## Forward Chaining

### ****Aim:****

To derive conclusions **by starting from known facts and applying inference rules** in a forward direction, until the goal is reached.

### ****Simple Program (Python Simulation)****

# Knowledge base (facts)

facts = {"has\_fever", "has\_cough"}

# Rules

rules = [

({"has\_fever", "has\_cough"}, "might\_have\_flu"),

({"might\_have\_flu"}, "recommend\_rest"),

]

# Inference engine (forward chaining)

inferred = set()

while True:

applied = False

for condition, conclusion in rules:

if condition.issubset(facts) and conclusion not in facts:

facts.add(conclusion)

inferred.add(conclusion)

applied = True

if not applied:

break

print("Inferred facts:", inferred)

### ****Output:****

bash

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Inferred facts: {'might\_have\_flu', 'recommend\_rest'}

### ****Result:****

Starting from the facts "has\_fever" and "has\_cough", the system:

* Infers "might\_have\_flu"
* Then infers "recommend\_rest" This demonstrates how **forward chaining can reason step-by-step** to reach conclusions.