Aplicații Prolog
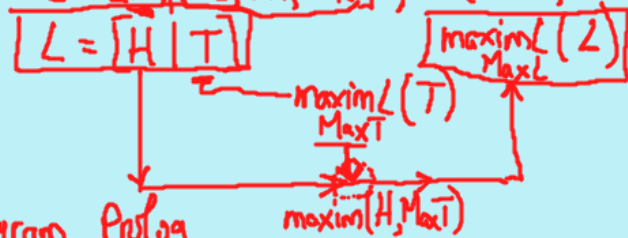
3) Maximul a N valori reale, $N \in \mathbb{N}^*$.

$$L = [H_1, H_2, \ldots, H_N]\ ;\ H_i \in \mathbb{R},\ i = \overline{1..N}$$

$$L = [H | T]$$

$$\text{maximL}\ (T)$$
$$\underline{\text{maxT}}$$

$$\text{maximL}\ (L)$$
$$\underline{\text{MaxL}}$$

$$\text{maxim}(H, \text{MaxL})$$

Program Prolog

```
domains
    lista = real*
predicates
    maxim (real, real, real)
    maximL (lista, real)
clauses
    maxim(A, B, A) :- A > B, !.
    maxim (A, B, B).
    maximL ([H], H).
    maximL([H|T], MaxL) :- maximL (T, MaxT),
                           maxim(H, MaxT, MaxL).
```

Execuție: maximL ([8, 12, -17, 24, -1, 18], Max_lista).
           Max_lista = 24

4) Minimul a N valori reale, $N \in \mathbb{N}^*$.
   (homework)

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5) Concatenarea (alipirea) a N liste de valori reale, $N \in \mathbb{N}^*$.

$$L_1 = \left[H_i^1\right]_{i=\overline{1..n_1}},\ L_2 = \left[H_i^2\right]_{i=\overline{1..n_2}}, \ldots,\ L_N = \left[H_i^N\right]_{i=\overline{1..n_N}},\ \text{unde}$$

$H_i^j \in \mathbb{R}$ - reprezintă elementul cu nr. i din lista nr. j $(1 \leq i \leq n_j,\ 1 \leq j \leq N)$.

$n_j \in \mathbb{N}^*$ - reprezintă numărul de elemente din lista j, $j = \overline{1..N}$

$$LR = L_1 \cdot L_2 \cdot \ldots \cdot L_j \cdot \ldots \cdot L_N$$
$$\text{lista lista} \quad \text{liste} \quad \text{lista}$$

$$\text{lista\_de\_liste} = \text{lista}*$$
$$\text{(matrice)}$$

$$[HM | TM]$$

$$\text{concatenareN}(TM)$$
$$LR$$

Program Prolog

```
domains
    liste = real*
    matrice = lista*
predicates
    concatenare(lista, lista, lista)
    concatenareN (matrice, lista)
clauses
    concatenare ([], L2, L2).
    concatenare ([H|T], L2, [H|TR]) :- concatenare(T, L2, TR).
    concatenareN ([], []).
    concatenareN ([HM|TM], RM) :- concatenareN(TM, RTM),
                                  concatenare(HM, RTM, RM).
```

Execuție:
   concatenareN ([[-1, 2], [0, 1], [2, 3]], Rezultat).