Thursday-19-Jan-2023. Some clarifications regarding assignment 2.

Dear students,

We (TAs) have received some queries regarding assignment-2 posted at Moodle. Like:

i) In what format input is given?.

(ii) Constraints regarding the number of blocks to be operated on.

(iii) number of stacks in the output

(iv) what should be printed as output.

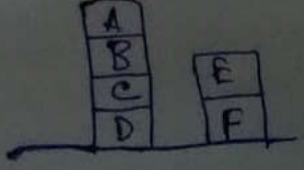
(v) Constraints on the number of stacks that can be used in the intermediate states.

Let us discuss them below.

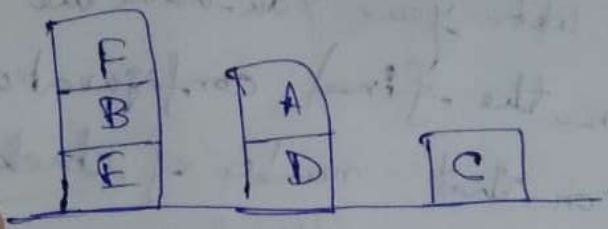
What are our constraints? We have below constrains:

Constraint 1) Input configuration is given using 3 stacks of blocks. However it is your freedom to put blocks into those 3 stacks. That means you may want to skip any (preferably the last) stack.

Example 1 (a valid initial configuration)

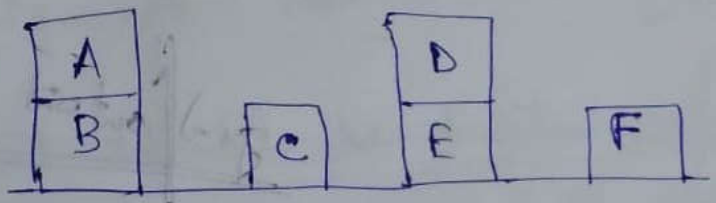


Example2 (Another valid configuration)



Note that :- In example-1, we have left empty the right-most stack. You can do it. In example2, we have used all the 3 stacks.

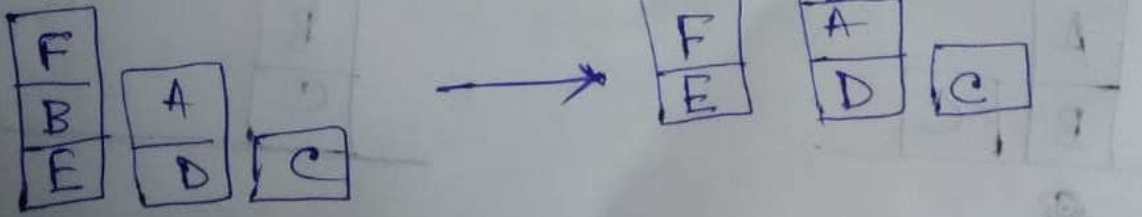
Example-3 (An invalid configuration)



It is invalid because we are breaking constraint-1 which says to use 3 stacks at most.

Constraint 2: We ~~have~~ can move/shift only the top block of any stack to the top position of another stack.

Example-4 (An invalid move)

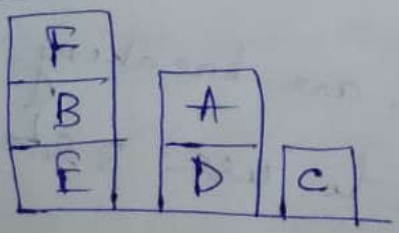


Number of stacks in the output :-

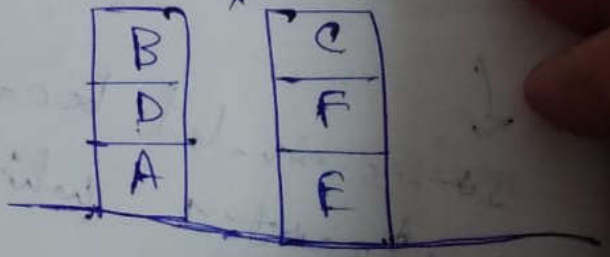
It is totally upto you. You have the freedom to design the final configuration. Only fix this notation that number of stacks should not be more than 3. That means you can design your code where in the final/output configuration, number of stack is 1, 2 or 3.

Example 5 (A final configuration where number of stack is 2)

start

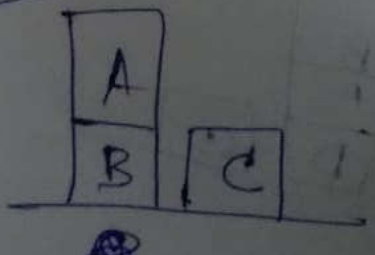


goal/output

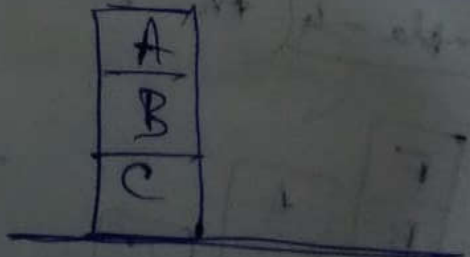


Example 6. (A final configuration where number of stack is 1)

start

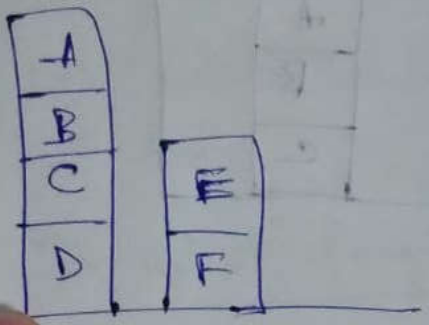


goal/output

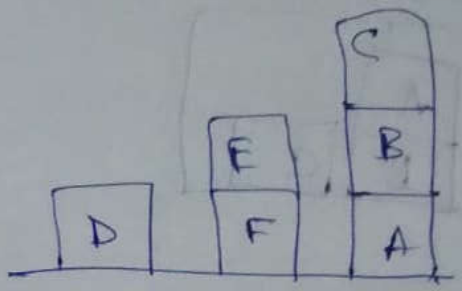


Example 7 (* find Configuration where number of stack is 3)

