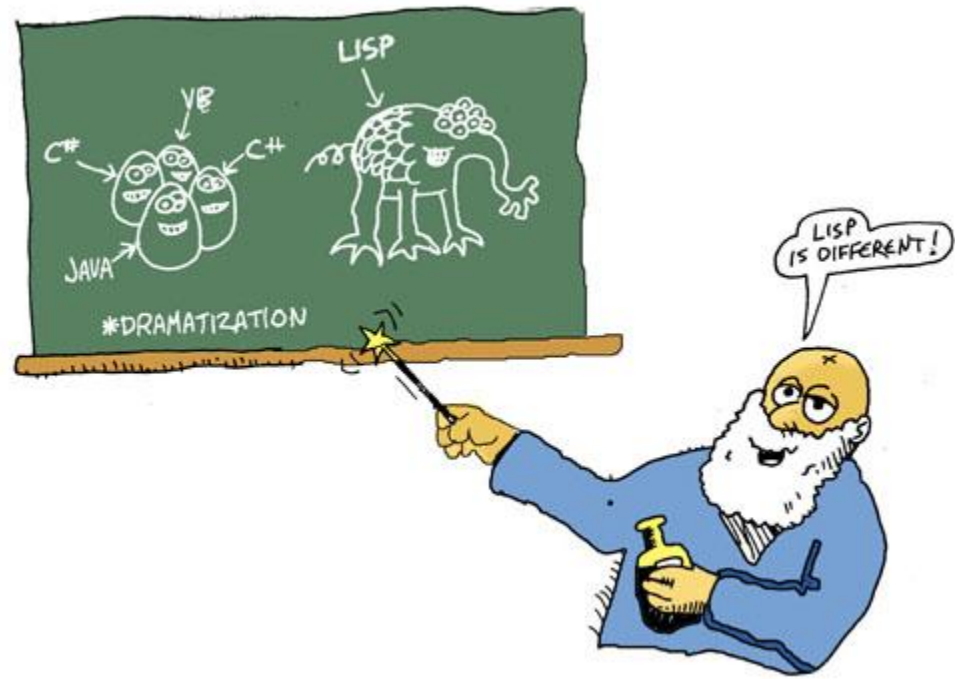# LISP

basics

LISP
LISt Processing

A list of 3 items
(1 "two" 3.0)

Nested lists

(1 (2 3))

Symbolic expression

s-expression

$$(+ \ 1 \ 2)$$

3

Nested s-expressions

$$(+ 1 (+ 2 3))$$

1   5

6

Code is data

CODE: "3"

$$(+ 1 \; 2)$$

DATA: "A LIST"

$$'(+ 1 \; 2)$$

Code is data

code: "my name is Jim"

I'm Jim

data: "a phrase"

"I'm Jim"

CODE → DATA → NEW DATA → CODE

"I'M JIM" → "I'M MARTA" → A NEW MEANING

'(+ 1 2) → '(- 2 1) → A NEW RESULT

Fun facts about Lisp

- It's almost 60 years old
- Introduced Garbage Collection
- … conditionals
- … higher-order functions
- … recursion
- … self-hosting

Clojure

- A dialect of Lisp
- Runs on JVM
- Compiles to JavaScript
- Functional programming
- Immutability