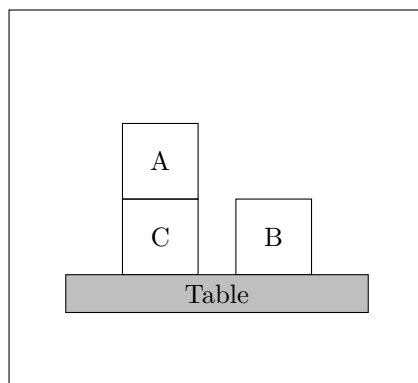# Problem Set IV: Situation Calculus and STRIPS

Figure 1: A blocks-world problem.

In blocks-world, the agent's aim is to stack the blocks in one tower with A on B and B on C. The actions available to the agent are:

- pickUp(block)

- dropOn(heldBlock, onToBlock)

- dropOnTable(block)

1. Model blocks-world as a STRIPS problem $P = \langle F, O, I, G \rangle$: Define the set of facts F, the set of operators/actions O, the goal facts G and the initial facts I. You will also need to define the *pre*, *add* and *del* functions.

2. Basics of the situation calculus:

- What is a situation? How it is different from a state in STRIPS?

- What is a fluent? How is it different from a fact in STRIPS?

- How would you denote the situation arising from the sequence of actions "pickUp(A)", "dropOnTable(A)"?

- How would you represent this as a state in your STRIPS model?

3. What fluents are necessary to model blocks-world? Define effect axioms for these fluents.