

# List Processing in Prolog P2

Robert Krisztian Sandor, group 927

6.11.2015

**10.** Given a list of integer numbers. Remove all sub-lists formed from decreasing elements.

## Mathematical Models

$$removedec(l_1, \dots, l_n) = \begin{cases} emptylist & \text{if } n = 0 \text{ or if } n = 2 \text{ and } l_1 > l_2 \\ l_1 & \text{if } n = 1 \\ removedec(l_3, \dots, l_n) & \text{if } l_1 > l_2 \text{ and } l_2 < l_3 \\ removedec(l_2, \dots, l_n) & \text{if } l_1 > l_2 \text{ and } l_2 > l_3 \\ l_1 \cup removedec(l_2, \dots, l_n) & \text{otherwise} \end{cases}$$

## Meaning of predicates. Flow models. Source Code

```
% remove_decreasing(L : List, R : List)
% L - list of numerical atoms
% R - resulting list
% flow model (i, i), (i, o)
remove_decreasing([], []) :- !.
remove_decreasing([E], [E]) :- !.
remove_decreasing([X, Y], []) :- X > Y, !.
remove_decreasing([X, Y, Z | T], R) :-
    X > Y,
    Y < Z,
    remove_decreasing([Z | T], R), !.
remove_decreasing([X, Y | T], R) :-
    X > Y,
    remove_decreasing([Y | T], R), !.
remove_decreasing([X | T], [X | R]) :- remove_decreasing(T, R).
```

### Examples

```
?- remove_decreasing([1,2,3,2,1,7,6,5,4,3,2,4,5,3,2], Result).  
Result = [1, 2, 4].
```

```
?- remove_decreasing([5,4,3,2,1], Result).  
Result = [].
```