A4-sol (win 2023)

We have:

$$\begin{array}{l}
\left(\left(\frac{1}{3}(x) \wedge \frac{1}{3}(x)\right) \longrightarrow g(x)\right) \wedge \\
\left(\left(\frac{1}{3}(x) \wedge \frac{1}{3}(x)\right) \longrightarrow g(x)\right) \wedge \\
= \left(\frac{1}{3}(x) \wedge \frac{1}{3}(x)\right) \vee g(x) \wedge \\
\left(\frac{1}{3}(x) \wedge \frac{1}{3}(x)\right) \vee \frac{1}{3}(x)\right)
\end{array}$$

$$= \left(\neg \varphi(\kappa) \vee \neg h(\kappa) \vee g(\kappa) \right) \wedge \left(\neg \varphi(\kappa) \vee h(\kappa) \vee \neg g(\kappa) \right)$$

$$= ((s(x) \wedge h(x)) \rightarrow g(x)) \wedge ((s(x) \wedge g(x)) \rightarrow h(x))$$

Prolog:

$$g(x) := s(x), h(x).$$

 $h(x) := s(x), g(x).$

one non-negated term

```
permute([H|T], P) :- permute(T, P1), insert(H, P1, P).
        permute ([a, 6], Y).
       permute ((5), P1), insert(a, P1, Y).

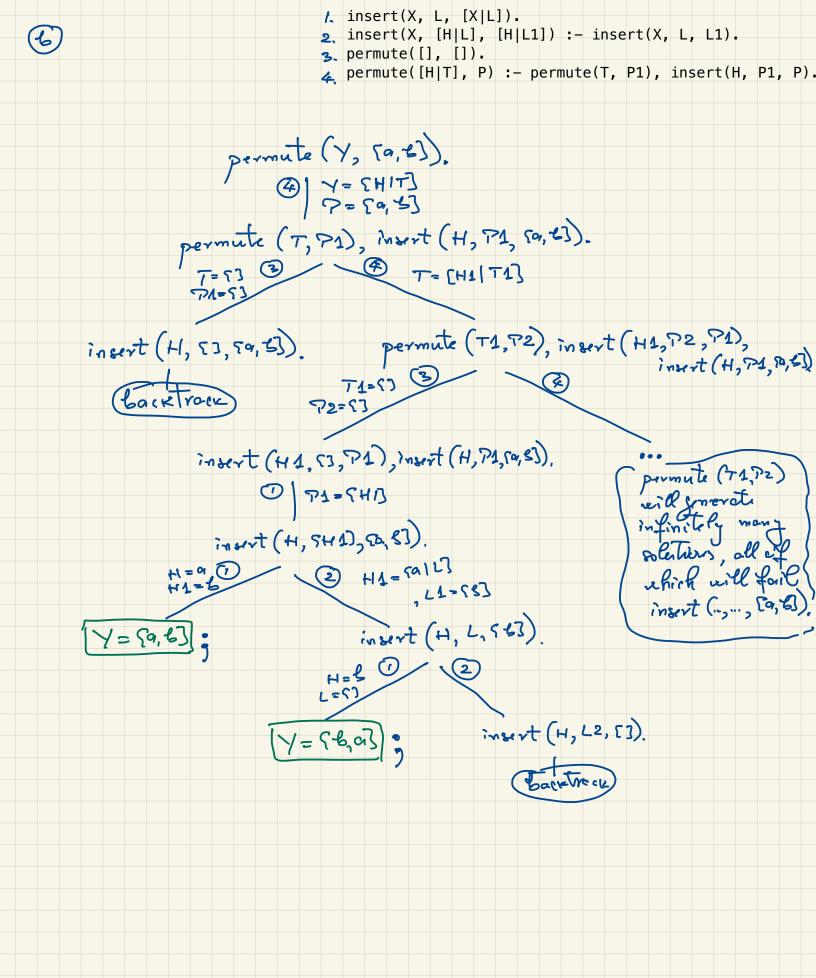
(4) H= 6
T= 53
                                                     false
permute (53,72), insert (6, 72, P1), insert (a, P1, Y).
             3 3= []
     insert (6,53,71), insert (a,71,7).
            1) X=5
L=53
D1=567
         insert (a, 563, Y).
                         insert (a, [3, Li).
Y=[9,5]
                             Y= [6,0]
```

