

RPAL's Phrase Structure Grammar:

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# Expressions #####
E    -> 'let' D 'in' E           => 'let'
      -> 'fn' Vb+ '.' E          => 'lambda'
      -> Ew;
Ew   -> T 'where' Dr            => 'where'
      -> T;

# Tuple Expressions #####
T    -> Ta ( ',' Ta )+           => 'tau'
      -> Ta ;
Ta   -> Ta 'aug' Tc             => 'aug'
      -> Tc ;
Tc   -> B '->' Tc '|' Tc        => '->'
      -> B ;

# Boolean Expressions #####
B    -> B 'or' Bt               => 'or'
      -> Bt ;
Bt   -> Bt '&' Bs               => '&'
      -> Bs ;
Bs   -> 'not' Bp               => 'not'
      -> Bp ;
Bp   -> A ('gr' | '>' ) A        => 'gr'
      -> A ('ge' | '>=' ) A       => 'ge'
      -> A ('ls' | '<' ) A        => 'ls'
      -> A ('le' | '<=' ) A       => 'le'
      -> A 'eq' A               => 'eq'
      -> A 'ne' A               => 'ne'
      -> A ;

# Arithmetic Expressions #####
A    -> A '+' At               => '+'
      -> A '-' At               => '-'
      -> '+' At                 => 'neg'
      -> '-' At
      -> At ;
At   -> At '*' Af              => '*'
      -> At '/' Af              => '/'
      -> Af ;
Af   -> Ap '***' Af            => '***'
      -> Ap ;
Ap   -> Ap '@' '<IDENTIFIER>' R  => '@'
      -> R ;

# Ratons And Rands #####
R    -> R Rn                   => 'gamma'
      -> Rn ;
Rn   -> '<IDENTIFIER>'
      -> '<INTEGER>'
      -> '<STRING>'
      -> 'true'                   => 'true'
      -> 'false'                  => 'false'
      -> 'nil'                     => 'nil'
      -> '(' E ')'
      -> 'dummy'                  => 'dummy' ;
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# Definitions #####

D    -> Da 'within' D                => 'within'
      -> Da ;
Da   -> Dr ( 'and' Dr )+            => 'and'
      -> Dr ;
Dr   -> 'rec' Db                    => 'rec'
      -> Db ;
Db   -> Vl '=' E                    => '='
      -> '<IDENTIFIER>' Vb+ '=' E    => 'fcn_form'
      -> '(' D ')' ;

# Variables #####

Vb   -> '<IDENTIFIER>'
      -> '(' Vl ')'
      -> '(' ')'                    => '()';
Vl   -> '<IDENTIFIER>' list ','      => ',?';

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