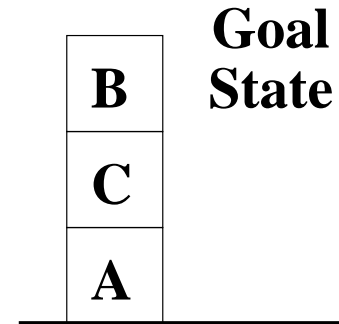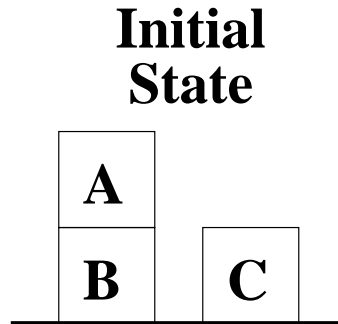# Prodigy

- 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)   **Initial**   **Goal**   (On C A)
(On B Table)   **State**   B   **State**   (On B C)
(On C Table)   C
(Clear A)   A   [+ whatever]
(Clear C)   B   C   A
(Clear Table)
(Arm–empty)

Operators: **(Pickup x)**   **(Putdown x y)**

preconds: (Clear x)   preconds: (Holding x)
                (Arm–empty)   (Clear y)

adds: (Holding x)   adds: (On x y)
            if (On x y), (Clear y)   (Arm–empty)
dels: (Arm–empty)   dels: (Holding x)
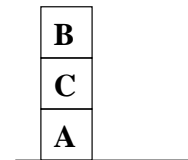   if (On x y), (On x y)   if (y != Table), (Clear y)

Prodigy/Blocksworld (cont.)
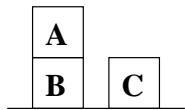
Putdown C A
(Holding C)
(Clear A)
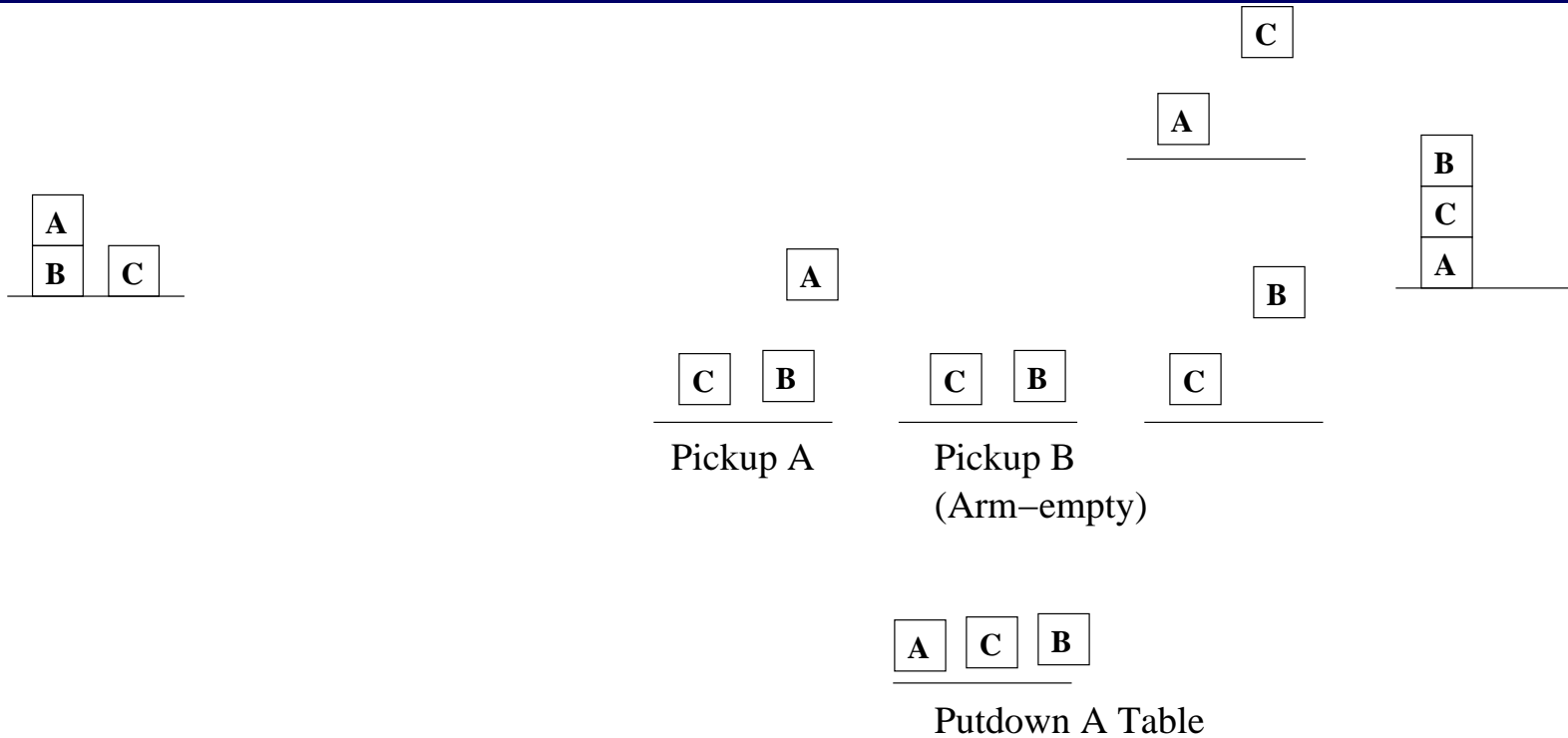
| C |

