AI - EXPERIMENT 7

A I - Experiment 7

Aim : To implement family tree in PROLOG

Theory :

1. PROLOG tree defines familiar relationship predicates like parent, male, female queries like mother, father, sibling relationship are defined allowing for inqueries about individuals parents, age, gender & sibling connections in a family tree structure.

2. The provided facts establish relationship btw individuals ; parents, children, genders.

3. For eg : 'parent/2' defines the parent - child relationship btw 2 individual members while 'female/1' & 'male/1' denote genders of family members.

4. Predicates are defined to query specific relationship within family tree :

   a) 'mother/2' find a person's mother using 'parent/2' & 'female/1' predicates. It retreives the mother ('x') of given child ('y')

   b) 'hasChild/1' checks if person has children using 'parent/2' predicate. It return 'True' if person 'x' is a parent.

5. Given input queries :

   a) 'parent (x, Jimmy)' will find who Jimmy's parent ('x') is.

   b) 'mother (x, y)' with find 'mother ('x') & their children ('y')

   c) 'hasChild (x)' will determine if person ('x') has any children.

d) `sister (x, y)` with pair of siblings (`x` & `y`) where `x` is an a sister of `y`.

So, it short, Prolog facts are used to represent basic information, & rules are defined for relationships or properties based on existing facts.

Conclusion : Hence, we implemented PROLOG family tree, in SWI prolog Software.

Code :

```
EXP7.pl
Female(nami).
female(robin).
female(otama).
female(hancock).
male(luffy).
male(zoro).
male(sanji).
male(ace).
parent(nami,zoro).
parent(sanji,zoro).
parent(sanji,lizza).
parent(zoro,hancock).
parent(zoro,otama).
parent(otama,jimmy).
parent(zoro,ace).
parent(ace,jimmy).
mother(X,Y):- parent(X,Y),female(X).
father(X,Y):- parent(X,Y),male(X).
haschild(X):- parent(X,_).
sister(X,Y):- parent(Z,X),parent(Z,Y),female(X),X\==Y.
brother(X,Y):-parent(Z,X),parent(Z,Y),male(X),X\==Y.
```

Output :

```
% c:/users/jsidd/dropbox/pc/desktop/exp7 compiled 0.00 sec, 0 clauses
|
|      parent(X,luffy).
false.

?-
|      parent(X,zoro).
X = nami ,

?-
|      mother(X,Y).
X = nami,
Y = zoro ,

?- haschild(X).
X = nami ,

?- sister(X,Y).
X = hancock,
Y = otama
```

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