12/11/2024

Lab 4

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1) Premises from Knowledge Base

i) Alice is the mother of Bob
ii) Bob is the father of charlie.
iii) A father is a parent.
iv) A mother is a parent.
v) All parents have children
vi) ~~All~~ If someone is a parent, their children are siblings.
vii) Alice is married to David.

2) Hypothesis
Charlie is a sibling of Bob

3) Entailment Process
From the premise, Alice is the mother of Bob, Bob is the father of charlie
∴ Both Alice and Bob are considered as parent and they ~~have~~ both have children Bob and charlie respectively. which satisfies premise v)

From premise vi) if anyone is a parent, then their children are siblings

So Bob and charlie ~~and~~ are considered as children of a parent

∴ Charlie is a sibling of Bob.

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3) Entailment Process.

If someone is a parent, their children are siblings, but for siblings the children

Lab - 8

First order Logic

1) All mammals are cat.
$\forall x \; cat(x) \Rightarrow Mammal(x)$

2) Felix is a cat
cat(Felix)

3) Mammals can walk
$\forall x \; Mammal(x) \Rightarrow canWalk$

To Prove
Felix can walk.

From 1) $\forall x \; Cat(x) \Rightarrow Mammal(x)$

Cat(Felix) is true
means Mammal(Felix) true → (A)

From 3)
$\forall x \; Mammal(x) \Rightarrow canWalk(x)$

From (A) we proved Felix is a mammal

so Mammal(Felix) becomes true
$\Rightarrow$ canWalk(Felix) = true
∴ Felix can walk.

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Unification

Consider

1) Parent(Alice, x) → Alice is a parent of x

Parent (Alice, Bob)

↳ Alice is a parent of Bob

∴ x = Bob

2) manages(manager(x, IT), employee(~~x~~, z))

manages(manager(Alice, ~~IT~~ dept), employee(Bob, HR))

∴ x = Alice manages dept = IT and has employee y = Bob and whose ~~role~~ z = HR.