

## CS 101 Computer Science I (Spring 2001) Assignment 1

1. Translate each of the following expressions into Scheme. Evaluate each of your Scheme expressions in order to verify that your expression is correct:

`2+4`                    `(1+2)+3`                    `3-(2+1)`                    `2*5`                    `2*(2+3)`

2. Write Scheme expressions whose evaluation will return each of the following values. Use only quoted symbols, the empty list and the `cons` procedure. Evaluate your expressions in DrScheme to verify that they operate as expected.

`(c b a)`                    `((a) b)`                    `(1 (2))`                    `((()))`                    `quote`

3. Consider each of the expressions written below. Take each expression and use it to construct a larger Scheme expression that evaluates to return the symbol `vc`. Your Scheme expression should use only the `car` and `cdr` Scheme procedures and the given expression (preceded by the single quotation mark). Evaluate your expressions in DrScheme to verify that they operate as expected.

`(sc wc vc)`                    `((vc))`                    `(sc (vc) wc)`                    `(sc (wc (vc)))`                    `vc`

4. Each of the expressions shown below should evaluate to return the value indicated. In order for that to happen, the variables appearing in each expression must be defined to have suitable values. For each of the expressions shown below, give definitions for the variables that cause the expression to evaluate as shown:

```
foo ==> vassar
bar ==> (jesse donald)
(cons v1 (cons v2 v3)) ==> (president and vice president)
(cons (car thing) (cdr thing)) ==> (gore bradley bush mccain)
```

### Due Dates

- Section 51 (Professor Welty): Monday, January 29, 2001
- Section 52 (Professor Ellman): Tuesday, January 30, 2001