

The Grammar for Tiny

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1 Introduction

For the grammar that follows, here are the types of the various elements by type font:

- **Keywords are in this type font.**
- **TOKEN CLASSES ARE IN THIS TYPE FONT.**
- *Nonterminals are in this type font.*

1.1 Some Token Definitions

letter = a | ... | z | A | ... | Z

digit = 0 | ... | 9

ID = letter+

NUM = digit+

Also note that white space is ignored except that it must separate **ID**'s, **NUM**'s, and keywords.

2 The Grammar

1. $program \rightarrow stmt\text{-}seq$
2. $stmt\text{-}seq \rightarrow stmt\text{-}seq ; stmt$
3. $stmt \rightarrow if\text{-}stmt \mid repeat\text{-}stmt \mid assign\text{-}stmt \mid read\text{-}stmt \mid write\text{-}stmt$
4. $if\text{-}stmt \rightarrow \mathbf{if} \ exp \ \mathbf{then} \ stmt\text{-}seq \ \mathbf{end} \mid \mathbf{if} \ exp \ \mathbf{then} \ stmt\text{-}seq \ \mathbf{else} \ stmt\text{-}seq \ \mathbf{end}$
5. $repeat\text{-}stmt \rightarrow \mathbf{repeat} \ stmt\text{-}seq \ \mathbf{until} \ exp$
6. $assign\text{-}stmt \rightarrow \mathbf{ID} = exp$
7. $read\text{-}stmt \rightarrow \mathbf{read} \ \mathbf{ID}$
8. $write\text{-}stmt \rightarrow \mathbf{write} \ exp$
9. $exp \rightarrow simple\text{-}exp < simple\text{-}exp \mid simple\text{-}exp = simple\text{-}exp \mid simple\text{-}exp$
10. $simple\text{-}exp \rightarrow simple\text{-}exp + term \mid simple\text{-}exp - term \mid term$
11. $term \rightarrow term * factor \mid term / factor \mid factor$
12. $factor \rightarrow (\ exp \) \mid \mathbf{NUM} \mid \mathbf{ID}$