A Grammar for the Calculator Example
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1 Introduction

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

- **Keywords are in this type font.**
- **TOKEN CLASSES ARE IN THIS TYPE FONT.**
- *Nonterminals are in this type font.*
- The symbol $\boldsymbol{\epsilon}$ means the empty string in a CS grammar sense.

1.1 Some Token Definitions

- letter = a | ... | z
- digit = 0 | ... | 9
- **ID** = letter
- **NUMCONST** = digit$^+$
- **White space** (a sequence of blanks and tabs) is ignored.
- **Comments** are ignored by the scanner. Comments begin with // and run to the end of the line.

2 The Grammar

1. *statementList* → *statementList statement* | *statement*
2. *statement* → $\boldsymbol{\backslash n}$ | *expression* $\boldsymbol{\backslash n}$ | **quit** $\boldsymbol{\backslash n}$
3. *expression* → **ID** = *expression* | *sumexp*
4. *sumexp* → *sumexp* + *mulexp* | *sumexp* − *mulexp* | *mulexp*
5. *mulexp* → *mulexp* ∗ *unary* | *mulexp* / *unary* | *unary*
6. *unary* → − *unary* | *factor*
7. *factor* → **ID** | (*expression*) | **NUMCONST**