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9.2. LR parsing and augmented grammars (Dragon Book page 241...)

LR parsing

Now we turn to a class of parsers known collectively as LR parsers. The L indicates that the parser reads the input from left to right, and the R indicates that it produces a rightmost derivation (and so is a bottom-up style of parsing).

Augmented grammars

For technical reasons, we do not want the start symbol to appear on the right-hand side of any production. That is easy to arrange.

If G is a grammar with start nonterminal S , form the *augmented grammar* G' by adding a new nonterminal S' to G and adding one production, $S' \rightarrow S$. The start nonterminal of G' is S' .

I will describe the simplest of the LR parsers, LR(0), using an augmented version of our unambiguous expression grammar as a running example. The start nonterminal is E' .

1. $E' \rightarrow E$
2. $E \rightarrow T$
3. $E \rightarrow E + T$
4. $T \rightarrow F$
5. $T \rightarrow T * F$
6. $F \rightarrow \mathbf{n}$
7. $F \rightarrow (E)$

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