to specify that r_1 is stronger than r_2.

We do not impose many conditions on $>$. It is not even required that the rules form a complete ordering. We require only the priority relation to be acyclic. That is, it is impossible to have cycles of the form

$$r_1 > r_2 > \ldots > r_n > r_1$$

Note that priorities are meant to resolve conflicts among *competing rules*. In simple cases two rules are competing only if the head of one rule is the negation of the head of the other. But in applications it is often the case that once a predicate p is derived, some other predicates are excluded from holding. For example, an investment consultant may base his recommendations on three levels of risk that investors are willing to take: low, moderate, and high. Only one risk level per investor is allowed to hold at any given time. Technically, these situations are modeled by maintaining a conflict set $C(L)$ for each literal L. $C(L)$ always contains the negation of L but may contain more literals.

5.9.2 Definition of the Syntax

A *defeasible rule* has the form

$$r : L_1, \ldots, L_n \Rightarrow L$$

where r is the *label*, $\{L_1, \ldots, L_n\}$ the *body* (or *premises*), and L the *head* of the rule. $L, L_1, \ldots, L_n$ are positive or negative literals (a literal is an atomic formula $p(t_1, \ldots, t_m)$ or its negation $\neg p(t_1, \ldots, t_m)$). No function symbols may occur in the rule.[5] Sometimes we denote the head of a rule as $head(r)$, and its body as $body(r)$. Slightly abusing notation, sometimes we use the label r to refer to the whole rule.

A *defeasible logic program* is a triple $(F, R, >)$ consisting of a set F of facts, a finite set R of defeasible rules, and an acyclic binary relation $>$ on R (precisely, a set of pairs $r > r'$ where r and r' are labels of rules in R).

[5]This restriction is imposed for technical reasons, the discussion of which is beyond the scope of this chapter.