CSE 305 Programming Languages Spring, 2005
Homework 4
Maximum Points: 19 plus 3 bonus points
Due 9:00 am, Monday, February 21, 2005

Professor Shapiro

February 14, 2005

Write the answers to this homework set into a file named `hw4`, and submit it using the `submit` script, by the date and time shown above.

1. (6) Do both parts (a) and (b) of problem 8 of Chapter 5 of the text.
2. (10) Do problem 12 of Chapter 5 of the text.
3. (3) As the text says, "Perl's dynamic scoping is unusual—in fact it is not exactly like that discussed in this section, although the semantics are often that of traditional dynamic scoping" [p. 218]. What is printed by the following Perl program:

```
#! /util/bin/perl

$x = 1;
$y = 2;

sub inner {
  # Print the nonlocals $x and $y
  print "x = $x, y = $y\n";
  }

sub outer {
  # The formal parameter is implicitly the array @_
  #   so the first argument is assigned to @_[0]
  #   and the second argument is assigned to @_[1]

  # make $x have static scope
  my $x = @_[0];

  # make $y have dynamic scope
  local $y = @_[1];

  # Now call the subroutine inner
  inner;
  }

# Call the subroutine outer with arguments 3 and 4
outer(3, 4);
```

4. (3 bonus points) On a CSE Unix computer, execute the command

```
mlisp -L /projects/shapiro/CSE305/count
```

Examine the program `/projects/shapiro/CSE305/count.cl`, and explan its behavior in terms of the scope and lifetime of the variable `count`.