

Concepts of Programming Languages, CSCI 305, Fall 2021 Scheme Syntax, Aug. 27

Expressions

- No terminator
- Can span several lines

Constant data

- Numbers
 - Integers
 - Fractions
 - Real – 328.1, 3.77e-6
 - Imaginary – 5+9i, 0-2i, -34.5+1.0e10i
- Characters – preceded with #\ (can also surround by single quote)
 - #\c
 - #\newline
 - #\space
- Strings – surround by double quotes
- Booleans - #t, #f
- Lists – surround by parentheses
 - (a b (c d) ((e) f) a b) is a list of 6 elements, some of which are lists
- Vector – precede with # and surround with parentheses - #(1 5.02 -1.7)
- Matrix – vector of vectors
 - #(#(1 2)#(3 2)#(5 1)) – 2 by 3 matrix
 - #(#(1 2)) – 1 by 2 matrix

Comments - semicolon (;) followed by any number of characters up to the next line break

Naming conventions:

- Predicate names end with ? (except =, <, >, <-. >=) e.g. *zero?*
- Type predicates, such as *pair?*, are created from the name of the type, in this case *pair*, and ?
- The names of most character, string, and vector procedures start with the prefix *char-*, *string-*, and *vector-* e.g. *string-append*.
- The names of procedures that convert an object of one type into an object of another type are written as *type1->type2*, e.g. *vector->list*.
- The names of procedures and syntactic forms that cause side effects end with an exclamation point (!). These include *set!* and *vector-set!* Procedures that perform input or output technically cause side effects, but their names are exceptions to this rule.