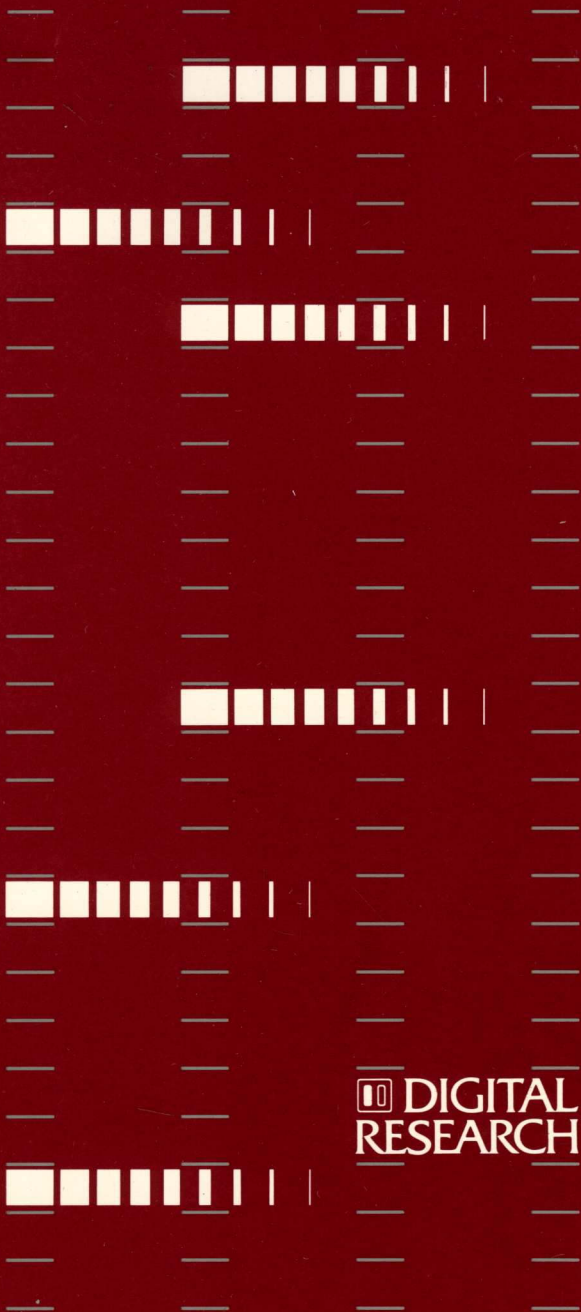


# Languages & Productivity Tools



 **DIGITAL  
RESEARCH™**

# A Complete Library Of Proven Tools For Commercial Software Development

If you're producing software professionally, there's a lot riding on the tools you rely on to create your product. Digital Research languages and productivity tools combine the high performance and flexibility you need with the portability that will help sell your product, and assure its continued viability.

