

Laboratory 3

9.

a. For a list of integer number, write a predicate to add in list after 1-st, 3-rd, 7-th, 15-th element a given value

e.

b. For a heterogeneous list, formed from integer numbers and list of numbers; add in every sublist after 1-st, 3-rd, 7-th, 15-th element the value found before the sublist in the heterogeneous list. The list has the particularity that starts with a number and there aren't two consecutive elements lists.

Eg.: [1, [2, 3], 7, [4, 1, 4], 3, 6, [7, 5, 1, 3, 9, 8, 2, 7], 5] =>

[1, [2, 1, 3], 7, [4, 7, 1, 4, 7], 3, 6, [7, 6, 5, 1, 6, 3, 9, 8, 2, 6, 7], 5].

$$\begin{aligned}
 \text{a. } \text{addElem}(L = [l_1, l_2, \dots, l_n], e, pos) = \{ \\
 & \emptyset, \text{ if } \text{len}(L) = 0 \\
 & \{l_1\} \cup \text{addElem}(L = [l_2, \dots, l_n], e, pos+1), \text{ if } \\
 & \quad \quad \quad pos \in \{1, 3, 7, 15\} \\
 & \{l_1\} \cup \text{addElem}(L = [l_2, \dots, l_n], e, pos+1) \\
 & \}
 \end{aligned}$$

$$\begin{aligned}
 \text{b. } \text{addElemHetero}(L = [l_1, l_2, \dots, l_n], e) = \{ \\
 & \emptyset, \text{ if } \text{len}(L) = 0 \\
 & \text{addElem}(l_1, e, 1) \cup \text{addElemHetero}(L = [l_2, \dots, l_n], e), \\
 & \quad \quad \quad \text{if } l_1 \text{ is a list} \\
 & \{l_1\} \cup \text{addElemHetero}(L = [l_2, \dots, l_n], l_1), \text{ otherwise} \\
 & \}
 \end{aligned}$$