

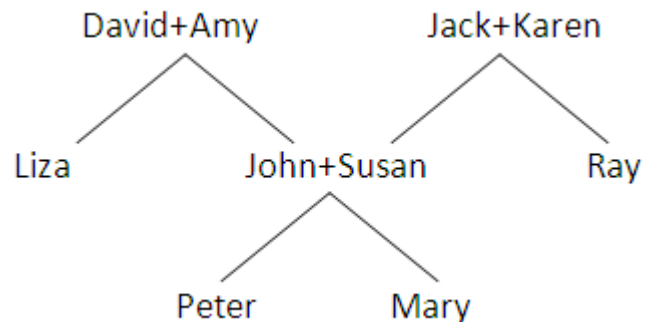
Elements of a Prolog program

We will use the following sample program to describe the structure of a Prolog program.

Program 1: A sample Prolog program

```
sunny.                /* It is sunny. */
father(john, peter).   /* John is the father
of Peter. */
father(john, mary).
father(david, liza).
father(david, john).
father(jack, susan).
father(jack, ray).
mother(susan, peter). /* Susan is the mother
of Peter. */
mother(susan, mary).
mother(amy, liza).
mother(amy, john).
mother(karen, susan).
mother(karen, ray).
loves(john, susan).    /* John loves Susan.
*/
b1([p, 2, q], p).      /* No special meaning.
*/

yeye(X, Y) :- father(X, Temp), father(Temp,
Y).
/* X is the "yeye" of Y
   if X is the father of Temp and
   Temp is the father of Y. */
mama(X, Y) :- mother(X, Temp), father(Temp,
Y).
gunggung(X, Y) :- father(X, Temp),
mother(Temp, Y).
popo(X, Y) :- mother(X, Temp), mother(Temp,
Y).
a(A1, [A | B]) :- A1 is A + 1.
a(A, [B | C]) :- a(A, C).father(john, peter).
```



As you can see, a Prolog program consists of a number of clauses, **each ended with a fullstop (.)**. Each clause is either a fact or a rule.

An **atom** is a group of alphanumeric characters (the underscore character is also considered as an alphanumeric character) **starting with a small letter**. In the above example, `father`, `mother`, `david`, `yeye`, `b1`, `p`, `a`, etc., are atoms. Some atoms are constants while others are predicates.

A **variable** is a group of alphanumeric characters **starting with a capital letter or the underscore (_) character**. In the above example, `x`, `Temp`, `Y`, `A1`, `A`, `B` and `C` are variables. Variables (as well as constants) need not be declared in Prolog.

Constants and variables are called **terms**.

Prolog is case sensitive. Therefore `abc` and `aBc` are different (although both of them are atoms).

Apart from atoms and variables, Prolog can also process numbers.

Atoms, variables and numbers can be enclosed by square brackets (`[]`) to form a list.

Comments are enclosed by the delimiters `/*` and `*/`.