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CLASS: TY\_CS\_D

BATCH: 2

ROLL NO: 37

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**ASSIGNMENT 6**

**Problem Statement: Expert System**: Prolog

**Code:**

diagnose :-

 write('This is an expert system for dignosis of mental disorders.'), nl,

 write('There are several questions you need to answer for dignosis of mental disorders.'), nl, nl,

 disorder(X),

 write('Condition was diagnosed as '),

 write(X),

 write('.').

diagnose :-

    write('The diagnosis was not found.').

%The question predicate will have to determine from the user

%whether or not a given attribute-value pair is true

question(Attribute, Value):-

 retract(yes, Attribute, Value), !.

question(Attribute, Value):-

 retract(\_, Attribute, Value),  !, fail.

question(Attribute, Value):-

 write('Is the '),

 write(Attribute),

 write(' - '),

 write(Value),

 write('?'),

 read(Y),

 asserta(retract(Y, Attribute, Value)),

 Y == yes.

%question with additional argument which contains

%a list of possible values for the attribute.

questionWithPossibilities(Attribute, Value, Possibilities) :-

 write('What is the patient`s '), write(Attribute), write('?'), nl,

 write(Possibilities), nl,

 read(X),

 check\_val(X, Attribute, Value, Possibilities),

 asserta( retract(yes, Attribute, X) ),

 X == Value.

check\_val(X, \_, \_, Possibilities) :-  member(X, Possibilities),

 !.

check\_val(X, Attribute, Value, Possibilities) :-

 write(X), write(' is not a legal value, try again.'), nl,

 questionWithPossibilities(Attribute, Value, Possibilities).

%retract equips this system with a memory that remembers the facts that are already

%known because they were already entered by the user at some point during the interaction.

:- dynamic(retract/3).

food\_amount(X) :- question(food\_amount,X).

symptom(X) :- question(symptom,X).

mentality(X) :- question(mentality,X).

cause(X) :- question(cause, X).

indication(X) :- question(indication,X).

social\_skill(X) :- question(social\_skill,X).

condition(X) :- question(condition, X).

consequence(X) :- question(consquence,X).

specialty(X) :- question(specialty,X).

face\_features(X) :- question(face\_features,X).

ears\_features(X) :- question(ears\_features,X).

brain\_function(X) :- question(brain\_function,X).

perceptions(X) :- question(perceptions, X).

behavior(X) :- questionWithPossibilities(behavior, X, [repetitive\_and\_restricted, narcissistic, aggressive]).

%eating disorders

disorder(anorexia\_nervosa) :- type(eating\_disorder),

                      consequence(low\_weight),

                      food\_amount(food\_restriction).

disorder(bulimia\_nervosa) :- type(eating\_disorder),

                     consequence(purging),

                         food\_amount(binge\_eating).

%neurodevelopmental disorder

disorder(asperger\_syndrome) :- type(neurodevelopmental\_disorder),

                   specialty(psychiatry),

                       social\_skill(low),

                       behavior(repetitive\_and\_restricted).

disorder(dyslexia) :- type(neurodevelopmental\_disorder),

                  social\_skill(normal),

                  perceptions(low),

                  symptom(trouble\_reading).

disorder(autism) :- type(neurodevelopmental\_disorder),

                social\_skill(low),

                symptom(impaired\_communication).

%psychotic disorder

disorder(tourettes\_syndrome) :- type(neurodevelopmental\_disorder),

                        social\_skill(normal),

                specialty(neurology),

                    symptom(motor\_tics).

disorder(bipolar\_disorder) :- type(psychotic\_disorder),

                      indication(elevated\_moods).

%genetic disorder

disorder(schizophrenia) :- type(psychotic\_disorder),

                   indication(hallucinations).

disorder(down\_syndrome) :- type(genetic\_disorder),

                   symptom(delayed\_physical\_growth),

                   face\_features(long\_and\_narrow),

                   ears\_features(large),

                   brain\_function(intellectual\_disability).

disorder(fragile\_X\_syndrome) :- type(genetic\_disorder),

                    face\_features(small\_chin\_and\_slanted\_eyes),

                brain\_function(intellectual\_disability).

