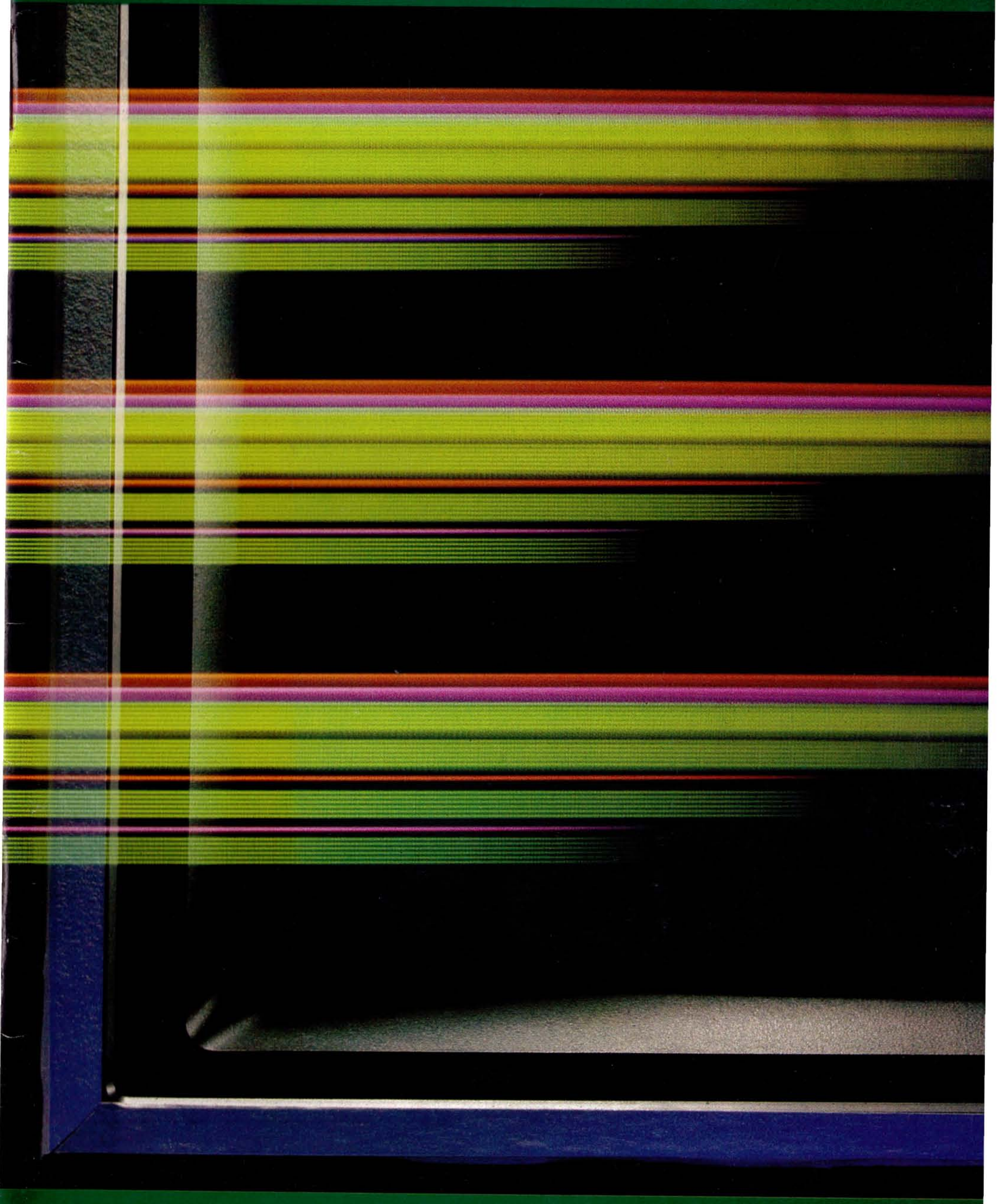
MICROSOFT™

BETTER TOOLS FOR MICROCOMPUTERS



ABOUT MICROSOFT

At Microsoft, we think that quality is something that all of us should expect in every product we buy. Claiming quality is easy. Earning a reputation for quality isn't. And retaining that reputation is even harder.

The best demonstration of what we are is what we make. Languages, utilities and application software for microcomputers.

We're microcomputer software specialists. We always have been. Our software products are designed to get the highest possible utility from your computer. Because that's what you expect from us. We don't get points for doing it right. We get points for doing it right... then improving it.

Constant research helps us provide unique, versatile and highly useful software products. This catalog describes those products for you.

About our system designator bars

Five color bars appear at the beginning of each Microsoft product description. These color bars pertain to the operating systems each product supports.

🟩🟩🟩🟩🟩 Refers to Apple® II or III.
🟩🟩🟩🟩 Refers to CP/M®-80 operating system.
🟩🟩🟩 Refers to MS™-DOS.
🟩🟩 Refers to TRS-80®.
🟩 Refers to other specified machines/operating systems.

Each appearance of one or more of these bars in green on a Microsoft product page indicates the support of that product for that system.

As you read through our new Microsoft product catalog you can tell at a glance which products supports your microcomputer and operating system.

