

Converting PDAs to CFGs

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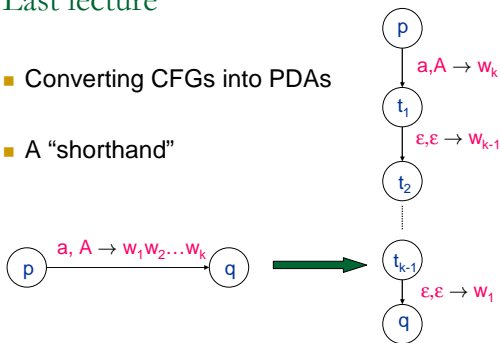
May 15

Announcements

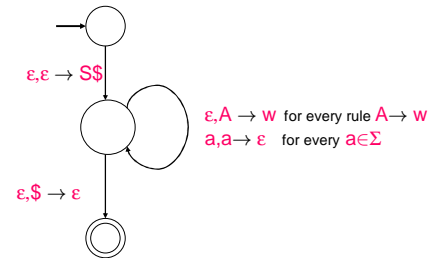
- Handout
 - "Bottom-Up" parsing
 - Example of PDA to CFG conversion
 - H/W #6 if you did not pick up one last class
- No puzzle today

Last lecture

- Converting CFGs into PDAs
- A "shorthand"

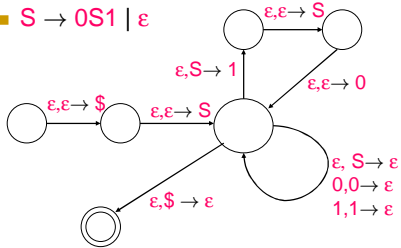


PDA for a grammar $G = \langle V, \Sigma, R, S \rangle$

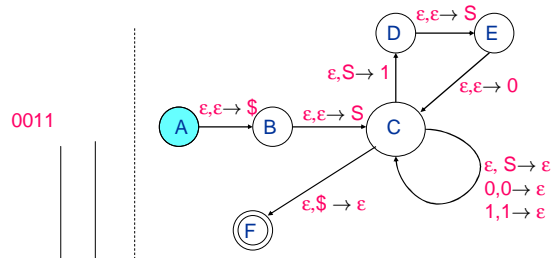


An example

- $S \rightarrow 0S1 \mid \epsilon$



An accepting path for 0011

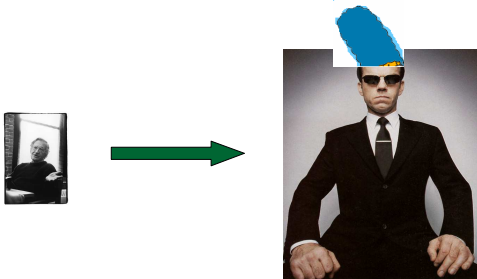


Questions ?

Top-down vs Bottom-up parsing

- What we have seen is top-down parsing
 - Start from **S** and get to the string
- Bottom-up parsing
 - Start from the string and get **S**
 - "Reverse" derivation
 - See the handout for details

So we have shown



Up next...

- Converting PDAs to CFGs



Proof of correctness

- We won't have time to go through all of the proof
- **Reading Assignment:**
 - Read from Sipser
 - Claim 2.30, 2.31 in Sipser, Pgs 121-122.