P2 - FILIMON BRIANA, 923

5.
a. Substitute all occurrences of an element of a list with all the elements of another list.
Eg. subst([1,2,1,3,1,4],1,[10,11],X) produces X=[10,11,2,10,11,3,10,11,4].
b. For a heterogeneous list, formed from integer numbers and list of numbers, replace in every sublist all
occurrences of the first element from sublist it a new given list.
Eg.: [1, [4, 1, 4], 3, 6, [7, 10, 1, 3, 9], 5, [1, 1, 1], 7] si [11, 11] =>
[1, [11, 11, 1, 11, 11], 3, 6, [11, 11, 10, 1, 3, 9], 5, [11 11 11 11 11 11], 7]

```
% Student exercise profile
:- set_prolog_flag(occurs_check, error).        % disallow cyclic terms
:- set_prolog_stack(global, limit(8 000 000)).  % limit term space (8Mb)
:- set_prolog_stack(local,  limit(2 000 000)).  % limit environment space

% Your program goes here

% a. Substitute all occurrences of an element of a list with all the elements of another list.
% Eg. subst([1,2,1,3,1,4],1,[10,11],X) produces X=[10,11,2,10,11,3,10,11,4].

% substitute(l1..ln, elem, r1..rm, R) =
%                               [], if n = 0
%                               r1..rm U substitute(l2..ln, elem, r1..rm, R), if li = elem
%                               substitute(l2..ln, elem, r1..rm, R), otherwise

substitute([], _, _, []).

substitute([H|T], E, L, R) :-
   H = E,
   substitute(T, E, L, R1),
   append(L, R1, R).

substitute([H|T], E, L, [H|R]) :-
   H \= E,
   substitute(T, E, L, R).


% append(l1..ln, r1..rm, R) =
%                               r1..rm, if n = 0
%          l1..ln U r1 U append(l1..ln,r1, r2..rm , R) if n != 0
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append([], L2, L2).

append([H|T], L2, [H|R]) :- append(T, L2, R).

%b. For a heterogeneous list, formed from integer numbers and list of numbers, replace in
every sublist all
%occurrences of the first element from sublist it a new given list.
%Eg.: [1, [4, 1, 4], 3, 6, [7, 10, 1, 3, 9], 5, [1, 1, 1], 7] si [11, 11] =>
%[1, [11, 11, 1, 11, 11], 3, 6, [11, 11, 10, 1, 3, 9], 5, [11 11 11 11 11 11], 7]

% replace(l1..ln, r1..rn, R) =
%                       [], if n == 0
%                       replace(l2..ln, r1..rn, R), if l1 is not a sublist
%                       r1..rn c l1 U replace(l2..ln, r1..rn, R), otherwise
%

replace([], _, []).

replace([[S1|T1]|T], L, [R2|R]) :-
  substitute([S1|T1], S1, L, R2),
  replace(T, L, R).

replace([H|T], L, [H|R]) :-
  H \= [],
  replace(T, L, R).


/** <examples> Your example queries go here, e.g.
?-
*/
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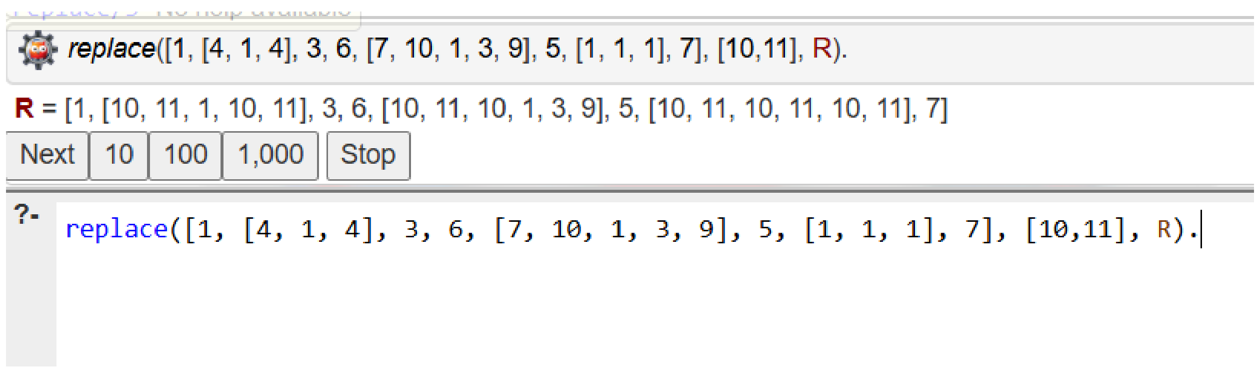

```
replace([1, [4, 1, 4], 3, 6, [7, 10, 1, 3, 9], 5, [1, 1, 1], 7], [10,11], R).
R = [1, [10, 11, 1, 10, 11], 3, 6, [10, 11, 10, 1, 3, 9], 5, [10, 11, 10, 11, 10, 11], 7]
```

```
?- replace([1, [4, 1, 4], 3, 6, [7, 10, 1, 3, 9], 5, [1, 1, 1], 7], [10,11], R).
```