~/aleph/test/examples/trains[42]> yap
[Restoring file /users/ashwin/Yap-
4.3.18/solaris/startup]
[YAP version Yap-4.3.18]
  ?- [aleph].
 [consulting aleph...]

A L E P H
Version 4
Last modified: Wed Nov 13 16:18:53 GMT 2002

Manual:
http://www.comlab.ox.ac.uk/oucl/groups/machlear
n/Aleph/index.html

 [aleph consulted 1160056 bytes in 0.46 seconds
]

yes
  ?- read_all(train).
 [reconsulting train.b...]
 [train.b reconsulted 47092 bytes in 0.02 seconds
]

[consulting pos examples] [train.f]
[consulting neg examples] [train.n]

yes
   ?- induce.
[select example] [1]
[sat] [1]
[eastbound(east1)]

[bottom clause]
eastbound(A) :-
   has_car(A,B), has_car(A,C), has_car(A,D),
has_car(A,E),
   short(B), short(D), closed(D), long(C),
   long(E), open_car(B), open_car(C),
open_car(E),
   shape(B,rectangle), shape(C,rectangle),
shape(D,rectangle), shape(E,rectangle),
   wheels(B,2), wheels(C,3), wheels(D,2),
wheels(E,2),
   load(B,circle,1), load(C,hexagon,1),
load(D,triangle,1), load(E,rectangle,3).

[literals] [25]
[saturation time] [0.01]
[reduce]
[best label so far] [[1,0,2,1]/0]
eastbound(A).
[5/5]
eastbound(A) :-
   has_car(A,B).
[5/5]
eastbound(A) :-
   has_car(A,B).
[5/5]
eastbound(A) :-
   has_car(A,B).
[5/5]
eastbound(A) :-
   has_car(A,B).
[5/5]
eastbound(A) :-
   has_car(A,B), short(B).
[5/5]
eastbound(A) :-
   has_car(A,B), open_car(B).
[5/5]

```prolog
eastbound(A) :-
   has_car(A,B), shape(B,rectangle).
[5/5]
eastbound(A) :-
   has_car(A,B), wheels(B,2).
[5/5]
eastbound(A) :-
   has_car(A,B), load(B,circle,1).
[3/3]
eastbound(A) :-
   has_car(A,B), has_car(A,C).
[5/5]
eastbound(A) :-
   has_car(A,B), has_car(A,C).
[5/5]
eastbound(A) :-
   has_car(A,B), has_car(A,C).
[5/5]
eastbound(A) :-
   has_car(A,B), long(B).
[2/5]
eastbound(A) :-
   has_car(A,B), open_car(B).
[5/5]
```

eastbound(A) :-
   has_car(A,B), shape(B,rectangle).
[5/5]
eastbound(A) :-
   has_car(A,B), wheels(B,3).
[3/1]
eastbound(A) :-
   has_car(A,B), load(B,hexagon,1).
eastbound(A) :-
   has_car(A,B), has_car(A,C).
[5/5]
eastbound(A) :-
   has_car(A,B), has_car(A,C).
[5/5]
eastbound(A) :-
   has_car(A,B), short(B).
[5/5]
eastbound(A) :-
   has_car(A,B), closed(B).
[5/2]
eastbound(A) :-
   has_car(A,B), shape(B,rectangle).
[5/5]
eastbound(A) :-

has_car(A,B), wheels(B,2).
[5/5]
eastbound(A) :-
      has_car(A,B), load(B,triangle,1).
[5/2]
eastbound(A) :-
      has_car(A,B), has_car(A,C).
[5/5]
eastbound(A) :-
      has_car(A,B), long(B).
[2/5]
eastbound(A) :-
      has_car(A,B), open_car(B).
[5/5]
eastbound(A) :-
      has_car(A,B), shape(B,rectangle).
[5/5]
eastbound(A) :-
      has_car(A,B), wheels(B,2).
[5/5]
eastbound(A) :-
      has_car(A,B), load(B,rectangle,3).
eastbound(A) :-
      has_car(A,B), closed(B), shape(B,rectangle).

eastbound(A) :-
   has_car(A,B), closed(B), wheels(B,2).
eastbound(A) :-
   has_car(A,B), closed(B), load(B,triangle,1).
[2/0]
[----------------------------------]
[found clause]
eastbound(A) :-
   has_car(A,B), closed(B), load(B,triangle,1).
[pos-neg] [2]
[clause label] [[2,0,4,2]]
[clauses constructed] [34]
[----------------------------------]
eastbound(A) :-
   has_car(A,B), closed(B), has_car(A,C).
eastbound(A) :-
   has_car(A,B), load(B,triangle,1), has_car(A,C).
eastbound(A) :-
   has_car(A,B), wheels(B,3), has_car(A,C).
eastbound(A) :-
   has_car(A,B), wheels(B,3), has_car(A,C).
eastbound(A) :-
   has_car(A,B), short(B), open_car(B).
eastbound(A) :-

has_car(A,B), short(B), shape(B,rectangle).
eastbound(A) :-
    has_car(A,B), short(B), wheels(B,2).
eastbound(A) :-
    has_car(A,B), short(B), load(B,circle,1).
eastbound(A) :-
    has_car(A,B), short(B), has_car(A,C).
eastbound(A) :-
    has_car(A,B), short(B), has_car(A,C).
eastbound(A) :-
    has_car(A,B), short(B), has_car(A,C).
eastbound(A) :-
    has_car(A,B), open_car(B), shape(B,rectangle).
eastbound(A) :-
    has_car(A,B), open_car(B), wheels(B,2).
eastbound(A) :-
    has_car(A,B), open_car(B), load(B,circle,1).
eastbound(A) :-
    has_car(A,B), open_car(B), has_car(A,C).
eastbound(A) :-
    has_car(A,B), open_car(B), has_car(A,C).
eastbound(A) :-
    has_car(A,B), open_car(B), has_car(A,C).
eastbound(A) :-

