Artificial Intelligence Lab

Name : Sandip Kumar Maity
Roll : 001911001032
Department : Information Technology (UG-3)
Semester : 5
Assignment 6: Prolog Assignment

Assignment Description :

1. Please run the following attached prolog files
2. Find some of the answers of the predicate sibling and full_siblings where it is true and false. Attach some full screenshots of those queries and answers.
3. Use uncle and aunt predicate on some values in query processing and relate on the knowledge base and justify the answer generated by prolog in a document. Use the full screenshots of the answer in preparation for the documentation.

Uncle Predicate *on some values in query processing :*

```
sandip@LAPTOP-6SDFJDLN:/mnt/d/Documents HDD/JU IT '23/3rd Year/AI/Prolog$ swipl -s parent3.pl
Welcome to SWI-Prolog (threaded, 64 bits, version 8.4.0)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit https://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- uncle(liz, pat).
false.

?- uncle(ann, jim).
false.

?- uncle(adam, paul).
false.

?- uncle(tom, ann).
false.

?- uncle(bob, jim).
false.

?- halt.
sandip@LAPTOP-6SDFJDLN:/mnt/d/Documents HDD/JU IT '23/3rd Year/AI/Prolog$
```

Justification *of above answer generated by prolog :*

1. ***uncle(liz, pat) → false***
    a. Liz is a woman, i.e. false.
2. ***uncle(ann, jim) → false***
    a. Ann is a woman, i.e. false.
3. ***uncle(adam, paul) → false***
    a. Adam is a man.
    b. Adam is a parent of Paul, i.e. false.
4. ***uncle(tom, ann) → false***
    a. Tom is a man.
    b. Tom is a parent of Bob.
    c. Bob is a parent of Ann, i.e. false (Tom is grandfather of Ann).
5. ***uncle(bob, jim) → false***
    a. Bob is a man.
    b. Bob is a parent of Pat.
    c. Pat is a parent of Jim, i.e. false (Bob is grandfather of Jim).

Aunt Predicate *on some values in query processing :*

```
sandip@LAPTOP-6SDFJDLN:/mnt/d/Documents HDD/JU IT '23/3rd Year/AI/Prolog$ swipl -s parent3.pl
Welcome to SWI-Prolog (threaded, 64 bits, version 8.4.0)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit https://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- aunt(liz, pat).
true .

?- aunt(ann, jim).
true.

?- aunt(pam, liz).
false.

?- aunt(liz, ann).
true .

?- aunt(marry, peter).
false.

?- aunt(pam, pat).
false.

?- halt.
sandip@LAPTOP-6SDFJDLN:/mnt/d/Documents HDD/JU IT '23/3rd Year/AI/Prolog$
```

Justification *of above answer generated by prolog :*

1. ***aunt(liz, pat) → true***
    a. Liz is a woman.
    b. Liz and Bob have the same parent, Tom.
    c. Bob is a parent of Pat, i.e. true.
2. ***aunt(ann, jim) → true***
    a. Ann is a woman.
    b. Ann and Pat have the same parent, Bob.
    c. Bob is a parent of Jim, i.e. true.
3. ***aunt(pam, liz) → false***
    a. Pam is a woman.
    b. Pam and Tom have a common child, Bob.
    c. Tom is a parent of Liz, i.e. false.
4. ***aunt(liz, ann) → true***
    a. Liz is a woman.
    b. Liz and Bob have the same parent, Tom.
    c. Bob is a parent of Ann, i.e. true.
5. ***aunt(marry, peter) → false***
    a. Marry is a woman.
    b. Marry and Adam have a common child, Paul.
    c. Adam is a parent of Peter, i.e. false.
6. ***aunt(pam, pat) → false***
    a. Pam is a woman.
    b. Pam is a parent of Bob.
    c. Bob is a parent of Pat, i.e. false.