***Machines and Intelligence COM1005***

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**(2.1.0) The case: there is a snake in a pit**

C:\Users\cbssj\Documents\strips>java warriorStrips

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

\*goal state

Warrior got treasure

working on goal Warrior got treasure

------------------

Strips2

working on Warrior got treasure

calling Strips3 to apply operator

get treasure with Rope and Hook

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

attempting to use operator

get treasure with Rope and Hook

in context {}

precond not met- Warrior attached the Hook to the Rope

calling Strips1 for goal Warrior attached the Hook to the Rope

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

\*goal state

Warrior attached the Hook to the Rope

working on goal Warrior attached the Hook to the Rope

------------------

Strips2

working on Warrior attached the Hook to the Rope

calling Strips3 to apply operator

attach the hook to the rope

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

attempting to use operator

attach the hook to the rope

in context {}

precond not met- Hook at the pit

calling Strips1 for goal Hook at the pit

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

\*goal state

Hook at the pit

working on goal Hook at the pit

------------------

Strips2

working on Hook at the pit

calling Strips3 to apply operator

carry ?obj from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

attempting to use operator

carry ?obj from ?r1 to ?r2

in context {?obj=Hook, ?r2=pit}

precond not met- Warrior at ?r1

calling Strips1 for goal Warrior at H

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

\*goal state

Warrior at H

working on goal Warrior at H

------------------

Strips2

working on Warrior at H

calling Strips3 to apply operator

move from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

attempting to use operator

move from ?r1 to ?r2

in context {?r2=H}

Strips3: Applying op [move from W to H]

[Warrior at W]

[Warrior at H]

New state

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

Warrior at H

-----------------

Strips1

\*current state

Ladder at the L

Hook at the H

Rope at the R

Snake in the pit

Warrior at H

\*goal state

Warrior at H

all goals met

-----------------

Strips3: Applying op [carry Hook from H to pit]

[Hook at the H, Warrior at H]

[Warrior at pit, Hook at the pit]

New state

Ladder at the L

Rope at the R

Snake in the pit

Warrior at pit

Hook at the pit

-----------------

Strips1

\*current state

Ladder at the L

Rope at the R

Snake in the pit

Warrior at pit

Hook at the pit

\*goal state

Hook at the pit

all goals met

-----------------

precond not met- Rope at the pit

calling Strips1 for goal Rope at the pit

-----------------

Strips1

\*current state

Ladder at the L

Rope at the R

Snake in the pit

Warrior at pit

Hook at the pit

\*goal state

Rope at the pit

working on goal Rope at the pit

------------------

Strips2

working on Rope at the pit

calling Strips3 to apply operator

carry ?obj from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Ladder at the L

Rope at the R

Snake in the pit

Warrior at pit

Hook at the pit

attempting to use operator

carry ?obj from ?r1 to ?r2

in context {?obj=Rope, ?r2=pit}

precond not met- Warrior at ?r1

calling Strips1 for goal Warrior at R

-----------------

Strips1

\*current state

Ladder at the L

Rope at the R

Snake in the pit

Warrior at pit

Hook at the pit

\*goal state

Warrior at R

working on goal Warrior at R

------------------

Strips2

working on Warrior at R

calling Strips3 to apply operator

move from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Ladder at the L

Rope at the R

Snake in the pit

Warrior at pit

Hook at the pit

attempting to use operator

move from ?r1 to ?r2

in context {?r2=R}

Strips3: Applying op [move from pit to R]

[Warrior at pit]

[Warrior at R]

New state

Ladder at the L

Rope at the R

Snake in the pit

Hook at the pit

Warrior at R

-----------------

Strips1

\*current state

Ladder at the L

Rope at the R

Snake in the pit

Hook at the pit

Warrior at R

\*goal state

Warrior at R

all goals met

-----------------

Strips3: Applying op [carry Rope from R to pit]

[Rope at the R, Warrior at R]

[Warrior at pit, Rope at the pit]

New state

Ladder at the L

Snake in the pit

Hook at the pit

Warrior at pit

Rope at the pit

-----------------

Strips1

\*current state

Ladder at the L

Snake in the pit

Hook at the pit

Warrior at pit

Rope at the pit

\*goal state

Rope at the pit

all goals met

-----------------

precond not met- Warrior at pit

calling Strips1 for goal Warrior at pit

-----------------

Strips1

\*current state

Ladder at the L

Snake in the pit

Hook at the pit

Warrior at pit

Rope at the pit

\*goal state

Warrior at pit

all goals met

-----------------

Strips3: Applying op [attach the hook to the rope]

[Hook at the pit, Rope at the pit]

[Warrior attached the Hook to the Rope]

New state

Ladder at the L

Snake in the pit

Warrior at pit

Warrior attached the Hook to the Rope

-----------------

Strips1

\*current state

Ladder at the L

Snake in the pit

Warrior at pit

Warrior attached the Hook to the Rope

\*goal state

Warrior attached the Hook to the Rope

all goals met

-----------------

precond not met- Warrior at pit

calling Strips1 for goal Warrior at pit

-----------------

Strips1

\*current state

Ladder at the L

Snake in the pit

Warrior at pit

Warrior attached the Hook to the Rope

\*goal state

Warrior at pit

all goals met

-----------------

Strips3: Applying op [get treasure with Rope and Hook]