%types of mental disorders

type(eating\_disorder) :- symptom(abnormal\_eating\_habits),

                 mentality(strong\_desire\_to\_be\_thin).

type(neurodevelopmental\_disorder) :-  condition(affected\_nervous\_system),

                              brain\_function(abnormal),

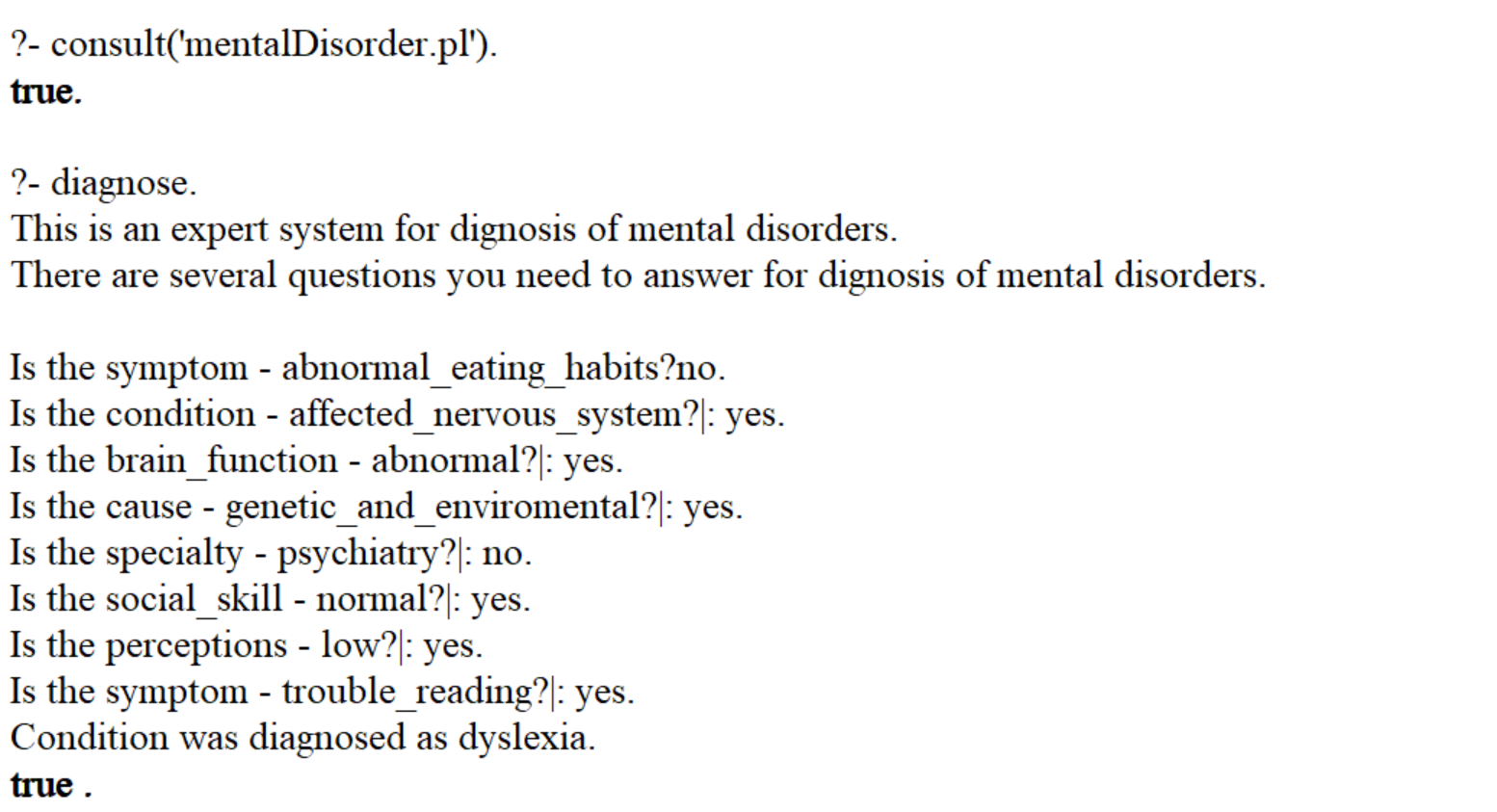
                          cause(genetic\_and\_enviromental).

type(psychotic\_disorder) :- symptom(false\_beliefs),

                    mentality(manic\_depressive),

                    cause(genetic\_and\_enviromental).

type(genetic\_disorder) :- cause(abnormalities\_in\_genome).

**Output:  
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