

A MITS database has the following vocabulary:

John]
Mary] - Names of individuals
Fred]

likes Name of relationship

Enter this data into the MITS database.

Use MITS to answer these questions;

1. Do John and Mary like each other?
2. Does John like Fred?
3. Does Mary like herself?

A MITS database has this vocabulary:

cow]
fish]
air] - Names of individuals
water]
grass]

eats]
breathes]
walks_on] - Names of relationships
swims_in]

Use MITS to answer these questions;

1. Does the cow walk on water?
2. Is water eaten by the fish?
3. Do the cow and the fish swim in the grass?
4. Is air breathed by the cow?
5. Does the fish eat itself?
6. Does the cow eat and breathe air?

Add these individuals to your database:

dog mouse eel deer rabbit

Try to write a MITS query which will answer these questions;

1. What eats grass?
2. Which individuals breathe air?
3. Is anything eaten by the dog?

THE ANCESTOR PROBLEM

Consider a PROLOG database about the British Royal family comprising the following;

```
Philip      ]  
Elizabeth II ]  
Charles    ]  
Diana      ]  
William    ]  
Edward     ]      - names of members of Royal family  
Henry      ]  
George VI  ]  
Mary       ]  
Margaret   ]  
George V   ]  
  
male       ]      - gender of family members  
female     ]  
  
is         ]      - relationships of family members  
parent_of  ]
```

Enter this database into PROLOG.

The problem is to get PROLOG to list all the ancestors of, say, Charles. An ancestor is someone who is a parent, grand-parent, great-grand-parent, etc.

In this database, parents are explicitly stated, eg. Philip parent_of Charles.

The rule for ancestor takes two lines to declare;

```
    someone ancestor_of somebody if someone parent_of somebody.  
    someone ancestor_of somebody if someone parent_of anybody and anybody ancestor  
    of somebody.
```

The first line of the rule takes the simplest case, ie. your parents are your immediate ancestors.

The second line covers all other cases. Someone is your ancestor if they were the ancestor of your parents.

This rule is an example of RECURSION. ancestor_of is defined in terms of a call to itself. This can only work if there is an exit clause built into the rule. The first line is just such a clause.

Try to work out a question to ask PROLOG to list the ancestors of Charles.