[Warrior attached the Hook to the Rope]

[Warrior got treasure]

New state

Ladder at the L

Snake in the pit

Warrior at pit

Warrior got treasure

-----------------

Strips1

\*current state

Ladder at the L

Snake in the pit

Warrior at pit

Warrior got treasure

\*goal state

Warrior got treasure

all goals met

-----------------

Result is true

Plan is [move from W to H, carry Hook from H to pit, move from pit to R, carry Rope from R to pit, attach the hook to the rope, get treasure with Rope and Hook]

**(2.1.1) Another case: there is no-snake in a pit**

C:\Users\cbssj\Documents\strips>java warriorStrips

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Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

\*goal state

Warrior got treasure

working on goal Warrior got treasure

------------------

Strips2

working on Warrior got treasure

calling Strips3 to apply operator

get treasure with Rope and Hook

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

attempting to use operator

get treasure with Rope and Hook

in context {}

precond not met- Warrior attached the Hook to the Rope

calling Strips1 for goal Warrior attached the Hook to the Rope

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

\*goal state

Warrior attached the Hook to the Rope

working on goal Warrior attached the Hook to the Rope

------------------

Strips2

working on Warrior attached the Hook to the Rope

calling Strips3 to apply operator

attach the hook to the rope

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

attempting to use operator

attach the hook to the rope

in context {}

precond not met- Hook at the pit

calling Strips1 for goal Hook at the pit

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

\*goal state

Hook at the pit

working on goal Hook at the pit

------------------

Strips2

working on Hook at the pit

calling Strips3 to apply operator

carry ?obj from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

attempting to use operator

carry ?obj from ?r1 to ?r2

in context {?obj=Hook, ?r2=pit}

precond not met- Warrior at ?r1

calling Strips1 for goal Warrior at H

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

\*goal state

Warrior at H

working on goal Warrior at H

------------------

Strips2

working on Warrior at H

calling Strips3 to apply operator

move from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

attempting to use operator

move from ?r1 to ?r2

in context {?r2=H}

Strips3: Applying op [move from W to H]

[Warrior at W]

[Warrior at H]

New state

Ladder at the L

Hook at the H

Rope at the R

Warrior at H

-----------------

Strips1

\*current state

Ladder at the L

Hook at the H

Rope at the R

Warrior at H

\*goal state

Warrior at H

all goals met

-----------------

Strips3: Applying op [carry Hook from H to pit]

[Hook at the H, Warrior at H]

[Warrior at pit, Hook at the pit]

New state

Ladder at the L

Rope at the R

Warrior at pit

Hook at the pit

-----------------

Strips1

\*current state

Ladder at the L

Rope at the R

Warrior at pit

Hook at the pit

\*goal state

Hook at the pit

all goals met

-----------------

precond not met- Rope at the pit

calling Strips1 for goal Rope at the pit

-----------------

Strips1

\*current state

Ladder at the L

Rope at the R

Warrior at pit

Hook at the pit

\*goal state

Rope at the pit

working on goal Rope at the pit

------------------

Strips2

working on Rope at the pit

calling Strips3 to apply operator

carry ?obj from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Ladder at the L

Rope at the R

Warrior at pit

Hook at the pit

attempting to use operator

carry ?obj from ?r1 to ?r2

in context {?obj=Rope, ?r2=pit}

precond not met- Warrior at ?r1

calling Strips1 for goal Warrior at R

-----------------

Strips1

\*current state

Ladder at the L

Rope at the R

Warrior at pit

Hook at the pit

\*goal state

Warrior at R

working on goal Warrior at R

------------------

Strips2

working on Warrior at R

calling Strips3 to apply operator

move from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Ladder at the L

Rope at the R

Warrior at pit

Hook at the pit

attempting to use operator

move from ?r1 to ?r2

in context {?r2=R}

Strips3: Applying op [move from pit to R]

[Warrior at pit]

[Warrior at R]

New state

Ladder at the L

Rope at the R

Hook at the pit

Warrior at R

-----------------

Strips1

\*current state

Ladder at the L

Rope at the R

Hook at the pit

Warrior at R

\*goal state

Warrior at R

all goals met

-----------------

Strips3: Applying op [carry Rope from R to pit]

[Rope at the R, Warrior at R]

[Warrior at pit, Rope at the pit]