has_car(A,B), shape(B,rectangle), wheels(B,2).
eastbound(A) :-
    has_car(A,B), shape(B,rectangle),
load(B,circle,1).
eastbound(A) :-
    has_car(A,B), shape(B,rectangle),
has_car(A,C).
eastbound(A) :-
    has_car(A,B), shape(B,rectangle),
has_car(A,C).
eastbound(A) :-
    has_car(A,B), shape(B,rectangle),
has_car(A,C).
eastbound(A) :-
    has_car(A,B), wheels(B,2), load(B,circle,1).
eastbound(A) :-
    has_car(A,B), wheels(B,2), has_car(A,C).
eastbound(A) :-
    has_car(A,B), wheels(B,2), has_car(A,C).
eastbound(A) :-
    has_car(A,B), wheels(B,2), has_car(A,C).
eastbound(A) :-
    has_car(A,B), load(B,circle,1), has_car(A,C).
eastbound(A) :-

has_car(A,B), load(B,circle,1), has_car(A,C).
eastbound(A) :-
  has_car(A,B), load(B,circle,1), has_car(A,C).
eastbound(A) :-
  has_car(A,B), has_car(A,C), long(C).
eastbound(A) :-
  has_car(A,B), has_car(A,C), open_car(C).
eastbound(A) :-
  has_car(A,B), has_car(A,C),
shape(C,rectangle).
eastbound(A) :-
  has_car(A,B), has_car(A,C), wheels(C,3).
eastbound(A) :-
  has_car(A,B), has_car(A,C),
load(C,hexagon,1).
eastbound(A) :-
  has_car(A,B), has_car(A,C), has_car(A,D).
eastbound(A) :-
  has_car(A,B), has_car(A,C), has_car(A,D).
eastbound(A) :-
  has_car(A,B), has_car(A,C), short(C).
eastbound(A) :-
  has_car(A,B), has_car(A,C), closed(C).
eastbound(A) :-

```prolog
   has_car(A,B), has_car(A,C),
shape(C,rectangle).
eastbound(A) :-
   has_car(A,B), has_car(A,C), wheels(C,2).
eastbound(A) :-
   has_car(A,B), has_car(A,C), load(C,triangle,1).
eastbound(A) :-
   has_car(A,B), has_car(A,C), has_car(A,D).
eastbound(A) :-
   has_car(A,B), has_car(A,C), long(C).
eastbound(A) :-
   has_car(A,B), has_car(A,C), open_car(C).
eastbound(A) :-
   has_car(A,B), has_car(A,C),
shape(C,rectangle).
eastbound(A) :-
   has_car(A,B), has_car(A,C), wheels(C,2).
eastbound(A) :-
   has_car(A,B), has_car(A,C),
load(C,rectangle,3).
eastbound(A) :-
   has_car(A,B), open_car(B), shape(B,rectangle).
eastbound(A) :-
   has_car(A,B), open_car(B), wheels(B,3).
```

```
eastbound(A) :-
    has_car(A,B), open_car(B), has_car(A,C).
eastbound(A) :-
    has_car(A,B), open_car(B), has_car(A,C).
eastbound(A) :-
    has_car(A,B), shape(B,rectangle), wheels(B,3).
eastbound(A) :-
    has_car(A,B), shape(B,rectangle),
has_car(A,C).
eastbound(A) :-
    has_car(A,B), shape(B,rectangle),
has_car(A,C).
eastbound(A) :-
    has_car(A,B), has_car(A,C), short(C).
eastbound(A) :-
    has_car(A,B), has_car(A,C), closed(C).
eastbound(A) :-
    has_car(A,B), has_car(A,C),
shape(C,rectangle).
eastbound(A) :-
    has_car(A,B), has_car(A,C), wheels(C,2).
eastbound(A) :-
    has_car(A,B), has_car(A,C), load(C,triangle,1).
eastbound(A) :-
```

```
   has_car(A,B), has_car(A,C), has_car(A,D).
eastbound(A) :-
   has_car(A,B), has_car(A,C), long(C).
eastbound(A) :-
   has_car(A,B), has_car(A,C), open_car(C).
eastbound(A) :-
   has_car(A,B), has_car(A,C),
shape(C,rectangle).
eastbound(A) :-
   has_car(A,B), has_car(A,C), wheels(C,2).
eastbound(A) :-
   has_car(A,B), has_car(A,C),
load(C,rectangle,3).
eastbound(A) :-
   has_car(A,B), short(B), closed(B).
[5/0]
[----------------------------------]
[found clause]
eastbound(A) :-
   has_car(A,B), short(B), closed(B).
[pos-neg] [5]
[clause label] [[5,0,4,5]]
[clauses constructed] [100]
[----------------------------------]
```

[clauses constructed] [100]
[search time] [0.05]
[best clause]
eastbound(A) :-
    has_car(A,B), short(B), closed(B).
[pos-neg] [5]
[atoms left] [0]

[theory]

[Rule 1] [Pos cover = 5 Neg cover = 0]
eastbound(A) :-
    has_car(A,B), short(B), closed(B).

[Training set performance]
        Actual
      +   -
    + 5   0   5
Pred
    - 0   5   5

      5   5   10

Accuracy = 1.0

[Training set summary] [[5,0,0,5]]
[time taken] [0.07]
[total clauses constructed] [100]

yes

   ?- ~/aleph/test/examples/trains[43]> exit
exit