

12/11/24

Propositional Logic

Knowledge Base:

1. Alice is the mother of Bob.
2. Bob is the father of Charlie.
3. A father is a parent.
4. A mother is a parent.
5. All parents have children.
6. If someone is a parent, their children are siblings.
7. Alice is married to David.

Hypothesis:

- Charlie is a sibling of Bob.

Entailment Process:

From the premise, Alice is the mother of Bob, Bob is the father of Charlie.

∴ Both Alice and Bob are considered as parents and they 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 are considered as children of a parent.

∴ Charlie is a sibling of Bob.