New state

Ladder at the L

Hook at the pit

Warrior at pit

Rope at the pit

-----------------

Strips1

\*current state

Ladder at the L

Hook at the pit

Warrior at pit

Rope at the pit

\*goal state

Rope at the pit

all goals met

-----------------

precond not met- Warrior at pit

calling Strips1 for goal Warrior at pit

-----------------

Strips1

\*current state

Ladder at the L

Hook at the pit

Warrior at pit

Rope at the pit

\*goal state

Warrior at pit

all goals met

-----------------

precond not met- Snake in the pit

calling Strips1 for goal Snake in the pit

-----------------

Strips1

\*current state

Ladder at the L

Hook at the pit

Warrior at pit

Rope at the pit

\*goal state

Snake in the pit

working on goal Snake in the pit

------------------

Strips2

working on Snake in the pit

calling Strips3 to apply operator

climb down the Ladder to the treasure

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

attempting to use operator

climb down the Ladder to the treasure

in context {}

precond not met- Warrior puts down the ladder

calling Strips1 for goal Warrior puts down the ladder

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

\*goal state

Warrior puts down the ladder

working on goal Warrior puts down the ladder

------------------

Strips2

working on Warrior puts down the ladder

calling Strips3 to apply operator

Ladder is down

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

attempting to use operator

Ladder is down

in context {}

precond not met- Ladder at the pit

calling Strips1 for goal Ladder at the pit

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

\*goal state

Ladder at the pit

working on goal Ladder at the pit

------------------

Strips2

working on Ladder at the pit

calling Strips3 to apply operator

carry ?obj from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

attempting to use operator

carry ?obj from ?r1 to ?r2

in context {?obj=Ladder, ?r2=pit}

precond not met- Warrior at ?r1

calling Strips1 for goal Warrior at L

-----------------

Strips1

\*current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

\*goal state

Warrior at L

working on goal Warrior at L

------------------

Strips2

working on Warrior at L

calling Strips3 to apply operator

move from ?r1 to ?r2

back from Strips3

-------------------

Strips3

current state

Warrior at W

Ladder at the L

Hook at the H

Rope at the R

attempting to use operator

move from ?r1 to ?r2

in context {?r2=L}

Strips3: Applying op [move from W to L]

[Warrior at W]

[Warrior at L]

New state

Ladder at the L

Hook at the H

Rope at the R

Warrior at L

-----------------

Strips1

\*current state

Ladder at the L

Hook at the H

Rope at the R

Warrior at L

\*goal state

Warrior at L

all goals met

-----------------

Strips3: Applying op [carry Ladder from L to pit]

[Ladder at the L, Warrior at L]

[Warrior at pit, Ladder at the pit]

New state

Hook at the H

Rope at the R

Warrior at pit

Ladder at the pit

-----------------

Strips1

\*current state

Hook at the H

Rope at the R

Warrior at pit

Ladder at the pit

\*goal state

Ladder at the pit

all goals met

-----------------

precond not met- Warrior at pit

calling Strips1 for goal Warrior at pit

-----------------

Strips1

\*current state

Hook at the H

Rope at the R

Warrior at pit

Ladder at the pit

\*goal state

Warrior at pit

all goals met

-----------------

Strips3: Applying op [Ladder is down]

[Ladder at the pit]

[Warrior puts down the ladder]

New state

Hook at the H

Rope at the R

Warrior at pit

Warrior puts down the ladder

-----------------

Strips1

\*current state

Hook at the H

Rope at the R

Warrior at pit

Warrior puts down the ladder

\*goal state

Warrior puts down the ladder

all goals met

-----------------

precond not met- Warrior at pit

calling Strips1 for goal Warrior at pit

-----------------

Strips1

\*current state

Hook at the H

Rope at the R

Warrior at pit

Warrior puts down the ladder

\*goal state

Warrior at pit

all goals met

-----------------

Strips3: Applying op [climb down the Ladder to the treasure]

[Warrior at pit]

[Warrior got treasure]

New state

Hook at the H

Rope at the R

Warrior puts down the ladder

Warrior got treasure

-----------------

Strips1

\*current state

Hook at the H

Rope at the R

Warrior puts down the ladder

Warrior got treasure

\*goal state

Warrior got treasure

all goals met

-----------------

Result is true

Plan is [move from W to L, carry Ladder from L to pit, Ladder is down, climb down the Ladder to the treasure]

**(2.2) The limitations**

The part of codes needs to be changed all the time when I want to see the result in different ways such as snake in a pit and not. For the warrior example the initial state (MStringVector) has "Snake in the pit" when I want to see the snake case. If not, there is not "Snake in the pit" line in the initial state. This limitation prevents me to run to check both conditions at once.

And when we need to make specific operators are linked together by some private variables such as addList and preconds in "climb" and "down" operators, we should make sure that those two variables have the exactly same words including article "the" even. Additionally, the upper-case and lower-case also matter to match operators.

**(3) The suggestions for improvements**

If it is available to have 'or' condition in each variables, it would be better(shorter codes) to deal with the different cases rather than using different operators. For instance, we could have "use" operator for using the object whatever it is necessary to get the treasure instead of using "get" and "climb" at the same time.

And if it does not matter with lower-case or upper-case in every words, it would help to avoid errors which are matching problems to each operators. Which could be solved by String toUpperCase() Method or toLowerCase() in java.