Andrew Giardina 3/26/2021

Language Study

Homework 4

Problem 1

// New Rules:

sister(Sister,Sib) ←

parent(Parent,Sister),

parent(Parent,Sib),

female(Sister),

Sister /= Sib.

niece(Niece,Uncle) ←

uncle(Uncle,Niece),

female(Niece).

// Full Siblings only

sibling(Sibl,Sib2) ←

parent(Mother,Sibl),

parent(Mother,Sib2),

parent(Father,Sib1),

parent(Father,Sib2),

Mother /= Father,

Sib1 /= Sib2.

Problem 2

// Facts:

left\_of(pencil,hourglass).

left\_of(hourglass,butterfly).

left\_of(butterfly,fish).

above(bicycle,pencil).

above(camera,butterfly).

// Rules:

right\_of(X,Y) ← left\_of(Y,X).

below(X,Y) ← above(Y,X).

// Example Query

// right\_of(butterfly,hourglass)?

// Yes because left\_of(hourglass,butterfly).

Problem 3

// Recursive Rules:

left\_of(X,Z) ←

left\_of(X,Y),

left\_of(Y,Z).

above(X,Z) ←

above(X,Y),

above(Y,Z).

higher(X,Z) ←

above(X,Y),

left\_of(Z,Y). // Will recur if not directly next to

higher(X,Z) ←

above(X,Y),

right\_of(Z,Y). // Will recur if not directly next to

Problem 4

// Rules:

above(X,Z) ←

on(X,Y),

above(Y,Z). // Recursive Case

above(X,Y) ←

on(X,Y). // Base Case