CONTENTS

MULTI-TOOLS

Multiplan Electronic Worksheet 1

MANAGER SERIES

Time Manager System 3

SYSTEM SOFTWARE

BASIC Interpreter 5
BASIC Compiler 6
COBOL Compiler 7
FORTRAN Compiler 8
Applesoft Compiler 9
Sort Facility 10
A.L.D.S. System 11
Macro Assembler Package 12
Editor/Assembler-Plus System 13
Level III BASIC 14
muLISP/muSTAR 15

HARDWARE

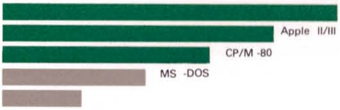
SoftCard System 16
SoftCard Premium System 17
RAMCard Memory Board for Apple II 18
RAMCard Memory Board for the IBM Personal Computer 19

EDUCATIONAL

Typing Tutor II 20
muMATH/muSIMP System 21
muMATH Symbolic Math Package 22

RECREATIONAL

Decathlon 23



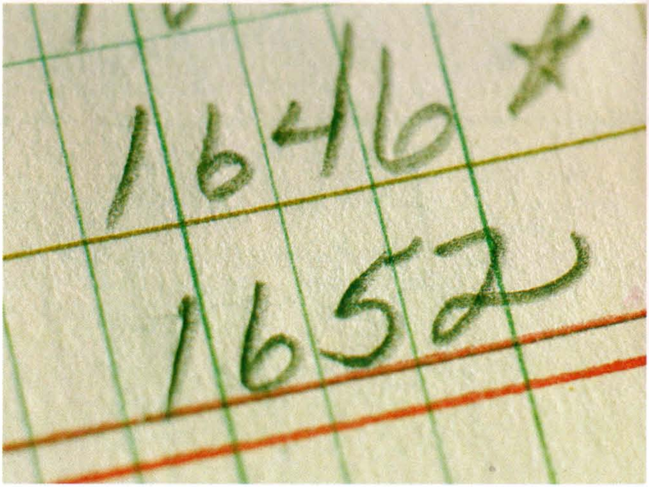
The Microsoft™ Multiplan™ electronic worksheet replaces the time-consuming, midnight-oil method of using pencil, eraser, ledger paper and calculator to develop worksheets. More powerful and easier to use than other electronic worksheets, the Multiplan program will help you get fast answers to all kinds of planning, modeling, and forecasting questions.

Multiplan starts by presenting you with a blank grid of rows and columns. You build your worksheet on this grid, just as you would on ledger paper. You enter numbers, such as sales figures and expenses, and connect them with the formulas you ordinarily use; using "SALES-COSTS" to calculate your profit, for instance.

After that, you do the brainwork and the computer does the tedious calculations. What if sales rise by 20%? What if inflation boosts the costs of materials by 12%? You can ask yourself these questions, change the critical numbers and watch the video display as the computer automatically recalculates the worksheet. If you need the results for a report or presentation, the computer can print them out, quickly and neatly.

There are other electronic worksheets available. But most of them use cryptic computer codes and abbreviations that make them tedious to learn and cumbersome to use.

The Multiplan electronic worksheet, from Microsoft, was designed to be the friendliest, most powerful electronic worksheet you can buy. You'll save time and frustration in planning and management—at the office, at home, even in technical and industrial computation.



Microsoft Multiplan Electronic Worksheet: Here's What It Can Do:

Provide You With Powerful Capabilities

- Multiplan lets you link different worksheets and share information between them. For example, you can link regional sales forecasts with the company forecast. If you change the growth rate in Region One, the company forecast will automatically reflect the change the next time you look at it.
- Multiplan lets you present results in two powerful new ways: (1) you can sort entries alphabetically or numerically and (2) you can present the results of a formula as either numbers or letters. The most well-known example of this is the school grading formula: 90-100=A, 80-89=B, etc.
- Powerful formatting, alignment and printing options enable you to print out elegant finished reports. Formatting options include commas, "$", "%" with the symbol displayed and the ability to fix the decimal point anywhere between 0 and 16 places.

Help You Work Quickly and Easily

- English commands and user prompts make the Multiplan program easy to learn. The computer prompts you by telling you what to do next, and by presenting you with a list of commands in English.
- Mulitplan lets you work in English, the way you think. For instance, you can assign a name such as "SALES" to an area of the worksheet, then reference the area by name. You can even build formulas using names; for example you could calculate profit as "SALES-COSTS".
- A special online reference guide lets you ask the computer for additional help anytime. The reference guide is available for information about the command being used, or for reference to detailed sections on other commands, editing, formulas, the keyboard, or applications.
- Multiplan features complete tutorial and reference documentation.

Adapt to Your Unique Needs

- Multiplan will help you in all types of business analysis and forecasting. Cash flow analysis; budget planning and consolidation; resource allocation; and merger analysis are just a few of the possibilities.
- You'll get a better handle on your personal finances, too. You can plan your budget, then see how a few changes in spending affect your total financial picture. Multiplan can help you with stock portfolio analysis, and home investment projections as well.
- Engineering tabulations and data analysis can be made easier. Multiplan will help you set up worksheets for formula analysis, statistical research, and electrical engineering projects such as linearity analysis.

Apple II

The Time Manager™ system is a calendar-oriented software package designed to help you plan, organize, schedule and record the significant details of your business and personal activities.

The system is structured very much like the appointment book you keep at home or work. That book probably has a calendar for each given month, and a sectioned area for each day in each month. Within each day's section you enter information about daily activities—appointments, meetings, personal reminders, important calls to make, travel plans and other miscellaneous details. These individual entries form the basis of your daily agenda. Together they form the calendar of your monthly activities.

The Time Manager system handles data on the same levels—by month, day and that individual unit of information, the entry. The Time Manager system is much more efficient than your appointment book, however, because information entered into this program can be electronically changed, deleted or moved on your agenda. It also can be compiled, sorted, stored and retrieved in a flash—and in a variety of forms.

All information entered into the Time Manager system is assigned a priority level, subject category and permanent/non-permanent status. You can retrieve information on any of several levels... retrieval of the individual piece of information, retrieval of all entries in a designated category or retrieval of all entries with the same keyword.

In addition to these basic calendar-entry activities, the Time Manager system also has a totaling and accounting capability (again, with cross referencing by subject's keyword, category or priority code). Numerical data from an entry can be transferred to one of nine accounts you set up. This data can be pulled at any time for creation of up-to-date financial reports, client files and a host of other accounting applications.

The Time Manager system's notepads feature keeps useful but miscellaneous information at your fingertips. This data is stored in an orderly fashion on one of 12 electronic notepads which can be changed and updated as needed.

Time Manager can be an invaluable aid for analyzing how you spend your time. If you make a "time spent" account and include that information with entries on client meetings, projects, appointments and other time-related activities, that numerical data can be tabulated and reviewed for any period. You'll have an accurate picture of how much time you're spending in a given area. Then you can measure results against time spent to see if you've been managing your time—and that of your employees—most effectively.

