University of Virginia 16 September 2011
cs1120: Introduction of Computing
Explorations in Language, Logic, and Machines

Class 11: Deep List Procedures

Assignments Due

- **Quiz 2 will be Monday.** It covers:
  - Course book Chapters 5 and 6.
  - *The Information*, Chapters 4 and 10.
  - Problem Set 1 Comments.
  - *A Lost Spirit Still Inspires*, Boston Globe, 4 September 2011 (link from Class 9 post).
  - Classes 1-11.
- **Friday, 23 September:** Problem Set 3

On-Line Book

Please try out ElevenLearning's on-line version of the book. You need to first complete the free registration at http://www.elevenlearning.com. ElevenLearning is developing a new, open source, model for publishing textbooks that should be a big win for students if it succeeds.

Upcoming Help Schedule (all office hours are now in Rice Hall)

Sunday, 1-6pm (Valerie/Joseph/Kristina, Rice 1st)

Problems and Procedures

```
(define (list-accumulate f base p)
  (if (null? p)
      base
      (f (car p) (list-accumulate f base (cdr p))))

(define (list-cruncher base carproc combiner p)
   (if (null? p)
       base
       (combiner
        (carproc (car p))
        (list-cruncher baseres carproc combiner (cdr p)))))
```

What have we learned so far (and what should we expect to learn later) for each of the three main themes of the course?

Recursive Definitions: A recursive definition defines a thing in terms of smaller instances of itself.

Universality: One of the most fundamental results in computing is that any machine that can perform a few simple operations is powerful enough to perform any computation, and in this deep sense, all mechanical computers are equivalent.

Abstraction: Abstraction is a way of hiding details by giving things names. We use abstraction to manage complexity. Good abstractions hide unnecessary details so they can be used to build complex systems without needing to understand all the details of the abstraction at once