

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 heterogenous 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].

a.

$$\text{pow2 Minus 1}(n) = \begin{cases} \text{pow2 Minus 1}(n // 2), & \text{if } n > 1 \text{ and } n // 2 \neq 2 + 1 = n \\ 1, & \text{otherwise} \end{cases}$$

$$\text{addElem}(l_1, l_2 \dots l_n, e, pos) = \begin{cases} \emptyset, & \text{if } n = 0 \\ \{l_1\} \cup \text{addElem}(l_2 \dots l_n, e, pos+1), & \text{if } \text{pow2 Minus 1}(pos) = \text{true} \\ \{l_1\} \cup \text{addElem}(l_2 \dots l_n, e, pos+1), & \text{otherwise} \end{cases}$$

b.

$$\text{addElemHetero}(l_1 \dots l_n, e) = \begin{cases} \emptyset, & \text{if } n = 0 \\ \text{addElem}(l_1, e, 1) \cup \text{addElemHetero}(l_2 \dots l_n, e), & \text{if } l_1 \text{ is a list} \\ \{l_1\} \cup \text{addElemHetero}(l_2 \dots l_n, l_1), & \text{otherwise} \end{cases}$$