

# Clojure programming language & it's ecosystem

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DEVELOPERS  
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# What is Clojure?

- LISP



Figure 1: Lisp Cycles, <https://xkcd.com/297/>

- Rich Hickey



Figure 2: Rich Hickey at the first Clojure Conj in 2010, <https://creativecommons.org/licenses/by-sa/2.0/>

# What is LISP?

The image displays three lambda expressions in a medieval manuscript style, each enclosed in large, decorative initial letters. The first expression defines a general function `defun` using the Y-combinator. The second defines `fib` (Fibonacci) and the third defines `fac` (factorial). Below these, two `mapcar` calls are shown, evaluating the functions on a list of numbers. The results are displayed in a similar medieval script, with some numbers written in red ink.

```
(Defun Y (f) ((λ (g) (funcall g g)) (λ (x) (funcall f  
(λ (rest a) (apply (funcall x x) a))))))
```

```
(Defun fib (n) (funcall (Y (λ(f) (λ (n a b) (if (< n 1)  
a (funcall f (1- n) b (+ a b)))))) n 0 1)
```

```
(Defun fac (n) (funcall (Y (λ (f) (λ (n) (if (zerop n) 1  
(× n (funcall f (1- n))))))) n)
```

`(mapcar #'fib '(i ij iij iv v vi vij viij iε))`  
`(i i ij iij v viij xij xxi xxxiv)`

`(mapcar #'fac '(i ij iij iv v vi vij viij iε))`  
`(i ij vi xxiiv cxx dcccc vxl εdccccε xxxviiiiidccccεεε)`

Figure 3: Y Combinator Codex by emacsomancer.

# What is LISP?

- LISP Processing language
- 2nd oldest High-Level Language after FORTRAN
- 1958 - John McCarthy

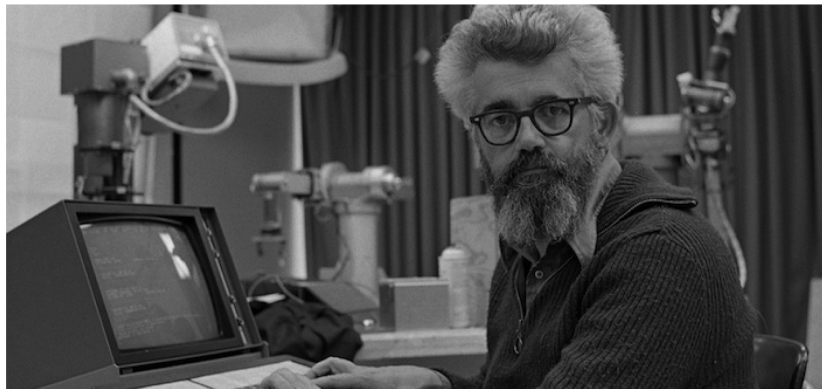


Figure 4: John McCarthy at work in his artificial intelligence laboratory at Stanford