

Scheme

Announcements

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- "The greatest single programming language ever designed."
 - Alan Kay, co-inventor of Smalltalk and OOP (from the user interface video)

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(Demo)

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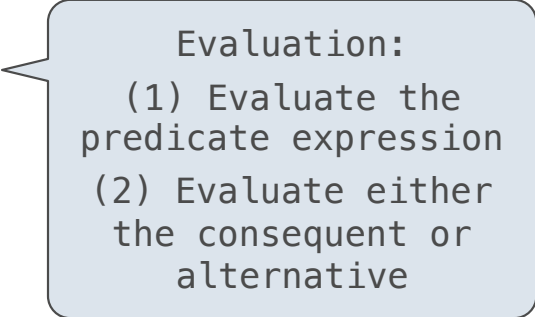
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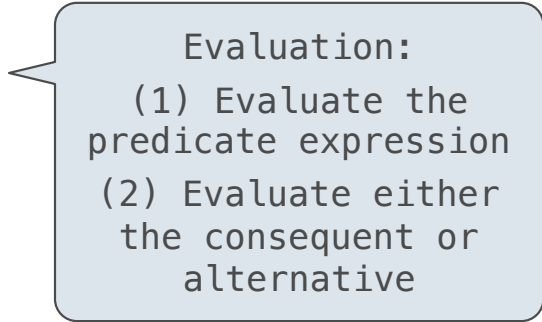
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Scheme Interpreters

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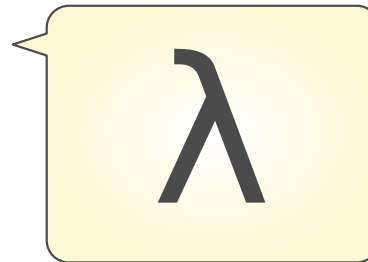
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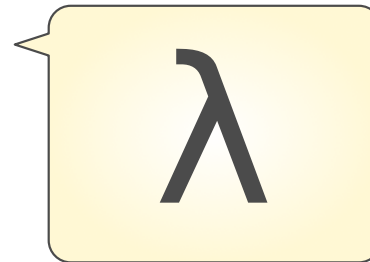
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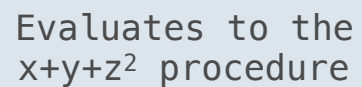
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(define (plus4 x) (+ x 4))
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A large black lambda symbol (λ) is centered within a yellow rounded rectangular box with a thin black border. A small tail of the box points towards the lambda expression in the code above.

