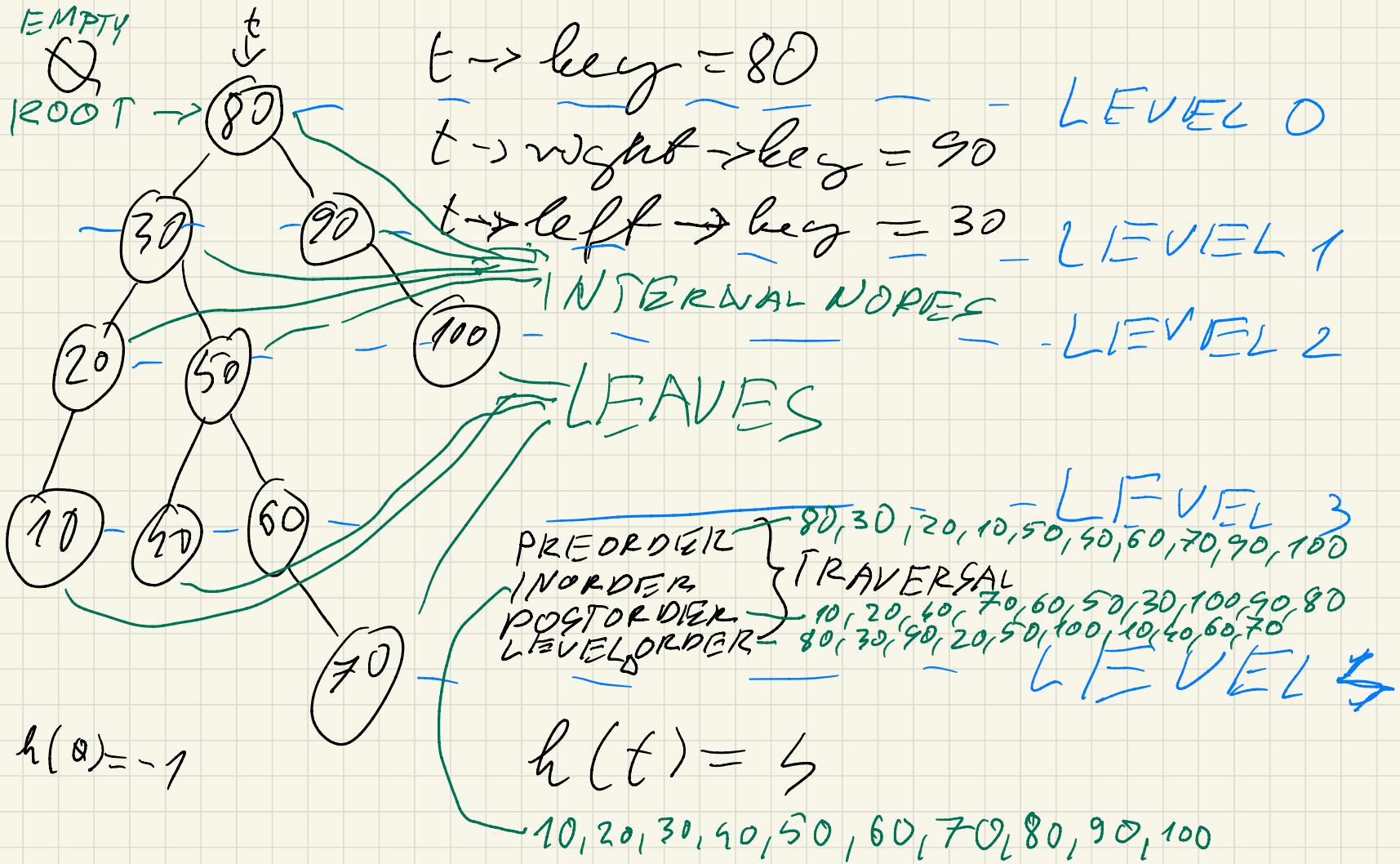


Binary trees

- Expression trees
- Postfix and infix forms of expressions

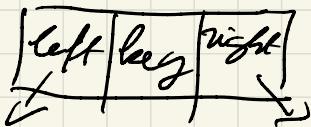
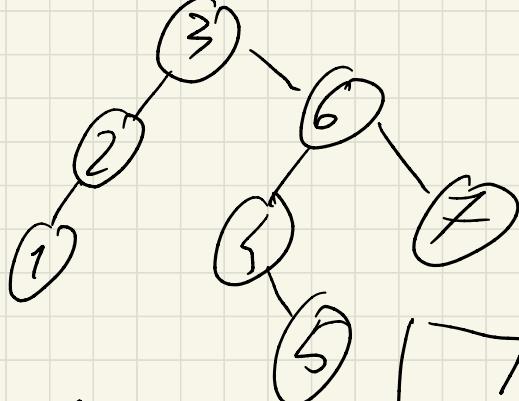
23.03.2021



