

Introduction to Programming for Scientists

Lecture 12 Parsing

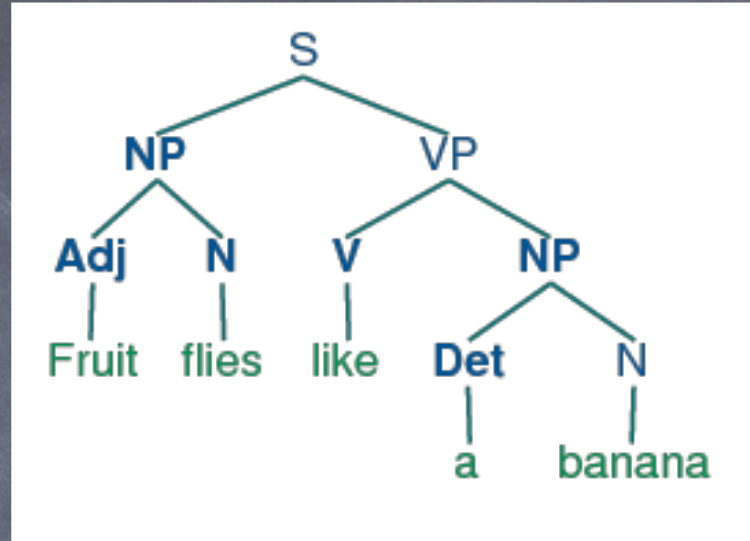
Prof. Steven Ludtke
N410, sludtke@bcm.edu

Homework Review

Parsers

- Compilers/Interpreters
- Mathematical expressions
- Natural language

Natural Language



I run fast.

I'm going to go for a run.

The run queue on the computer is full.

Computer Languages

Reserved Word Lists (keywords)

• Python

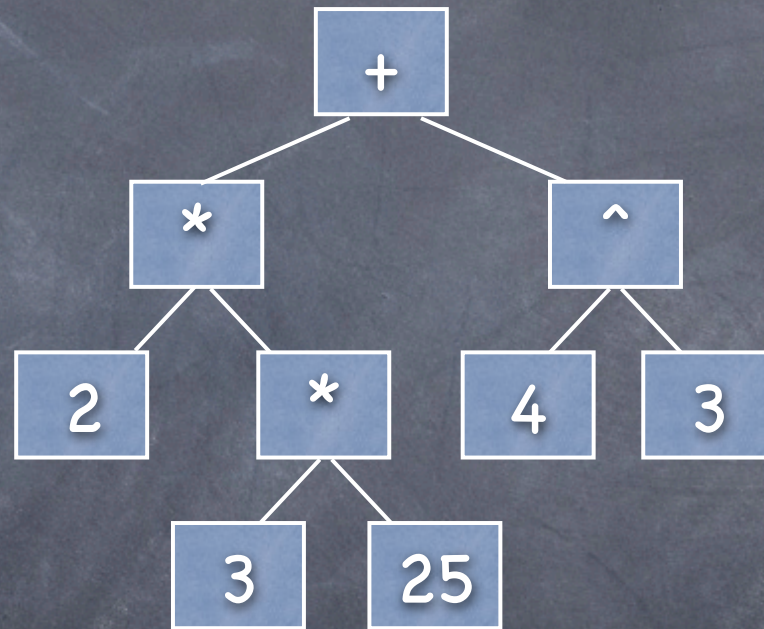
• and, as, assert, break, class, continue, def, del, elif, else, except, exec, finally, for, from, global, if, import, in, is, lambda, not, or, pass, print, raise, return, try, while, with, yield

• C++

• and, and_eq, asm, auto, bitand, bitor, bool, break, case, catch, char, class, compl, const, const_cast, continue, default, delete, do, double, dynamic_cast, else, enum, explicit, extern, false, float, for, friend, goto, if, inline, int, long, mutable, namespace, new, not, not_eq, operator, or, or_eq, private, protected, public, register, reinterpret_cast, return, short, signed, sizeof, static, static_cast, struct, switch, template, this, throw, true, try, typedef, typeid, typename, union, unsigned, using, virtual, void, volatile, wchar_t, while, xor, xor_eq

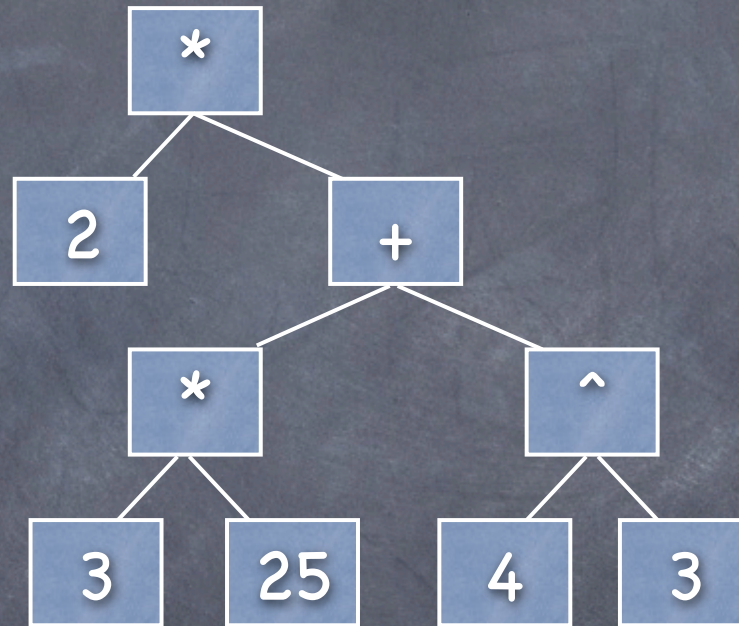
Parsing Math

$$2*3*25+4^3$$



Parsing Math

$$2*(3*25+4^3)$$



How do we generate this ?

Regular expressions ?

<http://re-try.appspot.com/>

Parsers

- Lexical analysis
 - Search for tokens
- Parsing or Syntactic Analysis
 - Relate tokens to a 'formal grammar'
- Evaluate Parse Tree
 - Recursion !

Parsing

- http://en.wikipedia.org/wiki/Comparison_of_parser_generators
- C/C++
 - Bison
- Python
 - <http://wiki.python.org/moin/LanguageParsing>
 - We will use PLY (<http://www.dabeaz.com/ply>)