A Hands-on Approach to FLA with JFLAP

SLR(1) Parsing

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Parsing in JFLAP

- Brute Force Parsing
  - Regular Grammars, CFG, unrestricted grammars
- LL(1) Parsing
- SLR(1) Parsing
  - Application with
    - DFA
    - Pushdown Automata
  - Can parse grammars with conflicts!
Example Parsing with SLR

- Ambiguous Grammar
- Will have conflicts in the parse table, but can still parse strings
SLR(1) Parsing

1. Define FIRST and Follow sets
2. Build DFA
3. Define parse table

orange is conflict
Parse of aaba with reduce conflicts

- Parse entry highlighted
- Stack
- Rule used
- Parse tree
Parse of aaba complete
Recall the conflicts

- When click on orange entry, can choose a different entry to resolve conflict
- For both, let’s choose the shift instead of the reduce
Parse of aaba with shift conflicts

- Note tree is a different shape
Comparison Reduce vs Shift
Conflicts

With Reduce Entrees  With Shift Entrees
Compare SLR(1) with NPDA

- Convert the CFG to an NPDA
Trace same string: aaba

- Note the nondeterminism
- Discuss how lookaheads in SLR(1) make it deterministic
Finish the trace: aaba

- 5 paths accepted