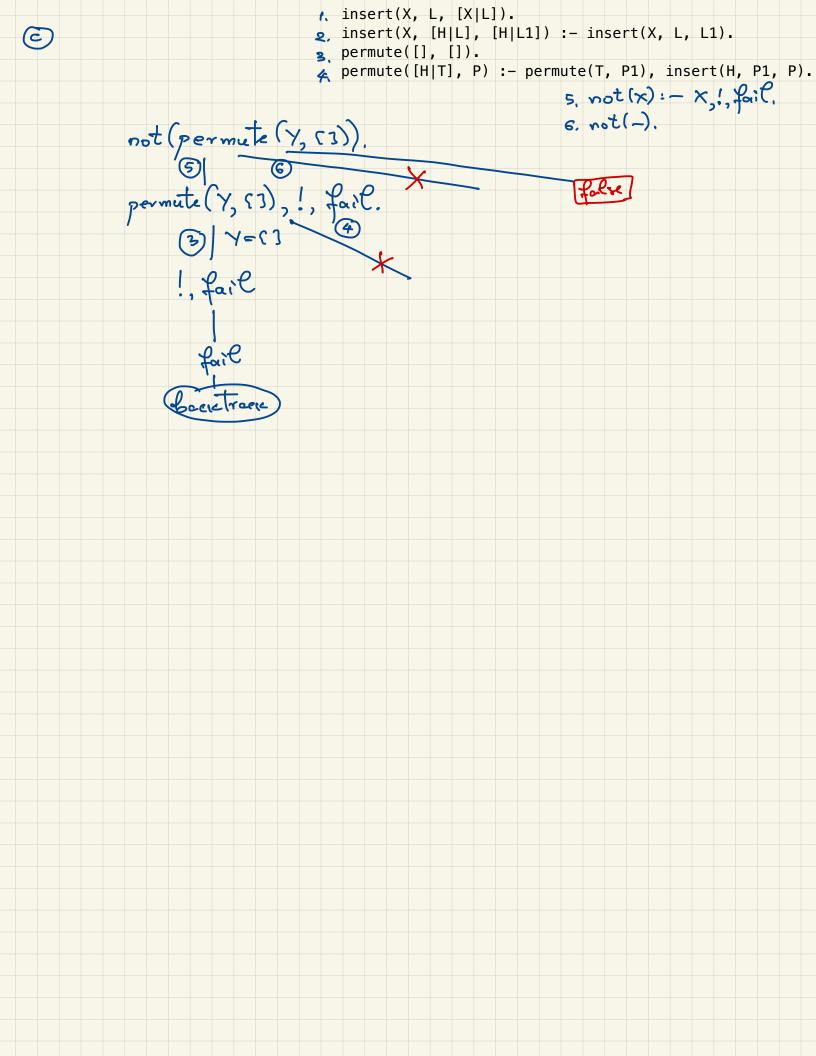
insert(X, L, [X|L]).

permute([], []).

insert(X, [H|L], [H|L1]) :- insert(X, L, L1).

2 @





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3
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X = [4, 3, 8, 9, 5, 1, 2, 7, 6]; X = [4, 9, 2, 3, 5, 7, 8, 1, 6]; X = [6, 1, 8, 7, 5, 3, 2, 9, 4]; X = [6, 7, 2, 1, 5, 9, 8, 3, 4]; X = [8, 1, 6, 3, 5, 7, 4, 9, 2];X = [8, 3, 4, 1, 5, 9, 6, 7, 2];

false.