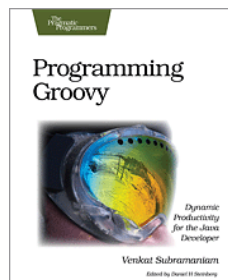


# *Essence of Functional Programming*

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## Not Your Father's Environment

Your World: Multiprocessors are Common Place

Multithreading on Steroids

"Well Written" Programs may be ill-fated on  
Multiprocessors

# Cry for Higher Level Of Abstraction

Threading Support of Java/.NET Won't Cut It

As soon as you create a thread,  
you worry how to control it

`synchronize` is latin for waste Concurrency

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## How can Functional Programming Help?

Assignment-less Programming

Immutable State

You can't Screwup what  
you can't change

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# But What's FP?

Functions are first-class citizens

create them wherever you like,  
store them, pass them around, ...

Higher Order Functions

Functions accept functions as  
parameters

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## What Made Lisp Special

☺ Paul Graham's list

1. Conditionals
2. A function type
3. Recursion
4. Concept of variables
5. Garbage-collection
6. Composed of Expressions
7. A symbol type
8. Notation for tree of symbols
9. Whole Program always available

6

# Exercise 1

- Write Pseudo code for finding factorial of a number

7

# Exercise 2

- Use Recursion for Factorial

8

## Exercise 3

- Can you improve the recursion?

9

## Exercise 4

- Write a program that will double the values in a list of numbers.

10

## Exercise 5

- Write a program that will find the total of a list of numbers.

11

## Exercise 6

- Given a list of numbers, find the min and max.

12

# Exercise 7

- Write a function that will allow you to total values in a list of numbers based on different criteria

13

## Exercise 7(continued)

- Can you reduce the function (once you write it) so you don't have to pass the list to operate on

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## Exercise 8

- Write a program that goes out to Yahoo weather and finds the temperature of a given city

15

## Exercise 9

- Given a list of ticker symbols, write a program that will go out to the web and get their closing price last year and determine the stock with highest price

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# Exercise 10

☞ Can you improve the response of the above code?

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# Thank You

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