Assignment 4

Family Tree Knowledge Base in Python

Build a Python program to create a First-Order Logic (FOL) Knowledge Base (KB) for a family tree. Implement commands like `TELL`, `ASK`, `RETRACT`, and `LIST` to manage and query family relationships with logical inference.

Requirements

1. Implement `SimpleFolKB` Class:
   - Support:
     - `TELL`: Add facts/rules.
     - `ASK`: Query with bindings or boolean.
     - `RETRACT`: Remove facts.
     - `LIST`: Show all facts/rules.
2. Family Tree:
   - Facts: e.g., `Parent(John, Mary)`, `Male(John)`.
   - Rules: e.g., `Parent(x, y) & Parent(y, z) ==> Grandparent(x, z)`, `Parent(x, y) & Male(x) ==> Father(x, y)`.
   - Add 5 facts, 2 rules
3. Tasks:
   - Task 1: Use `TELL` to add facts/rules.
   - Task 2: Use `ASK` to query:
     - Who is Alice's grandparent?
     - Is John a father?
   - Task 3: Use `RETRACT` to remove a fact, add a new one, and re-query.
   - Task 4: Use `LIST` to display the KB.

Instructions:

Submission of the python code and your own explanation of every command.

Group of 3 students

Deadline: May 02, 2025