

Tutorial 8: Prolog Exercises.

1. Using the parent relation. Define a new rule, called hasachild, that labels someone as having a child.

2. Translate the following into prolog rules:
 - (a) Everybody who has a child is happy.

- (b) For all X, if X has a child who has a sister then X has two children (introduce a new relation hastwochildren).

3. Define the relation aunt(X,Y) in terms of the relations parent and sister. Draw diagram.

4. Write a rule called removeThree, using conc, to delete the last three elements from a list L producing another list L1. Hint: L is the concatenation of L1 and a three-element list.

5. Write a rule, called removeThreeLeftAndRight, to delete the first three elements and the last three elements from a list L producing list L2.

6. Define the rule:

last(Item, List)

using the conc relation, so that Item is the last element of the List.

7. Write the prolog procedure: `length(List, N)`. Which counts the number of items in a list.

8. Define the relation `max(X, Y, Max)` so that Max is the greater of two numbers X and Y.

9. Define the predicate `maxList(List, Max)` so that Max is the greatest number in the list of numbers, List.

10. Define the set subtraction relation:

`set_difference(Set1, Set2, SetDifference)`

where all the three sets are represented as lists. For example:

`set_difference([a,b,c,d], [b,d,e,f], [a,c]).`