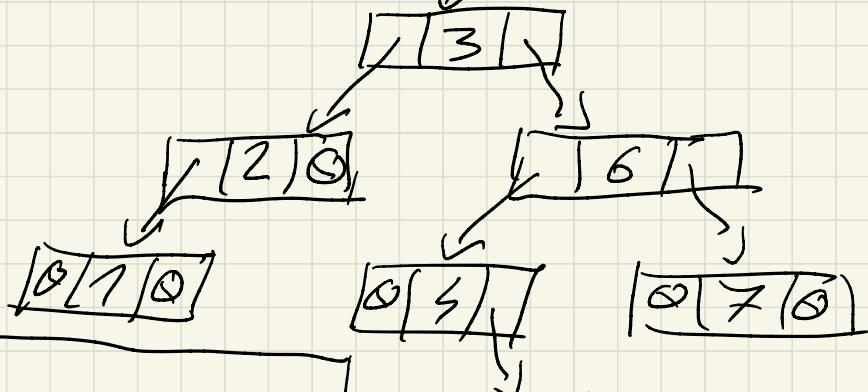


LINKED REPRESENTATION OF BINARY TREES

ABSTRACT

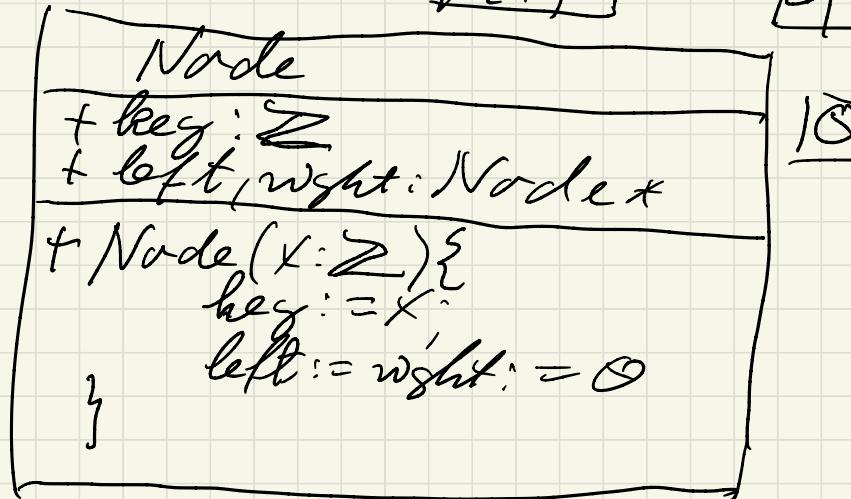


REPR.



Textual repn.

{ [(1)2] 3
 [(5 { 5 })
 6 (7)] }



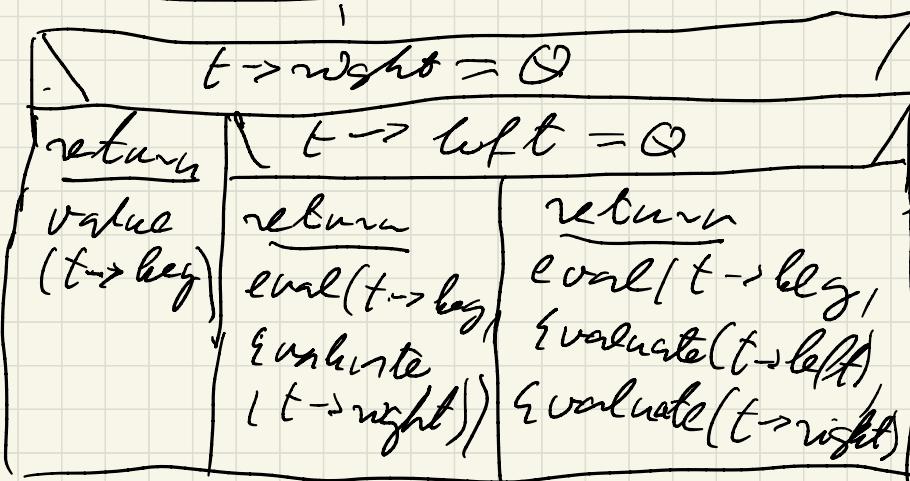
[0 | 5 | 5]

