Scheme Tutorial Exercises

Fall 2002

Introduction

Here are the exercises to complement the Scheme tutorial sessions for cs173. Many are taken directly from How to Design Programs (http://www.htdp.org/). We depart from the book in one major way. Instead of using define-struct and cond for compound data and variants, we use **define-datatype** and **cases**. Documentation for these constructs can be found in DrScheme’s Help Desk.

Example

```
(define-datatype vehicle vehicle
  [taxi]
  [bus (seats number?)
     (hand-holds number?)
     (color string?)]
  [subway (cars number?)
     (seats-per-car number?)
     (line symbol?)])
```

```
(define (max-occupants v)
  (cases vehicle v
    [taxi () 4]
    [bus (seats handholds color) (+ seats hand-holds)]
    [subway (cars seats-per-car line) (+ cars seats-per-car)]))
```

```
(max-occupants (subway 10 25 'green))
> 250
```

DrScheme

We will be using DrScheme version 202 with a language level for cs173 that includes **define-datatype** and **cases**.

To run DrScheme on the CS network:

1. Type /pro/plt/plt/Linux{name}/v202/plt/bin/drscheme
To run DrScheme at home:

1. Download DrScheme v202 from http://www.drscheme.org/
2. Install DrScheme v202 on your home machine.
3. Download the package cs173.plt from the course web site
4. Install the cs173.plt package on your home machine.