Key ideas from last time

- Computational Thinking/programming:
  - Functional abstraction
  - Subroutine (F2 that does a part of the job)

- Representation of data on computers:
  - Bits, bytes, ASCII, UTF
  - Presence or Absence of signal: PandA
  - Signal can be mechanical, electrical, color, light, blinking an eye, moving a finger, yes, no, true false
  - Hollerith tabulating machine: mechanical => electrical

Blown 2 Bits. Ch. 2. 1984 is here & we like it

What are you supposed to learn?

- What is a digital footprint?
- What technology advances in the last ten years have made 'Big Brother' possible
- Which organizations try to protect your privacy.
- Why should you read the "Terms and Conditions" for every app you download
  - You never know what they might say. Example: Pulse App asks you to give permission for them to track every number you call
- Why should you consider what you put onto public sites like Facebook.
  - Are you sure your privacy settings are as you want?
  - Name three recent cases of information going viral that could never have happened ten years ago.

What are you supposed to learn?

Name three cases of information going viral that could never have happened 15 years ago.
Privacy: A Definition
- Privacy: The right of people to choose freely under what circumstances and to what extent they will reveal themselves, their attitude, and their behavior to others.
  - It’s a human right – explicit in many countries
  - You do the revealing, no one else
  - You can’t live like a hermit; you must reveal
  - With strong privacy protections – the US has almost none – it’s OK to reveal, because the receivers of the information must keep it private

Technology doesn’t violate privacy. People violate privacy.
..... Technology just makes it a lot easier/faster

Data Aggregators: Computational Advertising is getting to be a big business

Who is making money from your data?
- Facebook
- Google
- Domain registries (GoDaddy, etc.)
- Amazon
- Netflix
- ?????

What is YOUR digital footprint?
- Where are you revealing stuff you’d rather not have open to the world?
- Facebook
- Credit card information
- Cookies tracking transaction data
- Amazon purchases
- Embarrassing stuff. Facebook youtube
- Porn downloads tracking
What is YOUR digital footprint?
- Where are you revealing stuff you’d rather not have open to the world?
- Location information
- General search and site history
- Tracking cookies in general
- Email
- Every app you download on your phone
- Tumblr

What is the scariest thing in the chapter?
- Online banking
- Key logging
- Skimmers, card readers
- Electronic boarding pass
- Conversations we consider private, can’t trust other person
- Vanneck radiation phreaking, hotel wireless can measure people’s activity (electrical activity)

What is the scariest thing in the chapter?

.... How did we get here?

What technological innovations have brought us where we are today?

First: This mean there could be Personal Computers
- Ken Olsen, Founder of DEC “There is no reason for any individual to have a computer in their home [1977]”
- Xerox Star, 1981. First PC. First mouse. Failed
- Apple Macintosh, 1984: first commercially successful personal computer to feature a mouse and a graphical user interface rather than a command–line interface.
- But only YOUR data on
Eventually ICs => Miniaturization: Phones, Smartdust

The Internet
- Invented in 1969 for military purposes, it took almost 20 years to get out of the lab
- Communication by FTP (file transfer protocol)
- Ascii Terminal interface
- E.g. 1983 War Games Film

Connectivity to Change the World
- WWW = An INTERFACE!!
- All computers "speak" a common language: hyper-text transfer protocol
- HTTP
- Content points to other content
  - (Google page rank, later)
  - UTF ensures content of pages in any language can be displayed

Everything that humanity knows is now online!!
- Newspapers
- Scientific Articles
- Books
- Encyclopedias (Wikipedia)
- Dictionaries and Thesauri (Wordnet, Framenet, Sentiwordnet, Freebase)
- Penn Treebank: a million words of parsed and semantically labelled news, books etc.
- Plus current and historic (10 years) opinions, reactions, emotions (opinion mining)

WWW + http: Early 90’s changed everything
- WWW = The Servers + The Data
- All computers use one standard protocol (http) meaning that every computer in every country where people all speak different languages can communicate
- Publishing and accessing information is completely decentralized –no one limits what you put out or search for
- Critical mass of data =>
  Too much personal Data?
Message: WWW exploits one protocol, neutralizing differences at endpoints; the Internet’s universal medium lets us look at other people’s digital info.

Digital Footprint: Where you go, What you do on web
- A digital footprint is a collection of activities and behaviours recorded when an entity (such as a person) interacts in a digital environment. It may include the recording of activities such as system login and logouts, visits to a web-page, accessed or created files, or emails and chat messages. The digital footprint allows interested parties to access this data: possibly for data mining, or profiling purposes.
- Inputs to digital footprint include attention, location, time of day, search results and key words, content created and consumed, digital activity and data from sensor, and from the users social crowd. Some data can come from deep IP and Internet data, such as footprinting.
- Value created from the collection of inputs and analysis of the data are recommendation.

Surprising Digital Footprint. Harry Potter.
- Shortly before release, photos of all 759 pages of the U.S. edition were leaked and transcribed, leading Scholastic to look for the source that had leaked it.
- EXIF metadata on pix

Use of Security Cameras Exploded after 9/11
- http://www.youtube.com/watch?v=AoNT6u3mQew

Boston Marathon Bombing
People turned to social media over major news outlets.

