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Assignment 6 Writeup

1. Describe any implmentation choices you made that you felt were important. Mention anything else we should know when evaluating your program.
I grounded my actions into a hash table, mapping each predicate to a list of actions that have that predicate as a precondition.

2. Which of your heuristic are admissible?
h0 and h1 are admissible. h-goal-lits and h1sum are not.

3. What can you say about the time and space complexity of your program?
The time and space complexity of this program is the same as a-star:

Time: b^d
Space: b^d

4. What suggestions do you have for this assignment in the future?
Nothing to report.

Table showing proper heuristic domination on groceryworld.in:

Heuristic	Plan Cost	Nodes Generated	Nodes Expanded
h0	5	4058	609
h1	5	3474	517
h1sum	5	2473	357
h-goal-lits	5	676	102

Note that weight is set to 1.0 for all of these experiments. Also note that number of unachieved goal literals does not necessarily have to dominate h1 and h1sum, it just does in this example. The transcript of the validator running with these test runs is below.

Validator Running on Problems:
-bash-4.3$ ./strips-plan-validator ./run.sh 1 h0 < worlds/groceryworld.in
Picked up JAVA_TOOL_OPTIONS: -Xmx256m
Program exited with status 0

Found a plan:

0 Go Home HWS
1 Buy HWS Drill
2 Go HWS SM
3 Buy SM Milk
4 Buy SM Bananas
5 Go SM Home
4058 nodes generated
609 nodes expanded

Checking Solution...
Valid Solution
Solver used 1.00 Seconds
Solver used approximately 988 KB of memory

-bash-4.3$ ./strips-plan-validator ./run.sh 1 h1 < worlds/groceryworld.in
Picked up JAVA_TOOL_OPTIONS: -Xmx256m
Program exited with status 0

Found a plan:

0 Go Home HWS
1 Buy HWS Drill
2 Go HWS SM
3 Buy SM Milk
4 Buy SM Bananas
5 Go SM Home
3474 nodes generated
517 nodes expanded

Checking Solution...
Valid Solution
Solver used 0.000 Seconds
Solver used approximately 988 KB of memory

-bash-4.3$ ./strips-plan-validator ./run.sh 1 h1sum < worlds/groceryworld.in
Picked up JAVA_TOOL_OPTIONS: -Xmx256m
Program exited with status 0

Found a plan:

0 Go Home HWS
1 Buy HWS Drill
2 Go HWS SM
3 Buy SM Milk
4 Buy SM Bananas
5 Go SM Home
2473 nodes generated
357 nodes expanded

Checking Solution...
Valid Solution
Solver used 1.00 Seconds
Solver used approximately 988 KB of memory

-bash-4.3$ ./strips-plan-validator ./run.sh 1 h-goal-lits < worlds/groceryworld.in
Picked up JAVA_TOOL_OPTIONS: -Xmx256m
Program exited with status 0

Found a plan:

0 Go Home HWS
1 Buy HWS Drill
2 Go HWS SM
3 Buy SM Milk
4 Buy SM Bananas
5 Go SM Home
676 nodes generated
102 nodes expanded

Checking Solution...
Valid Solution
Solver used 0.000 Seconds
Solver used approximately 988 KB of memory