KOÇ UNIVERSITY

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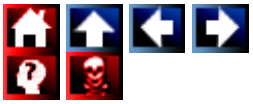

Comp200 Etutor: Problem PS.10.1.3: Whose side effect are you on?

This problem has been submitted previously; no changes will be saved.

Due date: 12/10

The code for the lazy evaluator can be found here: Interpreter Code in text form.

Cy D. Fect, a reformed C programmer, is worried that some side effects may never take place, because the lazy evaluator doesn't force the expressions in a sequence. Since the value of an expression in a sequence other than the last one is not used (the expression is there only for its effect, such as assigning to a variable or printing), there can be no subsequent use of this value (e.g., as an argument to a primitive procedure) that will cause it to be forced. Cy thus thinks that when evaluating sequences, we must force all expressions in the sequence except the final one. He proposes to modify `eval-sequence` to use `actual-value` rather than `l-eval`:

```
(define (eval-sequence exps env)
  (cond ((last-exp? exps) (l-eval (first-exp exps) env))
        (else (ACTUAL-VALUE (first-exp exps) env)
              (eval-sequence (rest-exps exps) env))))
```

Now suppose we define the following two procedures:

```
(define (p1 x)  (set! x (cons x '(2)))
  x)

(define (p2 x)
  (define (p e)
     e
     x)
  (p (set! x (cons x '(2)))))
```

1. If we use the original version of `eval-sequence`, what value is returned for `(p1 1)` (use "e" for error).
   [Your response: "(1 2)" is **correct.** A valid answer is: (1 2)]
2. If we use the original version of `eval-sequence`, what value is returned for `(p2 1)` (use "e" for error).
   [Your response: "1" is **correct.** A valid answer is: 1]
3. If we use Cy's version of `eval-sequence`, what value is returned for `(p1 1)` (use "e" for error).
   [Your response: "(1 2)" is **correct.** A valid answer is: (1 2)]
4. If we use Cy's version of `eval-sequence`, what value is returned for `(p2 1)` (use "e" for error).
   [Your response: "(1 2)" is **correct.** A valid answer is: (1 2)]

Check Get Answers