

# HW 5

① Remove 3 5 7 due to contradiction

P.287

atan c  
is like atpt

Case #	A	B	C	D	E
1	1	1	1	1	1
2	0	0	1	0	1
4	0	1	0	1	0
6	0	0	1	0	1
8	0	1	0	0	0
9	1	1	1	0	1

$$r_A = 2/2$$

$$r_B = 2/4$$

$$r_C = 4/4$$

$$r_D = 1/2$$

C = OK

remove it below 2

Item	Support
$I_1$	4
$I_2$	7
$I_3$	6
$I_4$	4
$I_5$	3

Item Set {I}	Support
1, 2	2
1, 3	2
1, 4	2
1, 5	0
2, 3	5
2, 4	3
2, 5	3
3, 4	2
3, 5	2
4, 5	0

Item Set	Support
1, 2, 3	1
1, 2, 4	1
1, 3, 4	1
2, 3, 4	1
2, 3, 5	2
2, 4, 5	1
1, 3, 5	0

$$\text{Confidence} = \{I_1 \rightarrow I_2\} = \frac{\text{sup}(I_1, I_2)}{\text{sup}(I_1)}$$

$$= 2/4 = 50\% < 70\%$$

$$\begin{aligned} I_3 \rightarrow I_2 &= 5/6 > 70\% \\ I_5 \rightarrow I_2 &= 3/3 > 70\% \end{aligned}$$

b. fill (pan)

PC: clean (stove)

D: clean (floor)

A: ~~clean~~ (floor)

③ scrub (stove)

a. Pre condition (PC): T

Delete (D):  $\neg$  clean (stove), clean (floor)

Add (A): clean (stove),  $\neg$  clean (floor)

scrub (refrigerator)

b. PC: T (none)

D:  $\neg$  clean (refrigerator),  $\neg$  garbage full, clean (counter), clean (floor)

A: clean (refrigerator), garbage full,  $\neg$  clean (counter),  $\neg$  clean (floor)

c. wash (counter)

PC: T

D:  $\neg$  clean (counter), clean (sink)

A: clean (counter),  $\neg$  clean (sink)

wash (floor)

PC: T

D:  $\neg$  clean (floor), clean (sink)

A: clean (floor),  $\neg$  clean (sink)

③ initial state:

clean (sink)  $\wedge$   $\neg$  garbage full  $\wedge$   $\neg$  clean (refrigerator)  $\wedge$   $\neg$  clean (stove)  
 $\wedge$   $\neg$  clean (floor)  $\wedge$   $\neg$  clean (counters)

goal state:

clean (sink)  $\wedge$   $\neg$  garbage full  $\wedge$  clean (refrigerator)  $\wedge$  clean (stove)  
 $\wedge$  clean (floor)  $\wedge$  clean (counter)  $\wedge$  fill (pans)

④  $A+(t, x)$  tile t can not be black spot (adjacent)

$A+(B, x)$

Movable (t)

move (x, y)

PC:  $A+(B, x)$ ,  $A+(t, y)$ , Movable (t)

D:  $A+(B, x)$ ,  $A+(t, y)$

A:  $A+(B, y)$ ,  $A+(t, x)$

⑤ floor chair banana monkey

x, y, z

- |                     |   |
|---------------------|---|
| 1 IN-ROOM(x)        | 1 IN-ROOM(MONKEY)   |
| 2 CAN-REACH(x, y)   | 2 IN-ROOM(chair)  |
| 3 CAN-CLIMB(x, y)   | 3 IN-ROOM(BANANA)   |
| 4 CAN-MOVE(x, y, z) | 4 DEXTEROUS(monkey)   |
| 5 DEXTEROUS(x)      | 5 TALL(chair)   |
| 6 TALL(x)           | 6 CAN-CLIMB(monkey, chair)  |
| 7 UNDER(x, y)       | 7 CAN-MOVE(monkey, chair, banana)   |
| 8 GET-ON(x, y)      | 8 $\neg$ CLOSE(banana, floor)   |
| 9 CLOSE(x, y)       | $DEXTEROUS(x) \wedge CLOSE(x, y) \rightarrow CAN-REACH(x, y)$                         |
|                     | $GET-ON \wedge UNDER(y, banana) \wedge TALL(y) \rightarrow CLOSE(x, banana)$          |
|                     | $IN-ROOM(x) \wedge IN-ROOM(y) \wedge IN-ROOM(z) \wedge CAN-MOVE(x, y, z) \rightarrow$ |
|                     | $CLOSE(z, floor) \vee UNDER(y, z)$  |
|                     | $CAN-CLIMB(x, y) \rightarrow GET-ON(x, y)$  |

CL goal

- ②  $\neg DEXTEROUS(x) \wedge \neg CAN-REACH(x, y) \rightarrow CAN-REACH(x, y)$
- ③  $\neg GET-ON(x, y) \vee \neg UNDER(y, banana) \vee \neg TALL(y) \vee CLOSE(x, banana)$
- ④  $\neg IN-ROOM(x) \vee \neg IN-ROOM(y) \vee \neg IN-ROOM(z) \vee \neg CAN-MOVE(x, y, z) \vee$
- $CLOSE(z, floor) \vee UNDER(y, z)$
- ⑤  $\neg CAN-CLIMB(x, y) \wedge \neg DEXTEROUS(x, y)$
- ⑥  $\neg CAN-REACH(monkey, banana)$



⑦  $\neg CAN-MOVE(monkey, chair, banana) \vee \neg CLOSE(banana, floor) \vee UNDER(chair, banana)$

$CLOSE(banana, floor) \vee UNDER(chair, banana)$  ⑧

⑩  $UNDER(chair, banana)$

⑤  $\neg GET-ON(chair, monkey) \vee \neg TALL(chair) \vee CLOSE(x, banana)$

②  $GET-ON(monkey, chair) \rightarrow GET-ON(x, chair) \vee \neg CLOSE(x, banana)$



(4) (9)

CLOSE(monkey, banana)

→ CLOSE(monkey, y) ∨ CANREACH(monkey, y)

(13)

CAN-REACH(monkey, banana)

[ ]