



The Beauty and Joy of Computing



Lecture #17 Higher Order Functions I

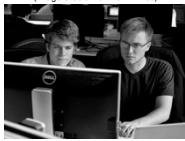
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Regrades : hand exam to TA in discussion with reason stapled to front

CODING IS COOL AGAIN!

The market for classes in coding (esp focused on the Internet) is booming, so says the NY Times. Codecademy is one of the biggest sites; CS10 is a great first step!!

<http://www.nytimes.com/2012/03/28/technology/for-an-edge-on-the-internet-computer-code-gains-a-following.html>



Why use functions? (review)

The power of generalization!

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But how general can we be?

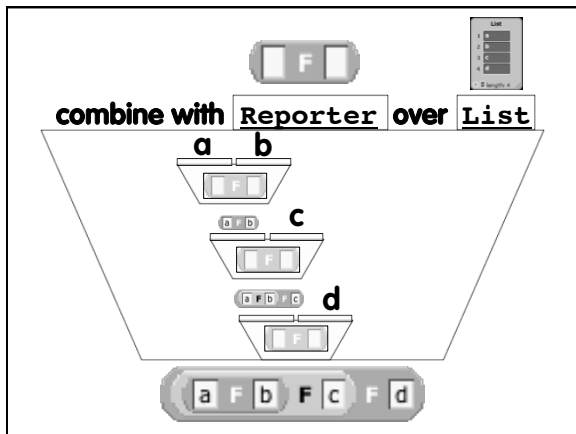
The power of generalization!

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Today

- Functions as Data
- Higher-Order Functions
- Useful HOFs (you can build your own!)
 - map Reporter over List
 - Report a new list, every element E of List becoming Reporter(E)
 - keep items such that Predicate from List
 - Report a new list, keeping only elements E of List if Predicate(E)
 - combine with Reporter over List
 - Combine all the elements of List with Reporter(E)
 - This is also known as "reduce"
- Acronym example
 - keep → map → combine

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Summary

- Functions as data is one of the two (programming) big ideas in this course
- It's a beautiful example of the abstraction of the list iteration details
- Google (and other companies) use this!
 - They use "map-reduce"

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