Context Free Grammars

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Continued

G = (V, Σ, R, S) where - - V a finite set called the set of variables - Σ a finite set of characters - S ∈ V start variables - R is a set of rules A → string of variables and/or letters from Σ

Rules

supp. rule A → 0A1 And if w1 = 01A11 $\implies$ w2 = 010A111 where w2 is derived from w1.

Also,

w1$\implies$w2$\implies$w3$\implies$w4$\implies$...$\implies$wn

Then w1 =*$\implies$ wn

Given a CFG G(= (V,Σ,R,S)), then the language generated by it is LG = { w | w∈Σ and S =$\implies$ w }

Example

In the previous case of the Grammar of arithmetic over add and sub, - Σ was {0...9, (,), +, -} - V was {E, N} - R was - E → E+E | E-E | (E) | N - N → 0 | ... | 9 | NN - S = E

Parse Tree

Stack

FILO - First in Last out. You push into the stack, but you must pop out the last element only.

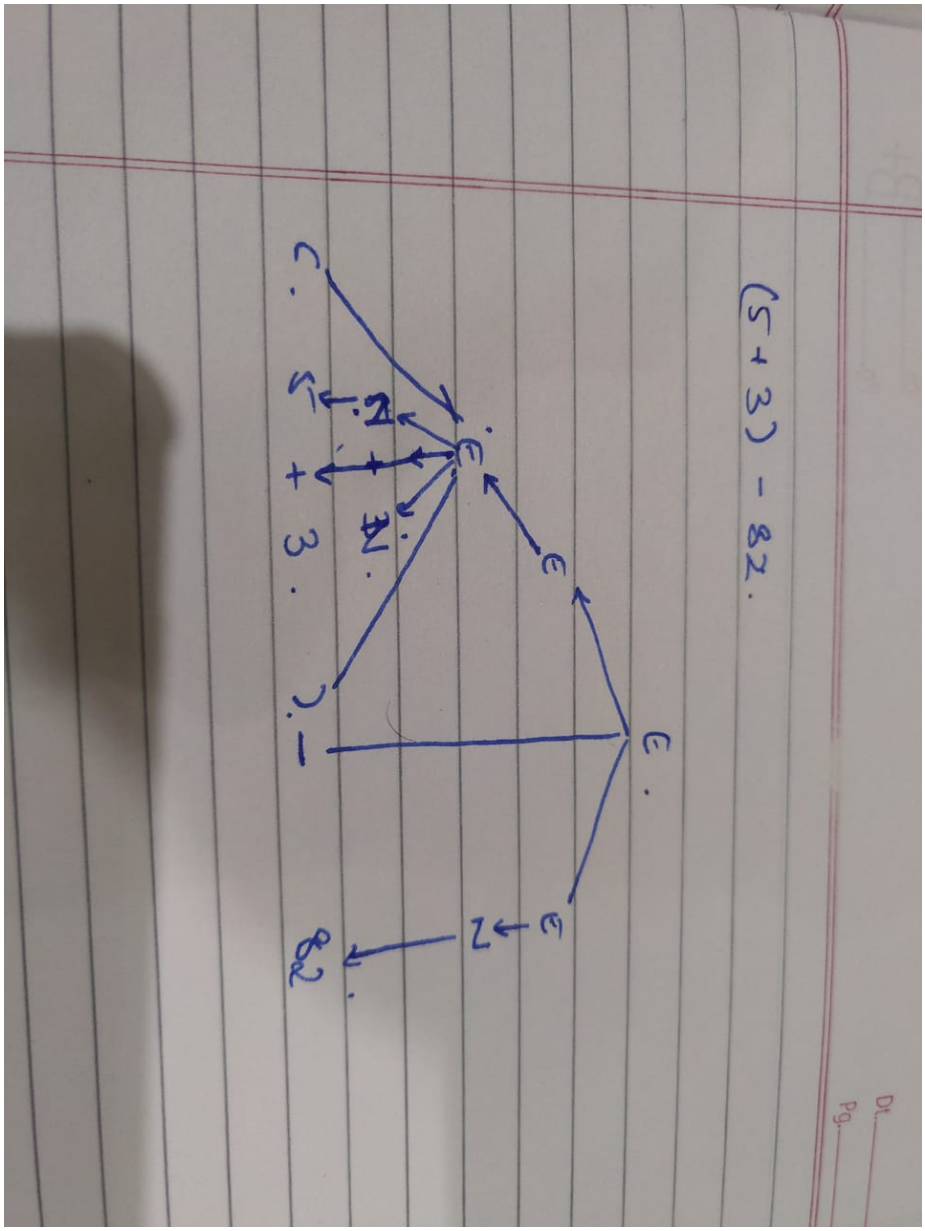

Figure 1: parsetree.jpg