| A |

| A |
| B | | C |

| B |
| C |
| A |

(On C A)
(On B C)

Department of Computer Sciences

The University of Texas at Austin

Prodigy/Blocksworld (cont.)

Pickup A

Pickup B

(Clear C)
(Holding B)

Prodigy/Blocksworld (cont.)

A
B   C

A
C   B

Pickup A

A
C   B

Pickup B
(Arm–empty)

C
A

B
C
A

B

A   C   B

Putdown A Table

Prodigy/Blocksworld (cont.)
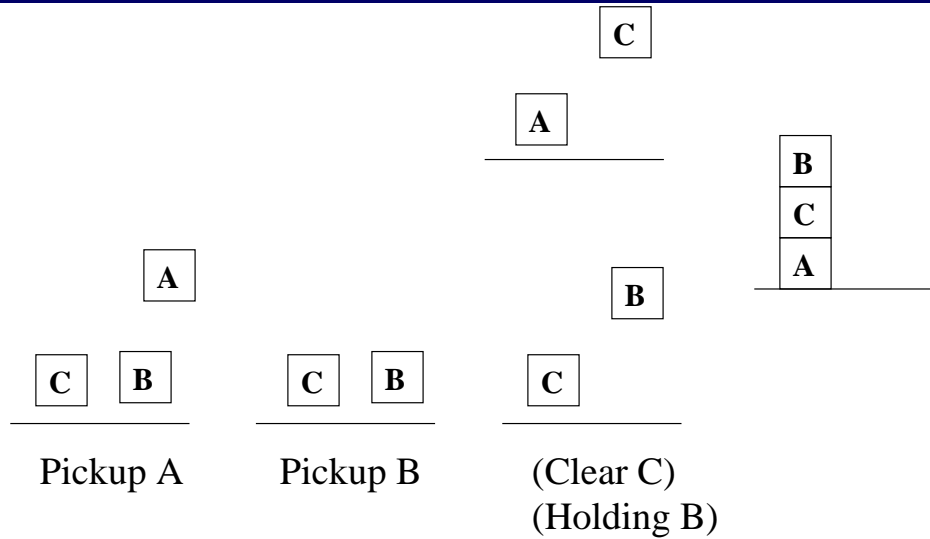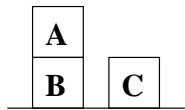
Putdown A Table

