Declarative Programming Final Exam Questions

Question1:

%family tree.

male(ahmet).

male(mustafa).

male(recep).

male(halil).

male(ersu).

male(bartu).

male(poyraz).

male(deniz).

male(atlas).

male(asil).

male(tuna).

female(afet).

female(pınar).

female(gamze).

female(nehir).

female(merve).

female(rümeysa).

parent(ahmet,recep). %ahmet recep's parent.

parent(ahmet,mustafa). %ahmet mustafa's parent.

parent(recep,pınar). %recep pınar's parent.

parent(recep,gamze). %recep gamze's parent.

parent(recep,halil). %recep halil's parent.

parent(afet,pınar). %afet pınar's parent.

parent(afet,gamze). %afet gamze's parent.

parent(afet,halil). %afet halil's parent.

parent(pınar,ersu). %pınar ersu's parent.

parent(pınar,bartu). %pınar bartu's parent.

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parent(pınar,poyraz). %pınar poyraz's parent.
parent(gamze,deniz). %gamze deniz's parent.
parent(gamze,atlas). %gamze atlas's parent.
parent(gamze,asil). %gamze asil's parent.
parent(halil,nehir). %halil nehir's parent.
parent(halil,tuna). %halil tuna's parent.
parent(halil,merve). %halil merve's parent.
parent(halil,rümeysa). %halil rümeysa's parent.

%rules.

father(X,Y) :- male(X),parent(X,Y). % We can find mother ,if X is a male.
mother(X,Y) :- female(X),parent(X,Y). % We can find mother ,if X is a female.
grandfather(X,Y) :- male(X),parent(X,Z),parent(Z,Y). % We can find grandfather, if X is a male.
uncle(X,Y) :-  male(X),brother(X,Z),parent(Z,Y). % We can find uncle, if X is a male.
grand_uncle(X,Y) :- male(X),father(Z,Y),father(A,Z),brother(A,X). % We can find grand_uncle, if X is a male.
grand_uncle(X,Y) :- male(X),mother(Z,Y),father(A,Z),brother(A,X). % We can find grand_uncle, if X is a male.
brother(X,Y) :-  male(Y),parent(Z,X),parent(Z,Y), X \= Y. % We can find brother, if X is a male.
sister(X,Y) :- female(Y),parent(Z,X),parent(Z,Y), X \= Y. % We can find sister, if X is a female.
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Question2:

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%family tree.

male(mustafa).
male(recep).
male(halil).
male(ersu).
male(bartu).
male(poyraz).
male(deniz).
male(atlas).
male(asil).
male(tuna).
female(afet).
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female(pınar).

female(gamze).

female(nehir).

female(merve).

female(rümeysa).

%rules.

father(X,Y) :- male(X),parent(X,Y). % We can find mother ,if X is a male.

mother(X,Y) :- female(X),parent(X,Y). % We can find mother ,if X is a female.

grandfather(X,Y) :- male(X),parent(X,Z),parent(Z,Y). % We can find grandfather, if X is a male.

uncle(X,Y) :- male(X),brother(X,Z),parent(Z,Y). % We can find uncle, if X is a male.

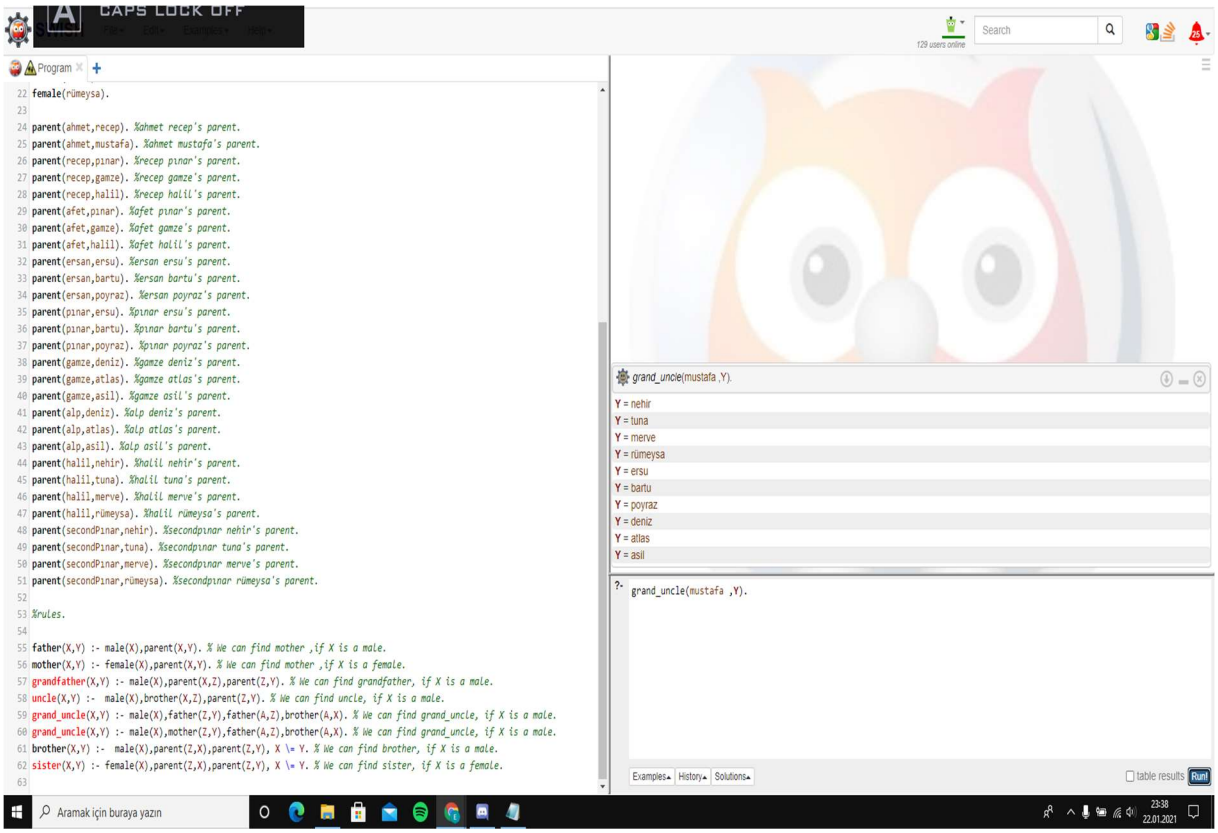
grand_uncle(X,Y) :- male(X),father(Z,Y),father(A,Z),brother(A,X). % We can find grand_uncle, if X is a male.

