

CSE 3302 Lab Assignment 2

Due March 20, 2014

Goal:

Understanding of list manipulation in Scheme.

Requirements:

1. Write the following Scheme functions to implement sets of *closed* intervals of reals using ordered lists. Your sets will be lists of pairs where both elements of a pair are positive integers. (The third element is `null`.) The first element of a pair will never be larger than the second and the pairs in a list will not overlap. Each pair represents the lowest and highest elements of an interval. The intervals in a list will be ordered lowest to highest, like going left-to-right on a number line.
 - a. `intervalSet?` - predicate to verify the properties described above
 - b. `union` - returns the union of two sets
 - c. `intersect` - returns the intersection of two sets
 - d. ~~`diff` - returns the set difference of two sets~~
 - e. ~~`symdiff` - symmetric difference of two sets~~
 - f. `pointMember? x set` - predicate to check that `set` has an interval that includes `x`
 - g. `intervalMember? pair set` - predicate to check that `set` has an interval that includes the full range of `pair`
2. Email your program to `sourabh.bose@mavs.uta.edu` by 9:15 a.m. on March 20, 2014

Getting Started:

1. Each of the listed functions should take linear time.
2. Use of a few helper functions and `let` to avoid duplicate subexpressions can greatly simplify code.
3. The Ten Commandments and The Five Rules from *The Little Schemer* will lead you to many days of happiness.
4. `set!` will lead to nights of suffering (and loss of points).
5. The library function `equal?` is used in the test cases.