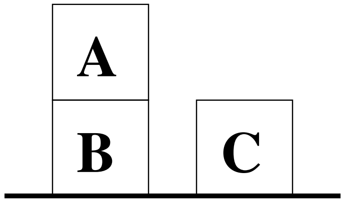
Prodigy

- A classical STRIPS-style planner
  - Domain Representation: objects, operators
  - Problem Representation: initial state, goal state
- Operators have preconditions and effects

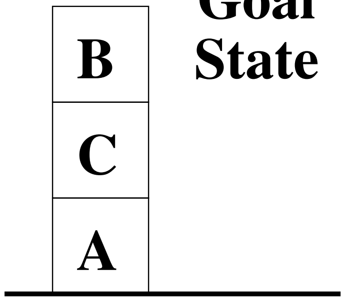
Example – Blocksworld

(On A B)
(On B Table)
(On C Table)
(Clear A)
(Clear C)
(Clear Table)
(Arm–empty)

Initial State



Goal State



(On C A)
(On B C)

[+ whatever]

Operators:

(Pickup x)

preconds: (Clear x)
(Arm–empty)

adds: (Holding x)
if (On x y), (Clear y)

dels: (Arm–empty)
if (On x y), (On x y)

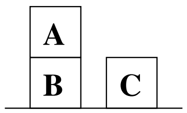
(Putdown x y)

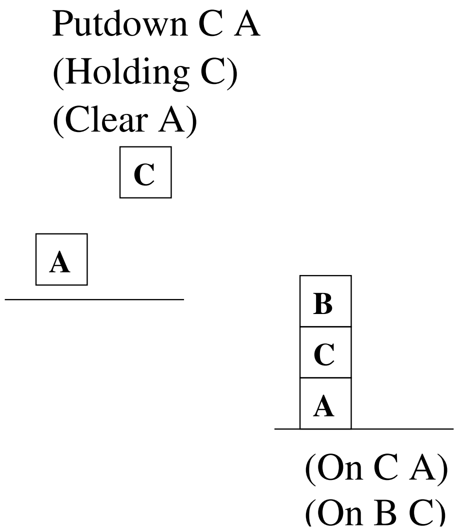
preconds: (Holding x)
(Clear y)

adds: (On x y)
(Arm–empty)

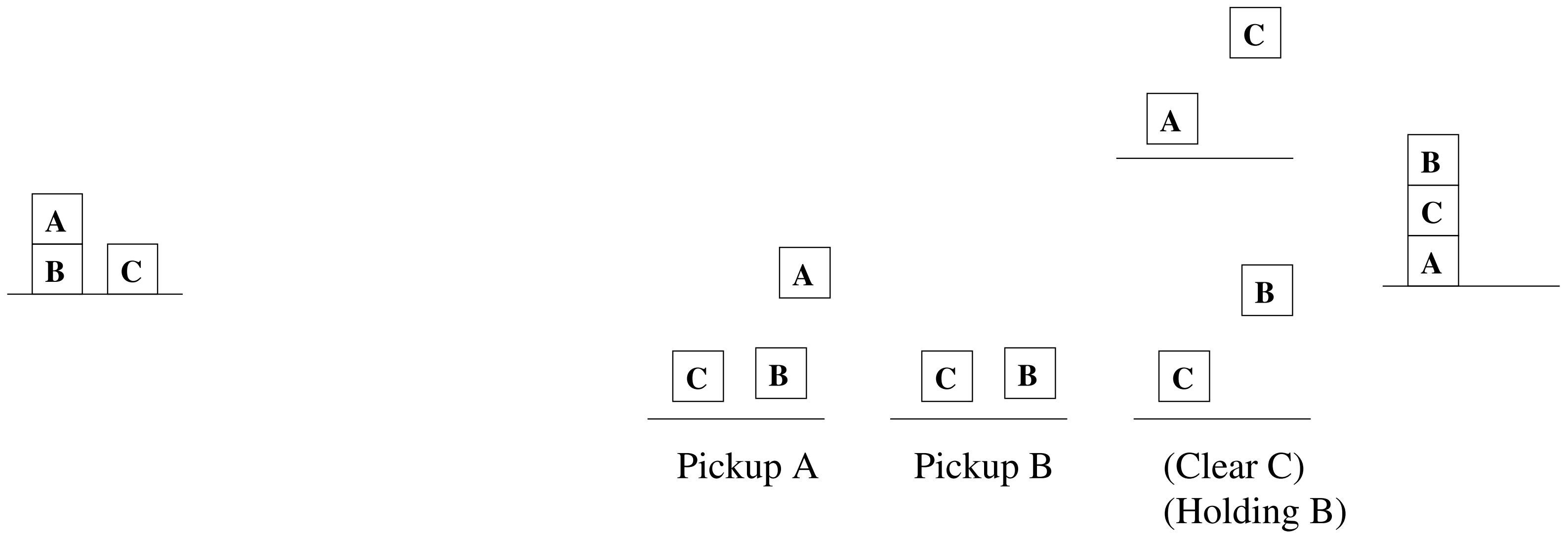
dels: (Holding x)
if (y != Table), (Clear y)

Prodigy/Blocksworld (cont.)