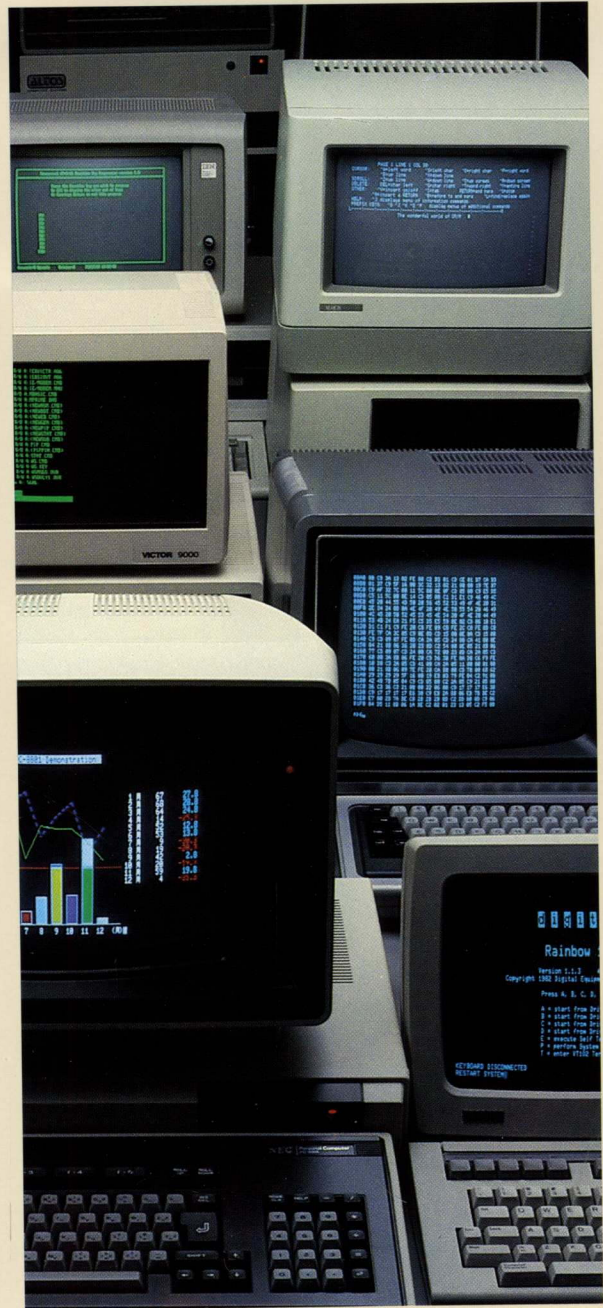
More business applications programs have been written in CBASIC<sup>®</sup> than in any other BASIC language. Pascal/MT+<sup>™</sup> is widely recognized as the professional's choice: the fastest, most comprehensive Pascal available. Our GSA-certified CIS COBOL<sup>™</sup> and Level II COBOL<sup>™</sup> from Micro Focus are preferred by professionals worldwide. And our PL/I is unrivaled for performance, flexibility and power.

All Digital Research languages and productivity tools are available in both 8- and 16-bit implementations.

When you program in any Digital Research language, you're buying into a reputation for quality unmatched in the industry. You're gaining access to the widest possible range of professional productivity tools to make your work faster, easier and more profitable.

Our business is built on helping you succeed. We do that by giving you the quality tools you need, and helping to develop the standards our industry can build on. Our first standard graphics interfaces are now available, and will soon be joined by a complete family of device-independent graphics software tools.

We also feel it's important to your success that we give you complete support, all the way from technical help to marketing assistance. As an Independent Software Vendor, for example, our run-time library is available to you free of charge. We enjoy the loyalty and support of a growing community of Independent Software Vendors. We'll continue to make it our first priority to earn that loyalty by giving you both the professional products and the services you need.



## CBASIC®

*The most widely used Commercial BASIC dialect for 8- and 16-bit microcomputers in the business community.* CBASIC saves programming time, provides superior business accounting accuracy, and allows more efficient processing. It's one of the most flexible languages on the market today; a tool you can depend on with absolute confidence.

- 14-digit decimal arithmetic
- Random and sequential disk addressing
- Complete string processing facilities
- Enhanced source code maintenance
- Debugging capabilities
- Cross reference lister
- Assembly code interface

## CBASIC Compiler™

*A direct enhancement of CBASIC with several important advantages for software professionals.* CBASIC Compiler is a native code compiler that allows separate modules to be written, tested, and then combined to create a complete program. This efficient, modular, top-down approach makes CBASIC Compiler programs much faster to write and easier to maintain. Arithmetic functions are as fast as double-precision binary while retaining 14 decimal digits of accuracy. CBASIC Compiler is the high performance CBASIC for professional programming in a sophisticated business environment.

