**Functional Programming project: Let's build a parser.**

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**Racket Programming Language**: Racket is a general-purpose, multi-paradigm programming language that is designed to be a platform for language creation, research, and teaching. Originally called PLT Scheme, Racket is a dialect of Lisp that is notable for its emphasis on functional programming and its macro system, which allows programmers to extend the language with their own syntactic constructs.

Racket is used in a variety of contexts, including research in programming language theory, software development, and education. Its standard library includes a wide range of modules for web development, database access, and graphics programming, among other things.

The grammar you're parsing:

program -> linelist $$   
linelist -> line linelist | epsilon   
line -> idx stmt linetail\* [EOL]  
idx -> nonzero\_digit digit\*   
linetail -> :stmt | epsilon   
stmt -> id = expr | if expr then stmt | read id | write expr | goto idx | gosub idx | return  
expr -> id etail | num etail | (expr)  
etail -> + expr | - expr | = expr | epsilon  
id -> [a-zA-Z]+  
num -> numsign digit digit\*  
numsign -> + | - | epsilon   
nonzero\_digit -> 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9  
digit -> 0 | nonzero\_digit

**References:**

**<https://zoo.cs.yale.edu/classes/cs201/Spring_2021/lectures/racket.html>**

[**https://docs.racket-lang.org/parser-tools/LALR\_1\_\_Parsers.html**](https://docs.racket-lang.org/parser-tools/LALR_1__Parsers.html)

[**https://sites.radford.edu/~itec380/2018fall-ibarland/Homeworks/Project/**](https://sites.radford.edu/~itec380/2018fall-ibarland/Homeworks/Project/) **(**from this project learned how to build the parser).