Police scanners were broadcast online.

Several suspects were wrongfully accused by tweeters and Redditors.

But finally the suspect(s) were captured.

So how did we get here?

- ICs =>
- Personal
- Miniaturization
- Internet
- WWW
- Digitization of Content
- Mobile
- The same technology that is incredibly useful and often fun (so we like it), also affords ‘Big Brother’

It’s easier than you think for your privacy to be violated without you knowing it.
Where you’ve been, who you’ve called


  Security researchers have discovered that Apple’s iPhone keeps track of where you go – and saves every detail of it to a secret file on the device which is then copied to the owner’s computer when the two are synchronised.

  The file contains the latitude and longitude of the phone’s recorded coordinates along with a timestamp, meaning that anyone who stole the phone or the computer could discover details about the owner’s movements using a simple program.

  For some phones, there could be almost a year’s worth of data stored, as the recording of data seems to have started with Apple’s iOS 4 update to the phone’s operating system, released in June 2010.

  “Apple has made it possible for almost anybody – a jealous spouse, a private detective – with access to your phone or computer to get detailed information about where you’ve been,” said Pete Warden, one of the researchers.

  Only the iPhone records the user’s location in this way, say Warden and Alasdair Allan, the data scientists who discovered the file and are presenting their findings at the Where 2.0 conference in San Francisco on Wednesday. “Alasdair has looked for similar tracking code in Google’s Android phones and couldn’t find any,” said Warden. “We haven’t come across any instances of other phone manufacturers doing this.”

Cell phone mikes can be remotely activated

- [Cell Phone Tap story on you tube](#)

Mobile Monitor: a scary app!


Who tries to protect your privacy?

- American Civil Liberties Union
- Electronic Privacy Information Center
- Electronic Frontier Foundation
- Center for Democracy and Technology

  Cycle of surprising privacy violation, lobbying for laws, new laws, but new technology or new twist, then cycle…

Edward Snowden

- Revealed wide-scale operations of the NSA to collect data on US citizens
- Revealed government collecting metadata from major phone companies
- PRISM, XKeyscore, and Tempora Internet surveillance programs
- Caused controversy and mixed reviews

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Is he a hero or an enemy?
### Facebook Privacy: A Timeline

**Facebook Privacy Policy circa 2005:**
No personal information that you submit to Thefacebook will be available to any user of the Web Site who does not belong to at least one of the groups specified by you in your privacy settings.

**Facebook Privacy Policy circa 2006:**
We understand you may not want everyone in the world to have the information you share on Facebook; that is why we give you control of your information. Our default privacy settings limit the information displayed in your profile to your school, your specified local area, and other reasonable community limitations that we tell you about.

### Facebook Privacy: A Timeline

**Facebook Privacy Policy circa 2007:**
Profile information you submit to Facebook will be available to users of Facebook who belong to at least one of the networks you allow to access the information through your privacy settings (e.g., school, geography, friends of friends). Your name, school name, and profile picture thumbnail will be available in search results across the Facebook network unless you alter your privacy settings.

### Facebook Privacy: A Timeline

**Facebook Privacy Policy circa November 2009:**
Facebook is designed to make it easy for you to share your information with anyone you want. You decide how much information you feel comfortable sharing on Facebook and you control how it is distributed through your privacy settings. You should review the default privacy settings and change them if necessary to reflect your preferences. You should also consider your settings whenever you share information. ... Information set to "everyone" is publicly available information, may be accessed by everyone on the Internet (including people not logged into Facebook), is subject to indexing by third party search engines, may be associated with you outside of Facebook (such as when you visit other sites on the internet), and may be imported and exported by us and others without privacy limitations. The default privacy setting for certain types of information you post on Facebook is set to "everyone." You can review and change the default settings in your privacy settings.

### Facebook Privacy: A Timeline

**Facebook Privacy Policy, circa April 2010:**
When you connect with an application or website it will have access to General Information about you. The term General Information includes your and your friends’ names, profile pictures, gender, user IDs, connections, and any content shared using the Everyone privacy setting. ... The default privacy setting for certain types of information you post on Facebook is set to "everyone." ... Because it takes two to connect, your privacy settings only control who can see the connection on your profile page. If you are uncomfortable with the connection being publicly available, you should consider removing (or not making) the connection.
Are you revealing only what you want to reveal?

Natural Language and Dialogue Systems Lab

Girls Around Me

In the mood for love, or just after a one-night stand? Girls Around Me helps you to find out! Show the hottest nightclubs, which is in them, and how to reach them...

NOTE: You need to have an Apple account to use Girls Around Me. Change your email address.

Girls Around Me

Creepy Girl-Stalking App Girls Around Me Has Been Removed From The App Store (Update)

iPhone 5s: New fingerprint scanners!

iPhone 5s: New fingerprint scanners!

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- Why you should consider what you put onto public sites like Facebook.
  - Are you sure your privacy settings are as you want?
  - Will they always be?
HW 2 Due Tuesday

- Text based programming
- Check website for readings
- Essay (due 10/19)