Nov 15

COMPSCI 3331

Fall 2022

What's next?

- Assignment 3: due Nov 22.
- Quiz 7 next Wednesday - **Lectures 12 and 13**.
- Midterm: Remark requests due Nov 24.
- Assignment 2, Quiz 5: being marked.
- Assignment 4: available by Nov 22 at the latest.

Intuition for CFLs

- Nested dependencies are ok. $L = \{a^n b^m c^m d^n \ : \ n, m \geq 0\}$ is a CFL.
- Serial dependencies are not. $L = \{a^n b^m c^n d^m \ : \ n, m \geq 0\}$ is not a CFL.
- Repeated use of a value: $L = \{a^n b^n c^n \ : \ n \geq 0\}$ is not a CFL.
- Indepedent values are ok: $L = \{a^n b^n c^m d^m \ : \ n, m \geq 0\}$ is a CFL.

Which are CFLs?

- $L_1 = \{ww \ : \ w \in \{a,b\}^*\}$.
- $L_2 = \{ww^R \ : \ w \in \{a,b\}^*\}$.
- $L_3 = \{ww^R w \ : \ w \in \{a,b\}^*\}$.
- $L_4 = \{a^n b^m c^{nm} \ : \ n,m \geq 0\}$.
- $L_5 = \{a^n b^m c^{n+m} \ : \ n,m \geq 0\}$.
- $L_6 = \overline{L}$ where $L = \{a^n b^n c^n \ : \ n \geq 0\}$.
- $L_7 = \{a^r b^{r^2} \ : \ r \geq 0\}$.

Complement example

$L_6 = \overline{L}$ where $L = \{a^n b^n c^n \ : \ n \geq 0\}$.

Square example

$$L_7 = \{a^r b^{r^2} \ : \ r \geq 0\}$$