

You do not always have a token in the first rule, you may need to recurse down a little bit, but you should avoid left recursion.

Parser

- Execute the code directly
- Build a data structure to represent the parsed code
 - Syntax tree
 - Concrete syntax tree
 - Abstract syntax tree
- Concrete syntax tree (CST) → literal parse structure
- Abstract syntax tree (AST) → cleaned up version

We had the long chains to look through (concrete syntax tree), but the abstract syntax tree makes it cleaner. e.g. you had to look through the whole thing in the first, but it is easier to find IDs for example in the second.

- Easy to produce as you parse.
- Parse an expression
 - {type: expression}
 - {left: {...}}
 - {op: {...}}
 - {right: {...}}

From the AST

- Execute it
- Generate code
- Optimize it (perhaps for some particular goal) → COMP621

“Dangling else” concern

[see 11c302](#)

Ambiguous

[see 11c302-1](#)

We can fix this (LR)

[see 11c302-2](#)

WML → Wiki Markup Language

- Inspired by a language used in wikis
 - Designed to simplify editing and presentation of HTML text
 - ‘Simplified’ syntax for HTML
- Wikitext.
 - Allow you to express HTML constructs but with ‘easier’ syntax
 - Allow the specifications to coexist with regular text
 - Template language on top of this
 - In wikis this is intentionally limited
- NB: syntax is not standardized.
 - We will follow Mediawiki (more or less), but vary it as well.

Idea

- User types text
- Interspersed with Wikitext syntax

We could use `<p></p>` for paragraphs.

Other things we could do:

- Start a line with certain chars
 - abc def
 - xyz
- `abc defxyz`

How is this parsed?

Look at beginning char of line, see if special character. Otherwise we see this as a line. Therefore, it is the start of a paragraph, then issue a paragraph symbol `<p>`. But, if the line is empty, we issue a line break symbol `
`. Keep reading and emitting lines until we get to an empty line (or EOF, special line) `</p>`.

```
abc \n
def \n
\n
\n
ghi
```

The above is my input.

```
<p> abc \n
    def \n
</p>
<p><br> \n
    ghi </p>
```

Templates

- Wiki is a set of pages that can represent it.
- I would like to include the content of a page inside another page.
- We can define pages as templates.
 - Wikitext that specifies that a template should be copied in to the current place. They call this “transclusion” → macro replacement.
- Syntax: [see 11c302-3](#)