

percept: [stench, breeze, glitter, bump, wumpus]



$\neg$  = Beliefs

KB:

Square(1,1): [none, none, none, none, none]

Square(2,1): [none, breeze, none, none, none]

Square(1,2): [stench, none, none, none, none]

4	SSSSS Stench		Breeze	PIT
3	 St	Breeze SSSSS Stench	PIT	Breeze
2	SSSSS Stench		Breeze	
1	 START	Breeze	PIT	Breeze
	1	2	3	4

KB RULES

to prove  $\neg \alpha$  , proof by contradiction  
 $\neg \alpha \Rightarrow \neg \neg \alpha$

$\neg \neg \alpha \Rightarrow \alpha$  // prove no pit in (2,2)

by showing  
there is.

- Since didn't have stench in (2,1)  
no wumpus in (2,2)

- Since no breeze in (1,2)  
then no pit in (2,2).

- R1:  $\neg P_{1,1}$
- R2:  $B_{1,1} \Leftrightarrow (P_{1,2} \vee P_{2,1})$
- R3:  $B_{2,1} \Leftrightarrow (P_{1,1} \vee P_{2,2} \vee P_{3,1})$
- R4:  $\neg B_{1,1}$
- R5:  $B_{2,1}$
- R6:  $B_{1,1} \Rightarrow (P_{1,2} \vee P_{2,1}) \wedge ((P_{1,2} \vee P_{2,1}) \Rightarrow B_{1,1})$
- R7:  $((P_{1,2} \vee P_{2,1}) \Rightarrow B_{1,1})$
- R8:  $(\neg B_{1,1} \Rightarrow \neg (P_{1,2} \vee P_{2,1}))$
- R9:  $\neg (P_{1,2} \vee P_{2,1})$
- R10:  $\neg P_{1,2} \wedge \neg P_{2,1}$
- R11:  $\neg B_{1,2}$

R12:  $B_{1,2} \Leftrightarrow (P_{1,1} \vee P_{2,2} \vee P_{1,2})$   
 R13:  $\neg P_{2,2}$  }  $\alpha$  // inferred rules

- Knowledge-base is sufficient to prove there is no pit in square (2,2). \*