CONTROL DATA®
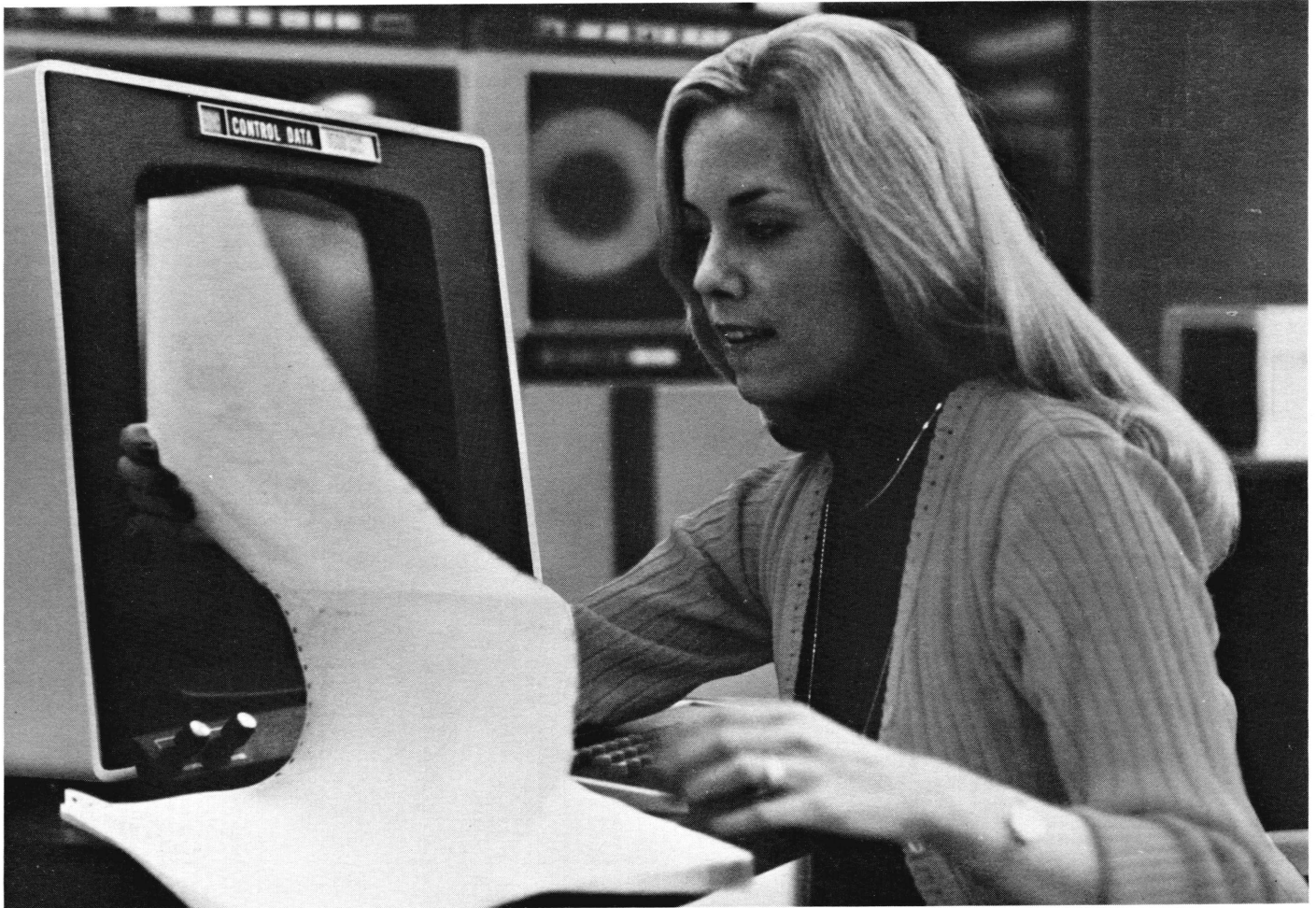# CYBER 170 SERIES APL 1.0

DESCRIPTION

CONTROL DATA CYBER 170 Series APL 1.0 is a mathematical programming language. It was developed from the concepts advanced by K. E. Iverson in his book, "A Programming Language," which describes a language for the systematic treatment of complex algorithms.

Programs written in APL are executed by an interpreter which runs on CDC" CYBER 170 Series Computers under control of the Network Operating System (NOS).

FEATURES

The APL 1.0 language consists of a large set of primitive (i.e., predefined) functions for manipulating data and performing mathematical computations. The notation used in describing the syntax is very compact. A single APL 1.0 character represents the function desired.

Unlike functions in other programming languages, most primitive functions in APL 1.0 are defined for general arguments. While scalar, or single-value, arguments are possible in special cases, the arguments are typically array data structures and the functions operate in a predefined manner on these structures as an entity. All data in APL 1.0 is handled in the form of arrays.

Control Data's implementation of APL incorporates all of this language's advantages. APL is easily learned, pro-gramming tasks are performed rapidly, programs are one-half to one-fifth as long in APL as in other programming languages, and APL has the ability to perform array operations (i.e., matrix algebra).

CONTROL DATA APL 1.0 offers two additional advantages: 1) a standard-terminal interpreter, and 2) access to all NOS time-sharing features.

In the past, APL implementations have required the use of a terminal with a special APL character set on its keyboard because APL depends on the descriptive power of special symbols instead of English words. Control Data's APL 1.0 can translate standard terminal keyboard characters into special APL characters. Equipped with a table of character equivalents, a user can access APL 1.0 from any terminal supported by NOS, either with or without the special APL keyboard. Terminals supported by NOS include the CDC 713, teletypewriter, IBM 2741, Tektronix 4013 (direct-view storage tube), and other compatible devices.

The principal component of the APL 1.0 system is a conversationally interactive interpreter designed for, but not limited to, time-sharing terminal operation. The interpreter operates as a separate subsystem under the Network Operating System. Thus, the user can avail himself not only of APL 1.0 but also of all other NOS time-sharing features.

Once access is gained to APL, expressions keyed on a terminal are evaluated and results, if requested, are displayed immediately.

In addition to this ability to operate the system as a sophisticated desk calculator, the following features enable it to be operated as a complete programming system.

- A user may define his own APL functions in terms of APL expressions using previously defined or existing functions.

- A user library facility enables APL functions and previously input or processed data to be stored for subsequent use or for interchange with other users.
- Extensive diagnostics, debugging aids, and editing facilities enable the APL programmer to be extremely productive.
- A variety of terminal types can gain access to the APL system and exchange data and programs.
- Batch users may also employ the system in batch mode.