

Bottom-Up Parsing

1. Show that the following simplified if-then-else grammar is not LR(0)

$$S \rightarrow \text{ict} S \mid \text{ict} S e S \mid a$$

2. Investigate the two possibilities to patch the parsing table in the above grammar, and their consequences. In both cases show the parsing of nested if-then-else statement: `ict ict a e a`

Conclude that it is not possible to parse this grammar with LR(0), even with conflict resolution.

Extra Material: Construct an LR(1) parsing table (Modern Compiler Design book, pages 165–170) and show that after conflict resolution it is possible to parse the input string given above.

3. Develop an LR(0) parser for the grammar: $S \rightarrow a S \mid b$.
4. Apply your parser to an input 'aab'. What is the conclusion that you draw from the usage of right-recursive grammars in LR parsers?