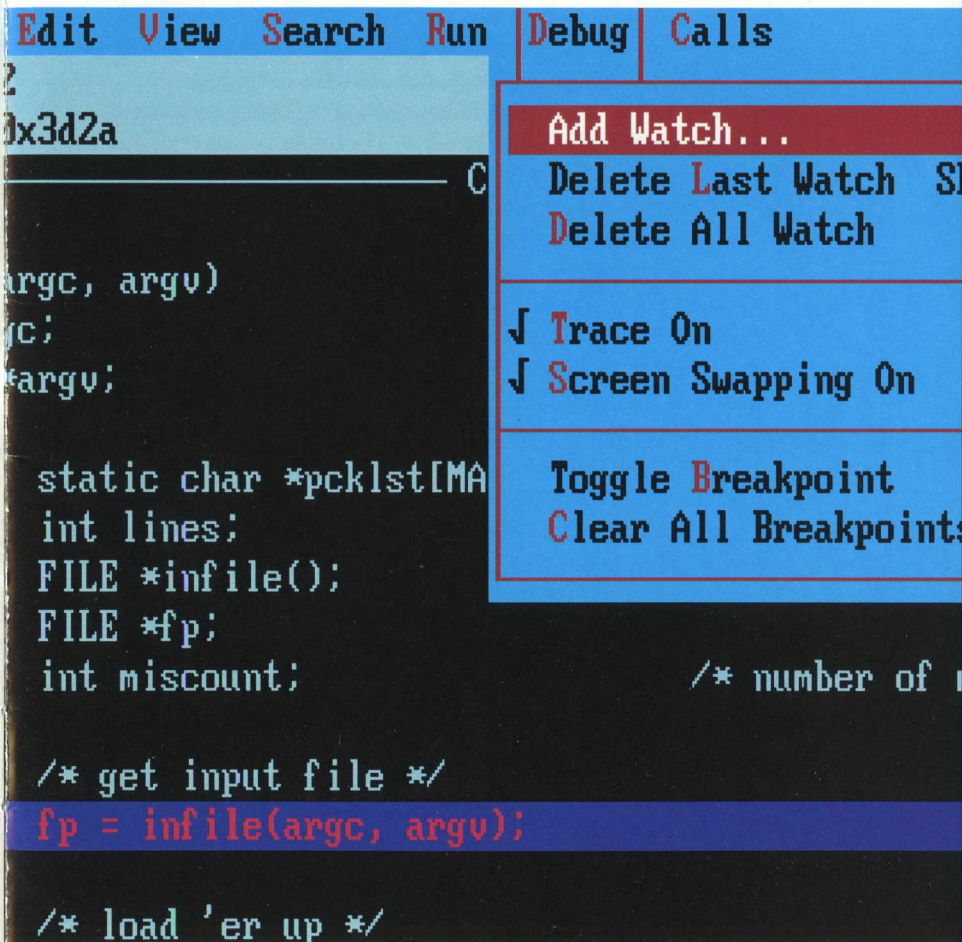


Guide to Microsoft
languages for the
MS-DOS® and XENIX®
operating systems.

Precision tools for the art of programming.



The image shows a screenshot of a debugger's menu system. The menu is displayed over a dark background with white text, which appears to be a C program. The menu has a blue header with white text and a red header for the first item. The items in the menu are: 'Add Watch...', 'Delete Last Watch', 'Delete All Watch', 'Trace On' (with a checkmark), 'Screen Swapping On' (with a checkmark), 'Toggle Breakpoint', and 'Clear All Breakpoints'.

```
2  
0x3d2a  
C  
argc, argv)  
c;  
*argv;  
  
static char *pcklst[MA  
int lines;  
FILE *infile();  
FILE *fp;  
int miscount; /* number of  
  
/* get input file */  
fp = infile(argc, argv);  
  
/* load 'er up */
```

Microsoft®

Microsoft offers the technology you need to perfect your art.

