Problem Set 8  
Mutation, State, Environment Model and Streams

Out: Thursday, 5 November 2015  
Due: Tuesday, 17 November 2015

Language: Choose Racket. At the top of your buffer, include the following two lines for streams:

```
(require racket/stream)
(define stream-null? stream-empty?)
```

Exercises

**Problem 1:** Exercise 3.2 on p. 224-225. After writing and testing the code, draw the environment diagram that would result from evaluating the three statements in the exercise.

**Problem 2:** Exercise 3.3 on p. 225.

**Problem 3:** Exercise 3.4 on p. 225.

**Problem 4:** Exercise 3.8 on p. 236.

**Problem 5:** Exercise 3.12 on p. 255-256.

**Problem 6:** Use `stream-filter` (p. 322 of textbook) to define the stream of all integers that are evenly divisible by 2 or 5.

**Problem 7:** Complete the following alternative definition of the integers stream:

```
(define integers (cons-stream 1 (stream-map <??> integers)))
```

**Problem 8:** Exercise 3.54 on p. 331.

**Problem 9:** Use your `mul-streams` solution from the prior problem to define a stream of factorials.

**Problem 10:** Exercise 3.57 on p. 332.