The Time Manager system is the cornerstone for The Manager Series™, a system of software tools to help you develop and maintain accurate and effective records with instant reference capabilities. As such, Time Manager manages the other programs in the series and coordinates intercommunication between them. Information developed for one program in The Manager Series can be cross referenced to another in the system by going through the Time Manager system.

Microsoft Time Manager Program: Here's What It Can Do:

- Keep track of daily activities with a dynamic "to do" list of tasks and appointments that reflect priority, permanence and category for future reference.
- Provide a valuable accounting tool for activities like budgeting, expense reports, tax records and personalized invoices.
- Create an electronic filing system that's easy for you to use and maintain. Dates and events information can be stored and then recalled selectively according to criteria you establish.
- Function as a project coordinator to organize project data on schedules, personnel budgets, time spent and other criteria. Any or all of this information can be retrieved in seconds.
- Maintain a permanent history file with each year's activities recorded on disk.
- Organize your notes on electronic notepads and help you find them instantly via the notepad directory.
- Manage and transfer data between the other programs in The Manager Series.

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CP/M-80

The Microsoft™ BASIC Interpreter is truly everyone's language. Regarded as the standard language for general-purpose computer programming. Microsoft BASIC can be utilized for a wide variety of applications by programmers at varying levels of expertise.

If you're new to programming, you'll find Microsoft BASIC is a versatile, easy to learn and use language that accepts English-like commands. Experienced programmers will appreciate its powerful features and the flexibility they permit when writing, editing, debugging and running applications.

Microsoft BASIC is the most popular BASIC interpreter in use today. It has been installed in over one million microcomputers since Microsoft introduced it in 1975 as the first high level language written for micros. Microsoft BASIC is provided on all the major microcomputers, including those from Apple Computer, Radio Shack, Atari, IBM, Commodore, NEC and Xerox.

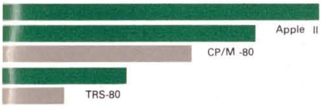
Many of these manufacturers as well as independent software suppliers use Microsoft BASIC for the ready-made applications they create.

This ANSI-standard BASIC interpreter supports many unique features seldom found in other BASICs. BASIC Release 5 from Microsoft is the most extensive implementation of BASIC available for microprocessors.

Microsoft BASIC is the only BASIC with a compatible compiler, the Microsoft™ BASIC Compiler. They're an unbeatable combination for the programmer who wants to interactively write and debug in BASIC, then compile the program and execute it at high speed.

The Microsoft BASIC Interpreter: Here's What It Can Do:

- Suit both the beginning and advanced BASIC programmer. Microsoft BASIC is easy to learn and use, yet possesses powerful features needed for complex applications.
- Make it easy to write, edit and debug your program with interactive, line-by-line data entry and special editing and debugging commands.
- Provide easy access to your program even as you are creating it. Statements are entered directly into the computer's memory and can be run at any time. A program already on disk can be recalled easily and loaded into memory for editing access.
- Offer great versatility for the programmer. Microsoft BASIC is used to create applications ranging from finance to scientific analysis to educational and recreational programs.
- Provide many powerful programming features including CHAIN and COMMON; PRINT USING; Edit Mode; IF/THEN/ELSE; WHILE/WEND; and trace facilities.



Increased program execution speed is just one of the benefits you'll derive from The Microsoft™ BASIC Compiler. It's the ideal tool for everyone who programs in Microsoft BASIC and is the only compiler with a compatible interpreter—the Microsoft™ BASIC Interpreter.

Together, the Microsoft BASIC Compiler and Interpreter form a powerful BASIC programming environment. You can write, run and debug your program interactively with the Microsoft BASIC Interpreter and then compile it with the Microsoft BASIC Compiler to increase program execution speed and decrease memory space.

A program compiled with Microsoft BASIC Compiler executes typically 3 to 10 times faster than the same interpreted program. Programs that make maximum use of integer operations can execute up to 30 times faster.

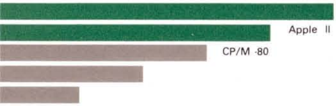
The Microsoft BASIC Compiler was created to support the interpreted BASIC language and thus supports all of the BASIC Interpreter's features and functions except those not applicable to a compiler.

Since the Microsoft BASIC Interpreter is available on most computers, the BASIC Compiler works in many environments. For the TRS-80® and many CP/M®-80 based systems, the BASIC Interpreter was provided when you purchased your computer. Apple® II owners receive the Interpreter with the SoftCard™ system. A CP/M-80 version of the Interpreter is also available from Microsoft.

If you program in Microsoft BASIC, you should use the Microsoft BASIC Compiler. It generally is faster, more efficient and accurate than its competitors. And it's the only BASIC compiler that bears the Microsoft name.

The Microsoft BASIC Compiler: Here's What It Can Do:

- Greatly increase program execution speed—a crucial factor when running time-related programs.
- Perform with optimum efficiency. This compiler translates source code into highly optimized object code that makes the most efficient use of space and execution time, eliminates redundancy, simplifies arithmetic expression and makes maximum use of integers.
- Protect your source code by translating it into relocatable object code which is closer to machine code. If you sell your compiled program commercially, you only need to release the object code, thus protecting your original program.
- Increase the accuracy of calculations with double-precision transcendental functions with numerical accuracy to 16 digits.



COBOL has dominated commercial data processing on mainframe and mini computers for many years. COBOL is uniquely suited for handling the large volumes of data generated by business. The data in COBOL programs is arranged hierarchically and stored in a logical structure with direct connections between related data. And because COBOL programs are self documenting and use plain English operation and variable names, the COBOL programmer and the business user communicate easily.

In Microsoft™ COBOL, Microsoft has combined the standard features found in COBOL on large computers with superior interactive capabilities that let the programmer take full advantage of the one-on-one microcomputer environment.