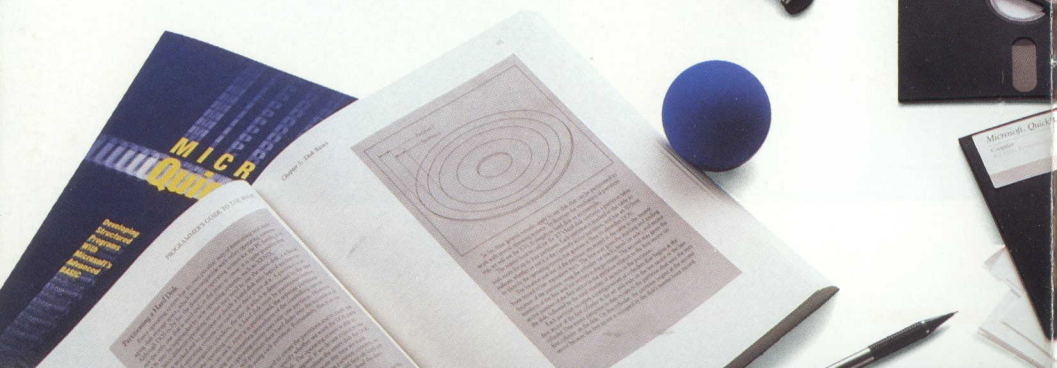
Computer programming can take you into late nights and lost weekends. But there's help at hand to make that extra effort pay off with code that's fast, clean, and bug-free—Microsoft programming languages.

Microsoft languages for the MS-DOS and XENIX operating systems are the precision tools you need to get the job done quickly, accurately, and elegantly. Tools that are powerful microcomputer implementations of leading programming languages. Tools that make those late nights not only easier, but shorter and more rewarding, too.

And Microsoft offers a wider selection of language solutions than anyone else. Our *Quick* line is the perfect introduction to programming. These products supply everything you need in one integrated package and provide capabilities even experienced users will appreciate. For high-end needs, we offer languages that use the latest optimizing technology to create the fastest possible code.

Now that you have at least one Microsoft language product, we'd like to introduce you to the entire MS-DOS and XENIX family of languages. There's sure to be one that can handle whatever programming challenges you might encounter. If you'd like more information on specific languages, send in the enclosed order form for free data sheets.

