Software Agents

Problem Set VIII: Regression

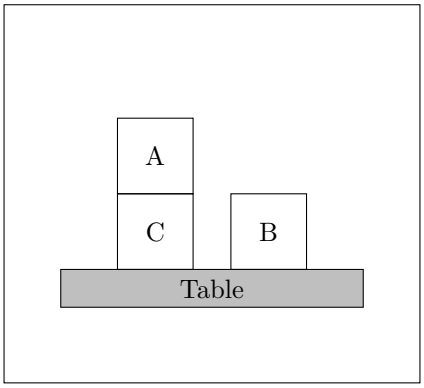

Figure 1: A blocks-world problem.

The robot has two actions

- $PutOn(x, y)$ - which picks up block x and puts it on top of block y
- $PutOnTable(x)$ - which picks up block x and puts it on the table

There are two fluents

- $On(x, y, s)$ - block x is on block y in situation s
- $OnTable(x, s)$ - block x is on the table in situation s

1. Regress the following queries after the specified action sequence, showing the intermediate queries. Do **not** assume the starting state in figure 1.

- $On(A, B, s)$ after: $PutOn(B, A)$
- $\neg On(\_, B, s)$ after: $PutOnTable(A)$
- $Poss(PutOn(A, C), s)$ after: $PutOnTable(C)$, $PutOn(B, C)$

2. Write successor state axioms for the fluents described above in prolog. Change the initial state to the those required in each of your previous answers and ensure the action sequences entail the desired fluent value.

`swipl` is in the path on the department servers.