An extensive implementation of the COBOL language, the Microsoft COBOL Compiler has received the same ANSI rating — low intermediate — as the popular Data General and DEC® PDP-11 COBOL compilers.

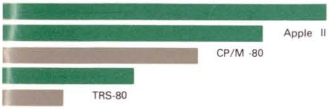
Microsoft COBOL has been specially tailored to the microcomputer environment, with provisions for entry of data during program execution, advanced screen formatting capabilities, interactive debugging, and handling of very large programs. Microsoft™ Sort, available as an option with Microsoft COBOL, adds a powerful record sorting facility.

Using Microsoft COBOL, you can write entirely new programs or adapt one of thousands of existing applications.

The Microsoft COBOL Compiler: Here's What It Can Do:

- Let you transfer your COBOL programming skills on mainframes and minis to microcomputers.
- Help you access thousands of existing COBOL programs.
- Provide a structured programming environment that facilitates working with business data.
- Let you write COBOL programs that allow the operator to enter information during program execution, taking advantage of the interactive capabilities of the microcomputer.
- Handle large numbers with the high level of precision you need for accounting and other business applications. COBOL accepts numbers of up to 18 digits and maintains accuracy up to 30 digits during internal calculations.
- Compile and run large programs, even programs several times larger than memory.
- Help you debug programs faster using Microsoft COBOL's interactive debugging capability.
- Simplify and speed data retrieval with four kinds of files.
- Allow you to link and run COBOL programs with programs written in the Microsoft™ FORTRAN Compiler, BASIC Compiler or Macro Assembler.

FORTRAN COMPILER



Designed specifically for solving numerical problems, FORTRAN has become the most widely used programming language for scientific and engineering applications. Its variable types and complete subroutine library for performing calculations make FORTRAN ideal for applications where computation of complex mathematical formulas and expressions is required.

The Microsoft™ FORTRAN Compiler is a very powerful and efficient implementation of the FORTRAN language for microcomputers. It meets American National Standards Institute (ANSI) 1966 requirements except for the COMPLEX data type. It also features many extensions to the standard designed to optimize FORTRAN in the microcomputer environment.

Since the 1966 ANSI standard is the one for which most FORTRAN applications have been written, you'll find many existing scientific and engineering programs that can be easily adapted to Microsoft FORTRAN. If you're an experienced FORTRAN programmer on mainframe or minicomputers, Microsoft FORTRAN is most likely the FORTRAN you're used to.

The Microsoft FORTRAN Compiler is the best FORTRAN for microcomputers. It can compile programs in a small amount of space requiring less than 27K bytes of memory to compile most programs. It generates true machine code, so compiled programs run fast. And optimizations performed during compilation make the existing code compact.

The Microsoft FORTRAN Compiler: Here's What It Can Do:

■ Provide you with a microcomputer version of FORTRAN that's comparable to mini and mainframe versions and meets the 1966 ANSI standard except the COMPLEX data type.

■ Generate compiled programs that run fast and are compact. The Microsoft FORTRAN Compiler generates native object code that is optimized in four ways.

■ Supply an extensive library of subroutines, including efficient routines for 16-bit and 32-bit integer arithmetic and 32-bit and 64-bit floating point arithmetic.

■ Simplify program debugging by providing diagnostic output.

■ Enable you to easily interface non-standard output devices to FORTRAN programs. Microsoft FORTRAN lets you write non-standard I/O drivers for each Logical Unit Number.

Apple II

The Microsoft™ Applesoft® Compiler converts Applesoft BASIC programs into true machine code with speed, ease and efficiency. Programs compiled with the Applesoft Compiler run at speeds 2 to 20 times faster than they run under the Applesoft interpreter.

Ideal for the Apple owner who writes large, complex BASIC programs, the Microsoft Applesoft Compiler makes it possible for him to quickly translate and execute programs which are limited in size only by the amount of memory in his computer.

Since the Microsoft Applesoft Compiler is compatible with the Applesoft BASIC interpreter, it is an excellent compiler for those who program in this language. You can write and debug your programs in Applesoft BASIC, the easy-to-understand language you already know, and then efficiently compile your program with the Applesoft Compiler. It allows you to execute your BASIC programs at assembly language speed without having to learn a new language.

The Microsoft Applesoft Compiler: Here's What It Can Do:

- Let you compile and run large programs while it minimizes code expansion.
- Make BASIC programs run fast.
- Make it easy and fun to do high-res graphics animation. You can write your program in easy-to-use BASIC, turn it over to the Applesoft Compiler for compilation and then run it at lightning speed to achieve the dramatic animation effects you want.
- Allow program interaction. The CHAIN with COMMON feature lets you write multi-faceted programs that can communicate with each other and run from one main menu.
- Provide source code security. The Applesoft Compiler converts your Applesoft BASIC program into machine language, which is the only file you need to distribute when you sell a commercial application.

SORT FACILITY

A sorting utility is essential for those applications with extensive manipulation of disk file data. Microsoft™ Sort, a powerful, professional sorting facility for microcomputers, has the power to handle all types of sorting requirements extremely rapidly. The Microsoft Sort package includes both stand alone and COBOL-hosted versions of Sort.

With Microsoft Sort, you aren't limited to ordering files by one criteria; you can also merge files, select a specified subset of files and compare records. Microsoft Sort sequences records by a set of data keys supplied by the programmer. There is no limit on the number or size of keys, allowing maximum flexibility in the number and arrangement of sorting requirements.

Microsoft Sort-S, the standalone version of the program, accepts user data files and arranges the records in the order the user specifies. For the COBOL-hosted version (Microsoft Sort-C), the source of input records may be one or more disk files, or records constructed in memory by a user-written COBOL procedure.

Microsoft Sort: Here's What It Can Do:

- Provide a flexible, general purpose sort method, using the binary insertion technique of sorting.
- Let you sort files, merge files, select specified records and compare records.
- Give you both a standalone sort program and a COBOL-hosted sorting facility in one package.
- Give you full choice in the number and arrangement of sorting categories by setting no limit on the number or size of keys or no limit on record size.
- Support all Microsoft file formats and all data types as keys.
- Easily adapt to a variety of file formats and data types.
- Provide for custom user code at record input, output, compare and selection exits.
- Provide comprehensive error reporting, so you can quickly locate and eliminate the source of errors.
- Handle very large file sizes — up to two billion bytes.

