TP IA

Introduction to Prolog

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Download

- Windows: : http://www.swi-prolog.org/Download.html
- For Linux: http://www.swi-prolog.org/build/Debian.html

Introduction to Prolog

Syntax:

- Comments
  - % One line comment
  - /* multiple lines comment */

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Syntax:

- Constants:
  - Starts with lower case
  - Can be a string or a number (integer or float)
  - Examples:
    - karim, version_1, '1st year master', -54, 16.07

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Syntax:

- Variables:
    - Starts with uppercase or underscore "_"
    - Examples:
        - Var, Number_of, _new

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Syntax:

- Facts:
  - It expresses acquired knowledge (knowledge which is always true).
  - It should ends with a dot ".".
  - Examples:
    - student(malek, 'university of blida').
    - lives(david, blida)
  - We can define a fact with variables
    - equal(X, X).
    - addition(X, 0, X).

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Syntax:

- Rules:
  - Rule is a Horn clause that expresses how new knowledge can be inferred.
  - Examples:
    - meal(X) :- food(X).
    - mortal(X) :- human(X).
    - smart(X) :- human(X), fun_start_trek(X).

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Syntax:

- Requests:
  - Composed of one or more predicates and ends with a dot "."
  - Examples:
    - Boolean requests
      - ?- mortal(safia).
      - ?- son(yassine, rayane), brother(yassine, sara).
    - Existential requests
      - ?- mortal(X).
      - ?- son(X, rayane), brother(X, sara).

Exercice

We have the following set of facts.

- Ali is the father of Djamila
- Ali is the father of Mohamed
- Mohamed is the father of Reda
- Samia is the mother of Reda
- Omar is the father of Samia

Write these fact as a prolog program.

Exercice

Ask the following questions

- Is Ali father of Djamila.
- Is Ali father of Reda
- Get list of all the kids of Ali.
- Who is the mother of Reda.
- Who is the mother of Mohamed.
- Get list of all the kids of Mohamed.
- Get list of all the kids of Samira.
- grandparent(ali, reda).

Exercice

Define the following rules

- Parent
- Grandparent
- Ancestor