- Native code compilation
- Relocatable code
- Convenient linkage to assembler programs
- String lengths to 32,000 bytes
- Special file management techniques
- Support for multi-user operating systems
- Multiple line function with local variables
- Compatible with Display Manager™ and Access Manager™
- Compatible with CP/M Graphics™

## Pascal/MT+™

*The most complete Pascal available for micro-computer program development.* Pascal/MT+ is the full ISO standard Pascal, extended for more speed, more versatility, and more portability in business, industrial and educational applications. Unlike other systems which use P-code or assembly code as intermediate forms, Pascal/MT+ translates directly to high speed object code. Execution is five to ten times faster than traditional Pascal compilers.

Pascal/MT+ includes a compiler, a linker, a run-time support library, a disassembler and a symbolic program debugger. It can also be used with the unique Digital Research SpeedProgramming Package™ to save important development time by reducing the time required to find syntax errors.

Pascal/MT+ supports either binary coded decimal or floating point real numbers for the arithmetic precision essential in business applications. For industrial users, it offers the efficiency of native "ROMable" machine code, as well as special features to reduce program size and enhance I/O capabilities. And for educational use, Pascal/MT+ is the fully implemented Pascal you can start with, stay with, and never outgrow.

- Superset of ISO standard Pascal
- Separate modular compilation
- Efficient native code
- "ROMable" machine code
- Complete development tools
- Enhanced arithmetic functions
- Extended data types
- Powerful overlay facilities
- Compatible with Display Manager and Access Manager
- Compatible with CP/M Graphics

## PL/I

*The high performance standard from the mini and mainframe world.* Digital Research's PL/I is based on PL/I Subset G, one of the most popular structured languages in the mini and mainframe world—the standard for tens of thousands of professional programmers. PL/I takes advantage of the block structures of ALGOL, the string handling and decimal arithmetic of COBOL, and the numeric functions and standardized input-output of FORTRAN.

Digital Research's PL/I was designed and written using state-of-the-art compiling techniques. It's structured, expandable, and standardized.

The PL/I language includes an optimizing native code compiler, an assembler, a relocating linker, a librarian and a cross-reference generator. Together these tools form a complete program development system ideal for the most sophisticated commercial, scientific and system level program development.

A program written in Digital Research's PL/I can easily be transferred to any machine that has an ANSI standard PL/I compiler.

When you need maximum performance, power and functionality in a programming language, you need PL/I from Digital Research.

- Program control structures
- 15-digit arithmetic; fast fixed and float binary
- Character and bit string operations
- Exception processing to intercept run-time errors
- Compatible with Display Manager and Access Manager
- Compatible with CP/M Graphics

## CIS COBOL™

*The compact, interactive, standard for developing and executing COBOL programs on your microcomputer.* CIS COBOL from Micro Focus is a proven compiler for developing and executing ANSI '74 standard COBOL programs. Certified by the General Services Administration, CIS COBOL gives you the benefits of minicomputer or mainframe COBOL, while taking advantage of the efficient interactive facilities available on personal computers. CIS COBOL has been GSA certified for 3 years at a low-intermediate level. It's the most widely favored COBOL of all.

- ANSI 1974 standard
- Compact intermediate code for running large programs
- Powerful interactive screen handling
- Dynamic loading of segments and called programs
- Support for all major COBOL file processing options

## Level II COBOL™

Level II COBOL is a mainframe level compiler for ANSI '74 COBOL. Certified by the General Services Administration to High with zero errors, Level II COBOL gives you the full facilities of mainframe COBOL on your 8- or 16-bit microcomputer, with the additional interactive features of CIS COBOL.

- Inbuilt sort-merge capability
- Segmentation
- Inter-program communication
- Multi-key indexed sequential file handling
- Run-time specification of external file names and program names
- Use of dynamic paging to allow implementation of programs greater than 64K on an 8-bit computer

# Display Manager™

*An invaluable tool for designing screen displays.* Display Manager helps programmers using Digital Research languages interactively design user-friendly, device-independent CRT screen displays for 8080, Z-80®, and 8086 based microcomputers. Display Manager offers a stand-alone full screen editor to design displays, and a library of subroutines to place displays on the screen and transfer information to and from fields in the display.

