
SERIE of PS N°01 (PROLOG – DESIGNING - EXECUTING)

Exercise 1: Simple Facts & Rules: Family base

Write a knowledge base containing:

- Facts parent/2
- Rule father/2
- Rule mother/2

Testing with SWI-Prolog

father(ali, karim). mother(sara, leila). father(X, karim). mother(X, karim). father(X, Y).
mother(X, Y).

Exercise 2: Definition of brother and sister

Write a knowledge base containing:

- Rule brother/2
- Rule sister/2

brother(X,Y) :- man(X), parent(P,X), parent(P,Y), X \= Y.
sister(X,Y) :- woman(X), parent(P,X), parent(P,Y), X \= Y.

Testing: brother(karim, leila). brother(X, leila). sister(karim, Leila).
sister(karim, Y). brother(X, Y). sister(X, Y).

Exercise 3: Define ancestor/2

Write a knowledge base containing: Rule ancestor/2

Testing : ancestor(ali, leila). ancestor(X, ali). ancestor(X, Y).

Exercise 4: Lists: length of a list

Write a knowledge base containing: Rule length/2

Testing : length([a,b,c,d],N).

Exercise 5: Lists: Member of a list

Write a knowledge base containing:

- Rule member/2

Testing : member(b, [a,b,c]). member(X, [a,b,c]).

Exercise 6: Factorial (numerical recursion)

Write a knowledge base containing: Rule fact/2

fact(0,1).
fact(N,F) :- N > 0, N1 is N-1, fact(N1,F1), F is N * F1.

Testing : fact(5,F).

Exercise 7: Petit système expert simple

symptome(fievre). symptome(toux). symptome(fatigue).
grippe :- symptome(fievre), symptome(toux),
symptome(fatigue).

Testing : grippe.

Exercise 8: Recherche dans un graphe

arc(a,b). arc(b,c). arc(c,d). arc(a,d).
chemin(X,Y) :- arc(X,Y).
chemin(X,Y) :- arc(X,Z), chemin(Z,Y).

Testing : chemin(a,d).