time is it?
13. How many days are there in February in a leap year?
14. How many days are there in a week?
15. For which country is the flag a red circle on a white background?
16. Do you like to read books?
17. What food do you like to eat?

How would you use this in class?

- Perhaps try... [Twenty Questions](#)

See you tomorrow!

Unit 1: Human Computer Interaction

Unit 2: Problem Solving

Days 1-2: Intro to Data collection and problem solving

Day 3: Steps in Problem Solving

Days 4-6: Problem Solving Strategies

Days 7-9: Reinforcing the phases in the problem solving process

Days 10-12: Counting in Binary

Days 13-14: Linear and binary search

Days 15-16: Lists and sorting

Days 17: Minimal spanning trees and graphs

Days 18-21: Final unit projects

Unit 3: Web Design

Unit 4: Introduction to Programming

Unit 5: Computing Applications

Unit 6: Robotics