grand_uncle(X,Y) :- male(X),mother(Z,Y),father(A,Z),brother(A,X). % We can find grand_uncle, if X is a male.

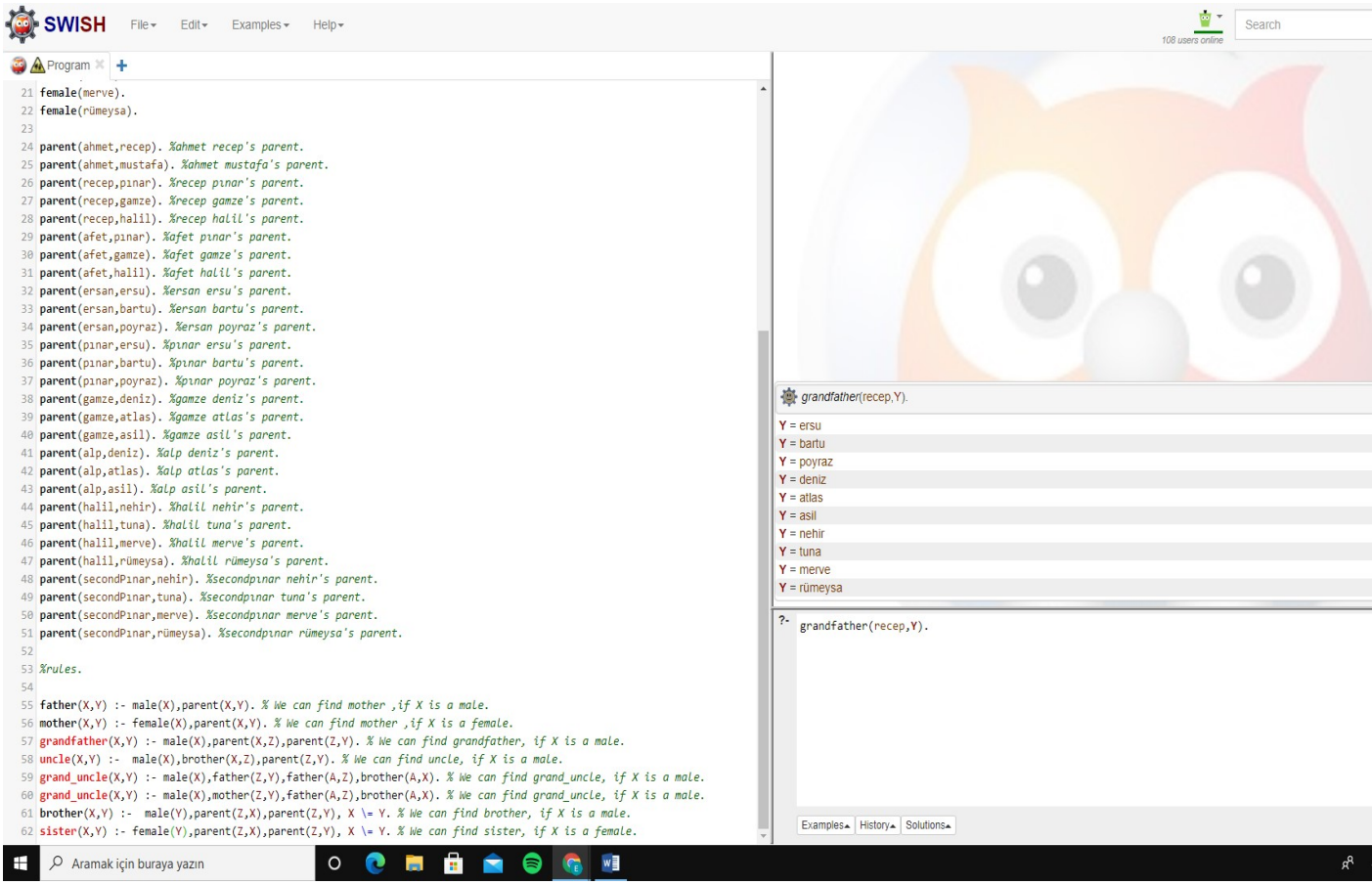
brother(X,Y) :- male(Y),parent(Z,X),parent(Z,Y), X \= Y. % We can find brother, if X is a male.

sister(X,Y) :- female(Y),parent(Z,X),parent(Z,Y), X \= Y. % We can find sister, if X is a female.

Question3:



Question4:



Question5:

Sir,My comments lines are in the code.