EXPRESSION TREES: $a * (-b + c * 3 - 7) / 2$

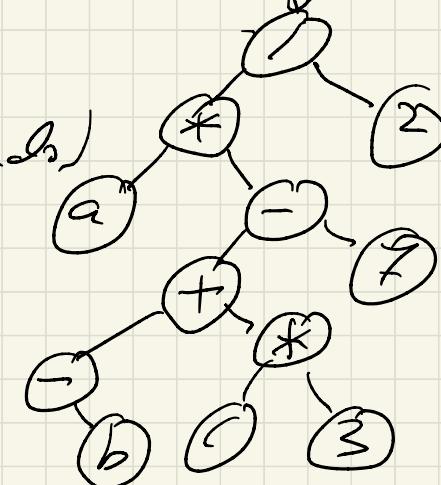
Now: + key: String in Node.

$t \neq \emptyset$ value (x: String): IR (for operands)

Evaluate (t : Node*): IR



Corresponds to POSTORDER traversal of bin. trees.



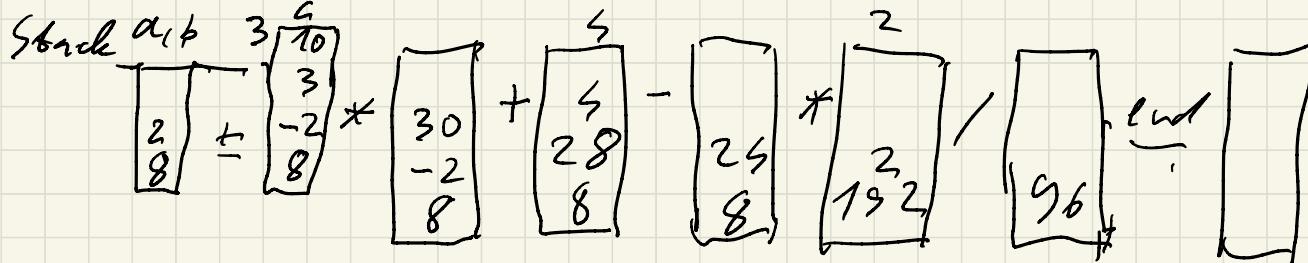
eval (op: String;
x, y: IR): IR
 $x \text{ op } y$

eval (op: String;
y: IR): IR

Infix form: $a * (-b + 3 * c - s) / 2$

$$\begin{aligned} a &= 8 \\ b &= 2 \\ c &= 10 \end{aligned}$$

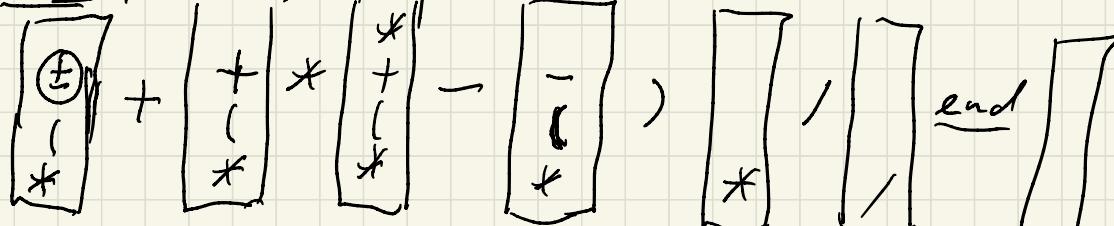
Postfix form: $a\ b\ -\ 3\ c\ *+\ s\ -\ *\ 2\ /$



result = 96
EVAL. OF POSTFIX FORM

Infix \rightarrow Postfix forms

Infix: $a * (-b + 3 * c - s) / 2$



Postfix: $a\ b\ -\ 3\ c\ *+\ s\ -\ *\ 2\ /$

Postfix form → Expression tree