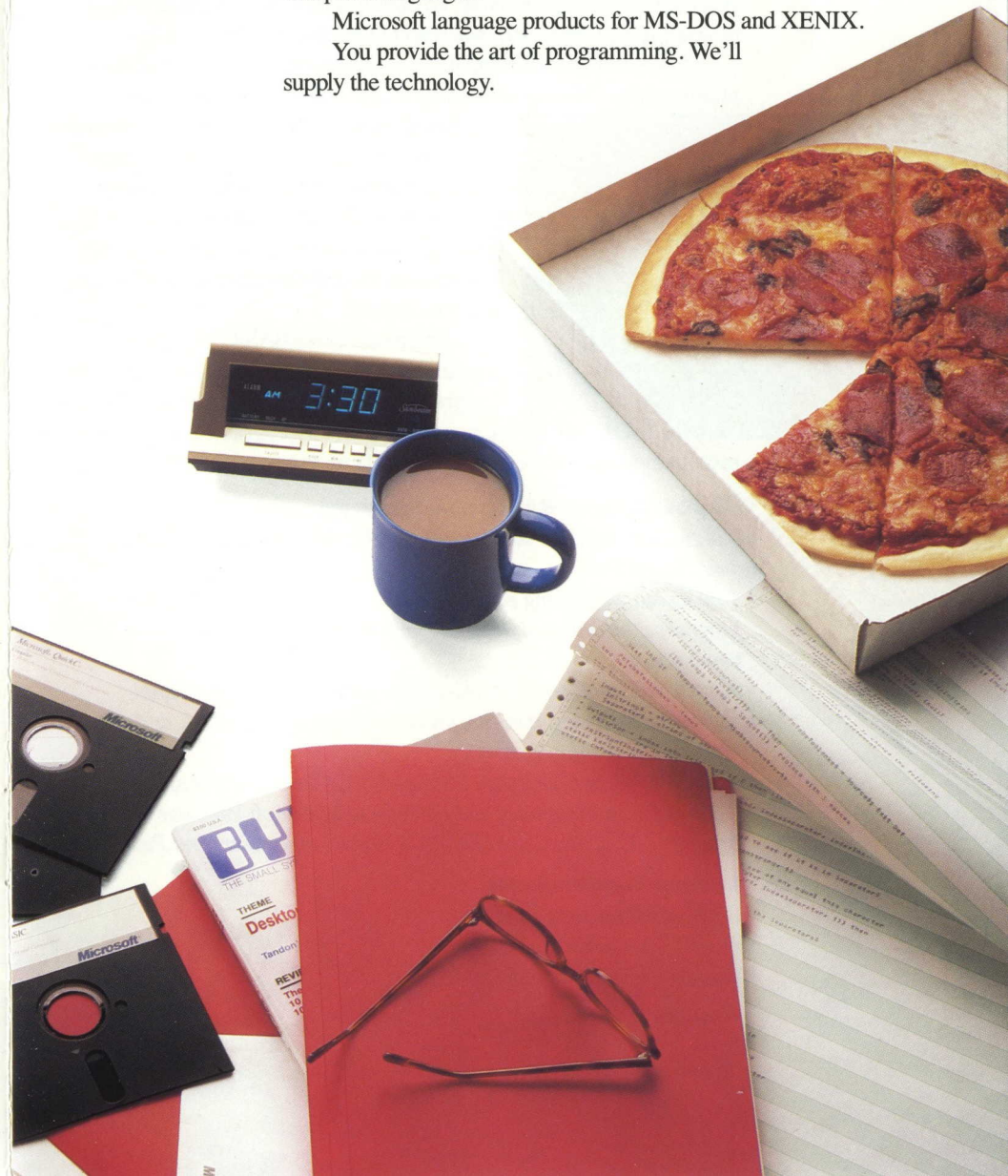
Whichever products you choose, you'll know that they come from the company that began writing languages and operating systems for personal computers before they were even called personal computers. Microsoft's expertise is part of every product we offer—the visible achievement of our programmers making programming easier for others. And more efficient, too, so you can keep those all-night coding sessions to a minimum.



But not all of Microsoft's support is in this package. Telephone hotlines, timely updates, and state-of-the-art on-line support like Microsoft® DIAL (Direct Information Access Line) mean our products will work for you now and in the future. (To make sure you're informed about these services, take a moment right now to fill out the registration card included in this package.) Also available is a selection of Microsoft Press books that cover basic programming techniques and tips on using individual products more efficiently. It all adds up to an unmatched commitment to quality from the leader in personal computer languages.

Microsoft language products for MS-DOS and XENIX.

You provide the art of programming. We'll supply the technology.



Microsoft QuickBASIC

Instant programming means instant results!

In the past, if you wanted to program in BASIC you had to choose between the immediacy of using an interpreter and the fast program execution of a compiler. Now, no choice is necessary because instant programming is here with Microsoft QuickBASIC Version 4.0.

Microsoft QuickBASIC 4.0 is a revolutionary concept in BASIC programming. There's no waiting to run or debug your program

because there's no compile step. You can run your program, stop to edit and debug, then continue running. Whenever you change your code, Microsoft QuickBASIC 4.0 automatically incorporates the change so quickly—usually at 150,000 lines per minute*—that it seems instant!

Microsoft QuickBASIC Version 4.0 also makes it easier to write multiple-module programs. The new built-in code outliner keeps track of all subprograms and functions

in an individual module and lets you edit up to two of them at a time.

