Roll no:- 41310

Assignment AIR3

Page No.:
Date:

* Title:- Implement Goal stack planning.

* Problem statement:- Implement Goal stack planning for the following configuration from the blocks of world.

* objective:-
To learn and implement goal stack planning.

* Outcome:-
Student will be able to implement goal stack planning.

* S/w & H/w requirements:-

Operating system:- 64 bit windows or open source operating system.
Python interpreter.

Theory:-
Goal stack planning (GSP) is the one of the simplest planning algorithm that is designed to handle problems having Compound goals The approach uses a stack for plan generation.
The stack can Contain subgoal & predicate for actions.

Page No.:
Date:

* Algorithm:-

1. Push the goal state into the stack.
2. push the individual predicate of goal state into the stack.
3. loop till stack is empty.
   pop an element E from the stack.
   If E is true then
      Do Nothing
   Else
      push the relevant action into the stack
      push the individual predicates of the action into the stack.
   Else if E is an action
      Apply the action to current state add the action 'a' to the plan.

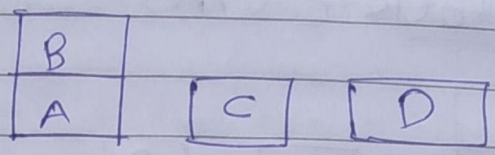
Operations:-

operators	Prediction	Delete	Add
1) stack(x,y)	clear(y) & Holding(x)	clear(y) Holding(x)	arEmpty on(x,y)
2) Unstack(x,y)	arEmpty on(x,y) & clear(x)	arEmpty on (x,y)	Holding(x) & clear y.
(3) Pickup(x)	clear(x) & ontable(x) & arEmpty	onTable(x) & arEmpty	Holding(x)
(4) Putdown(x)	Holding(x)	Holding(x)	ontable(x) & arEmpty.

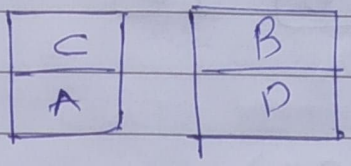
Page No.:
Date:

Example:-

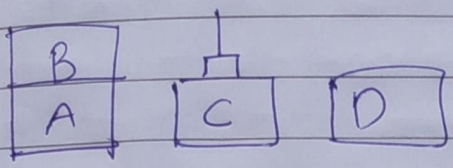
Initial state



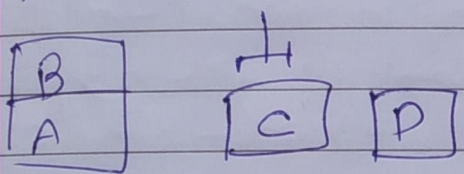
Goal state



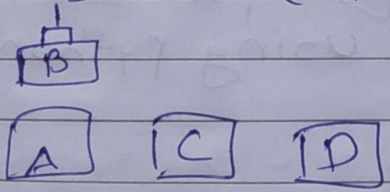
1. Pickup (C)



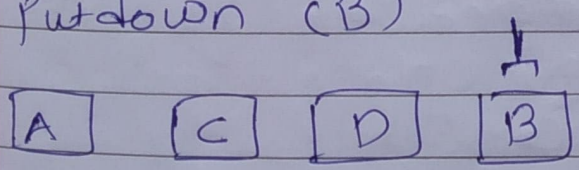
2. putdown (C)



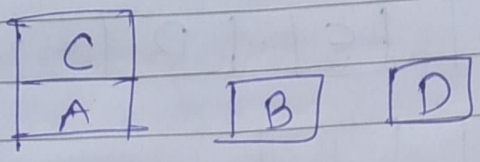
3. Unstack (B, A)



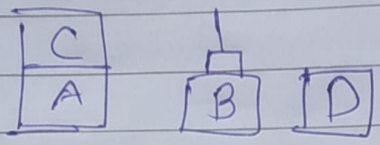
4. putdown (B)



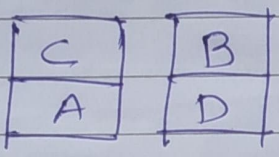
6. stack (C, A)



7. pickup (B)



8. stack (B, D)



(Goal state)

Conclusion:- Goal stack planning is performed using pickup(), putdown(), unstack() and stack() problem using python.