Oct 12

COMPSCI 3331

Fall 2022

What's next?

- ► Assignment 2: due Oct 26.
- ► Quiz 4: up to end of Lecture 8.
- ► Midterm: October 25.

Showing languages aren't regular

- $L_1 = \{a^n b^m : n \neq m\}$.
- $L_2 = \{w\#y : w, y \in \{a,b\}^*, |w| < |y|\}$ ($\subseteq \{a,b,\#\}^*$)
- $L_3 = \{w\#y : w, y \in \{a,b\}*, |w|_a = |y|_b\}$.
- $L_4 = \{w\#y : w, y \in \{0,1\}^*, w < y$ as binary numbers. $\}$.

Showing languages aren't regular

- $L_5 = \{w \in \{a, b, c, d\}^* : \forall x \in \{a, b, c, d\}, |w|_x = 0 \text{ or } |w|_x \geq 5\}$
- $L_6 = L^*$ where $L = \{a^n b^n : n \geq 0\}$
- $L_7 = \{w \in \{a, b\}^* : |w|_a \equiv |w|_b (\bmod 10)\}$
- $L_8 = \{w \in \{a, b\}^* : \exists u \in \{a, b\}^*, w = uu^R\}$.

CFGs

Grammar 1

$V = \{S\}$

$\Sigma = \{a, b, \#\}$

S is the start symbol

$$S \rightarrow aSb$$
$$S \rightarrow aSbb$$
$$S \rightarrow \#$$

Grammar 2

$V = \{S\}$

$\Sigma = \{a, b\}$

S is the start symbol

$$S \rightarrow aSa$$
$$S \rightarrow bSb$$
$$S \rightarrow \varepsilon$$