Lab: Records

Exercises

Exercise 0: Preparation
a. Make a copy of compound.ss.
b. Scan through that file to make sure that you understand all the procedures.
c. Start DrScheme.

Exercise 1: Testing Compounds
a. Try the compound examples given in the reading on records to see if they behave as I said they would.
b. Try a few of your own variations.
c. Explain why the attempted fake is not listed as a compound. Hint: Think about the order of the let and lambda in produce-type-mark.

Exercise 2: Filtering Compounds
Define a procedure filter-by-color that takes two arguments -- a list ls of records of type compound and a color symbol -- and returns a list of the names of compounds of that color that are elements of ls.

Exercise 3: Falsifying Compounds
a. Can you set the melting point of a compound to an illegal temperature? If so, how? If not, why not? (Note that there are other ways to modify compounds than to use the record’s provided procedures.)
b. Find a way to make a vector that compound? identifies as a compound. You may not use make-compound or compound-copy to build your new vector. However, you may use either procedure to create a “helper” compound from which you copy values.

**Exercise 4: A Shirt Record**

Write a set of definitions for a record type shirt, to be used in a program that keeps track of the inventory of a clothing store. Provide fields for catalog number, intended gender of wearer, size, color, price, and quantity in stock. Only the last two fields should be mutable.

**Exercise 5: Sorting Shirts**

Define a procedure that sorts a vector of records of type shirt into ascending order by catalog number.

**Exercise 6: Searching Shirts**

Adapt the binary search procedure so that it takes two arguments -- a vector vec of records of type shirt, sorted by the procedure defined in the previous exercise, and a catalog number catno -- and returns the entire record that contains that catalog number, if there is one in vec, or #f if there is no such record.

**Notes**