Backward-Chaining

Aim:

To Implement Backard-Chaining.

facts = set()

rules = [

    ("It is raining", "The ground is wet"),

    ("The ground is wet", "The grass is slippery")

]

def backward\_chaining(goal, facts, rules):

    print(f"Checking if we can prove: {goal}")

    if goal in facts:

        print(f"Goal {goal} is already a fact!")

        return True

    for premise, conclusion in rules:

        if goal == conclusion:

            print(f"Trying rule: If {premise}, then {conclusion}")

            if backward\_chaining(premise, facts, rules):

                facts.add(goal)

                print(f"Goal {goal} is achieved!")

                return True

    return False

facts.add("It is raining")

goal = "The grass is slippery"

backward\_chaining(goal, facts, rules)

print("\nInferred facts:", facts)

Result:

Checking if we can prove: The grass is slippery

Trying rule: If The ground is wet, then The grass is slippery

Checking if we can prove: The ground is wet

Trying rule: If It is raining, then The ground is wet

Checking if we can prove: It is raining

Goal It is raining is already a fact!

Goal The ground is wet is achieved!

Goal The grass is slippery is achieved!

Inferred facts: {‘the ground is wet’, ‘it is raining’, ‘the grass is slippery’}