An uncle is a brother of a parent:

$$brother(X, P), parent(P, Y) \rightarrow uncle(X, Y)$$

A grandmother is the mother of a parent:

$$mother(X, P), parent(P, Y) \rightarrow grandmother(X, Y)$$

An ancestor is either a parent or an ancestor of a parent:

$$parent(X, Y) \rightarrow ancestor(X, Y)$$

$$ancestor(X, P), parent(P, Y) \rightarrow ancestor(X, Y)$$

5.3   Monotonic Rules: Syntax

Let us consider a simple rule stating that all loyal customers with ages over 60 are entitled to a special discount:

$$loyalCustomer(X), age(X) > 60 \rightarrow discount(X)$$

We distinguish some ingredients of rules:

- *variables*, which are placeholders for values: X

- *constants*, which denote fixed values: 60

- *predicates*, which relate objects: $loyalCustomer, >$

- *function symbols*, which denote a value, when applied to certain arguments: age

In case no function symbols are used, we discuss function-free (Horn) logic.