This eliminates the need for tedious formatting of information to be displayed on the screen. Because most languages do not support a full screen CRT, a great deal of time is required for coding displays. Display Manager fully automates this process, provides consistent output from program to program, and takes full advantage of the features of a modern CRT terminal.

Literal data as well as input and output fields may be placed anywhere on the screen. In addition, input and output fields may be assigned visual attributes such as blinking, inverse video, underline and half intensity. After creating the displays they can be saved in a file.

A linkage editor combines the Display Manager library with an application program to form a complete, executable program.

Display Manager makes programming faster, makes your programs more portable, and makes you more productive.

- Screen-oriented interactive editor
- Supports capabilities of modern terminals
- Complete control of input and output fields
- Device-independent ■ Separates screen design from programming
- Compatibility with Digital Research compiled languages

# Access Manager™

*A fast, versatile, advanced file access manager.* A compatible file accessing method across all of Digital Research's compiled languages, Access Manager interfaces multiple languages to a common data file, and maintains separate index and data files to eliminate the need to sort data records. The index is accessed in either ascending or descending order to rapidly search for and retrieve information from an unsorted data file.

It supports both single-user and multiple-user operating systems. File and record locking ensure data integrity in multi-user systems.

Multiple keys may be associated with the records in a data file. For each key, Access Manager maintains a separate ordered index file. As new data records are added to the data file, the associated keys are placed in the proper position in the index file. Keys need not be in any particular position in the data record. If two or more data records have the same key, the duplicate keys are handled automatically.

Index files are organized using a height-balanced B-tree structure. The index files never need to be reorganized when data is inserted or deleted.

Access Manager is an invaluable time-saving tool for developing applications with fast, efficient file access.

- Multiple keys ■ Indexed access to data records
- B-Tree index structure ■ Multi-user support with record and file locking
- Automatic reclaiming of disk space
- Efficient memory utilization ■ Portability across all Digital Research compiled languages
- Automatic support for duplicate keys

## More Productivity Tools

**XLT86™** *Program translator.* Moving those 8-bit 8080 assembler programs to the 16-bit 8086 processor is made easier with XLT86. It's a program translator that takes 8080 assembler as input and provides the proper 8086 translation. You save valuable programming time and protect your software investment.

