First half of the course:

- Introduction (Aug 27–29)
- Regular expressions (Sept 3–5)
- Edit distance (Sept 8)
- Information theory (Sept 10–12)
- Language models (Sept 15–22)
- Parts of speech and HMMs (Sept 24–Oct 3)
- Parsing (**Oct 6–10**)
- Review (Oct 13–15)
- Midterm (Oct 17)

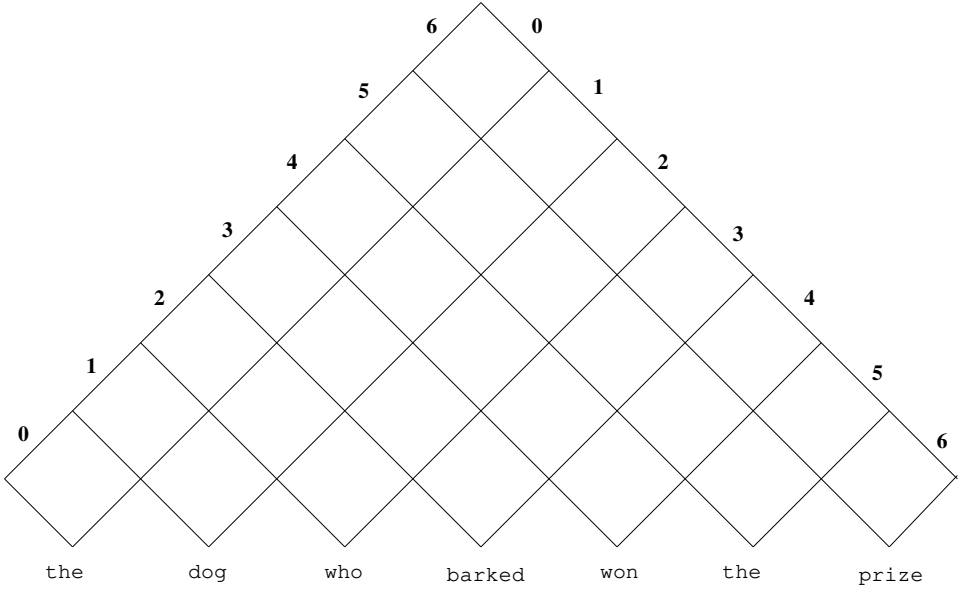
Parsing unit:

- Constitutents, parsing, and context free grammars (last week Monday)
- Recursive descent parsing (last week Wednesday, in lab)
- CKY parsing (last week Friday and **Today**)

Today:

- Finish CKY algorithm
- Reading discussion

$$
\begin{aligned}
\textit{Sentence} &\rightarrow \textit{NounPhrase VerbPhrase} \\
\textit{NounPhrase} &\rightarrow \textit{AbsNounPhrase} \mid \textit{ConcNounPhrase} \\
\textit{AbsNounPhrase} &\rightarrow \textit{That Sentence} \\
\textit{ConcNounPhrase} &\rightarrow \textit{CNPA RelativeClause} \mid \textit{CNPA PrepositionalPhrase} \mid \textit{CNPA} \\
\textit{CNPA} &\rightarrow \textit{PersonalPronoun} \mid \textit{Article Nominal} \\
\textit{Nominal} &\rightarrow \textit{Adjective Nominal} \mid \textit{Noun} \\
\textit{RelativeClause} &\rightarrow \textit{RelativePronoun VerbPhrase} \\
\textit{PrepositionalPhrase} &\rightarrow \textit{Preposition NounPhrase} \\
\textit{VerbPhrase} &\rightarrow \textit{VPA Adverb} \mid \textit{VPA} \\
\textit{VPA} &\rightarrow \textit{VPB PrepositionalPhrase} \mid \textit{VPB} \\
\textit{VPB} &\rightarrow \textit{Verb Adjective} \mid \textit{Verb NounPhrase} \mid \textit{Verb}
\end{aligned}
$$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Should we attribute to machines the ability to think, create, or be intelligent?

Swift, 1726. **No**, it is as absurd as the other projects at the Grand Academy of Lagado.
Observing me to look earnestly upon a frame, he said [that] by his contrivance, the most ignorant person, at a reasonable charge, and with a little bodily labour, might write books in philosophy, poetry, politics, laws, mathematics, and theology, without the least assistance from genius or study. . . . Pg 229

Weizenbaum, 1976. **No**, machine understanding is an illusion.
ELIZA created the most remarkable illusion of having understaood the minds of the many people who conversed with it. This phenomenon is comparable to the conviction may people have that fortune-tellers really do have some deep insight, that they do "know things." Pg 189

Turing, 1950. **Yes**, the fact that a machine can convincingly imitate a human is enough to say it can think.
We now ask the question, "What will happen when a machine takes the part of A in this game?" Will the interegator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, "Can machines think?" Pg 1

Larson, 2021. **Not yet**, and there's no clear way forward.
The question of AI for [Turing] was whether intuition could in fact be "pulled into" the formal part of the system, thus making a system capable of escaping the cures of narrowness by using intuition to choose its own problems. No one has the slightest clue how this would work. pg 31–32

Coming up:

- Do CKY parsing programming assignment (Mon, Oct 27)
- Take midterm (Fri, Oct 17)