The Microsoft™ A.L.D.S.™ system is an assembly language development system for the Apple II that lets you program in three different assembly languages—Z80®, 8080 and 6502—all on your Apple. In addition to its exclusive Z80/8080/6502 capability, the A.L.D.S. system is the only Apple assembly language system with macro capability, relocatability and conditional assembly. This powerful system has most capabilities of the Microsoft Macro Assembler package, plus many special features for use on the Apple II.

The A.L.D.S. system is designed to be used on the Apple II with the SoftCard™ system installed. The package includes:

1. MS™-Macro Assembler—a relocatable macro assembler for 8080 and Z80 microcomputer systems. A special pseudo-op, .6502, enables the assembler to accept 6502 opcodes.
2. MS™-Link—a versatile linking loader that lets you load any number of programs with one command.
3. MS™-CREF—a powerful cross reference facility.
4. 6502 Debugger—a program for debugging 6502 assembly language programs.
5. CPMXFER—a program to facilitate transfer of CP/M-80 files to Apple DOS.

Microsoft A.L.D.S. System: Here's What It Can Do:

- Let you program in any of three assembly languages: Z80, 8080 and 6502.
- Increase programming efficiency by letting you define macros to generate commonly used sequences of instructions.
- Let you load several assembled files together into user-defined memory areas.
- Make it easy to generate several different versions of a program by allowing assembly of code if a given condition is true.
- Let you link programs developed with A.L.D.S. to programs developed with the Microsoft™ COBOL, FORTRAN or BASIC Compiler.
- Let you transfer 6502 assembly language programs developed with A.L.D.S. to Apple DOS.

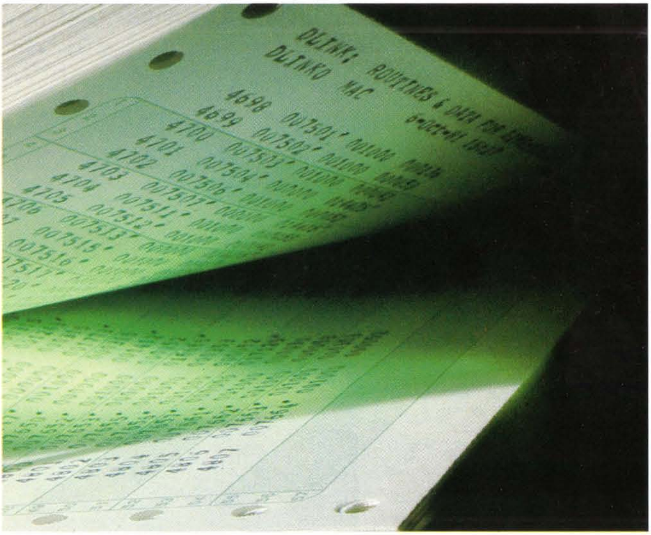
CP/M -80

The Microsoft™ Macro Assembler package is a powerful and flexible assembly language development system designed for Z80 and 8080 assembly language programming. The Macro Assembler package includes:

1. MS™-Macro Assembler—a relocatable macro assembler for 8080 and Z80 microcomputer systems.
2. MS™-Link—a versatile linking loader that lets you load any number of programs with one command.
3. MS™-CREF—a powerful cross reference facility.
4. MS™-LIB—a library manager for building or listing subroutine libraries.

The Microsoft Macro Assembler Package: Here's What It Can Do:

- Let you program in either Z80 or 8080 assembly language.
- Increase programming efficiency by letting you define macros to generate commonly used sequences of instructions.
- Let you load several assembled files together into user-defined memory areas.
- Make it easy to generate several different versions of a program by allowing assembly of code only if a given condition is true.
- Let you link programs developed with the Microsoft Macro Assembler package to programs developed with the Microsoft™ COBOL, FORTRAN or BASIC Compiler.



TRS-80

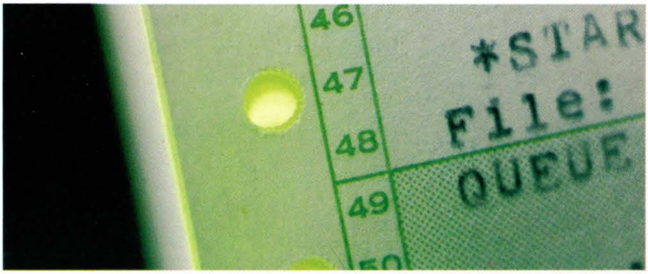
Assembly language provides programming power that can't be found in higher level languages such as BASIC. It's direct. It's compact. And the resulting programs are undeniably fast.

For TRS-80 programmers who enjoy working in assembly language, Microsoft offers Editor/Assembler-Plus, an editing, assembly and debugging system designed to add convenience to the power of assembly language programming.

Editor/Assembler-Plus is comprised of three tools—an editor, a macro assembler, and a debugger—containing many sophisticated features that make manipulating TRS-80 assembly language programs much less cumbersome than before.

The Microsoft Editor/Assembler-Plus System: Here's What It Can Do:

- Give you a complete system for TRS-80 assembly language programming.
- Save assembly time by letting you assemble directly into memory rather than first saving object code to disk.
- Save both programming time and memory space by defining macros to generate commonly used sequences of instructions.
- Make program editing much easier with many special edit commands.
- Help you debug assembly language programs faster. You can single step through instructions in memory and set up as many as eight break points at a time to isolate problems quickly.
- Lets you re-enter after an accidental reset without losing source or breakpoints.



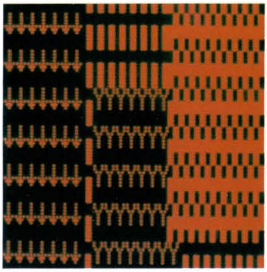
Microsoft™ Level III BASIC is a powerful enhancement to TRS-80 Disk BASIC. A subset of our most advanced BASIC, Level III BASIC adds many BASIC programming features previously not available to TRS-80 programmers.