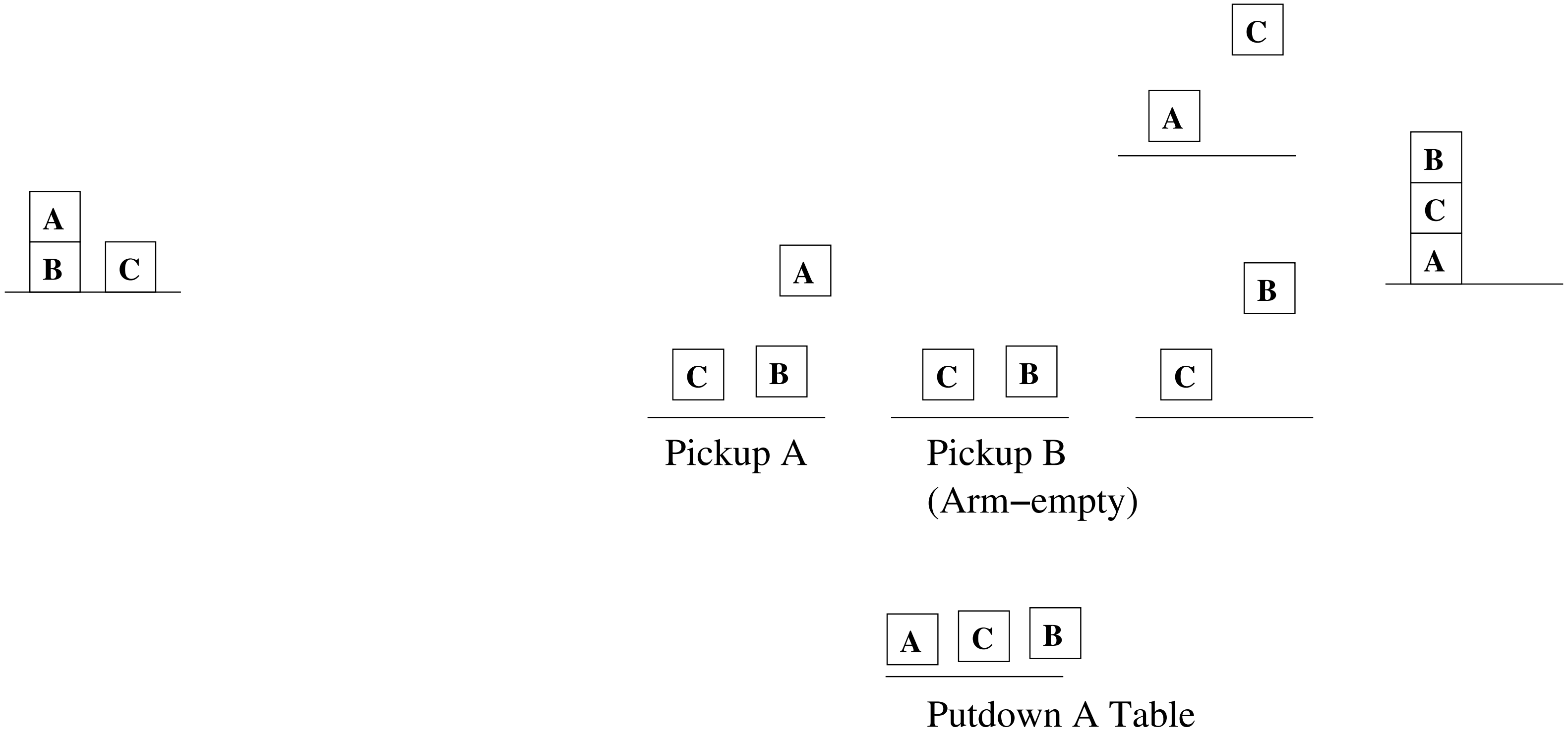




Prodigy/Blocksworld (cont.)



Prodigy/Blocksworld (cont.)



