```
;; Dribble started 2004-09-16 16:37:25
#<OUTPUT BUFFERED FILE-STREAM CHARACTER #P"demo.dribble" @1>
[2]> (load "aima.lisp")
;; Loading file aima.lisp ...
;;  Loading file /home/nilufer/aima-code/utilities/utilities.lisp ...
;;  Loaded file /home/nilufer/aima-code/utilities/utilities.lisp
;;  Loading file /home/nilufer/aima-code/utilities/binary-tree.lisp ...
;;  Loaded file /home/nilufer/aima-code/utilities/binary-tree.lisp
;;  Loading file /home/nilufer/aima-code/utilities/queue.lisp ...
;;  Loaded file /home/nilufer/aima-code/utilities/queue.lisp
;;  Loading file /home/nilufer/aima-code/utilities/cltl2.lisp ...
;;  Loaded file /home/nilufer/aima-code/utilities/cltl2.lisp
;;  Loading file /home/nilufer/aima-code/utilities/test-utilities.lisp ...
;;  Loaded file /home/nilufer/aima-code/utilities/test-utilities.lisp
;; Loaded file aima.lisp
T
[3]> (aima-load 'search)
;; Loading file /home/nilufer/aima-code/agents/test-agents.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/test-agents.lisp
;; Loading file /home/nilufer/aima-code/agents/environments/basic-env.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/environments/basic-env.lisp
;; Loading file /home/nilufer/aima-code/agents/environments/grid-env.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/environments/grid-env.lisp
;; Loading file /home/nilufer/aima-code/agents/environments/vacuum.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/environments/vacuum.lisp
;; Loading file /home/nilufer/aima-code/agents/environments/wumpus.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/environments/wumpus.lisp
;; Loading file /home/nilufer/aima-code/agents/agents/agent.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/agents/agent.lisp
;; Loading file /home/nilufer/aima-code/agents/agents/vacuum.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/agents/vacuum.lisp
;; Loading file /home/nilufer/aima-code/agents/agents/wumpus.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/agents/wumpus.lisp
;; Loading file /home/nilufer/aima-code/agents/algorithms/grid.lisp ...
;; Loaded file /home/nilufer/aima-code/agents/algorithms/grid.lisp
;; Loading file /home/nilufer/aima-code/search/test-search.lisp ...
;; Loaded file /home/nilufer/aima-code/search/test-search.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/problems.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/problems.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/simple.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/simple.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/new-simple.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/new-simple.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/repeated.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/repeated.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/csp.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/csp.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/ida.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/ida.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/iterative.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/iterative.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/sma.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/sma.lisp
;; Loading file /home/nilufer/aima-code/search/algorithms/minimax.lisp ...
;; Loaded file /home/nilufer/aima-code/search/algorithms/minimax.lisp
;; Loading file /home/nilufer/aima-code/search/environments/games.lisp ...
;; Loaded file /home/nilufer/aima-code/search/environments/games.lisp
;; Loading file /home/nilufer/aima-code/search/environments/prob-solve.lisp ...
;; Loaded file /home/nilufer/aima-code/search/environments/prob-solve.lisp
;; Loading file /home/nilufer/aima-code/search/domains/cannibals.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/cannibals.lisp
;; Loading file /home/nilufer/aima-code/search/domains/ttt.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/ttt.lisp
;; Loading file /home/nilufer/aima-code/search/domains/cognac.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/cognac.lisp
;; Loading file /home/nilufer/aima-code/search/domains/nqueens.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/nqueens.lisp
;; Loading file /home/nilufer/aima-code/search/domains/path-planning.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/path-planning.lisp
;; Loading file /home/nilufer/aima-code/search/domains/puzzle8.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/puzzle8.lisp
;; Loading file /home/nilufer/aima-code/search/domains/route-finding.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/route-finding.lisp
;; Loading file /home/nilufer/aima-code/search/domains/tsp.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/tsp.lisp
;; Loading file /home/nilufer/aima-code/search/domains/vacuum.lisp ...
;; Loaded file /home/nilufer/aima-code/search/domains/vacuum.lisp
;; Loading file /home/nilufer/aima-code/search/agents/ps-agents.lisp ...
;; Loaded file /home/nilufer/aima-code/search/agents/ps-agents.lisp
;; Loading file /home/nilufer/aima-code/search/agents/ttt-agent.lisp ...
;; Loaded file /home/nilufer/aima-code/search/agents/ttt-agent.lisp
T


[4]> (setf p1 (make-8-puzzle-problem))
#<a 8-PUZZLE-PROBLEM>

[5]> (setf p2 (make-8-puzzle-problem))
#<a 8-PUZZLE-PROBLEM>

[6]> (setf (problem-initial-state p1) (random-8-puzzle-state 10))
300404908

[7]> p1
#<a 8-PUZZLE-PROBLEM>

[8]> (8-puzzle-print (problem-initial-state p1))
 1 5 .
 4 3 2
 7 8 6
300404908

[9]> (8-puzzle-print (problem-initial-state p2))
 8 2 4
 5 6 3
 7 1 .
8723564

[10]> (A*-search p1)
#<NODE f(6) = g(6) + h(0) state:42374116>
```

```
[13]> (solve p1 'A*-search)
Action              State
======              =====
                    300404908
V                   300286972
<                   300444436
^                   300477196
>                   300477052
V                   300300148
V                   42374116
======              =====
Total of 7 nodes expanded.
#<NODE f(6) = g(6) + h(0) state:42374116>

[18]> (solve p1 'breadth-first-search)
Action              State
======              =====
                    300404908
V                   300286972
<                   300444436
^                   300477196
>                   300477052
V                   300300148
V                   42374116
======              =====
Total of 452 nodes expanded.
#<NODE f(6) = g(6) + h(0) state:42374116>

[19]> (setf p3 (make-8-puzzle-problem))
#<a 8-PUZZLE-PROBLEM>
[20]> (solve p3 'a*-search)
Action              State
======              =====
                    11525452
<                   88052956
<                   100807540
^                   103461100
^                   103466196
>                   103466164
V                   103459612
>                   103144684
V                   17169340
<                   131960596
<                   153218236
^                   156933220
^                   156936132
>                   156936124
>                   156935548
V                   156817612
V                   27854596
<                   219173356
^                   247831804
^                   247884220
>                   247884076
V                   247707172
V                   32768812
<                   262351324
^                   300562588
>                   300300148
V                   42374116
======              =====
Total of 1292 nodes expanded.
#<NODE f(26) = g(26) + h(0) state:42374116>
[21]> (solve p2 'a*-search)
Action              State
======              =====
                    8723564
<                   46987316
^                   75645764
^                   75658868
<                   75658932
V                   75655292
>                   75643628
^                   75696044
>                   75695756
V                   75518852
V                   32531180
<                   262113692
^                   300324956
<                   300336620
^                   300340260
>                   300340228
V                   300327124
>                   300274636
^                   300451540
<                   300451684
V                   300445132
<                   300474292
^                   300477204
>                   300477196
>                   300477052
V                   300300148
V                   42374116
======              =====
Total of 2824 nodes expanded.
#<NODE f(26) = g(26) + h(0) state:42374116>
[22]> (dribble)
;; Dribble finished 2004-09-16 17:18:42
```