

graduate computer science curriculum offer a course based on Volume 3. It is through scholarship such as evidenced by Professor Knuth's work that the science belongs in computer science.

MICHAEL T. MCCLELLAN
JACK MINKER

Department of Computer Science
University of Maryland
College Park, Maryland 20742

56 [12].—R. P. VAN DE RIET, *ABC Algol, A Portable Language for Formula Manipulation Systems*. Part I: *The Language*, Part II: *The Compiler*, Mathematisch Centrum, Amsterdam, 1973, Part I: iv + 173 pp. Price Dfl 18.—; Part II: 116 pp. Price Dfl 12.—.

The ABC Algol system is an extension of Algol 60 designed for algebraic manipulation, with some thought given to more general symbol manipulation. It is a small-scale system, not designed to compete with larger systems such as FORMAC or MATHLAB. It bears some resemblance to Perlis' old Formula Algol System [1], but is somewhat less general in the manipulations that it allows.

ABC Algol provides a datatype *formula*; values of this type can be symbolic expressions. Through an extension to the procedure-defining mechanism of Algol, operators can be defined on operands of type *formula*. The formula manipulation system consists of a set of such definitions, including facilities for manipulating rational numbers and performing a standardized kind of expression simplification.

The system is written in Algol and includes the necessary dynamic storage allocation features and a garbage collector as runtime procedure in Algol. The tract describing the system consists of two volumes, specifying the system and giving the full text of the algebraic manipulation system as well as the compiler.

This system does not seem to contribute anything new; it may be of some interest to specialists in algebraic manipulation because of its self-contained description and its portability. A summary of this publication can also be found in [2].

PAUL ABRAHAMS

Courant Institute of Mathematical Sciences
New York University
251 Mercer Street
New York, New York 10012

1. A. J. PERLIS & R. ITURRIAGA, "An extension to ALGOL for manipulating formulae," *Comm. ACM* (2), v. 7, 1964, pp. 127–130.
2. R. P. VAN RIET, "ABC Algol: A portable language for formula manipulation," *SIGPLAN Notices* (3), v. 9, 1974, p. 1.