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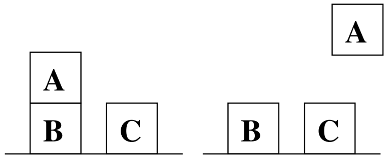
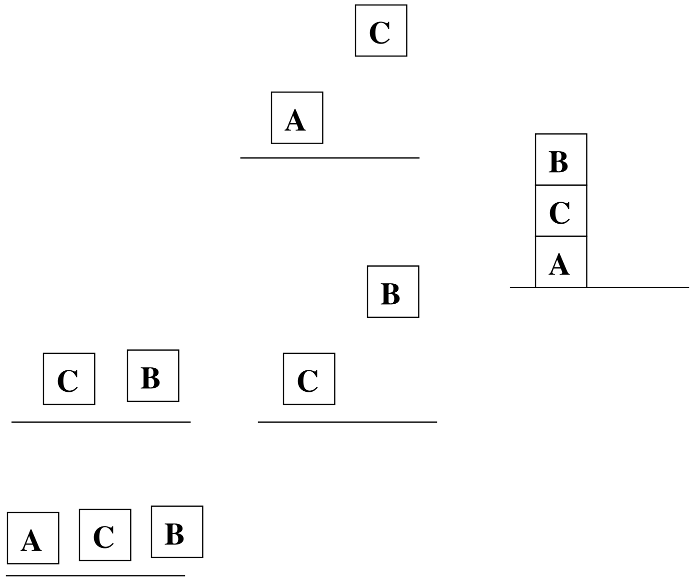
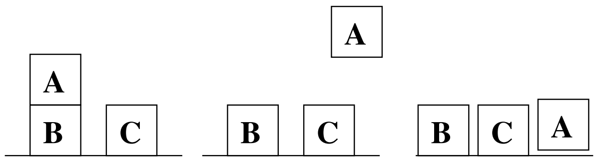
Prodigy/Blocksworld (cont.)

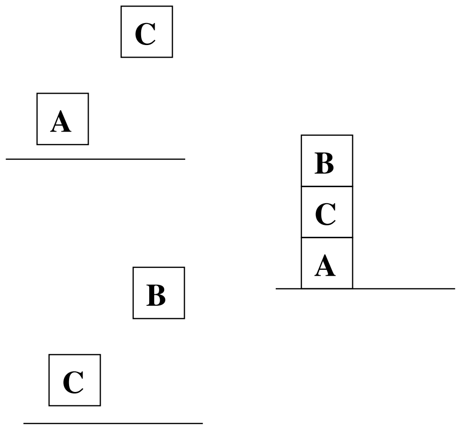




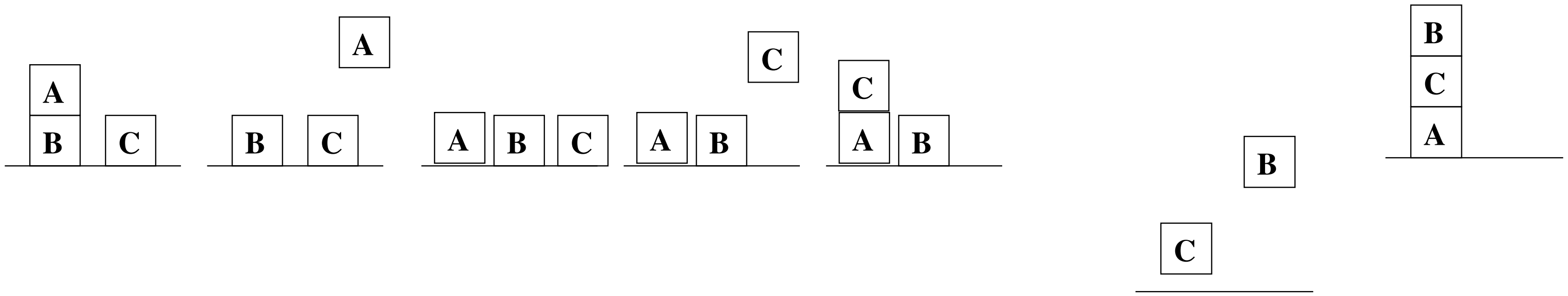
Putdown A Table

Prodigy/Blocksworld (cont.)





Prodigy/Blocksworld (cont.)



Issues in Planning

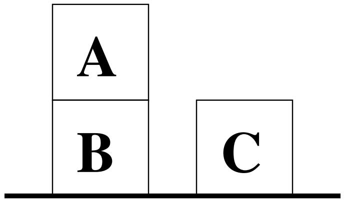
- Representations
- Algorithms
- Conditional effects
- Dynamic worlds
- Mixing planning and execution
- Learning
- Large-scale applications

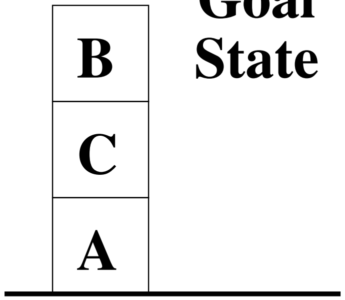
$\boxed{\text{Fairly mature field}}$

Example – Blocksworld

(On A B)
(On B Table)
(On C Table)
(Clear A)
(Clear C)
(Clear Table)
(Arm–empty)

Initial State





Goal State

(On C A)
(On B C)

[+ whatever]

Operators:

(Pickup x)

preconds: (Clear x)
(Arm–empty)

adds: (Holding x)
if (On x y), (Clear y)

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if (On x y), (On x y)

(Putdown x y)

preconds: (Holding x)
(Clear y)

adds: (On x y)
(Arm–empty)

dels: (Holding x)
if (y != Table), (Clear y)