Principi dei Linguaggi di Programmazione
-
Esercitazione

Small project

- Define a State monad that manages errors (in a sense like Maybe): if an error/problem occurs during the "do" computation, it is signalled and propagated by >>=. The error should also contain a string describing it.
- Apply this monad to mapTreeM, using for map a function that assumes states as numbers and a tree containing numbers, and at each visiting step updates the current state by adding to it the value of the current leaf; the resulting tree must contain a pair with the old leaf value and the state at the visiting instant. Such visit must fail if the state becomes negative during the computation, and succeed if it is positive.

Example

- Branch
  - (Branch
    - (Leaf 7)
    - (Branch
      - (Leaf (-1))
      - (Leaf 3)))
    - (Branch
      - (Leaf (-2))
      - (Leaf 9))

- Branch
  - (Branch
    - (Leaf 7, 7)
    - (Branch
      - (Leaf (-1, 6))
      - (Leaf 3, 9)))
    - (Branch
      - (Leaf (-2, 7))
      - (Leaf 9, 16))

Rules

- Max 2 points of the final grade
- Due in 15 days (May 28th → June 11th)
- It is an **individual** project