MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Department of Electrical Engineering and Computer Science
6.001 Structure and Interpretation of Computer Programs
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Lambda Notes   Dr. Kimberle Koile

Lambda Special Form

Lambda must be a special form: don't evaluate the list telling us what the formal parameters are, nor evaluate the body until later, when we use (apply) the procedure. The special rules for evaluating a lambda expression:

* syntax: e.g., (lambda (x y) (+ x y))
* 1st operand position: formal parameters is a list of names
* 2nd operand position: body is any expression, not evaluated when lambda evaluated; when?

Syntactic Sugar

Two ways to define procedures and associate names with those procedures in the environment:

(define square (lambda (x) (* x x)))

short-hand: (define (square x) (* x x))

Three often misunderstood examples

(define four 4)

(define (five) 5)

(define f-add   (lambda (x y) (+ (x) (y))))

What's the value of evaluating:

four   4

(five)   5

(four)   error , 4 is not a procedure

(+ (five) 1)   6

(f-add five four)   error, 4 is not a procedure

(f-add five (lambda () four))   9