It's designed for the TRS-80 BASIC programmer who wants to add more powerful features and some conveniences to his/her programming. Most significant is the addition of CHAIN and COMMON features. Level III BASIC also brings advanced graphics capabilities to the TRS-80 user.

Other enhancements included in the Level III BASIC package are useful features like DUMP, MENU, various editing commands and double-precision transcendental functions. These and other features simplify your programming tasks and let you concentrate on the enjoyable aspects of creating new software on your TRS-80.

The Microsoft Level III BASIC System: Here's What It Can Do:

- Make it easy to carry over variables from one program to another. CHAIN and COMMON features handle the task quickly and efficiently.
- Give you graphics capabilities on your TRS-80 computer. Now you can create everything from animated characters to a multitude of charts.
- Utilize the new MENU feature which lets you call up a list of user options with a single command.
- Simplify debugging with the DUMP feature so you can get your program up and running a lot faster.
- Increase your program editing capabilities with a new set of commands.
- Offer the most powerful set of enhancements available for Disk BASIC.
- Increase the accuracy of your numerical calculations for transcendental functions to 16 digits.



Apple II

CP/M-80

muLISP™, Microsoft's implementation of LISP, is a high level, developmental language that is especially useful for symbol manipulation and the processing of symbolic expressions. The language of choice in the artificial intelligence community, LISP also is used by scientists, engineers and mathematicians.

The structures and features of Microsoft muLISP make it well suited to this field. muLISP is noted for its recursive nature and its ability to manipulate arbitrary lists of data.

The structures of data and programs are identical because muLISP represents information as lists. This makes it easier to rearrange and utilize data as needed for a given application. Since muLISP programs also are stored as lists, the need to allocate memory space for storing different sections for programs and data is eliminated.

This language is a study of contrasts. Easy to learn and use, muLISP features very simple, consistent syntax which can be utilized to develop very complex structures. With muLISP you are given 84 primitively defined LISP functions from which you build your own language to meet your specific application needs.

Based on the original LISP 1.5, muLISP contains numerous upwardly compatible extensions which maximize execution speed and reduce storage requirements.

muSTAR™ is a resident screen-oriented editor that facilitates incremental program development. Corrections are implemented through the use of control characters, so modifications to the muLISP program are made without leaving the environment. muSTAR also contains a trace facility for debugging programs.

muLISP/muSTAR: Here's What It Can Do:

- Give you the smallest, fastest, most complete implementation of the LISP system for microcomputers.
- Produce very compact code that makes optimum use of memory space and executes very fast.
- Let you build the language that meets your programming needs by giving you 84 primitively defined LISP functions.
- Give you the accuracy and control you need for complex math applications with exact, infinite precision integer arithmetic.
- Make highly efficient use of space with dynamic memory management and dynamic allocation of data space boundaries.

Apple® II

The Microsoft™ SoftCard™ system is a hardware/software combination for the Apple II that adds an important new software dimension—the ability to run software written for the popular CP/M-80 operating system. With the SoftCard system and CP/M-80, you can access thousands of useful business, scientific, educational and system software packages that were unavailable to Apple owners before.

SoftCard also gives you access to Microsoft's full line of programming languages. Microsoft's BASIC Interpreter is included in the SoftCard package. Microsoft™ FORTRAN COBOL, BASIC Compiler and A.L.D.S. are available separately.

Using the SoftCard system on a 48K Apple II, you'll have 44K of available memory. Add the Microsoft™ RAMCard™ memory board and you get a full 60K of available memory, enough for even complex CP/M-80 application programs.

The SoftCard package is a proven, high-quality system with more than 40,000 installations. The system includes:

SoftCard Circuit Board. Contains a Z80 microprocessor, making it possible for the Apple to run CP/M-80.

CP/M-80 Operating System. The software key to the languages and sophisticated applications software you want.

Microsoft™ BASIC Interpreter. Ideal for developing sophisticated BASIC programs, Microsoft BASIC has many features not found in Applesoft BASIC. Includes both low-resolution and high-resolution graphics.

Complete Utility Programs. Provide complete support of CP/M-80 on the Apple.

Complete Instruction and Reference Documentation. Provides complete reference manuals for Microsoft BASIC and CP/M-80, along with installation instructions and the *Osborne CP/M Handbook,* an excellent tutorial book on CP/M-80.

The Microsoft SoftCard System: Here's What It Can Do:

- Enable your Apple to run the CP/M-80 operating system.
- Let you utilize high quality applications written for CP/M-80 including business, scientific and educational software.
- Let you write sophisticated programs using Microsoft's industry standard BASIC Interpreter, which is included in the SoftCard system.

Apple II

The Microsoft™ SoftCard™ Premium System gives you everything you need to make the most effective use of the CP/M-80 operating system and software written for CP/M-80 on your Apple II. This package brings together the most significant Apple II enhancements into one integrated system:

1. The Microsoft SoftCard system with its Z80 microprocessor, CP/M-80 operating system and Microsoft BASIC.
2. The Videx™ Videoterm™ 80-column card with two extra options: a soft video switch and an inverse character set.
3. Microsoft's popular RAMCard™ memory board.

While the SoftCard alone provides full CP/M-80 capability, the Videoterm card and RAMCard provide the 80-column display capability and expanded memory common to CP/M-80 environments. With the SoftCard Premium System in place, you can make optimum use of software written for CP/M-80.

