Magic Cloud

Compiler (pipeline)

.bird → parse (*inferring structure*) → [tree] → transform → [tree] → compile (*reducing structure*) → [.o] → assemble → .o → .run, link
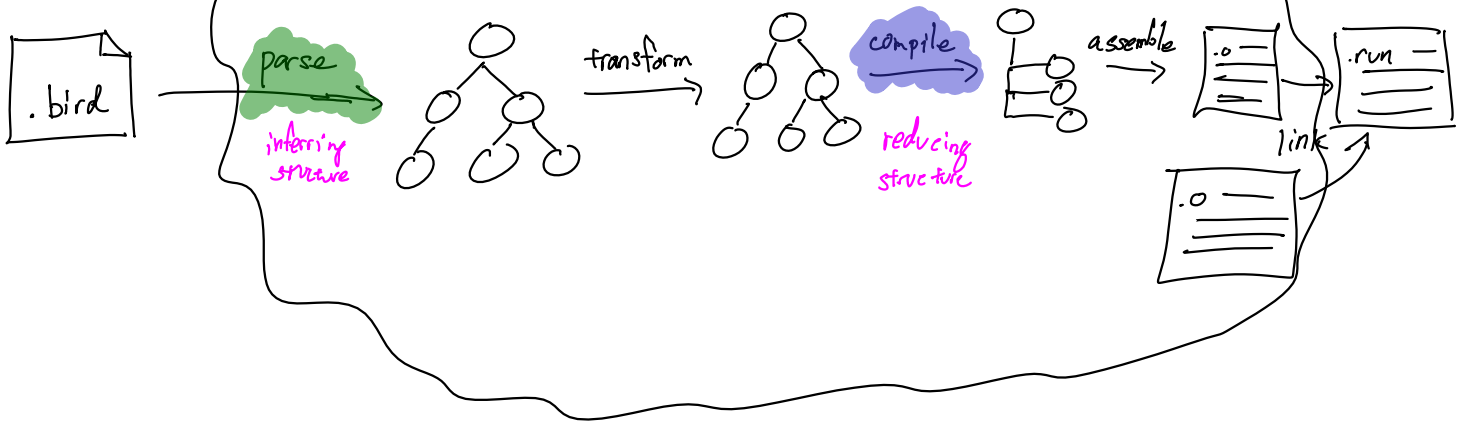
Parsing: infer structure from unstructured data

structure ⟶ tree

unstructured data ⟶ source file


```
| 1 | + | ( | 2 | * | 3 | ) |
      | 1 | + | 2 | * | 3 |
```
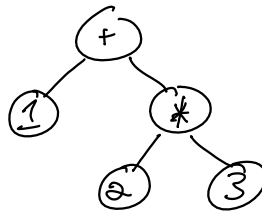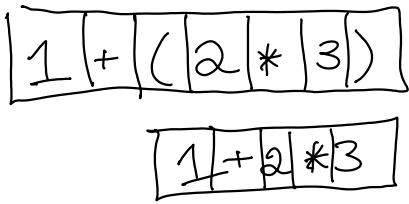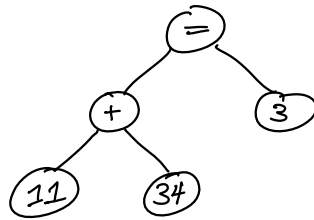
tree:
```
      +
     / \
    1   *
       / \
      2   3
```
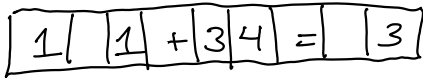
each sequence of characters corresponds to at most one tree

```
| ( | 1 | + |
```
this doesn't make sense syntactically

```
| 1 | 1 | + | 3 | 4 | = | 3 |
```
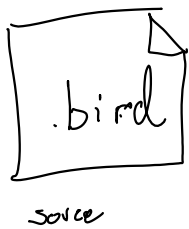
tree:
```
      =
     / \
    +   3
   / \
  11  34
```
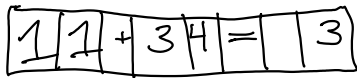
$\langle expr \rangle ::= \ldots$
$\langle expr \rangle = \langle expr \rangle$
$\langle expr \rangle + \langle expr \rangle$

= lesser precedence than +

```
| 1 | 1 | + | 3 | 4 | = | 3 |
```
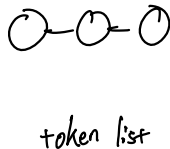
tree:
```
        =
       / \
      +   3
     / \
   Appl  34
   / \
  1   1
```
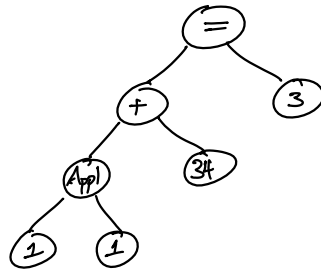
this doesn't make sense semantically

Parsing pipeline

.bird — lexing (tokenization) TODAY → token list — parsing = ∩ → AST

source