PROLOG NOTES #3

De Morgan Laws with Operators
:-op(800, xfx, <==>).
:-op(700, xfy, v).
:-op(600, xfy, &).
:-op(500, xfx, ~).

Definition

~(A & B) <==> ~A v ~B.

Which is

<==>(~(&(A,B)),v(~(A),~(B))).

Using it:

?- C=false, D=true, ~(C & D) <==> X.
C = true,
D = true,
X = (~true v ~true).

Precedence
It is an integer number. Precedence is the rank of the operator, the stronger the higher the rank (closer to 1). You can always use the () to override the precedence. BTW: () have the rank of 0 – the highest possible.

Associativity

Prefix Unary Operators
oper1 oper2 A
is it

      oper1 (oper2 (A))   OK!

or

      oper1(oper2) A   illegal!

fx   what inside f must have higher precedence (lower precedence number)
        oper oper A is illegal
fy   what inside f can have lower or equal precedence (higher or equal precedence number)
        oper oper A is legal

Postfix Unary Operators

A oper1 oper2

is it

       oper2 (oper1 (A))   OK!

or

       A oper2(oper1)   illegal!

xf   what inside f must have higher precedence (lower precedence number)

       A oper oper is illegal

yf   what inside f can have lower or equal precedence (higher or equal precedence number)

       A oper oper is legal

Infix Binary Operators

A oper1 B oper2 C

is it

       oper1(A, oper2(B, C))

or

       oper2(oper1(A, B), C)

xfy   what on the right can have lower or equal precedence (lower precedence number)

       A oper1 B oper2 C is equivalent to oper1(A , B oper2 C)

yfx   what on the left can have lower or equal precedence (lower precedence number)

       A oper1 B oper2 C is equivalent to oper2(A oper1 B, C)

xfx   what on both sides is evaluated first

       A oper1 B oper2 C is illegal!

yfy   no such thing exists

Grammar

Grammar of a Language – set of rules for specifying what sequences of words are acceptable as sentences, for example CGF (context-free grammar).

Parse Tree – diagram showing the parse structure of a sentence.

Parsing Problem – construct parse tree

Parser – program that produces parse trees.

DCG (definite clause grammar) – formalism for grammar rules

Prolog Grammar Rule Notation – syntactic shorthand for ordinary Prolog code.