

Compsci367 Assignment 2 Part 1:

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1. Family Problems

For the following assume we have the fact predicates *ChildOf(child, parent)*, *Male(person)* and *Female(person)*.

MotherOf(mother, person)

$A(\text{mother})E(\text{person}) \text{ MotherOf}(\text{mother}, \text{person}) \text{ iff } \text{ChildOf}(\text{child}, \text{mother}) \text{ and } \text{Female}(\text{mother})$

SisterOf(sister, person)

$A(\text{sister})E(\text{person}) \text{ SisterOf}(\text{sister}, \text{person}) \text{ iff } \text{Female}(\text{sister}) \text{ and } \text{MotherOf}(\text{sister}, \text{mother}) \text{ and } \text{MotherOf}(\text{person}, \text{mother})$

2. Tree Problems

For the following assume we have the fact predicate *ParentOf(parent, child)*.

InSameTree(node1, node2)

$A(\text{ancestor})E(\text{descendent}) \text{ AncestorOf}(\text{ancestor}, \text{descendent}) \text{ iff } \text{ParentOf}(\text{ancestor}, \text{descendent})$

$A(\text{ancestor})E(\text{descendent}) \text{ AncestorOf}(\text{ancestor}, \text{descendent}) \text{ iff } \text{ParentOf}(\text{ancestor}, \text{child}) \text{ and } \text{AncestorOf}(\text{child}, \text{descendent})$

$A(\text{node1})E(\text{node2}) \text{ InSametree}(\text{node1}, \text{node2}) \text{ iff } \text{AncestorOf}(\text{ancestor}, \text{node1}) \text{ and } \text{AncestorOf}(\text{ancestor}, \text{node2})$