Microsoft QuickBASIC also features:

- *Standalone, multiple-module executables that can be generated in a single operation*
- *Full-screen windowing editor that lets you edit two parts of your program simultaneously and supports WordStar®-compatible keystrokes*
- *Automatic syntax error checking after each line of code is typed*
- *Enhanced language features, including records, recursion, and data arrays up to available memory*
- *Automatic support for Intel® 8087 and 80287 math coprocessors*
- *Support for interlanguage calling to these Microsoft language products—C, QuickC™, FORTRAN, Macro Assembler, and Pascal*

System Requirements

- *320K available user memory*
- *DOS 2.1 or higher*
- *One double-sided disk drive*

**On an IBM PC AT® at 8 MHz.*

```
PRINT#(fileNumber) USING format-string: expression-list [(,)]

See USING for format-string syntax.
INDEX.BAS
CASE "A"
AddRecord StockRecord
CASE "V"
IF NumberOfRecords = 0 THEN
PRINT : PRINT "No records in file yet.";
PRINT "Press any key to continue.";
ELSE
INDEX.BAS:AddRecord
CLS
INPUT "Part Number: ", RecordVar.PartNumber
INPUT "Description: ", RecordVar.Description
RecordVar.UnitPrice = VAL(Filter$("Unit Price: "))
RecordVar.Quantity = VAL(Filter$("Quantity: "))

NumberOfRecords = NumberOfRecords + 1
Immediate
PrintRecord RecordVar
RecordVar.UnitPrice = 35.00
Main: INDEX.BAS Context: INDEX.BAS:AddRecord 00075:018
```

▪ *Multi-window editing and debugging give you a flexible and powerful BASIC programming environment.*

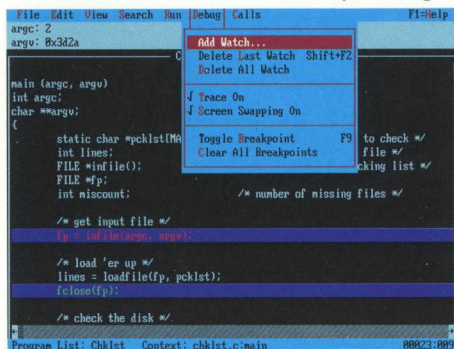
▪ *Context-sensitive help gives you quick answers.*

Microsoft QuickC Compiler.

Total integration. Totally amazing!

Even if you've never programmed in C before, you can explore the power of this versatile computer language with Microsoft QuickC Compiler.

Microsoft QuickC Compiler features an easy-to-use debugger that's fully integrated with the editor and compiler, so you have all the tools at your fingertips all the time.



Your programming tools are at your command all the time. Editing, compiling, and debugging are quick and easy because there's no switching between tools.

The full-screen editor gives you complete cut-copy-paste convenience, as well as detailed error messages that help you solve problems quickly. The compiler not only crunches your code at 10,000 lines per minute,* but also finds as many as 26 errors at a time. Then it puts you right back into the editor with the cursor on the first error, ready for you to begin making changes. And recompiling is easy, because Microsoft QuickC automatically generates MAKE

files for you—just choose the modules you want included, and QuickC does the rest.

Microsoft QuickC's source-level debugger is integrated right into the compiler. You can see exactly what your code is doing during execution, making your debugging faster and more efficient. Single-step, animate, or trace through your source code. Set dynamic breakpoints to stop execution at any point you choose. And track local and global variables so you can see values change as the program runs.

Microsoft QuickC Compiler also features:

- Full compatibility with Microsoft C Optimizing Compiler
- Extensive, easy-to-use documentation
- Context-sensitive help that displays information on statement syntax and library routines
- Graphics library
- Two math libraries (8087/80287 support and floating-point emulation)
- Support for the Microsoft Mouse

System Requirements

- 448K available user memory (512K recommended)
- DOS 2.0 or higher
- Two double-sided disk drives

*On an IBM Personal System/2™ Model 60.



Microsoft CodeView®.

