Nov 8

COMPSCI 3331

Fall 2022

What's next?

- ▶ Assignment 3: available now.
- ▶ Quiz 4 marks available now.
- ▶ Quiz 5 tomorrow - **Lectures 8 and 9**.
- ▶ Midterm marks: soon.
- ▶ Assignment 2: being marked.

CYK - Useless Symbols

$S \rightarrow aaBaA \mid aE \mid caDbb$

$A \rightarrow E \mid ABaa \mid ab$

$B \rightarrow aB \mid \varepsilon$

$C \rightarrow CC \mid a$

$D \rightarrow aba$

$E \rightarrow EEF \mid aEaa$

$F \rightarrow aF \mid aG \mid ababb$

$G \rightarrow GG \mid aGa \mid \varepsilon$

CYK Algorithm

$$S \rightarrow AB \mid CD$$
$$A \rightarrow AE \mid a$$
$$B \rightarrow EF \mid \#$$
$$C \rightarrow EC \mid a$$
$$D \rightarrow SG \mid \#$$
$$E \rightarrow a$$
$$F \rightarrow BG$$
$$G \rightarrow b$$

PDA execution

PDAs

$L = \{a^n b^{2n} \,:\, n \geq 0\}$

PDAs

- ★☆☆ $L_1 = \{a^n b^m : n, m \geq 0, n \neq m\}$
- ★☆☆ B, the language of balanced parentheses over $(,)$.
- ★★☆ $L_2 = \{w \in \{a, b\}^* : |w|_a = |w|_b\}$
- ★★☆ $L_3 = \{a^i b^j c^k : i = j \text{ or } i = k\}$.