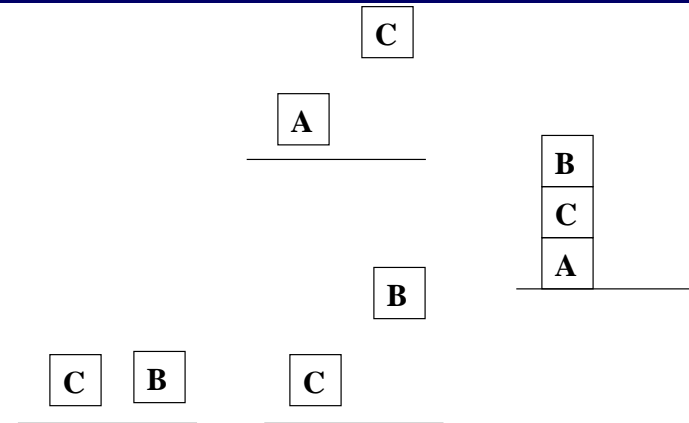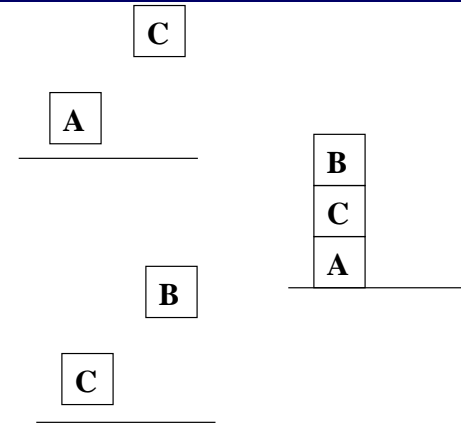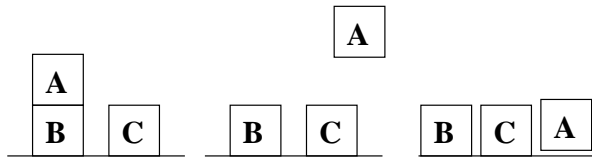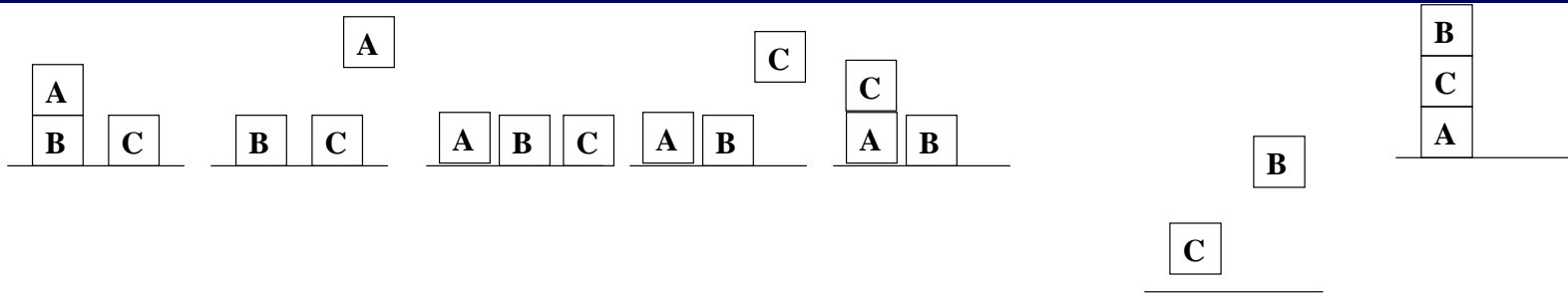# Prodigy/Blocksworld (cont.)
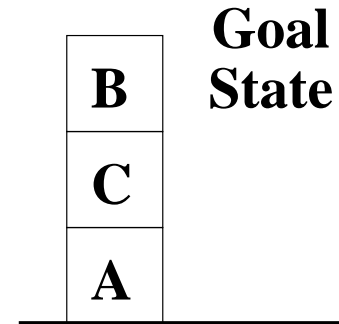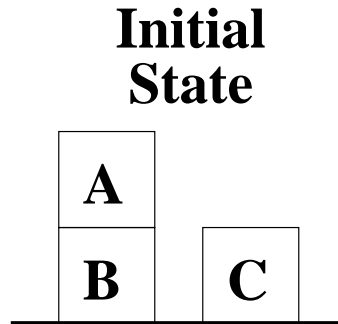
Prodigy/Blocksworld (cont.)

Issues in Planning

- Representations

- Algorithms

- Conditional effects

- Dynamic worlds

- Mixing planning and execution

- Learning

- Large-scale applications

Fairly mature field

Peter Stone

Example – Blocksworld

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

Initial State

A
B   C

Goal State

B
C
A

(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)