A new experience in debugging—included with many Microsoft languages.

Debugging your Microsoft C and QuickC, Microsoft QuickBASIC 4.0, Microsoft FORTRAN, Microsoft Pascal 4.0, and Microsoft Macro Assembler programs has never been so easy as with Microsoft CodeView.

Microsoft CodeView features multiple on-screen windows that let you view program execution while you watch variable and register

```
File View Search Run Watch Options Language Calls Help PS-Trace PS-Co
103: register char **a      Add Watch... Ctrl+W
104: register CTL *ctl     Watchpoint...
105: (                       Watchpoint...
106:     short fill         Delete Watch... Ctrl+W
107:     ctl->debu          Delete All Watch
108:     nt of files on
109:     et out with no
110:     /* now go find flags and files on cmd line */
111:     while (--argc)
112:     {
113:         /* first uppercase the arg to simplify parsing
114:         upper (**argv);
115:         /* check command line for flags */
116:         if (**argv == '-')
117:         {
118:             /* interpret flags if found */
119:             switch (**argv)
120:             {
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Microsoft C Optimizing Compiler.

First with the pros.

This is the ultimate C development environment for the IBM Personal Computer, producing code with execution speed second to none.

Microsoft C includes optimization features to reduce the number of instructions in your programs and streamline your code for the targeted hardware. Take advantage of inline code generation of functions, loop invariant expression removal, automatic register allocation of variables within loops, elimination of common sub-expressions, and improved constant folding and value propagation.

The compiler also supports fast, accurate program development. Use Microsoft QuickC's integrated editor, compiler, and debugger (included in the package) for fast prototyping of your C programs—not to mention compilation at 10,000 lines per minute.* The revolutionary Microsoft CodeView window-oriented debugger is included to provide powerful source-level debugging. And there's even documentation specifically designed to help you write the fastest code possible.

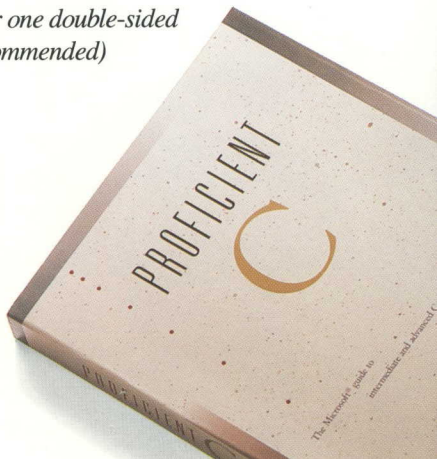
Microsoft C Optimizing Compiler also features:

- *Fast linking (twice as fast in Version 5.0 as in Version 4.0)*
- *Enhanced support of the proposed ANSI C standard*
- *Extended library functions*
- *Support for Intel 8087/80287/80387 math coprocessors*
- *Interlanguage calling to Microsoft FORTRAN, Microsoft Pascal, Microsoft Macro Assembler, and Microsoft QuickBASIC*
- *Run-time library source code available separately*

System Requirements

- *448K available user memory (512K recommended)*
- *MS-DOS 2.0 or higher*
- *Two double-sided disk drives or one double-sided disk drive and a hard disk (recommended)*

**On an IBM Personal System/2 Model 60.*



Microsoft FORTRAN Optimizing Compiler.

Fast. Full. Flawless.

Mainframe power on a personal computer—that's Microsoft FORTRAN Optimizing Compiler.

Microsoft FORTRAN generates extremely compact code for programs that run faster than you thought possible on a personal computer. And you can transport your programs to other systems easily, because this is a complete implementation of the ANSI FORTRAN 77 standard. Plus, we've added the largest set of IBM VS and DEC® VAX® extensions available for personal computers.

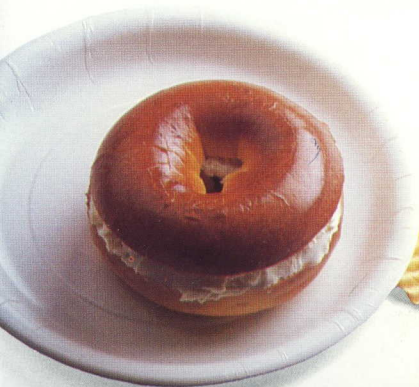
Microsoft FORTRAN Optimizing Compiler has been certified as Full and error-free by the General Services Administration (GSA)—your guarantee of the highest level of reliability you can get in a FORTRAN compiler. And Microsoft FORTRAN comes with the powerful Microsoft CodeView debugger for unprecedented control over your debugging.

Microsoft FORTRAN Optimizing Compiler also features:

- *Math coprocessor and emulator support*
- *Extensive plain-English diagnostic error messages*
- *Direct interlanguage calling to Microsoft C, Microsoft QuickC, Microsoft Macro Assembler, and Microsoft Pascal*
- *Medium, large, huge, and mixed memory modules*
- *Huge arrays and common blocks greater than 64K*
- *Support for 8087/80287 math coprocessors*
- *Networking support with file and record locking*

System Requirements

- *320K available user memory (512K recommended)*
- *MS-DOS 2.0 or higher*
- *Two double-sided disk drives*



Microsoft Macro Assembler.

Maximum power for microcomputers.

