

## Logic Programming

Assume we have facts for the predicates:

```
human(john) .  
human(paul) .  
human(mary) .  
  
male(john) .  
male(paul) .  
  
female(mary) .  
  
father(john,mary) .  
  
mother(mary,paul) .
```

### Exercise

Write Horn clauses defining the following predicates with the given meaning.

- a)    **man (X)**                    A man is a human who is male  
      **woman (X)**                A woman is a human who is female  
  
      Solution:            **man (X)        :- human (X) , male (X) .**  
                              **woman (X)    :- human (X) , female (X) .**
- b)    **parent (X,Y)**            X is the parent of Y if it is either the father or the mother of Y  
  
      Solution:            **parent (X,Y) :- mother (X,Y) .**  
                              **parent (X,Y) :- father (X,Y) .**
- c)    **ancestor (X,Y)**        An ancestor is the parent or an ancestor of a parent  
  
      Solution:            **ancestor (X,Y) :- parent (X,Y) .**  
                              **ancestor (X,Y) :- parent (X,Z) , ancestor (Z,Y) .**