2c

Implementation of Backward Chaining

Aim:

To implement backward chaining

Scenario:

a medical expert system designed to diagnose diseases based on patient symptoms. The system uses backward chaining to infer whether a patient has a specific disease by checking rules and knowledge list.

Procedure

- define the knowledge base with rules
- define known facts.
- define the backward chaining function.
- Query whether the patient has flu (flu)
- Execution:
  - flu requires cough & fever
  - cough is a fact -> true
  - fever needs sore_throat
  - Sore_throat is a fact - true
  - Since both are proven flu has been diagnosed.

```
knowledge_base = {"flu": [["cough", "fever"]],
"fever": [["sore_throat"]]}

facts = {"sore_throat", "cough"}

def backward_chaining(g)
    if g in facts
        return true
    if g in knowledge_base
        for conditions in knowledge_base[goal]
            if all(backward_chaining(cond) for
                cond in conditions):
                return True
            return False:

* Query: Does the patient have flu?
query = "flu"
if backward_chaining(query):
    print(f"The patient is diagnosed with
                {query}.")
    else:
    print(f"The patient does not have {query}
```

Output

The patient is diagnosed with flu.