Microsoft Macro Assembler is an indispensable tool for optimizing frequently used subroutines as well as those not easily implemented in high-level languages. It provides everything you need to develop and maintain assembler code for the Intel 80386 and related microprocessors.

With Microsoft Macro Assembler, it's easy to write assembly-language subroutines for programs written in Microsoft QuickBASIC, Microsoft QuickC, Microsoft C, Microsoft FORTRAN, and Microsoft Pascal. The *Mixed-Language Programming Guide* included in the package shows you how—it's just part of the comprehensive documentation that makes Microsoft Macro Assembler easy to learn.

Debugging your assembly-language programs is faster and easier than ever with Microsoft CodeView, and it's right in your Microsoft Macro Assembler package. Use CodeView's power to see your source and disassembled code simultaneously, including labels, constants, and comments. Debug mixed-language programs, programs with overlays, and large programs that use the Expanded Memory Specification (EMS).

And Microsoft Macro Assembler is the most powerful development tool available for the Intel 8086/80286/80386 processors and 8087/80287/80387 math coprocessors.

Microsoft Macro Assembler also features:

- Access to all available memory on your personal computer for assembling complex programs
- Wide selection of environment variables and command-line options
- Default IEEE floating-point format (binary format optional)

System Requirements

- 256K available user memory (320K recommended)
- MS-DOS 2.0 or higher
- Two double-sided disk drives



Microsoft Pascal Compiler.

When you've outgrown the others.

If you want a Pascal that can push your personal computer to its limits, move up to Microsoft Pascal Compiler. It's based on the proposed ISO and ANSI Level 0 standards to ensure language compatibility—then we've added extensions to better support the development of large, powerful programs.

Microsoft Pascal's symbol table can be as large as available memory, letting you write larger Pascal programs for both the Microsoft Windows operating environment and the MS-DOS operating system. You can easily develop your programs in modules for fast coding and compiling, then link them together to create large applications. And your code can be combined with other modules developed in Microsoft C, Microsoft FORTRAN, and Microsoft Macro Assembler (some limitations apply), letting you choose the best language for each task.

Microsoft Pascal Compiler includes our Microsoft CodeView window-oriented debugger for fast, efficient program development.

Microsoft Pascal Compiler also features:

- 8087/80287 math coprocessor and emulation support
- Source-code XENIX compatibility
- Multi-user file sharing with file and record locking

System Requirements

- 320K available user memory (512K recommended)
- MS-DOS 2.0 or higher
- Two double-sided disk drives or one double-sided disk drive and a hard disk



Microsoft COBOL Compiler.

The complete COBOL.

When you mean business, you mean COBOL. Microsoft COBOL Compiler offers unquestioned accuracy and reliability for your business applications. An implementation of the ANSI 74 standard, Microsoft COBOL's excellence has even been certified at High level by the GSA.

Microsoft COBOL gives you an advanced COBOL compiler plus Microsoft COBOL Tools, an exceptional collection of development tools and utilities that make your programming time more productive. They include a menu-driven interactive symbolic debugger (ViewCob), a cross-reference utility, a menu handler, and an object module to add Microsoft Mouse control to your COBOL applications for the MS-DOS operating system.

The compiler supports four file types. Take advantage of exceptionally fast multi-

key ISAM files (including support for the IBM PC Network), or choose from relative, line-sequential, and sequential files.

And with Microsoft COBOL Compiler, you can create, manipulate, and maintain screens easily. ACCEPT and DISPLAY entire screens with a single statement, protect sensitive data with secure fields, and enhance screens with color and underlining.

Microsoft COBOL Compiler also features:

- Source-code XENIX compatibility
- Overlays and expanded memory parameters for large program support
- Network file sharing with file and record locking
- Dynamic loading of subroutines

System Requirements

- 256K available user memory
- MS-DOS 2.0 or higher
- One double-sided disk drive

