



Lecture 8

Syntax Analysis

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Take aways from the last class

- Predictive Parser

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- Parsing algorithm

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- Parsing algorithm
- Computing *first* for grammar symbols.

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- If there is a production $A \rightarrow \alpha B \beta$ and $First(\beta)$ contains ϵ then everything in $follow(A)$ is in $follow(B)$

Example

- For the expression grammar

$$E \rightarrow TE'$$

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$$T \rightarrow FT'$$

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$$F \rightarrow (E) | id$$

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- A grammar whose parse table has no multiple entries is called $LL(1)$

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 - ▶ Does not work very well!

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- Essentially makes common errors as part of the grammar
- Complicates the grammar and does not work very well

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- PL/C compiler implemented this scheme: anything could be compiled!
- It is complicated and not a very good idea!

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$$S \rightarrow aABe$$

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- Shift: move terminal symbol from right string to left string if string before shift is then string after shift is $\alpha.pqr$ $\alpha p.qr$
- Reduce: immediately on the left of "." identify a string same as RHS of a production and replace it by LHS if string before reduce action is $\alpha\beta.pqr$ and $A \rightarrow \beta$ is a production then string after reduction is $\alpha A.pqr$