

Homework, Week 0, part C

September 12, 2014

Invoke clisp and type the following commands. Remember, a ‘:q’ (COLON QUE), ‘:a’ (COLON AIGH), CONTROL-BREAK, or CONTROL-C will restore the top level prompt if you make a mistake. This explores the Lisp functions, (minusp), (zerop), (plusp), (evenp), (oddp), (rem), (mod), (random), and (ash). Write down each result and see if you can figure out what each one does.

Functions that end in the letter “p” are called *predicates*. Predicates return either TRUE or FALSE. This homework also includes the remainder (or modulus) operations. (random) is a random number generator, useful for games of chance. (ash) is the arithmetic shift function. It takes two arguments, the number to be shifted, and a number indicating the amount to shift – to the left for a positive amount, and to the right for a negative number – effectively doubling or halving the number given as the first argument.

(minusp -1)	(rem 9 7)
(minusp 0)	(rem 9 8)
(minusp 1)	(rem 9 9)
(zerop -1)	(rem 9 4)
(zerop 0)	
(zerop 1)	<i>;; run these several times</i>
(plusp -1)	<i>;What is the difference?</i>
(plusp 0)	(random 1.0)
(plusp 1)	(random 1)
	(random 11)
(evenp 4)	(random 11.0)
(evenp 5)	(random 101)
(oddp 6)	(random 101.0)
(oddp 7)	
	(ash 4 0)
<i>;; run with (rem) and (mod)</i>	(ash 4 1)
(rem 4 9)	(ash 4 2)
(rem 5 9)	(ash 4 3)
(rem 6 9)	(ash 4 4)
(rem 7 9)	(ash 28 0)
(rem 8 9)	(ash 28 -1)
(rem 0 9)	(ash 28 -2)
(rem 9 4)	(ash 28 -3)
(rem 9 5)	(ash 28 -4)
(rem 9 6)	