Microsoft SoftCard Premium System: Here's What It Can Do:

- Let you run the CP/M operating system on your Apple and utilize the thousands of business, scientific, educational and recreational applications that run under CP/M-80. With CP/M-80, your Apple also will support powerful high level languages like BASIC, FORTRAN, and COBOL so you can write your own programs.
- Give you Microsoft BASIC, the most powerful BASIC interpreter you can buy. This ANSI-standard BASIC runs under CP/M-80. With both you have the tools you need to write BASIC applications.
- Allow you to run larger, more complex programs on your Apple. The Microsoft RAMCard boosts your Apple's memory capability to a full 60K. With the SoftCard Premium System in place, you can run programs like Microsoft™ Multiplan™ and Time Manager™, or create your own programs.
- Utilize the Videx Videoterm card to display CP/M-80 programs more effectively on the Apple. Since most CP/M-80 software is designed for display in an 80-column format, installation of the Videoterm card in your Apple makes it easier to work with that software. The Videoterm card also doubles the amount of data you can display on an Apple screen.
- Let you print text in upper and lower case characters.
- Offer two video features that enhance the versatility of the Videoterm card. The soft video switch allows software control of 80 or 40-column display—you decide which format you need —and gives you automatic selection of graphics. The inverse character set lets you display black letters on a white field.

RAMCARD™ MEMORY BOARD For Apple II

Microsoft™ RAMCard™, a 16K memory card for the Apple II, provides the high quality solution to expanding your Apple's memory.

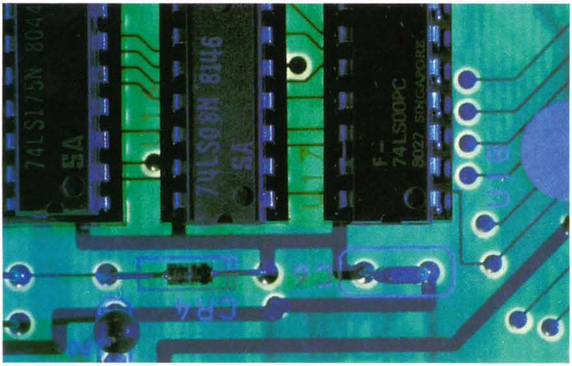
When used in conjunction with the Microsoft™ SoftCard™ system, the RAMCard memory board lets you build a CP/M-80 system with a full 60K of user memory, enough to handle complex business programs and other applications that require large amounts of memory. The RAMCard board also can be used independently of the SoftCard system to provide additional user memory for other software packages such as the Microsoft™ Time Manager™ system and Multiplan™ electronic worksheet.

Designed and built to the highest quality standards, the RAMCard memory board assures the data reliability you need. Special features that enhance reliability include buffered memory, data bus drivers and gold-plated edge connectors.

The RAMCard board comes complete with all nine memory chips in place. Complete instructions and a special IC puller make installing RAMCard quick and easy.

The Microsoft RAMCard Memory Board: Here's What It Can Do:

- Combine with the Microsoft SoftCard system to form a 60K CP/M-80 system that lets you run large applications or write your own in any of Microsoft's languages.
- Get more user memory for non-SoftCard programs such as electronic worksheets and data base managers that really benefit from extra memory.
- Be assured of high reliability because of RAMCard's superior design and manufacturing standards.



RAMCARD™ MEMORY BOARD For the IBM® Personal Computer

Designed for the IBM® Personal Computer, the Microsoft™ RAMCard™ circuit card gives the PC user up to 256K of additional memory space. It also provides a new flexibility in how memory can be used, with two specific functions.

- It expands physical memory so you can run larger programs.
- It implements RAMDrive, a new application for memory that allows high speed access to files normally stored on diskette.

The RAMCard memory board is available in four configurations: 64K, 128K, 192K and 256K. Microsoft also offers upgrade packs of RAMChips so you can add memory in 64K intervals as needed. A set of diagnostic software included in each Microsoft RAMCard package lets you insure that all memory chips are functioning properly.

RAMDrive speeds data access more than 50 times by letting you store data in RAM that normally would have to reside in a mass storage unit—commonly, a disk. With the RAMDrive feature, you assign a "drive letter" to part of RAM memory. The RAMDrive software then instructs the program to go to the RAM rather than the disk for the files it needs, speeding overall program execution time by eliminating the need for disk access.

You can specify how the memory on the RAMCard is used—allocating it for program memory, RAMDrive or both.

RAMDrive complements rather than replaces your disk drive, which you still need for permanent file storage.

The Microsoft RAMCard Package: Here's What It Can Do:

- Let you run larger programs on your IBM Personal Computer.
- Speed program execution by accessing data files 50 times faster with RAMDrive.
- Offer memory in four configurations—64K, 128K, 192K and 256K—so you can choose the configuration that meets your memory requirements.
- Enable you to add more memory later. As you run or write larger, more complex programs that require more memory space, you can increase the RAMCard memory with RAMChips, one of our 64K upgrade kits.
- Provide the high reliability you need in a memory card. The Microsoft name assures you of excellent quality.
- Help you get up and running quickly. The RAMCard package has thorough installation instructions and documentation.

Apple II

Microsoft's Typing Tutor II program provides a highly individualized approach to learning and teaching typing on a microcomputer. It is equally appropriate for personal use at home or in a classroom setting with many students participating.

Ideal for experienced as well as beginning typists, Typing Tutor II combines fun with learning. As you use the program, you increase typing speed and accuracy through a series of personalized lessons and paragraph drills.

You choose your area of concentration—letters, numbers or symbols—and then learn new keys, practice using them in conjunction with keys you already know, and measure your proficiency with tests.

Special Time Response Monitoring™ (TRM™) software provides instant feedback on your speed, accuracy, number of mistakes and weakest keys. This information is incorporated into subsequent lessons specifically tailored to work on the problem areas.

As a teaching device, Typing Tutor II is the perfect vehicle for presenting typing lessons and drills, and monitoring student progress. Teachers can work with as many as 49 students, utilizing up to eight different typing tests which can be edited or rewritten.

Microsoft Typing Tutor II: Here's What It Can Do:

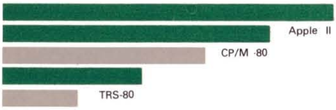
For the User:

- Help you acquire or improve typing skills with a combination of individualized lessons and drills.
- Remember your progress from lesson to lesson if you record your test results.
- Let you start at the typing level at which you are most comfortable and master those keys first.
- Provide three options for evaluating your progress: individual key drills, paragraph drills or tests.
- Let you set your typing goals (build more speed or learn more keys) and then automatically structure your lessons to help you achieve them.
- Allow those with some typing experience to take a proficiency test on the onset to determine ability levels and areas that need work.

