Entailment using literals

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 siblings of Bob

Ans → Alice is the mother of Bob

Alice is parent of Bob

$$M(Alice) \rightarrow P(Alice)$$

Bob is the father of charlie

Bob is parent of charlie

$$F(Bob) \rightarrow P(Bob)$$

A father is a parent

Bob being the father of charlie is a parent

$$F(x) \rightarrow P(x)$$

A mother is a parent

Alice seen, the mother of Bob is also a parent

$$M(x) \rightarrow P(x)$$

All the parents have children

Alice as a mother & Bob as a father

Both have children

$$P(x) \rightarrow child(x,y)$$

- If someone is a parent their children are siblings
  this means that if a person has 2 children,
  they are considered siblings
      P(n)   P(y)   Parent (2,x)   Parent (2,y)

- Alice is married to david
      this does not directly effect the siblings
  relationship but may be relevant in other

  Hypothesis:
      1. Alice is mother of Bob
      2. Bob is father of charlie
      3. (if someone is a parent their children
           are siblings)

  So bob is the parent of charlie & Alice is
  parent of Bob, [the share parental link], satis-
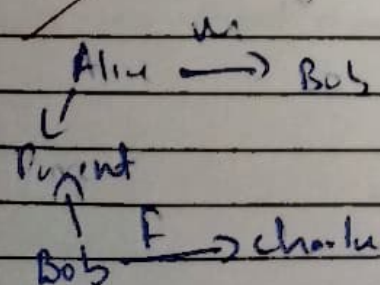 fying siblings condition.

      logical Derivation
      M(Alice) → P(Alice)
      F(Bob) → P(Bob)
      f(x,y) → as both are parents
                    → (charlie, bob)

  { A, B, f(n), M(n), P(n), f(x,y) }
                      { f} = charlie, bob }

      Alice —→ Bob   as both Alice & bob are
       | parents → their children
      Parent   are siblings
       | S[bob & chalie]
      Bob →chalie