

## Plan for Today

### Parsing: The Big Picture

- The lexer breaks the stream into tokens
- The parse is responsible for ...
  - determining if the string of tokens belongs to the language (syntactical analysis)
  - DO something when parts of the language are recognized
    - render pictures, generate code, build an AST ...

### Types of parsers

- Universal, top-down, and bottom-up

### Making grammars LL(1)

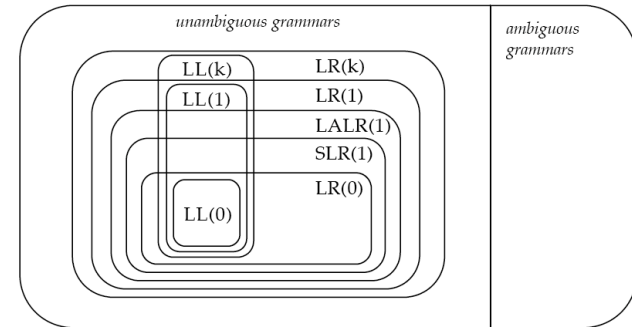
- if then else grammar
- expression grammar

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LL(1) Grammars

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## Grammar Hierarchy



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## Making a Grammar LL(1)

### Why?

- Because then we can create a predictive parser for it.

### Remove ambiguity

- grammar should only generate one parse tree per string

### Remove left recursion

- why? attempt a predictive parser for  $X \rightarrow X b$

### Left factor

- why? attempt a predictive parser for  $Y \rightarrow i A j \mid i A k$

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