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Class : TY CS D

Roll No: 14

Topic : **Implementation of an EXPERT SYSTEM using PROLOG**

facts.pl

% Facts about symptoms and corresponding conditions

symptom(john, fever).

symptom(john, cough).

symptom(john, fatigue).

symptom(jane, headache).

symptom(jane, fever).

symptom(jane, nausea).

symptom(jack, cough).

symptom(jack, fatigue).

symptom(jack, shortness\_of\_breath).

% Facts about conditions and their characteristics

condition(fever, high\_temperature).

condition(cough, persistent).

condition(headache, severe).

condition(fatigue, constant\_tiredness).

condition(nausea, occasional).

condition(shortness\_of\_breath, wheezing).

% Additional facts for complex conditions

complex\_condition(influenza, [fever, cough, fatigue]).

complex\_condition(migraine, [headache, nausea]).

complex\_condition(pneumonia, [fever, cough, shortness\_of\_breath]).

rules.pl

% Rules for diagnosing conditions based on symptoms

diagnose\_patient(Patient, Condition) :-

symptom(Patient, Symptom),

condition(Condition, Characteristic),

has\_characteristic(Symptom, Characteristic).

% Rules for diagnosing complex conditions

diagnose\_complex\_condition(Patient, ComplexCondition) :-

complex\_condition(ComplexCondition, Symptoms),

forall(member(Symptom, Symptoms), symptom(Patient, Symptom)).

% Rule to check if a symptom has a specific characteristic

has\_characteristic(Symptom, Characteristic) :-

symptom\_has\_characteristic(Symptom, Characteristic).

% Helper rules for symptom characteristics

symptom\_has\_characteristic(fever, high\_temperature).

symptom\_has\_characteristic(cough, persistent).

symptom\_has\_characteristic(headache, severe).

symptom\_has\_characteristic(fatigue, constant\_tiredness).

symptom\_has\_characteristic(nausea, occasional).

symptom\_has\_characteristic(shortness\_of\_breath, wheezing).

Queries:-

?- diagnose\_patient(john, Condition).

?- diagnose\_complex\_condition(jane, migraine).

?- findall(Symptom, symptom(john, Symptom), Symptoms).

?- findall(Condition, (condition(Condition, Characteristic), symptom\_has\_characteristic(\_, Characteristic)), Conditions).

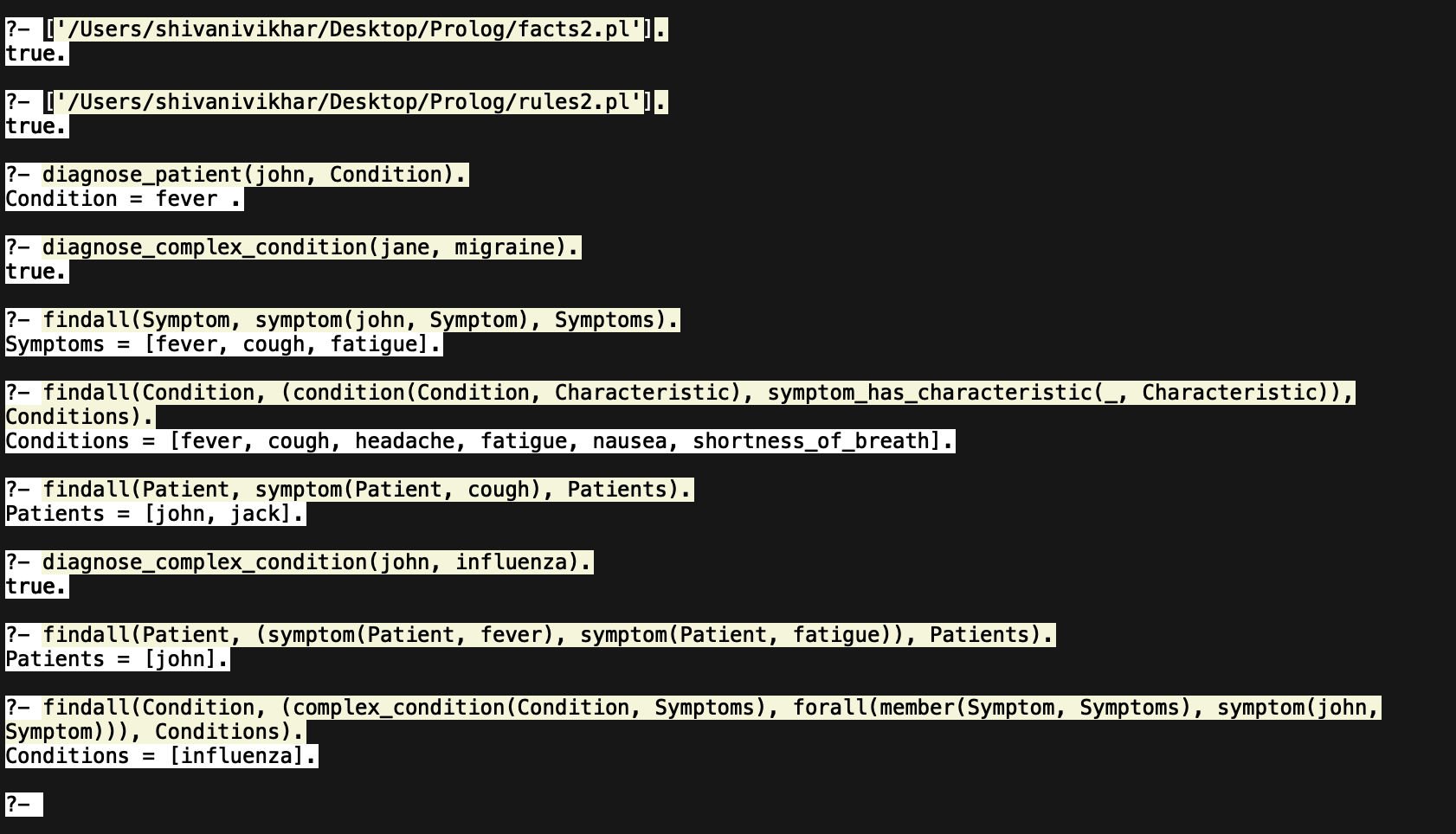
?- findall(Patient, symptom(Patient, cough), Patients).

?- diagnose\_complex\_condition(john, influenza).

?- findall(Patient, (symptom(Patient, fever), symptom(Patient, fatigue)), Patients).

?- findall(Condition, (complex\_condition(Condition, Symptoms), forall(member(Symptom, Symptoms), symptom(john, Symptom))), Conditions).

Output:-



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