

The Last Lecture

Thoughts on Computer Science and Life

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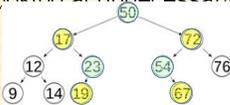
Paradigms merging?

- Some programming language specialists want us to stop talking about “paradigms” (e.g. functional, OOP, declarative) because modern languages are starting to support all at once.
- So, for example, as of 2013, even Java (the last holdout) has anonymous procedures (λ) — even though “real” programmers *still* think Lisp is impractical, slow, ivory-tower, etc.



Big Ideas Really Matter

- 61B midterm problem:
 - Write a function that takes three inputs: a binary search tree, a lower bound, and an upper bound, and returns a list of the tree elements between those bounds, taking advantage of the BST constraint to avoid looking at unnecessary nodes.



lower bound = 20
upper bound = 60
result = (23, 50, 54)



The Solution (in Scheme)

```
(define (range bst low high)
  (cond ((< (datum bst) low)
        (range (right-branch bst) low high))
        ((> (datum bst) high)
         (range (left-branch bst) low high))
        (else
         (append (range (left-branch bst) low high)
                 (cons (datum bst)
                       (range (right-branch bst)
                             low high))))))
```



The Solution (in Scheme and C)

```
(define (range bst low high)
  List *range(BST *bst, int low, int high) {
  (cond ((< (datum bst) low)
        (range (right-branch bst) low high);
        ((> (datum bst) high)
         (range (left-branch bst) low high);
        (else if (bst->datum > high)
                 (range (left-branch bst) low high);
                 (return range(bst->left, low, high);
                 (else
                  else return
                  (append (range (left-branch bst) low high)
                          (append (range (bst->left, low, high),
                                      (cons (datum bst)
                                            (cons (bst->datum,
                                                  (range (right-branch bst) low high))))))
                          (range (right-branch bst) low high))))))
        (return range(bst->right, low, high)); }
```



About money

- You are going to be obscenely rich *no matter what!*
 - 93% of US adults earn less than \$100,000/year
 - (which is about what I make)
 - 78% of the world’s people get less than \$3500/year
 - You *are* going to get a good job.
 - You *are* going to be able to send your kids to private school. And buy a Porsche.



Bite the hand that feeds you.

- My first job.



"And that's the hand that fed me."



Live in the present.

Don't jump through hoops.

Have fun.

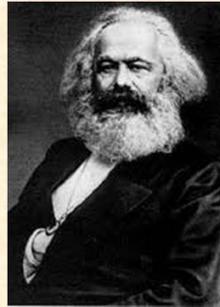
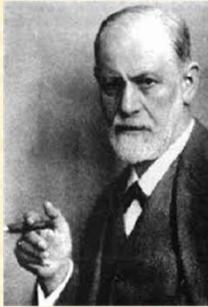
Enjoy life; you'll never be more free than you are right now. (Not necessarily happier, but more free.)



Never mind what your parents say.

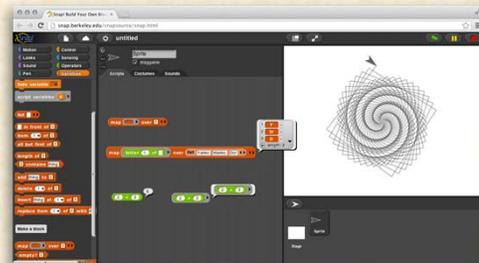


Learn something besides engineering.



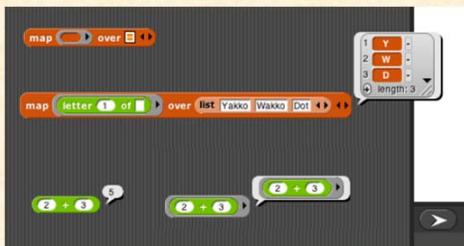
Change the world. For the better.

- <http://snap.berkeley.edu/run>
- Principal developer (95%): Jens Mönig



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- <http://snap.berkeley.edu/run>

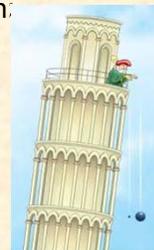


Those people a long time ago weren't idiots.

- RISC vs. CISC
- The great science myth:



VS



And speaking of Aristotle...

- Ethics isn't about *dilemmas*; it's about *virtues*.
- Dilemmas:
 - You're in a boat with your parent and your child. The boat sinks. You're the only swimmer and you only have time to save one of the others. Which?
 - You're up against a project deadline and at the last minute you discover a bug. Your boss wants to ship the product anyway. What do you do?
- Virtues: *courage, honesty, charity, temperance...*



Thank you.



Opinions expressed are not those of the University of California.