start



goal / output

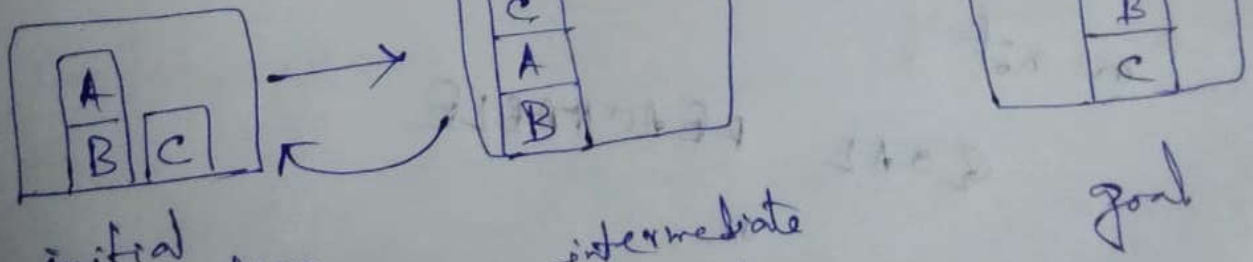


Keep in mind :- Number of stacks in any Configuration should not be more than 3.

~~What should be printed as output~~

Note From any random initial configuration it may happen that any random final Configuration may not be reachable. ~~So~~

Example. 8 (Below is a loop, so goal is not reachable)



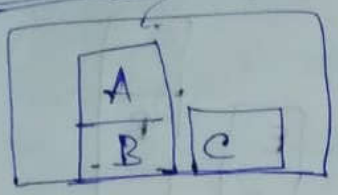
initial configuration

intermediate Configuration

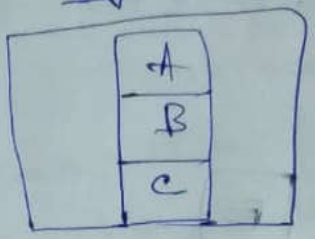
goal

Example - 9. (Another loop, where goal is not reachable)

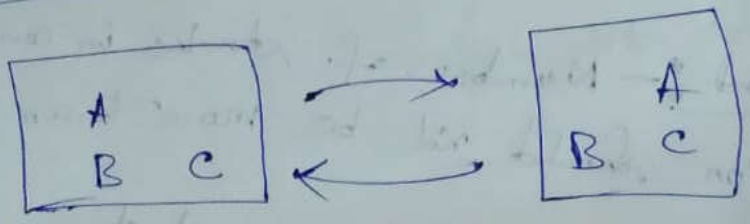
initial Configuration



goal.



This is loop.



What should be printed as output.

Based on the above observation,

i) ~~the~~ You may indicate that, for your defined input, for your defined output, whether goal is reachable or not

GOAL REACHABLE

or

GOAL NOT REACHABLE

ii) Number of states/nodes/configuration explored
same thing

iii) Input configuration

iv) output configuration

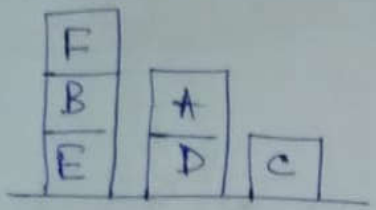
In what format input is given?

As you ~~are~~ will be working on ~~python 3~~, python (version 2 or 3) ~~are~~,

In the readme file, mention your python version. ~~It is recommended to~~ You can choose python 2 or python 3 ~~or~~, according to your proficiency

there are some ideas on how to represent each configuration. In other words how to represent input configuration or output configuration.

Idea 1

Pen-and-Paper design	Python design
	(1,1,E), (1,2,D), (1,3,C), (2,1,B), (2,2,A), (2,3,Empty) (3,1,F), (3,2,Empty) (3,3,Empty)

~~In python, you can exchange~~

I have use list of tuples, above: You can use (list of lists) or other alternative

Explanation of Idea-1 (Position matrix)

(3,1)	(3,2)	(3,3)
(2,1)	(2,2)	(2,3)
(1,1)	(1,2)	(1,3)

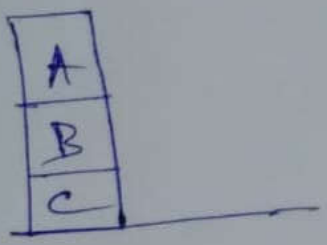
For empty character, you may use 'Z'. So the above configuration can be written as

(1,1,E), (1,2,D), (1,3,C), (2,1,B), (2,2,A), (2,3,Z), (3,1,F) (3,2,Z) (3,3,Z)

There are other alternative ideas also. I am not discussing them. Let us fix to Idea-1 to represent input configuration, and output configuration.

Example-1: (What will be output file format using idea-1?)

Let my, output configuration is below:



Then in python, it will be

[(1, 1, C), (1, 2, Z), (1, 3, Z), (2, 1, B),
(2, 2, Z), (2, 3, Z), (3, 1, A),
(3, 2, Z), (3, 3, Z)]

Final notes

i) You have to submit a report file (check on Moodle)

ii) At least two heuristics should be implemented

iii) You may read the input of your

code from a separate text file. [In this case you need to read that external file to get initial configuration.
input.

iv) The output, you may show on the Console, or, you may write to an external file. [In case you go for an external file, you need to write the output to external file].

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