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Comp200 Etutor: Problem PS.10.1.1: Counting calls

Due date: 12/10

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

Assume that the following definitions have been typed into the lazy evaluator.

```
(define count 0)

(define (id x)
   (set! count (+ count 1))
   x)
```

Suppose that the following sequence of expressions is evaluated in order. For each question, specify the value returned for the last expression or use "e" for error.

1. If the lazy evaluator does **not** use memoization, what is the value returned after evaluating

   ```
   count
   ```

   [Your response: "0" is **correct.** A valid answer is: 0]
2. If the lazy evaluator does **not** use memoization, what is the value returned after evaluating

   ```
   (define w (id (id 10)))
   count
   ```

   [Your response: "1" is **correct.** A valid answer is: 1
   Only the first application of `id` has actually been evaluated]
3. If the lazy evaluator does **not** use memoization, what is the value returned after evaluating

   ```
   w
   ```

   [Your response: "10" is **correct.** A valid answer is: 10]
4. If the lazy evaluator does **not** use memoization, what is the value returned after evaluating

   ```
   count
   ```

   [Your response: "2" is **correct.** A valid answer is: 2
   The second `id` evaluation has now been forced]
5. Now assume that the definition for `count` and for `id` have been re-evaluated in a new environment. If the lazy evaluator **does** use memoization, what is the value returned after evaluating

   ```
   count
   ```

[Your response: "0" is **correct.** A valid answer is: 0]

6. If the lazy evaluator **does** use memoization, what is the value returned after evaluating

```
(define w (id (id 10)))
count
```

[Your response: "1" is **correct.** A valid answer is: 1
Only the first application of `id` has actually been evaluated]

7. If the lazy evaluator **does** use memoization, what is the value returned after evaluating

```
w
```

[Your response: "10" is **correct.** A valid answer is: 10]

8. If the lazy evaluator **does** use memoization, what is the value returned after evaluating

```
count
```

[Your response: "2" is **correct.** A valid answer is: 2
The second `id` evaluation has now been forced]

Check Get Answers

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