```
79      close transaction-file.
80
81      p110-read-and-process.
82      read transaction-file into work-trans-rec
83      at end move on-value to end-of-file-su.
84
85      if transaction-status = "00"
86      perform p110-process-record
87      else if transaction-status > "10"
88      move on-value to error-su, end-of-file-su.

TRANSACTION-STATUS (00)
WORK-TRANS-REC 12      2222.22
TOTAL-RECORD-COUNT (00002)

Breakpoint 1 Step Count 0      on Entry of P110-READ-AND-PROCESS
Breakpoint 2 Step Count 0      on line number 86

COMMAND: Breakpoint Display Find Help Options
          Quit Transfer Hear View Window
Breakpoint 1 Step Count 0      on Entry of P110-READ-AND-PROCESS
Current line: 81              Status: Breakpoint 1      ViewCob: later
```

ViewCob's menu-driven interface makes it easy to trace, trap errors, and set breakpoints. Multiple windows let you view source code, data items, and memory values as your program executes.

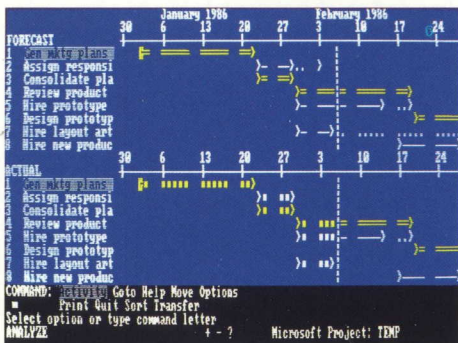
Microsoft Project.

Keep your projects on schedule.

Microsoft Project gives you an accurate overview of all sizes of programming projects, helping you keep them on time and within budget. It lets you plan activities, assign resources, monitor schedules and costs, and report project information quickly.

With Microsoft Project, you can choose the best chart format for your needs—PERT or Gantt—and compare the planned and actual schedules to track your progress. A flexible report generator lets you customize report formats and content to communicate schedule status effectively. And the program can output to a plotter as well as a printer for presentation-quality charts.

Microsoft Project also offers informative resource histograms for comparing resource assignments and loading, as well as individual



Microsoft Project helps you monitor your projects and track your progress by letting you compare your actual schedule with your planned schedule.

resource calendars to factor in vacations and other time off. Its resource-leveling feature automatically resolves resource scheduling conflicts. And Microsoft Project comes with a complete computer-based tutorial so it's as easy to learn as it is to use.

System Requirements

- 256K memory
- MS-DOS 2.0 or higher
- Two double-sided disk drives or one double-sided disk drive and a hard disk



Microsoft languages for the XENIX operating system.

Portable. Powerful. Practical.

Microsoft offers powerful implementations of our most popular languages for the XENIX 286 operating system.

Microsoft BASIC Interpreter.

For the benefits of BASIC programming without compiling, turn to Microsoft BASIC Interpreter. It offers on-line debugging, allows access to the XENIX file system, and features a high degree of compatibility with the Microsoft BASIC Interpreter and GW-BASIC® Interpreter for MS-DOS systems.

Microsoft BASIC Compiler.

Bringing the speed and power of compiled BASIC to the XENIX environment, this product lets you compile programs created with the Microsoft BASIC Interpreter so you can run them up to ten times faster. It's also fully compatible with the MS-DOS version and gives you a wide range of support for XENIX file- and screen-handling functions.

Microsoft FORTRAN Compiler.