For the Teacher:

- Keep up to 49 student records confidentially stored and accessed only by special password.
- Have the option to delete students on the program.
- Utilize the three furnished typing tests and have the option of creating up to five more tests, all of which can be revised or rewritten at any time.

muMATH™/muSIMP™ SYSTEM



muMATH™/muSIMP™, Microsoft's fully interactive symbolic math system, dramatically advances the mathematical capabilities of the microcomputer. With this package you have the tools to perform algebra, trigonometry, calculus, integration, differentiation and transcendental functions—operations formerly reserved for a few very large computers.

This two-part system consists of muMATH, the symbolic math package, and muSIMP, the general-purpose programming language in which muMATH is written.

muMATH is a set of programs which efficiently and accurately perform true algebraic and analytic operations which are beyond the scope of traditional scientific programming languages. Acting as a sophisticated calculator, muMATH is just as convenient and easy to use. Expressions are transformed and simplified as they are entered, eliminating the need to write long programs.

muMath is written in muSIMP, a high level language well suited to symbolic and seminumerical programming. A subset of the LISP language, muSIMP was designed especially for implementing computer algebra systems. It is provided in this package for those who want to go beyond the calculator-type functions of muMATH, and for those who want to implement artificial intelligence applications.

Microsoft muMATH/muSIMP System: Here's What It Can Do:

- Perform both low and high level math operations and thus be useful to people with a wide range of mathematical ability.
- Allow the microcomputer to perform symbolic math functions previously reserved for a few powerful mainframes.
- Function as efficiently as a calculator, with similar convenience and ease of use, and perform symbolic math operations. While using this "calculator mode" of muMATH, the user also can experiment with different formulas, immediately see the results, and discover mistakes quickly without changing the original program.
- Handle more advanced computer algebra systems by implementing muSIMP programming features.
- Make highly efficient use of memory space by letting you load in only the portions of muMATH actually needed for a given application, reserving more space for computations.
- Provide interactive lessons as part of the muMATH software to make the system easy to learn.

muMATH™ SYMBOLIC MATH PACKAGE

Apple II

TRS-80

The muMATH™ symbolic math package from Microsoft turns your microcomputer into a mathematical genius. It tackles arithmetic, algebra, trigonometry and calculus problems, like the ones shown here, with calculator speed and 611-digit precision.

For example, have you ever wondered how many poker hands there are in a 52-card deck? To find out, enter 52!/(5*(52-5!). The computer then replies: 2598960.

On a more practical level, perhaps you need to add the fractions 1/3, 5/6, 2/5, 3/7. You enter: 1/3+5/6+2/5+3/7. And your result is: 419/210.

An abbreviated version of the Microsoft muMATH/muSIMP™ system, this muMATH package is ideal for students, beginning mathematicians and others who need a symbolic math program to create applications of varying complexity.

muMATH provides basically the same symbolic math system and incorporates the most significant features of the larger muMATH/muSIMP package. muMATH can perform operations such as exact rational arithmetic, algebraic simplification of expressions, exact solutions of algebraic equations, integration, differentiation and transcendental functions. These powers previously were limited to a few large computers.

Like the large package, muMATH is a fully interactive system. It, too, makes effective use of the powerful "calculator mode" of operation.

muMATH also is written in the muSIMP language but does not provide muSIMP programming features. The built-in facilities of muMATH are powerful enough that most users will find the "calculator mode" sufficient to solve their mathematical problems.

Microsoft muMATH Symbolic Math Package: Here's What It Can Do:

- Allow a microcomputer to perform a variety of symbolic math functions previously restricted to a few large computers.
- Handle both high and low level mathematical operations (trigonometry to arithmetic) for a variety of users.
- Function as efficiently as a calculator, with similar convenience and ease of use.
- Give you the control and mathematical accuracy you need for your applications.
- Offer a symbolic math package that has all the functions you need, yet is still easy to use. The most frequently used muMATH operations are precompiled into one convenient module.

Apple II

TRS-80

Now you have the chance to become an Olympic champion in the greatest of all athletic competitions with this exciting skill game.

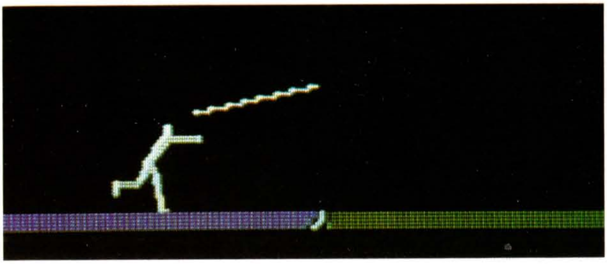
The decathlon has been called the truest test of an athlete. It demands excellence in ten different events that encompass three diverse disciplines—running, jumping and throwing. In Microsoft™ Decathlon, you'll participate just as if you were in actual competition.

Each Decathlon game includes these events: 100-meter dash, long jump, shot put, high jump, 400-meter dash, 110-meter high hurdles, discus throw, pole vault, javelin, 1500-meter run.

Every event is presented with extraordinary animated graphics. You must interact with the animation in real time, using the keyboard (and game paddles with the Apple version) to control the figures on the screen. To emerge the victor, you'll need a good sense of timing, fast reflexes and coordination.

Microsoft Decathlon: Here's What It Can Do:

- Let you enjoy the excitement of Olympic competition any day, using your personal computer. Decathlon's exceptional graphics will make you feel like you're there.
- Keep you interested, even after you've played the game a hundred times. Decathlon's ten different events keep it exciting; you won't learn one "trick" for a perfect score.
- Let you compete against up to seven other players on the TRS-80 or against up to five players on the Apple II. When others aren't available, you can still have fun playing Decathlon by yourself.
- Provide a practice mode to help you build skills on each Decathlon event.



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