

Script generated by TTT

Title: Petter: Compiler Construction (28.05.2020)
-20: Characteristic Automaton

Date: Fri May 08 14:17:29 CEST 2020

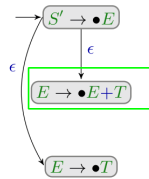
Duration: 12:05 min

Pages: 12

Characteristic Automaton



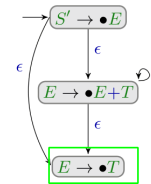
Characteristic Automaton



An automaton...

- consuming pushdown symbols, i.e. *prefixes of righthandsides* of productions expanding from S
- tracing admissible items in its states

Characteristic Automaton



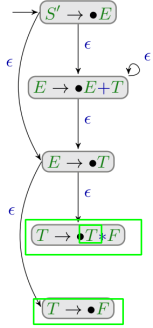
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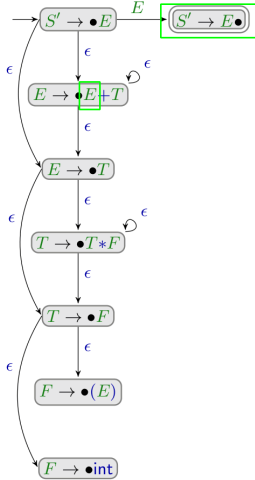
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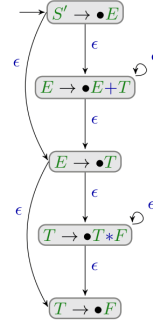
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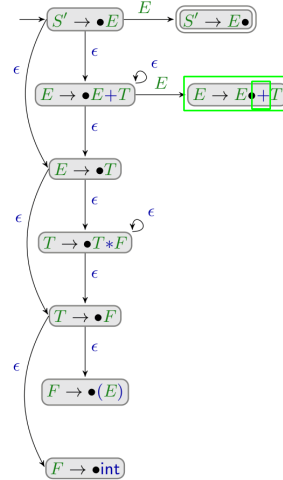
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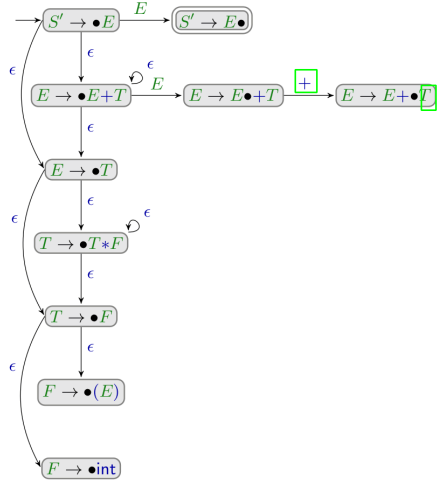
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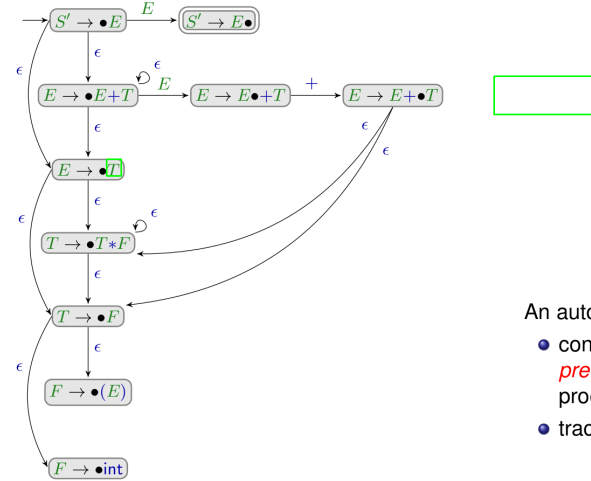
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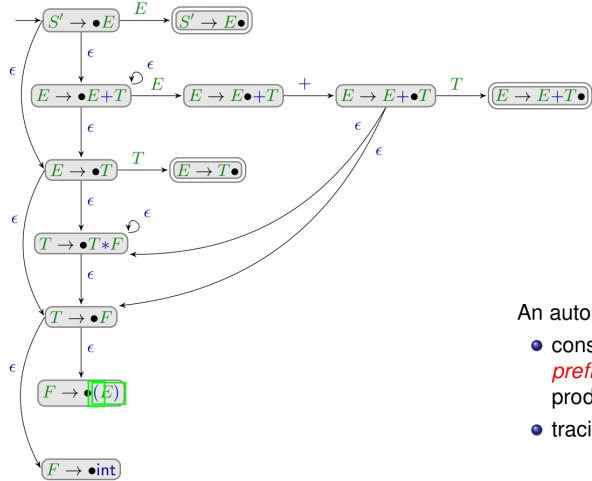
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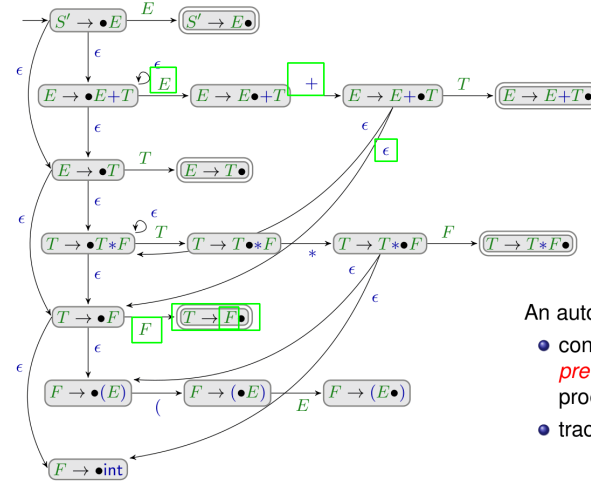
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Characteristic Automaton

Observation:

One can now consume the shift-reduce parser's pushdown with the characteristic automaton: If the input $(N \cup T)^*$ for the characteristic automaton corresponds to a viable prefix, its state contains the admissible items.

States: Items

Start state: $[S' \rightarrow \bullet S]$

Final states: $\{[B \rightarrow \gamma \bullet] \mid B \rightarrow \gamma \in P\}$

Transitions:

- (1) $([A \rightarrow \alpha \bullet X \beta], X, [A \rightarrow \alpha X \bullet \beta]), X \in (N \cup T), [A \rightarrow \alpha X \beta] \in P;$
- (2) $([A \rightarrow \alpha \bullet B \beta], \epsilon, [B \rightarrow \bullet \gamma]), [A \rightarrow \alpha B \beta], [B \rightarrow \gamma] \in P;$

The automaton $c(G)$ is called characteristic automaton for G .