This native-code compiler provides a wide range of ANSI FORTRAN 77 features and extensions and allows source code transfer to programs written with Microsoft FORTRAN for the MS-DOS operating system. It supports the use of math coprocessors and lets you develop applications from convenient, easily linked modules.

Microsoft Pascal Compiler.

Put the full power of your personal computer to work with Microsoft Pascal Compiler. Create large programs easily by linking separate modules and using overlays. Incorporate subroutines from other languages. Use data up to the limit of available memory. And the source code is compatible with Microsoft Pascal Compiler for the MS-DOS operating system.

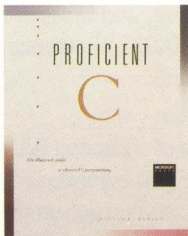
Microsoft COBOL Compiler.

For accuracy and reliability confirmed by ANSI 74 standardization and High GSA certification, choose Microsoft COBOL Compiler. Features include multi-keyed ISAM files, powerful screen-management functions, and an exceptional set of development tools and utilities that speed program design and debugging.

Microsoft Press.

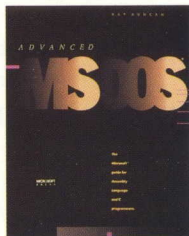
The last word on languages.

To make your programming even more efficient, Microsoft Press offers books on individual languages as well as the basics of programming. Check out the full selection at your local bookseller or software store, or call (800) 638-3030 to place your credit card order.



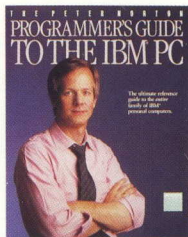
Proficient C
Augie Hansen

Aimed at intermediate to advanced programmers, *Proficient C* focuses on techniques and programming tools that can be used to develop fast, powerful C applications. Emphasis is placed on creating reusable modules that have a wide range of uses. Source code and executable-program companion disks are available.



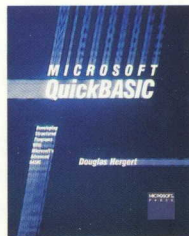
Advanced MS-DOS
Ray Duncan

Advanced MS-DOS is packed with detailed technical information on C and assembly-language programming for this popular IBM PC operating system. Experienced programmers will find a wealth of ideas in both the expository and reference sections. A companion disk of programs described in the book is also available.



The Peter Norton Programmer's Guide to the IBM PC

Peter Norton
Peter Norton is recognized as the foremost authority on IBM PC technology. In this comprehensive book, he provides intermediate and advanced users with the information needed to develop programs that can be easily transported among the various models of the PC family.



Microsoft QuickBASIC
Douglas Hergert

This is the definitive guide to programming with Microsoft QuickBASIC Compiler. It not only provides an understanding of the language's structure, but also includes tutorials built around five fully functional applications. These programs as well as supporting routines are available on a companion disk.

Which Microsoft language do you want to speak?

Find out more about Microsoft languages that interest you. Just mail in this coupon, and we'll send you detailed technical data sheets on the Microsoft languages of your choice.

Indicate which Microsoft language or languages you'd like to know more about. You can also request information on Microsoft Project, our project scheduling program.

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