Autonomous Systems
Master of Science Program

Fachhochschule Bonn-Rhein-Sieg

Homework / Project Document

Course	**Planning and Scheduling**
Homework/ Project	#2
Title	UCPOP Input/Output
Students/ Authors	**Alexander Moriarty and Alexander Hagg**

Instructor	Prof. Gerhard Kraetzschmar
Project Evaluator	Prof. Gerhard Kraetzschmar
Acceptance Status	☐ Accepted ☐ Revision needed ☐ Rejected
Points	
Comments:	


```
File: shopping.lisp output to html with vi:TOhtml
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;;;; Shopping problem using UCPOP
;;;; Author: Alex Moriarty & Alex Hagg
;;;; Course: Planning & Scheduling
;;;; Due: Tuesday, 29 October 2013, 1900h

;; Load the required libraries and change package
;; This prints a bunch of crap which we send to /dev/null

(defparameter *ucpop-root-dir* (string "~/src/ucpop/"))

(with-open-file (*standard-output* "/dev/null" :direction :output
       :if-exists :supersede)
       (load (concatenate 'string *ucpop-root-dir* "loader"))
       (load-ucpop)
       (in-package ucpop))

(define (domain shopping-domain)

;; Go from location l to m
       (:operator GO
       :parameters (?l ?m)
       :precondition (at shopper ?l)
       :effect (:and (at shopper ?m) (:not (at shopper ?m))))

;; Buy product p from shop s
       (:operator BUY
       :parameters (?p ?s)
       :precondition (:and (at shopper ?s) (sells ?s ?p))
       :effect (has shopper ?p)))

(define (problem shopping-example)
       :domain 'shopping-domain
       :inits ((location home)(location hardware-store)
              (location super-market)
              (at shopper home)(at drill hardware-store)
              (at milk super-market)(at banana super-market)
             (sells hardware-store drill)(sells super-market milk)
              (sells super-market banana))
       :goal (:and (has shopper drill)(has shopper milk)
              (has shopper banana)(at shopper home)))

(bf-control 'shopping-example)
```

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Generated with:
$ clisp shopping > shopping.output
$ vi shopping.lisp :TOhtml

Initial  :
((LOCATION HOME) (LOCATION HARDWARE-STORE) (LOCATION SUPER-MARKET)
 (AT SHOPPER HOME) (AT DRILL HARDWARE-STORE) (AT MILK SUPER-MARKET)
 (AT BANANA SUPER-MARKET) (SELLS HARDWARE-STORE DRILL)
 (SELLS SUPER-MARKET MILK) (SELLS SUPER-MARKET BANANA))

Step 1  : (GO HOME SUPER-MARKET)   Created 3
        0  -> (AT SHOPPER HOME)
Step 2  : (GO SUPER-MARKET HARDWARE-STORE)   Created 2
        3  -> (AT SHOPPER SUPER-MARKET)
Step 3  : (BUY BANANA SUPER-MARKET)   Created 5
        0  -> (SELLS SUPER-MARKET BANANA)
        3  -> (AT SHOPPER SUPER-MARKET)
Step 4  : (BUY MILK SUPER-MARKET)   Created 4
        0  -> (SELLS SUPER-MARKET MILK)
        3  -> (AT SHOPPER SUPER-MARKET)
Step 5  : (BUY DRILL HARDWARE-STORE)   Created 1
        0  -> (SELLS HARDWARE-STORE DRILL)
        2  -> (AT SHOPPER HARDWARE-STORE)

Goal    :
(AND (HAS SHOPPER DRILL) (HAS SHOPPER MILK)
 (HAS SHOPPER BANANA)(AT SHOPPER HOME))
        0  -> (AT SHOPPER HOME)
        5  -> (HAS SHOPPER BANANA)
        4  -> (HAS SHOPPER MILK)
        1  -> (HAS SHOPPER DRILL)

Facts: Complete!

UCPOP Stats: Initial terms = 10;   Goals = 5 ;  Success (5 steps)
        Created 29 plans, but explored only 21
        CPU time:    0.0430 sec
        Branching factor:  1.333
        Working Unifies: 187
        Bindings Added: 25
```