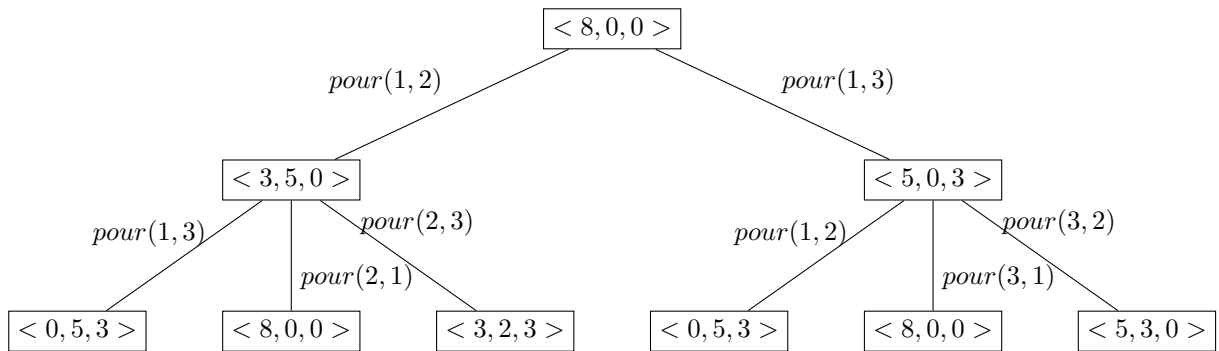# Problem Solving Review

Artificial Intelligence

1. What is a planning problem?

2. Describe open-loop and closed-loop control.

3. Write a problem formulation for a world with three unmarked pitchers – an 8L pitcher full of water, an empty 5L pitcher, and an empty 3L pitcher – where an agent must reallocate the water so that one of the pitchers contains exactly 4L of water.

4. Consider the first two levels of a BFS search tree with a start state of $< 8, 0, 0 >$ where the $expand(node)$ function always enumerates actions from "left to right", that is, choose the leftmost source pictcher to pour from, and the leftmost target pitcher to pour to.

$< 8, 0, 0 >$

$pour(1, 2)$ $pour(1, 3)$

$< 3, 5, 0 >$ $< 5, 0, 3 >$

$pour(1, 3)$ $pour(2, 3)$ $pour(1, 2)$ $pour(3, 2)$

$pour(2, 1)$ $pour(3, 1)$

$< 0, 5, 3 >$ $< 8, 0, 0 >$ $< 3, 2, 3 >$ $< 0, 5, 3 >$ $< 8, 0, 0 >$ $< 5, 3, 0 >$

Discuss the implications of this node expansion order for Depth-First Search.

5. TODO: more questions to be added ...