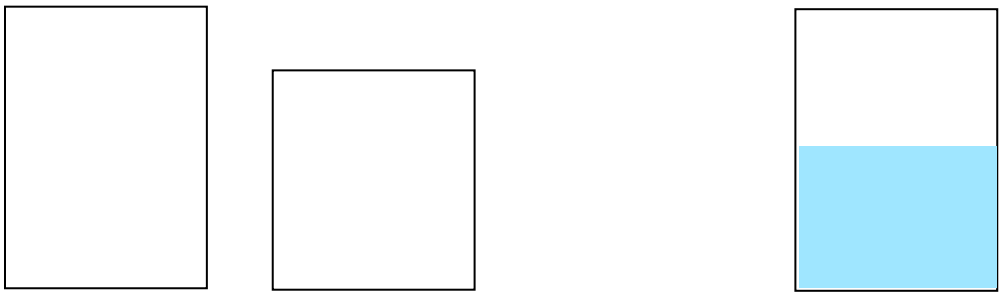
UCT31021 – PRACTICAL FOR ARTIFICIAL INTELLIGENCE
DEPARTMENT OF ICT
FACULTY OF TECHNOLOGY
SOUTH EASTERN UNIVERSITY OF SRILANKA

Labsheet: 08

Aim: Solve Real world problems.

Task1: Water jug Problem.

4 liters and 3 liters of empty jugs are given to you. You can fill the water from a tap and you can spill water to ground. No measuring marks are available in both jugs. How can you get exactly 2 liters of water in the 4-liter jug?



Empty *4l* Empty *3l* water *2l*

Tips:

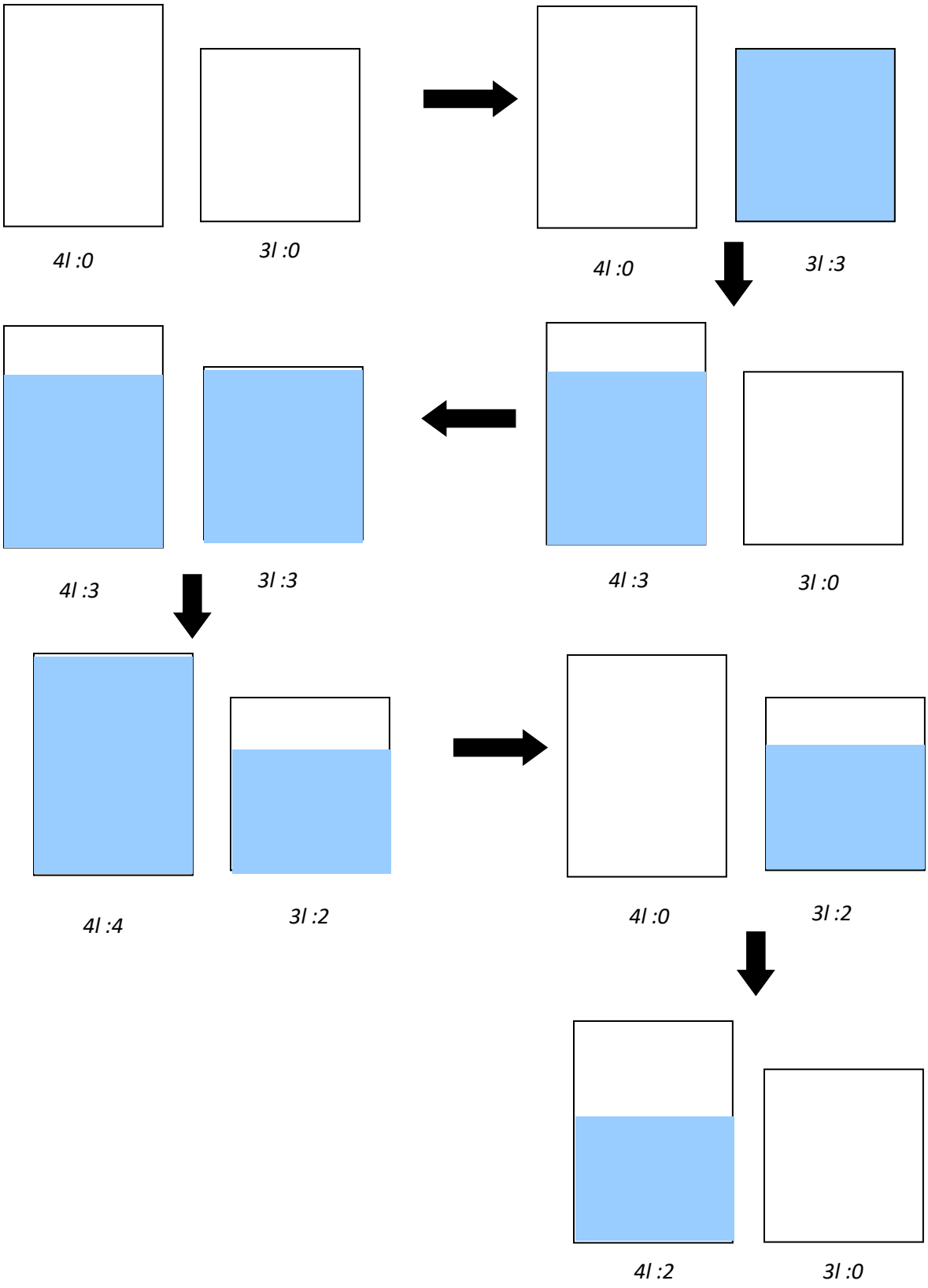
Identify initial state and goal state.

Create conditions.

If 4 liters of jug represented by x and 3 liters of jugs by y then,

- Filling 4 liters of jug (x,y) -> if x<4 -> (4,y)
- Filling 3 liters of jug (x,y) -> if y<3 -> (x,3)
- Empty 4l jug on ground (x,y) -> if x>0 -> (0,y)
- Empty 3l jug on ground (x,y) -> if y>0 -> (x,0)
- Pour from 3 to 4 (x,y) -> 0<x+y>=4 & y>0 -> (4,y-(4-x))
- Pour from 4 to 3 (x,y) -> 0<x+y>=3 & x>0 -> (x,(3-y),3)
- Pour all from 3-4 (x,y) -> 0<x+y=<4 & y>=0 -> (x+y,0)
- Pour all from 4-3 (x,y) -> 0<x+y=<3 & x>=0 -> (0,x+y)

A possible answer is,



Task 2: Monkey Banana Problem

Monkey is on floor, at door. A block is on floor at window. Banana is hanging from roof at the middle of the room. Problem is “How the monkey can get the banana”.

Hint:

Monkey can walk

Monkey can grasp the banana

Monkey can climb the block

Monkey can push the block

Practice Question:

Write a prolog program to represent the following region(map) below and write a prolog predicate “color_map” that will color the map for the whole region so that no adjacent regions are colored with the same color given that you should use at most 4 colors (red,green,blue,yellow) for the entire region.