Knowledge representation (INFO0049-1)

Exercise session 1

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Practical information

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Download and install SWI-Prolog

You can download SWI-Prolog from the following link: http://www.swi-prolog.org/download/stable

Exercise

Facts, rules and queries in prolog

1. Identify the rules and facts from the following program

```
parent(pam, bob).
parent(tom, bob).
parent(tom, liz).
parent(bob, ann).
parent(bob, pat).
parent(pat, jim).
female(pam).
male(tom).
male(bob).
female(liz).
female(liz).
female(pat).
male(jim).
```

offspring(X,Y) :- parent(Y,X).

2. Formulate in prolog the following questions about the parent and offspring relation using the above set of rules and facts.

- a. Who are bob's parents?
- b. List all the offsprings of pat.

- c. Does liz have a child?
- 3. Given the above facts and rules, write prolog rules defining
 - a. sister(X,Y) relation (introduce a new 2-argument relation called different to emphasize that two children belonging to the same parent have to be different).
 - b. grandparent(X,Y) and grandchild(X,Y) relation.
 - c. aunt(X,Y) relation using the parent relation and sister relation.

Recursive rules

4. Write a prolog rule for the following:

X is a predecessor of Y if there is a direct/indirect parentship chain of people between X and Y. For example,



write a predicate path(X, Y) which succeeds when there is a edge between X and Y. For instance path(1,4) should return true whereas path(5,1) should return false.