This supplement to Exam 1 is intended for students enrolled in the Honors section of 2500.

See the instructions on the regular exam.

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<tr>
<th>Problem</th>
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<td><strong>Total</strong></td>
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Good luck!
Problem 1 Design the function even-dogs? that takes a list of symbols and returns true of the symbol ‘dog occurs in the list an even number of times.
Problem 2  Design a function shift-x that given a list of Posns and a number n (which may be negative or positive), shifts each posn in the list by n along the x-axis, unless the posn is the origin (0,0).

You should design helper functions as needed, but they should be designed according to the recipe.

[Here is some more space for the previous problem.]
Problem 3  The local meteorological society keeps a list of records about the weather each day. They track the following attributes: zip code, humidity (as a percentage), and high and low temperatures (in Fahrenheit) for the day.

Here is the data definition for a weather record:

```
(define-struct weather (zip humidity hi lo))

; A Weather is a structure:
;   (make-weather String Number Number Number)
; interpretation: (make-weather z hum high low) is a day’s weather record where:
;   - z is the 5-digit zip code where data was collected
;   - hum is the humidity as a percentage
;   - high and low represent the day’s high and low
;   temperatures in degrees Fahrenheit, and high is
;   greater than or equal to low
```

The meteorological company has just been informed of a problem with temperature readings at all locations in zip code 02138. The high and low temperatures on file for this zip code are 4 degrees higher than the actual high and low temperatures of the day. Design a function `adjust-temps` that takes a list of weather records, a string representing the zip code, and a number `adjustment`, and produces a list of weather records that contains all the records in the input list but with the high and low temperatures in any record with the given zip code replaced by `high+adjustment` and `low+adjustment`, respectively.

Using your function, the meteorological society can fix its list of weather records for October 17th, called `lowr-oct-17-2013`, by running

`(adjust-temps lowr-oct-3-2012 "02138" -4)`.

Again, design helper functions as needed, but they should be designed according to the recipe.
[Here is some more space for the previous problem.]
Problem 4  Note the similarities and differences between \texttt{shift-x} from Problem 2 and \texttt{adjust-temps} from Problem 3. Design a function that abstracts over the differences and then use it to re-implement \texttt{shift-x} and \texttt{adjust-temps}.

[Here is some more space for the previous problem.]