WOW

* Terrific energy at the demo lunch yesterday
* Sustained volume of discussion was impressive
* Feedback from guests and students was great
* Let me know if I can post links to your projects
Things I’d Improve

- Get the class on Google Wave
  - some of you weren’t catching the lectures in a timely fashion
- Set up git and continuous integration in week 1
- Have one additional checkpoint and start the projects sooner
- Invite a couple of guest speakers who also think about scalability
- Find smarter ways to integrate remote students into projects
Things I Felt Worked

* Ending up with 6 demo worthy projects
* Self assembling teams of about 4-8 people
  * learning first hand about team interaction problems
* Building, testing and brainstorming about your code
* Having a project motivation that was not grade related
Things I Hope You Take Away

- Constraint management is an engineerable art
  - maximizing results given your limitations
- Communication is the biggest key to human scalability
- IT tools for SW development are also for communication
- All of this is more broadly applicable than just to web apps
Tell Me What You Think
Future Web App Technology

* Web data structures
  * new tribes
* Algorithms
  * web computation
* Odds and ends and Speculation
Five Random Things

- Noticed CA license plate 2TOT003
- Daughter spoke about a future event (mother going off to work)
- Talked about seven deadly sins and the consumer web
- Pondered how Sesame Street might use -1 as number of the day
- Saw ducks, thought about ducktyping for today’s lecture

  - “looks like a duck, quacks like a duck”
99% of Everything is Crap

* Jan’s (optimistic) corollary
  * 10% of that crap is fertilizer

* Jan’s (wasteful) lemma
  * non crap can’t emerge without 100 times as much crap

* Jan’s Augean (scatological, coprological) task
  * observe all the crap to see if/when non crap emerges
Ahem, Relevance Please?

- Managing the world’s information
- Exploiting the (key, value) pair model for data management
- Assuming the web (graph) model of information is universal
- Recognizing that most data will be unstructured
Complex Frontiers: \( Z = Z^2 + C \)
The New Tribes

- Historically we have always pigeonholed people
  - kinship, geography, language, beliefs, appearance, gender
- The web is fundamentally altering this as we speak
  - online our tribes are defined by tagclouds
- Tagclouds are fuzzy graph approximations of people, concepts
  - enough overlap indicates group membership
Already in Use

* Music affinity is an expressive shorthand for the broader tagcloud
* Napster, imeem exploited this to great advantage
* Duck typing is emblematic of this in programming languages
* drawback: static type checking incomplete at best
* define persistence model to support flexible types
Future Applications

- Generalized data matching, approximation algorithms
- Mental models
  - we really are only a sum of serendipitous events
  - some stick, some don’t
  - how many of my five will you remember tomorrow?
Algorithms

- PageRank variants
- Efficient graph instantiation
  - when it doesn’t fit in memory
- Relevant subgraph extraction
  - use a search term or graph as input
- Web summarization
Thinking Big

* Over 6 billion lines of open source software
* biggest software “company”
* Biggest are linux kernel, eclipse, java
* Over 250,000 projects
  * explosion of computer language and database projects
* Best option for implementing mature technologies
Future Web App Tech

- PHP beats GWT for rapid prototyping, GWT more maintainable
- the speed of code-[compile]-test loop factors into that a lot
- is this a permanent tradeoff or can we achieve both?
- embed java in html?
- can we make browser jvm work like javascript interpreter?
- Will Eclipse ever be fast as an IDE?
Worth Checking Out

* Open source code search engines
  * http://www.koders.com/
  * http://www.google.com/codesearch
Q & A Topics

* Is it possible to teach scalability in one quarter?
* Predictability horizon has significantly shortened
  * can we speak with confidence about the web in 2015?
* Radical originality/innovation is more difficult to achieve
  * the same concepts are broadly available to many people
Final Thoughts

- This course dedicated to a mentor, Rajeev Motwani