ELEC96005 Artificial Intelligence – Tutorial 1 – Introduction to Prolog

1. List Processing – Write Prolog predicates to:

- return the first element of a list
- return the last element of a list
- return the middle of a list
- find if an element is a member of a list
- append two lists together to form a third list
- reverse a list (using append, so 2 arguments)
- reverse a list (*not* using append and 3 arguments instead)
- delete the first occurrence of an element from a list
- delete all occurrences of an element from a list
- substitute all occurrences of one element for another in a list
- test for sub-list
- sieve a list (remove all elements less than a given element)
- partition a list into two lists
- sort a list using quicksort algorithm (hint: partition…)
- subset
- intersection
- union

2. Family Trees

Given the following facts:

father(homer, bart).
father(homer, lisa).
father(homer, maggie).
mother(marge, bart).
mother(marge, lisa).
mother(marge, maggie).
married(homer, marge).
male(homer). …
female (marge). …

Adding facts as necessary to test, write Prolog predicates for family relations

- parent
- grandfather, grandmother, grandparent
- brother, sister, sibling
- aunt, uncle, nephew, niece
- cousin
- any other family relation you can think of… (if you want to have a go at first cousin, second cousin, first cousin once removed, go ahead …)