L2: Problema 3

# ENUNT

Se da un arbore de tipul (1). Sa se precizeze numarul de niveluri din arbore.

(a 2 b 2 c 1 i 0 f 1 g 0 d 2 e 0 h 0)

A triangle with letters and numbers

Description automatically generated

## MODEL RECURSIV

A math equations on a white surface

Description automatically generatedA white board with black text

Description automatically generated

A black text on a white background

Description automatically generated

A close-up of a text

Description automatically generated

## COD

;parcurg\_st(L:list nrVarfuri:integer nrMuchii:integer)

;L - arbore binar

;parcurge si formeaza subarborele stang

(defun parcurg\_st(L nrVarfuri nrMuchii)

(cond

((null L) nil)

((equal nrVarfuri (+ 1 nrMuchii)) nil)

(T (cons (car L) (cons (cadr L) (parcurg\_st (cddr L) (+ nrVarfuri 1) (+ nrMuchii (cadr L)) ) ) ))

)

)

;stang(L:list)

;L - arbore binar

;parcurge si formeaza subarborele stang

(defun stang(L)

(parcurg\_st (cddr L) 0 0)

)

;parcurg\_dr(L:list nrVarfuri:integer nrMuchii:integer)

;L - arbore binar

;parcurge si formeaza subarborele drept

(defun parcurg\_dr(L nrVarfuri nrMuchii)

(cond

((null L) nil)

((equal nrVarfuri (+ 1 nrMuchii)) L)

(T (parcurg\_dr (cddr L) (+ nrVarfuri 1) (+ nrMuchii (cadr L))))

)

)

;drept(L:list)

;L - arbore binar

;parcurge si formeaza subarborele drept

(defun drept(L)

(parcurg\_dr (cddr L) 0 0)

)

;maxim(a:integer b:integer)

;afla maximul dintre doua numere

(defun maxim(a b)

(cond

((> a b) a)

(T b)

)

)

;nrNiveluri(L:list)

;L - arbore binar

;calculeaza numarul de niveluri dintr-un arbore binar

(defun nrNiveluri(L)

(cond

((null L) 0)

(T (+ 1 (maxim (nrNiveluri (stang L)) (nrNiveluri (drept L)) )))

)

)

;exemplu (nrNiveluri '(a 2 b 2 c 1 i 0 f 1 g 0 d 2 e 0 h 0))