## **Assignment 3**

| ?- belongs\_to(X, hufflepuff).  
X = cedric\_diggory ? ;  
no

| ?- loyalty(cedric\_diggory, X).  
X = hufflepuff ? ;  
X = harry\_potter ? ;  
no

| ?- patronus(X, Y), boggart(X, failure).  
X = hermione\_granger,  
Y = otter ? ;  
no

| ?- findall(X,(loyalty(X, Y), loyalty(Y, X)), L).  
L = [harry\_potter,hermione\_granger] ? ;  
no

1) Does it exist a wand that has had two different owners?

| ?- wand(Y, X), wand(Z, X), Y \== Z.

Y = harry\_potter,

X = '15"\_elder\_thestral\_hair',

Z = draco\_malfoy ? ;

Y = draco\_malfoy,

X = '15"\_elder\_thestral\_hair',

Z = harry\_potter ? ;

2) Who influences hermoine granger?

| ?- influence(X, hermione\_granger).  
X = harry\_potter ? ;  
X = cedric\_diggory ? ;  
X = hogwarts ?   
;no

3) Find out if there exist some, who has influence over something, that it also belongs to.

| ?- influence(X,Y), belongs\_to(X,Y).  
no

4) **Update the knowledge base** with a transitive influence rule named trans\_influence/2,that denotes a transitional relationship w.r.t. influence, i.e., X rel Y <- X rel Z ∧ Z rel Y. Now ask the last question again (Find out if there exist some who has influence over something that it also belongs to) write down your answer in your document.   
  
| ?- trans\_influence(X,Y), belongs\_to(X,Y).

X = draco\_malfoy,

Y = slytherin ? ;

no

5) Find out if there exist any entity that has (transitional) influence over themselves

| ?- trans\_influence(X,X) ; influence(X,X).

X = harry\_potter ? ;

X = hermione\_granger ? ;

X = draco\_malfoy ? ;

X = hogwarts ? ;

no

6) Does it exist anything that has (transitional) influence over anything else and the latter is **not loyal** to the former (and they cannot be the same object).

| ?- trans\_influence(X,Y) , \+ loyalty(Y,X), X\==Y .

X = cedric\_diggory,

Y = harry\_potter ? ;

X = cedric\_diggory,

Y = hermione\_granger ? ;

X = draco\_malfoy,

Y = gryffindor ? ;

X = draco\_malfoy,

Y = slytherin ? ;

X = draco\_malfoy,

Y = hufflepuff ? ;

X = draco\_malfoy,

Y = harry\_potter ? ;

X = draco\_malfoy,

Y = hermione\_granger ? ;

X = draco\_malfoy,

Y = cedric\_diggory ? ;

X = hogwarts,

Y = hermione\_granger ? ;

X = hogwarts,

Y = harry\_potter ? ;

X = hogwarts,

Y = hermione\_granger ? ;

X = hogwarts,

Y = harry\_potter ? ;

no

7) Does it exist anything that has (transitional) influence over anything else and the latter is **loyal** to the former (and they cannot be the same object).

| ?- trans\_influence(X,Y) , loyalty(Y,X), X\==Y.  
no

PART 2 unification:

1:   
| ?- [X, Y, Z | L] = [a | Zs].  
X = a,  
Zs = [Y,Z|L] ?  
yes

2 : No

3 :   
| ?- [f(g(X),a,Y)] = [f(g(b),Y,Z)].  
X = b,  
Y = a,  
Z = a ?   
Yes

4:   
| ?- p(q(X, Y), r([a, b])) = p(q(a, b), r(X, Y)).  
No

5:   
| ?- p(s(X),a,Z,Z) = p(Y,X,r(Y),r(s(a))).  
X = a,  
Z = r(s(a)),  
Y = s(a) ? yes

Monkey and Banana Problem:   
Plan = [go(a,d),grab(stick),go(d,b),push(box,b,c),climbon(box),swing(stick)]