```python
knowledge_base = {
    "flu": [["cough", "fever"]],
    "fever": [["sore_throat"]],
}
facts = {"sore_throat", "cough"}
def backward_chaining(goal):
    if goal in facts:
        return True
    if goal in knowledge_base:
        for conditions in knowledge_base[goal]:
            if all(backward_chaining(cond) for cond in conditions):
                return True
    return False
query = "flu"
if backward_chaining(query):
    print(f"The patient is diagnosed with {query}.")
else:
    print(f"The patient does NOT have {query}.")
```

File Edit Shell Debug Options Window Help

```
Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:/Users/welcome/AppData/Local/Programs/Python/Python311/POAIexp7.py
The patient is diagnosed with flu.
>>>
```