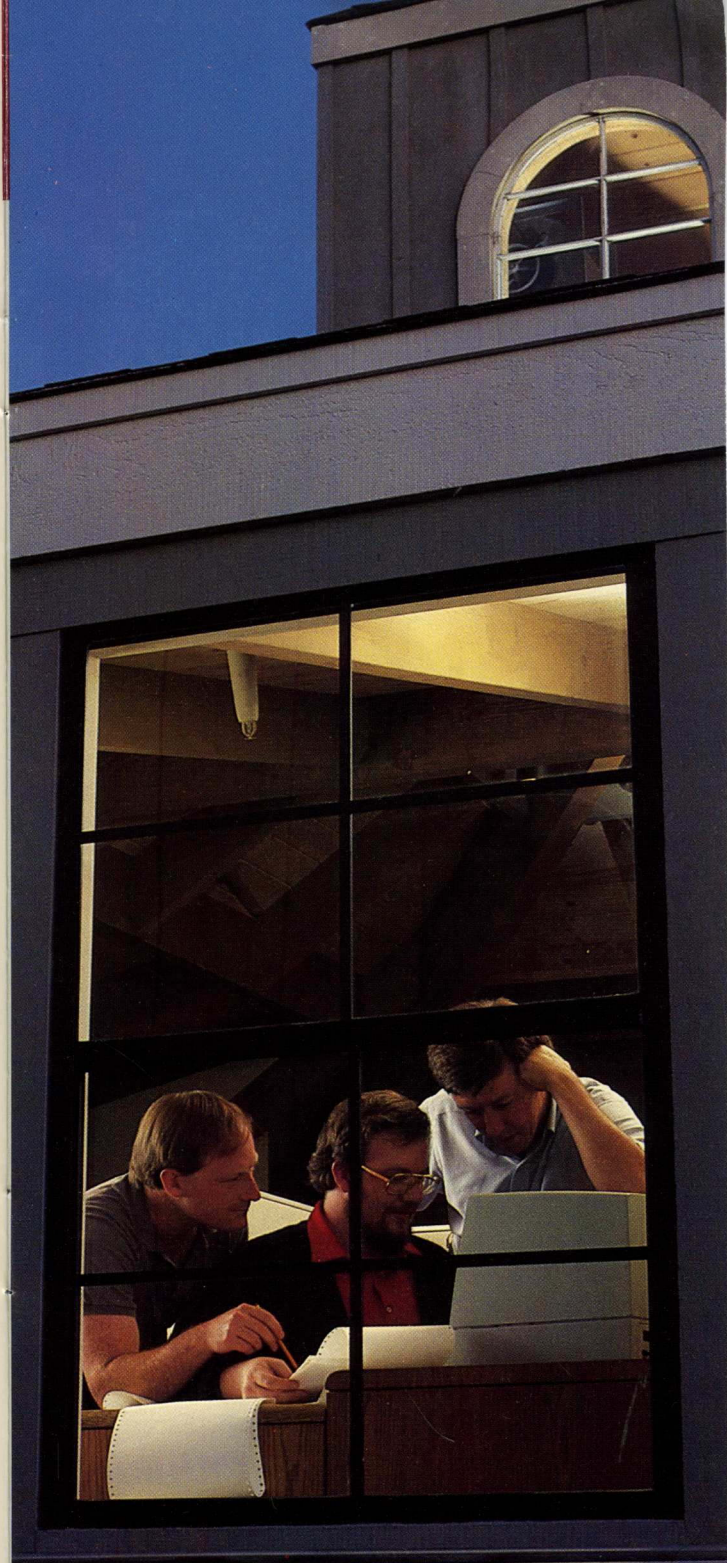
- Produces optimized 8086 assembly language code
- Preserves existing labels, comments and symbols

**SID™** *Fully Symbolic Instruction Debuggers for 8- and 16-bit microcomputers.* SID controls step-by-step execution of a program to allow location of logic errors. Parameters to SID commands may be entered in symbolic form. This allows memory to be displayed, break-points set, instructions assembled or blocks moved in memory, all without ever having to look up an actual memory address. SID will simplify your debugging tasks.

- Display and alter memory locations and registers
- Move, compare and fill blocks of memory
- Read, write and load disk files
- Assemble and disassemble 8086 mnemonics
- Set break points
- Trace program execution
- Standard debugger features
- Fully symbolic debugging
- Sophisticated pass point operation
- High-level program trace
- Arithmetic expressions

**MAC™ AND RMAC™** *Macro languages for developing high quality assembly language programs.* Powerful macro-processing facilities let you write routines once and then reference the instructions with just one statement. RMAC is a relocatable version of MAC. RMAC allows you to link together separate modules of other languages. MAC AND RMAC include support for full expression evaluation, nested macro definition and locally defined symbols.

- Provides macro capability in an assembler
- Full expression evaluation
- Nested macros
- Locally defined symbols



Since the days when microcomputer enthusiasts numbered in the hundreds, Digital Research has enjoyed a special personal and professional relationship with the Independent Software Vendors whose creative abilities have made microcomputers useful, viable tools.

We now have an association of more than 3500 ISVs helping us build the standards that will continue to strengthen our industry.

If you're writing software professionally, we offer you a support system that backs your efforts with our technical and marketing resources.

Our headquarters support staff answers hundreds of telephone and mail inquiries every day, providing information on available application programs and offering detailed product information.

Technical help is available to you through our headquarters support center, electronic bulletin board services, monthly newsletters and seminars at our Pacific Grove headquarters and in other facilities throughout the world.

We're committed both to giving you all the quality, professional products you need, and to giving you the kind of support that will help you make the most of them.

Post Office Box 579  
160 Central Avenue  
Pacific Grove, California 93950  
Telephone (408) 649-3896  
TWX 910-360-5001