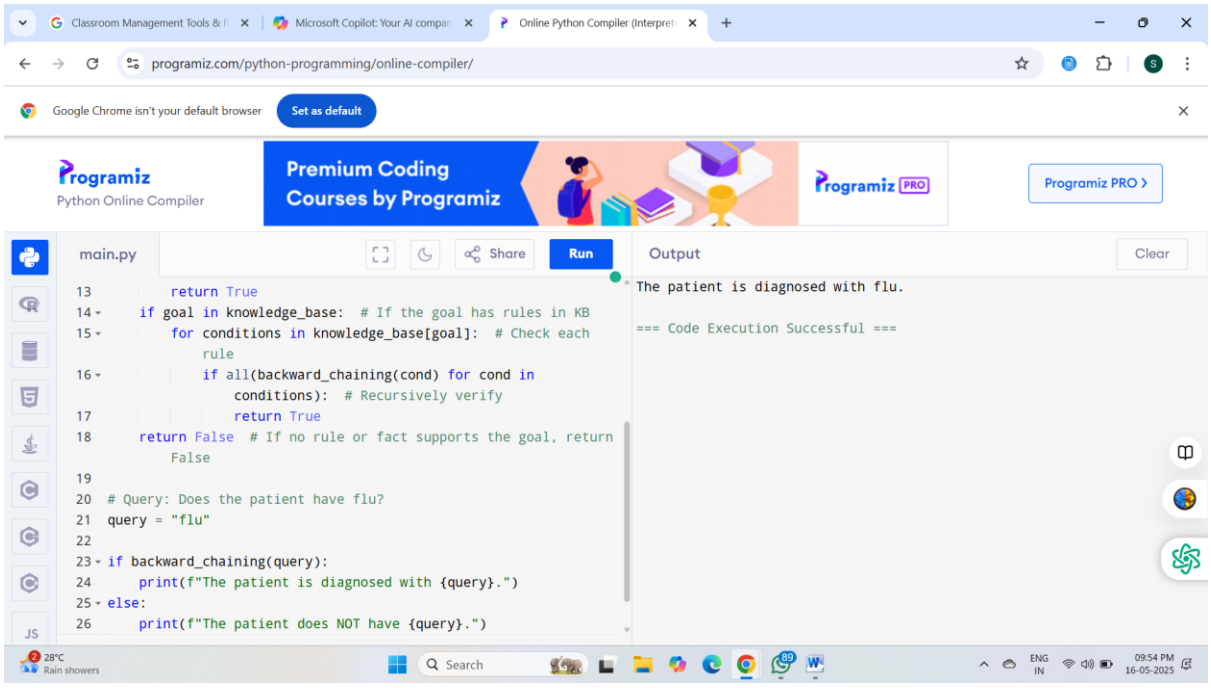
PRINCIPLES OF ARTIFICIAL INTELLIGENCE

LAB – EXPERIMENT 7:BACKWARD CHAINING

```
# Knowledge Base (Rules in IF-THEN format)
knowledge_base = {
    "flu": [["cough", "fever"]],
    "fever": [["sore_throat"]],
}

# Known facts
facts = {"sore_throat", "cough"}

# Backward chaining function
def backward_chaining(goal):
    if goal in facts:  # If the goal is a known fact, return True
        return True
    if goal in knowledge_base:  # If the goal has rules in KB
        for conditions in knowledge_base[goal]:  # Check each rule
            if all(backward_chaining(cond) for cond in conditions):  # Recursively verify
                return True
    return False  # If no rule or fact supports the goal, 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}.")



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