CSI 422

Online
"Royal Family"

1. What to do

Simple. A family tree of Royal British Family is given. You have to construct the knowledge base consisting of facts and rules.

1.1 Family Tree

The family tree of British Royal Family is given in Figure 1. Here you can see different kinds of relations denoted by edges. undirected edges denote husband-wife relations and directed edges denote parents-issues relations. Remember, this picture was drawn before the royal wedding of this century. So two additional facts for you which must be present in the knowledge base. William married Kate and they have a son George II.

ATTENTION

We all know, names in real life start with capital letters. Again, in Prolog, variables start with capital letters. But names are not variables. To resolve this conflict, you are suggested to use atoms regarding names starting with small letters like shown in the class. For example, use female(diana) instead of female(Diana). female('Diana') is valid too. But you already have to press keys a lot- why bother pressing an extra shift/caps lock and two single quote keys?

1.2 Facts

You have to enlist different facts in the knowledge bases. They are.

1.2.1 Parent-Issue

Enlist all parent-issues facts in the form of parent(X,Y). parent(X,Y) means that person X is a parent (father or mother) of person Y. For example,

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parent(diana, harry).
parent(anne, peter).
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1.2.2 Couples

Enlist all husband-wife facts in the form of husband(X,Y). husband(X,Y): means that person X is the husband of person Y.

For example,

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husband(philip, elizabeth).
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1.2.3 Male-Females

Enlist all females in the form of female(X). female(X) means that X is a female person.

For example,

female(margaret).

N.B. The females in the family are. Mum, Kydd, Elizabeth, Margaret, Diana, Anne, sarah, Zara, Beatrice, Eugenie, Kate.

Figure 1. Royal British Family

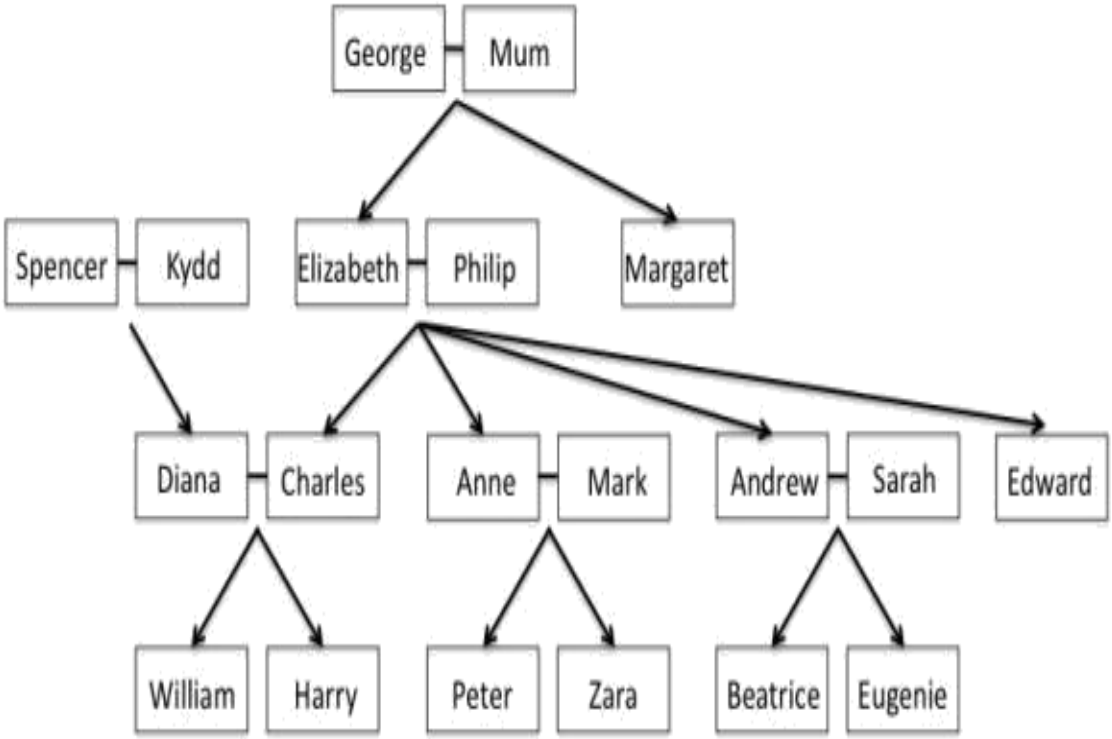

Table 1. Listing of Rules

No. Predicate

1. male (X). % X is not female.
2. father (X,Y). % X is the father of Y
3. mother(X,Y). % X is the mother of Y.
4. son(X,Y). % X is the son of Y.
5. daughter(X,Y). % X is the daughter of Y.
6. sibling(X,Y). % X and Y are siblings i.e. both of their parents are common.
7. brother(X, Y). % X is a brother of Y i.e. both of their parents are common, and both are male.
8. sister(X, Y). % X is a sister of Y. Similar to brother predicate.
9. wife(X, Y). % X is the wife of Y.
10. grandchild(X, Y). % X is a grandchild of Y (2hop descendant in the family tree).
11. grandfather(X, Y). % X is the grandfather of Y.
12. grandmother(X, Y). % X is the grandmother of Y.
13. uncle(X, Y). % X is an uncle of Y. i.e, brother of father/mother or husband of aunt.
14. aunt(X, Y). % X is an aunt of Y. i.e. sister of father/mother or wife of uncle.
15. ancestor(X, Y). % There is path from node X to node Y in the family tree.
16. descendant(X, Y). % There is a path from node Y to node X in the family tree.