

SORTED MULTIMAP (LL + AD LIST)

Map $e : (K, V)$



Representation

SMM

R : relation

head: \uparrow Node

size: Integer

Node

key: TKey

values: List of TValue

next: \uparrow Node

List Operations

- 1) $\text{init}(\underline{l})$
- 2) $\text{size}(l) : \text{Integer}$
- 3) $\text{isEmpty}(l) : \text{Bool}$
- 4) $\text{addFirst}(l, e)$
- 5) $\text{addBefore}(l, p, e)$
- 6) $\text{addAfter}(l, p, e)$
- 7) $\text{addLast}(l, e)$

- 8) $\text{search}(l, e) : \text{Bool}$
- 9) $\text{iterator}(l, \underline{i})$
- 10) $\text{destroy}(l)$
- 11) $\text{position}(l, e) : \text{Integer}$
- 12) $\text{modify}(l, p, e)$
- 13) $\text{element}(l, p, \underline{e})$
- 14) $\text{remove}(l, p, \underline{e})$

subalgorithm mit(smm, r) is:

smm.R \leftarrow r

smm.head \leftarrow NIL

smm.size \leftarrow 0

end_subalgorithm

searchNode(smm, k, kNode, prevNode)

addNode(smm, k, v, prevNode)

removeNode(smm, kNode, prevNode)

subalgorithm searchNode(smm, k, kNode, prevNode) is:

\downarrow \downarrow
NIL or 1Node NIL

aux \leftarrow smm.head

if smm.K([aux].key, k) then
prevNode \leftarrow NIL