CSC488 Practical: Backus-Naur Form

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- A way to describe grammar of *context-free language*
- E.g. programming language
- Used for influential programming languages, such as *ALGOL*
- Presents grammar as a set of rules called *productions*:

$$symbol = expression_0...expression_n$$

- **Non-terminals**: Symbols that has given a production rule.
- **Terminals**: Symbols that were not given a production rule (i.e., string literals). Represented by quotation marks.
- **"="**: Definition. Used to show the production rule of a given non-terminal symbol.
- **"|"**: Alteration. Used to show the alternate production rule of a given non-terminal symbol.

BNF Example

```
start      = "-" fractional
           | fractional

fractional = digitlist
           | digitlist "." digitlist

digitlist  = digit
           | digit digitlist

digit      = "0" | "1" | "2" | "3" | "4" | "5" | "6"
           | "7" | "8" | "9"
```

- Provides *convenience* over traditional BNF notation.
- What we expect people to be using for language specification.
- Useful extensions include:

    [symbol] representing *optional* symbol.
    {symbol} representing *repeating* symbol (0 or more).

EBNF Example

```
start       = ["-"] fractional

fractional  = digitlist ["." digitlist]

digitlist   = {digit}

digit       = "0" | "1" | "2" | "3" | "4" | "5" | "6"
            | "7" | "8" | "9"
```