Southern Denmark University
IMADA
DM552, Part II

2017-2018

Chapter 2:
Prolog (Introduction and Basic Concepts)

Exercise 01: Write in prolog the following rules and facts?

1. John is smart.
2. John is student.
3. Smart student is a student that works a lot.
4. Bill is a student.
5. Apple is located in the kitchen.
6. Nanni is a person who lives in New York.

Exercise 02:
Consider the initial rule base:

1- Man(X): X is a man.
2- Woman(X): X is a woman.
3- Child(X, Y): X is a child of Y.

By using the above predicates, write in Prolog the following predicates:

- Parent(X, Y): X is a parent of Y.
- Father(X, Y): X is the father of Y.
- Mother (X, Y): X is the mother of Y.
- Son(X, Y): X is a son of Y.
- Daughter(X, Y): X is a daughter of Y.
- GP(X, Y): X is the grand parent of Y.
- GF(X, Y): X is the grandfather of Y.
- GM(X, Y): X is the grandmother of Y.
- Brother(X, Y): X is the brother of Y.
- Sister(X, Y): X is the sister of Y.
- Uncle(X, Y): X is the uncle of Y.
- Cousin(X, Y): X is the cousin of Y.
- cousine(X, Y) : X est une cousine de Y.

Exercise 03:

Try to answer the following questions first “by hand” and then verify your answers using a Prolog interpreter.

1. Which of the following are valid Prolog atoms?

loves(john,mary), Mary, _c1, ’Hello’

2. Which of the following are valid names for Prolog variables?

a, A, Paul, ’Hello’, a_123, _, _abc, x2

3. What would a Prolog interpreter reply given the following query?

?- f(a, b) = f(X, Y).

4. Would the following query succeed?

?- loves(mary, john) = loves(John, Mary).

Why ?

5. Assume a program consisting only of the fact

a(B, B).

How will the system react to the following query?

?- a(1, X), a(X, Y), a(Y, Z), a(Z, 100).

Why?