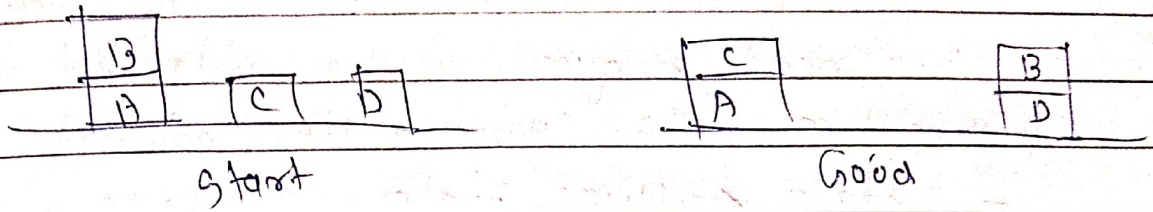
Assignment A3 41403

- Title: Goal stack planning
- problem statement: implement goal stack planning for the following config from the blocks



Start Goal

- objective: Understand the concept of goal stack planning

- S/w & H/w : Python 3, 64-bit OS, 4GB RAM

- Theory:

Goal stack planning:

- GSP breaks up a set of goal predicates into individual sub goals & attempts to solve them individually one after another.
- This is also called linear planning
- It works by pushing the goal description onto a stack
- It pushes both the conjunct as well as each of the individual goal predicates saperately
- The algorithms pop the element on top of the stack
- If it is a predicate that is true in the current state & then nothing is done & the next element is popped from the stack.

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- If it is a goal predicate that is not its current state a relevant action is pushed into the stacks followed by the preconditions first the conjunctions & then the individual preconditions
- The preconditions on top of the stack becomes the next subgoal to be addressed recursively
- Algorithm : GSP (given state, goal state, actions)
- state ← given state
- plan ← ()
- stacks ← empty stacks
- push set (given goal, stack)
- while not empty stacks
- do x ← pop(stack)
- if x ∈ ← action
- then plan ← plan.x
- stacks ← progress(x, state)
- else if x is a conjunct of goal predicate
- then solved flag ← true.
- for each g ∈ c
- do if g ∈ state
- then solved flag ← false
- if solvedflag == false
- then pushset (c, stack)
- else if x ∉ given state
- then choose action that achieve x
- if no such action exist then return false push(g,stack)
- pushset (precondition (a), stacks) return plan

Conclusion: We have successfully implemented goal stack planning.