Functional programming workshop

knowit®

Agenda

- Intro to functional programming
- Functional programming in plain Java?
- FunctionalJava
- Intro to Clojure
- Functional programming in Clojure

What is functional programming?

Programming with functions

In computer science, functional programming is a programming paradigm that treats computation as the evaluation of mathematical functions and avoids state and mutable data.

http://en.wikipedia.org/wiki/Functional_programming

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$$f(x) = 2 * x$$

Referential transparency

An expression is said to be referentially transparent if it can be replaced with its value without changing the behavior of a program (in other words, yielding a program that has the same effects and output on the same input).

http://en.wikipedia.org/wiki/Referential_transparency_(computer_science)

Side effects

Input/Output

Mutability

In a few languages enforced

- Charity
- Clean
- Curry
- Hope
- Miranda
- Haskell

http://en.wikipedia.org/wiki/List_of_programming_languages_by_category#Pure

In most functional languages a discipline

- Scala
- Clojure
- F#
- ...

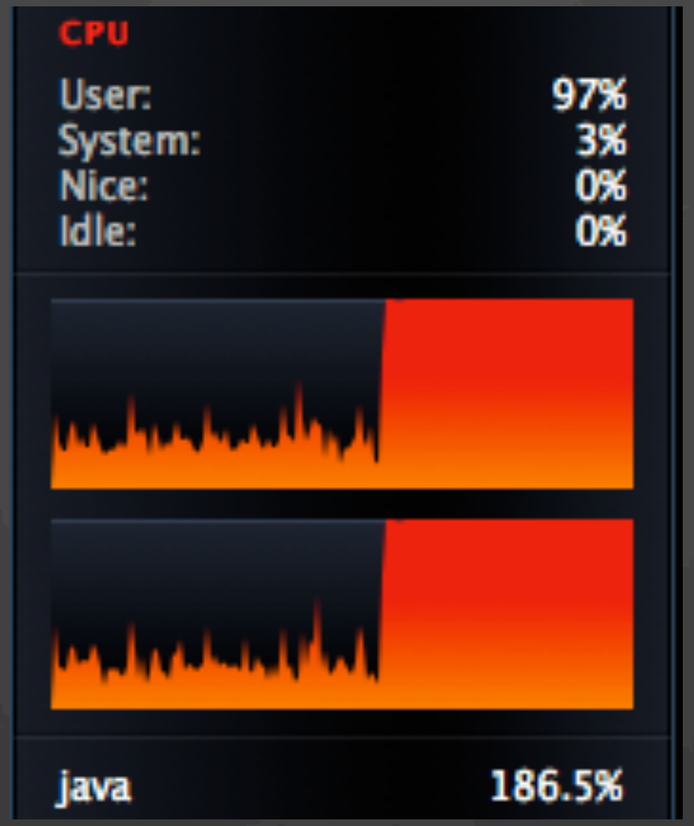
Why should we care?

Philosophical view

Practical view

Benefits of FP

- Concurrency
- Parallelism
- Robustness
- Testability
- Composability
- Higher abstractions
- Less code, less bugs!


CPU
User: 97%
System: 3%
Nice: 0%
Idle: 0%
java 186.5%

FP tries to avoid side effects

OO tries to encapsulate side effects

About us