Concepts of Programming Languages, CSCI 305, Fall 2021
Prolog, Chapter 12, Oct. 15

Prolog

- Place database facts and rules in a file with the suffix *pl*
  - ?- consult(filename). % loads the file
    % don't include extension
    ?- [filename]. % short-cut

- End each statement with a period.
- Predicates and terms begin with lower case, variables begin with upper case.
- Separate elements in a predicate by ',' (unlike Scheme which separated by a space) for 'and' and ; for 'or'
- Comparisons: <, >, =<, =>, ==, \== (not equal to)
- = triggers unification, is triggers arithmetic evaluation
- Comments: /* This is a comment */
  - % comment to the end of the line

Lists in Prolog

Prolog uses brackets [...] as a list builder.

- Square brackets indicate a list
- A finite list can be explicitly enumerated, such as [1,2,3,4]. (Notice that ',' separates the elements in the list.)
- The notation [X|Y] refers to a list whose first element is X and the rest of the list is Y. Thus, the element to the left of the bar is the car of the list. The element to the right of the bar is the cdr of the list.
- length(X,Ans) returns the length of the list in Ans.

Scheme operators car, cdr and cons can be written in Prolog:

```
car([X|Y],X).        % The head of [X|Y] is X
cdr([X|Y],Y).        % The tail of [X|Y] is Y
cons(X,R,[X|R]).     % Insert X into the front of list R
```

However, defining car, cdr and cons is unnecessary, as the notation gives the car, cdr and cons.