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2 3 4 5 6 7 8 9 10 11 12 13

$cur(N, LP) :- lista(2, N, L),$
 $curire(L, LP).$

$lista(K, N, []) :- K > N, !.$

$lista(K, N, [K|L]) :- SK is K+1,$
 $lista(SK, N, L).$

$curire([], []) :- !.$

$curire([H|T], [H|L]) :- filtreaza(H, T, M),$
 $curire(M, L).$

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$filtraza([], [], []) :- !.$

$filtraza(H, T, L) :- elimaltlea(H, T, [], P, S),$

$filtraza(H, S, M), append(P, M, L).$

$elimaltlea([], [], L, L, []).$

$elimaltlea(1, [Cada], L, L, Cada) :- !.$

$elimaltlea(H, [Cap|Cada], L, P, S) :-$

$PH is H-1, append(L, [Cap], Lw),$

$elimaltlea(PH, Cada, Lw, P, S).$

Rectific definiția predicatului **inversa**: folosirea lui cut (!) nu elimină ciclarea după afișarea unicei soluții în cazul de interogare **inversa(-CareiListe,+AceastaLista)**, ci împiedică obținerea acestei soluții:

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inversa([], []).

inversa([H|T], L) :- inversa(T, M),
append(M, [H], L).

Diagram illustrating a cycle in the Prolog execution:

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graph LR
    A([H|T]) --> B(T)
    B --> C([H|T])
    C --> A
  
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Handwritten notes and queries:

- ?- ~~reverse~~ reverse([a,b,c], L)
- L = [c,b,a]
- ?- ~~reverse~~ reverse(L, [a,b,c])
- L = [c,b,a]
- ?- ~~apartine~~ member(L, [a,b,c])
- ?- ~~member~~ member(L, [a,b,c])
- apartine true
- member false
- append
- concat([], L, L)
- concat([H|T], L, [H|M]) :- concat(T, L, M)

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Handwritten notes and queries:

- ?- ~~apartine~~ member(X, [a,b,c])
- X = a
- X = b
- X = c
- X \= H \Leftrightarrow not(X = H)
- apartine(-, []) :- fail.
- apartine(H, [H|_]) :- !, apartine(X, [H|_]) :- X = H
- apartine(X, [H|_]) :- X \= H
- apartine(X, [_|T]) :- apartine(X, T).
- ?- fail
- false
- member(-, []) :- fail.
- member(H, [H|_])
- member(H, [_|T]) :- member(H, T)

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$\text{member}(_, _):-\text{fail.}$
 $\text{member}(X, [H|_]):-X==H.$
 $\text{member}(X, [_|T]):-\text{member}(X, T).$
 $?-\text{member}(b, [a,b,c]) \quad ?-\text{member}(X, [a,b,c]).$
 $\text{true} \quad \text{false}$
 $?-\text{member}(3, [a,b,c]) \quad ?-\text{member}(X, [a,b,c], V, d).$
 $\text{false} \quad \text{false}$
 $?-\text{member}(X, [a,b,X,c,V,d,X]).$
 $\text{true}; \text{Next}$
 true.

$X \Rightarrow V$

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$A \subseteq B \stackrel{\text{def}}{=} (\forall x \in A)(x \in B)$
 $\Leftrightarrow (\forall x)(x \in A \Rightarrow x \in B)$
 $A \subseteq B \wedge B \subseteq A \Leftrightarrow [(\forall x)(x \in A \Rightarrow x \in B) \wedge (\forall x)(x \in B \Rightarrow x \in A)]$
 $\Leftrightarrow (\forall x)[(x \in A \Rightarrow x \in B) \wedge (x \in B \Rightarrow x \in A)]$
 $\Leftrightarrow (\forall x)(x \in A \Leftrightarrow x \in B) \stackrel{\text{def}}{=} A = B.$
 $A \subsetneq B \stackrel{\text{def}}{=} (A \subseteq B \wedge A \neq B).$

$A = B$
 $\frac{}{H}$
 $\text{Free } x \text{ are, fix}$
 $x \in A \Leftrightarrow x \in B$
 $\frac{}{H}$

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$A \cup B \stackrel{\text{def}}{=} \{x \mid x \in A \text{ or } x \in B\}$
 $A \cap B \stackrel{\text{def}}{=} \{x \mid x \in A \text{ and } x \in B\}$
 $A \setminus B \stackrel{\text{def}}{=} \{x \mid x \in A \text{ and } x \notin B\}$
 $A \Delta B \stackrel{\text{def}}{=} (A \setminus B) \cup (B \setminus A) =$
 $= \{x \mid (x \in A \text{ and } x \notin B) \text{ or } (x \in B \text{ and } x \notin A)\}$
 $= \{x \mid x \in A \text{ xor } x \in B\}$
 $\text{Since } A \subseteq T: \overline{A} \stackrel{\text{def}}{=} T \setminus A.$

$$A \cup (B \cap C) \neq (A \cup B) \cap (A \cup C)$$

Fie x $\begin{matrix} \nearrow \\ \searrow \end{matrix} \begin{matrix} \# \\ \# \end{matrix} \begin{matrix} \nearrow \\ \searrow \end{matrix} \Rightarrow (x \in A \text{ sau } x \in B) \wedge (x \in A \text{ sau } x \in C)$

$(x \in A \text{ sau } (x \in B) \wedge (x \in C)) \neq (x \in A \text{ sau } x \in B) \wedge (x \in A \text{ sau } x \in C)$

$\begin{matrix} \nearrow \\ \searrow \end{matrix} \begin{matrix} \# \\ \# \end{matrix} \begin{matrix} \nearrow \\ \searrow \end{matrix} \Rightarrow (p \text{ sau } (p \wedge r)) \wedge (p \text{ sau } r) \neq (p \text{ sau } p) \wedge (p \text{ sau } r)$
 $\Rightarrow \text{ind}(p, r) \neq \text{ind}(p, r)$
 sã fie valr. booleanã a expr. de sus

$$\begin{aligned} & (\forall p, r \in \{\text{true}, \text{false}\}) (\text{ms}(p, r) = \text{md}(p, r)) \Leftrightarrow \\ & \Leftrightarrow (\exists p, r \in \{\text{true}, \text{false}\}) (\text{ms}(p, r) \neq \text{md}(p, r)). \end{aligned}$$

$$(p \Rightarrow q) \Leftrightarrow (\text{not } p \text{ sau } q)$$

implica $(P, Q) :- \text{not}(P); Q.$

echiv $(P, Q) :- \text{implica}(P, Q), \text{implica}(Q, P)$

ms $(P, Q, R) :- P; Q, R.$

md $(P, Q, R) :- (P; Q), (P; R).$

dedem $(P, Q, R) :- \text{echiv}(\text{ms}(P, Q, R), \text{md}(P, Q, R))$

dem $:- \text{not}(\text{member}(P, [\text{true}, \text{false}]), \text{member}(Q, [\text{true}, \text{false}]),$
 $\text{member}(R, [\text{true}, \text{false}]), \text{not}(\text{dedem}(P, Q, R)))$