v3/crypto.pro KB

```prolog
% FILE: v3/crypto.pro
% TYPE: Prolog source
% LINE: Basic exhaustive solver for order 2,3,4, and 5 problems
% DATE: October 28, 2015
%------------------------------------------------------------------------------

:- consult('gv.pro').
:- consult('combosets.pro').

crypto(N1,N2,Goal,ex(N1,+,N2)) :- Goal is (N1 + N2).
crypto(N1,N2,Goal,ex(N1,*,N2)) :- Goal is (N1 * N2).
crypto(N1,N2,Goal,ex(N1,-,N2)) :- Goal is (N1 - N2).
crypto(N1,N2,Goal,ex(N2,-,N1)) :- Goal is (N2 - N1).
crypto(N1,N2,Goal,ex(N1,/,N2)) :- N2 > 0, Goal is (N1 / N2).
crypto(N1,N2,Goal,ex(N2,/,N1)) :- N1 > 0, Goal is (N2 / N1).

crypto(N1,N2,N3,G,Expr) :-
combos(set(N1,N2,N3),
combo(A,B),extras(C)),
crypto(A,B,SG,SGE),
crypto(C,SG,G,UGE),
substitute(SGE,SG,UGE,Expr).

crypto(N1,N2,N3,N4,G,Expr) :-
combos(set(N1,N2,N3,N4),
combo(A,B),extras(C,D)),
crypto(A,B,SG,SGE),
crypto(C,D,SG,G,UGE),
substitute(SGE,SG,UGE,Expr).

crypto(N1,N2,N3,N4,N5,G,Expr) :-
combos(set(N1,N2,N3,N4,N5),
combo(A,B),extras(C,D,E)),
crypto(A,B,SG,SGE),
crypto(C,D,E,SG,G,UGE),
substitute(SGE,SG,UGE,Expr).
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substitute(New,Old,ex(Old,O,Z),ex(New,O,Z)).
substitute(New,Old,ex(X,O,Old),ex(X,O,New)).
substitute(New,Old,ex(X,O,Z),ex(Q,O,Z)) :-
substitute(New,Old,X,Q).
substitute(New,Old,ex(X,O,Z),ex(X,O,Q)) :-
substitute(New,Old,Z,Q).
```