Problem Set 4

Lists and Symbols

Issued: Thursday, 25 September 2003
Due: Section 201 (Prof. Dimock): Monday, 06 October 2003,
Section 202 (Prof. Yanco): Thursday, 02 October 2003
Reading: Text (SICP 2nd Edition by Abelson & Sussman): Sections 2.2 and 2.3

Overview

This problem set covers programming with lists, quotation, equality, and symbols.

Use the R5RS language in DrScheme.

What to turn in

Keep your answers in a file named ps4-ans.ss (the file that saves your definitions buffer). Put the code for each problem sequentially in the definitions buffer. (If you work problems in a different sequence, put them in order before you submit.) Put the problem number in a comment before the code for that problem (use a semi-colon to make a line a comment).

Underneath the code for each problem, cut and paste the appropriate sample runs. You can put semi-colons in front of the sample runs, which will comment them out and allow you to load the entire buffer in another session.

Print the answers buffer and turn it in during the class on the due date. Also submit the answers using the submit command:
Section 201: submit dimock ps4 ps4-ans.ss
Section 202: submit holly 91301-ps4 ps4-ans.ss
Exercises

Problem 1  Exercise 2.33 on p. 119.  
You will need the following function:

\[
\text{(define (accumulate op init lst) }
\begin{array}{l}
\text{ (if (null? lst) }
\text{ init }
\text{ (op (car lst) }
\text{ (accumulate op init (cdr lst))))))}
\end{array}
\]

Problem 2  Exercise 2.34 on p. 119.

Problem 3  Exercise 2.36 on p. 120.

Problem 4  Exercise 2.37 on p. 120–121.

Problem 5  Exercise 2.54 on p. 145.

Problem 6  Exercise 2.55 on p. 145. (Hint: Remember that ' is an abbreviation.)

Problem 7  For Section 201 (Prof. Dimock):
Exercise 2.56 on p. 150.

For Section 202 (Prof. Yanco):
Exercise 2.58a on p. 151.

Use supplied code for deriv. You’ll find the code on the course web page.

Problem 8  Exercise 2.57 on p. 151.
Call your answer vderiv so it does not conflict with the name of you answer for the previous problem.