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EXP.NO: 8

EXP.NAME: BACKWARD CHAINING

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3 # Knowledge Base: Rules in IF-THEN format
4 knowledge_base = [
5     (["cough", "fever"], "flu"),
6     (["sore_throat", "runny_nose"], "cold"),
7     (["sore_throat"], "fever") # Sore throat can lead to fever
8 ]
9
10 # Given initial facts
11 facts = {"cough", "sore_throat"}
12
13 # Forward Chaining Function
14 def forward_chaining():
15     inferred = True # Keep looping as long as new facts are added
16
17     while inferred:
18         inferred = False # Stop if no new fact is added in an iteration
19
20         for conditions, conclusion in knowledge_base:
21             if all(condition in facts for condition in conditions) and conclusion not in facts:
22                 facts.add(conclusion) # Add the inferred fact
23                 inferred = True # Mark that we inferred a new fact
24
25 # Run forward chaining
26 forward_chaining()
27
28 # Check if flu or cold is inferred
29 if "flu" in facts:
30     print("The patient is diagnosed with flu.")
31 elif "cold" in facts:
32     print("The patient is diagnosed with cold.")
33 else:
34     print("No conclusive diagnosis could be made.")
```

Output

Clear

The patient is diagnosed with flu.

=== Code Execution Successful ===