An operator can be a call expression too:

```
((lambda (x y z) (+ x y (square z))) 1 2 3)
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A light blue rounded rectangular box with a thin black border and a tail pointing to the call expression in the code above. It contains the text "Evaluates to the x+y+z² procedure".

Evaluates to the
 $x+y+z^2$ procedure

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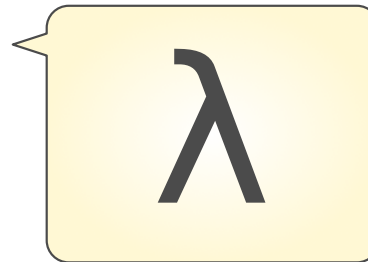
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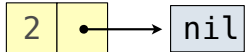
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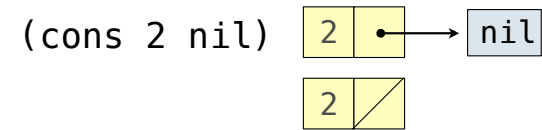
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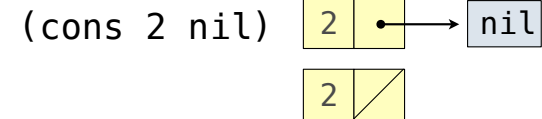
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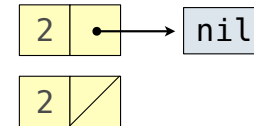
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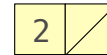
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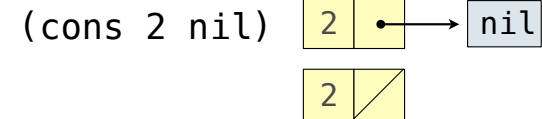
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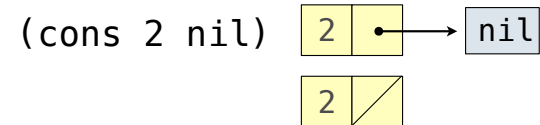
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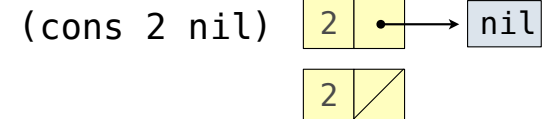
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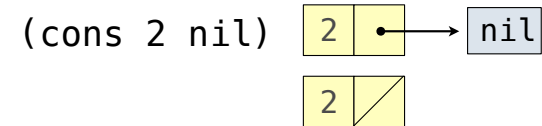
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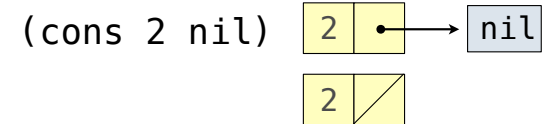
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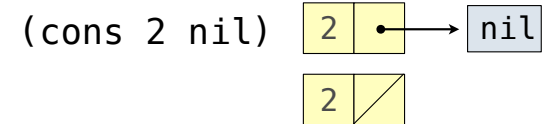
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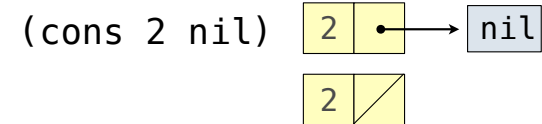
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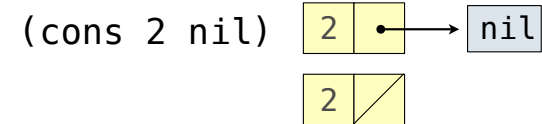
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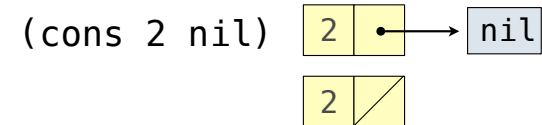
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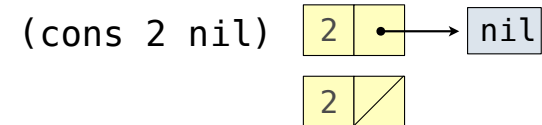
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Scheme Lists

In the late 1950s, computer scientists used confusing names

- **cons**: Two-argument procedure that creates a linked list
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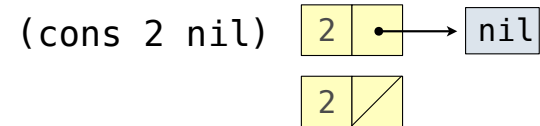
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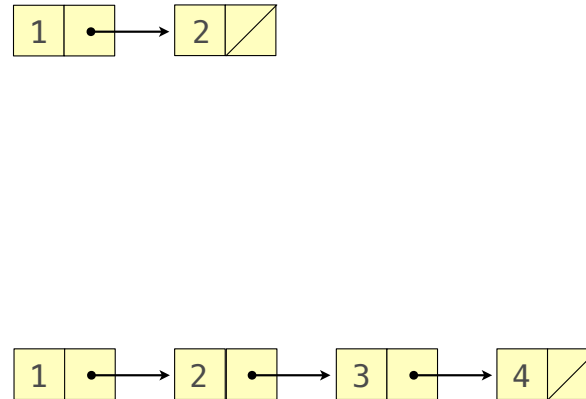
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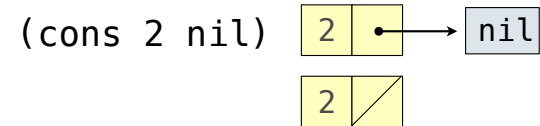
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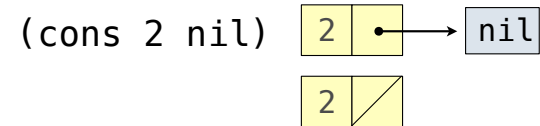
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(Demo)

Symbolic Programming

Symbolic Programming

Symbolic Programming

Symbols normally refer to values; how do we refer to symbols?

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> (define a 1)
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(Demo)

Sierpinski's Triangle

(Demo)