Apple

Workbench
Development Tools
for the Apple II and
Apple III Families

What software products are in the Apple Workbench series?

The first group of Apple Workbench products consists of six software packages:

- DOS Programmer's Tool Kit
- ProDOS™ Technical Reference Manual
- ProDOS Assembler Tools
- Apple Pascal Numerics (SANE: Standard Apple Numeric Environment)
- Apple *III* Pascal Tool Kit
- Pronto: Apple *III* Pascal Debugger

Each of these packages is purchased individually, and each comes with software, complete documentation, and a registration card (so we can notify you in case of a software update). Apple Workbench binders are available so you can file the documentation and future updates to the Workbench products. Over time, more and more tools will be available as the Workbench evolves to meet your needs.

DOS Programmer's Tool Kit

This software package consists of the 6502 Assembler Tool Kit and the Applesoft Programmer's Tool Kit.

The 6502 Assembler Tool Kit contains all the assembly-language programming tools you'll need to program your Apple *II* system in its native language under DOS 3.3. These include:

- EDASM (editor and assembler), to help you create assembly-language source programs, and to translate these programs into executable 6502 object programs;
- BUG BYTER, to assist in the testing and debugging of programs; and
- RLOAD, to load and execute assembly-language programs during the execution of a BASIC program.

The Applesoft Programmer's Tool Kit is designed to help you use the full programming capabilities of the Apple *II* family of computers. Intended for programmers familiar with Applesoft BASIC and DOS 3.3, this tool kit contains a collection of software programs which will aid you in creating, developing, and modifying both text- and graphic-based Applesoft programs. These programs include various utilities and tools used for developing and using special text and animation character sets, as well as the Boston Window, a full-screen editor.

ProDOS Technical Reference Manual
The diskette in this package contains ProDOS, Apple's new operating system for the Apple *II*, and the Exerciser, an interactive program that allows programmers to try out ProDOS calls from the keyboard. The reference manual that accompanies the diskette explains the advanced features of ProDOS, such as hierarchical file management, support of mass storage devices and interrupt driven processes, and compatibility with the Apple *III* Sophisticated Operating System (SOS). With the information in the manual, programmers will be able to write assembly-language programs that use the full power of ProDOS.

The ProDOS Technical Reference Manual requires assembler tools running on ProDOS or SOS, such as those you'll find in the ProDOS Assembler Tools package.
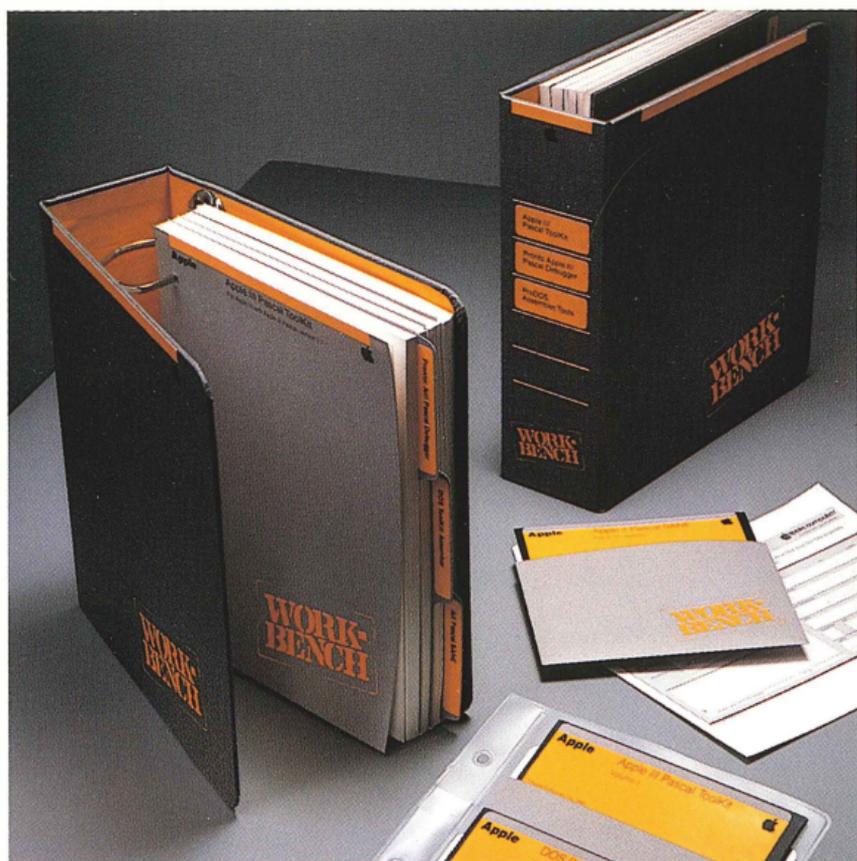
ProDOS Assembler Tools
The ProDOS Assembler Tools package contains all you'll need to program your Apple *II* system in assembly language under ProDOS. It includes the same pieces as the 6502 Assembler Tool Kit portion of the DOS Programmer's Tool Kit (EDASM, BUG BYTER, and RLOAD).

The ProDOS Technical Reference Manual is highly recommended for use with this package.

Apple Pascal Numerics
Now you can use double-precision real numbers and 64-bit integers in Apple Pascal for the Apple *II* and *III* with SANE (Standard Apple Numeric Environment). This package incorporates full IEEE-standard numerics, including single-, double-, and extended-precision types (32, 64, and 80 bit), as well as functions (arithmetic, conversion, comparison, control, logarithmic, exponential, financial, and trigonometric). With SANE, computations are more reliable and tailored to the needs of the application. The extensions are provided as a unit which can be used in an Apple Pascal program (for the Apple *II* and *III*). The package is upward compatible with the Apple *III* SANE provided in Apple *III* Pascal, version 1.1.

What is the Apple Workbench?

The Apple Workbench is a series of technical software products from Apple Computer designed to help software developers create high-quality applications for Apple® systems. Apple has always encouraged independent programmers to develop applications software. Now, through the Workbench, Apple is further opening up its systems with development tools, information, and support needed by successful software developers.

Who would be interested in the Apple Workbench?

Any developer interested in producing hardware or software for Apple systems would benefit from these software development tools. Whether you're an independent developer, a VAR reseller, a consultant developing customized software, a scientific programmer, or someone writing software for personal use, the Apple Workbench may have the right software tools for your needs.

What distinguishes Apple Workbench products from other Apple software?

The Workbench products are specifically designed for technically oriented people. With a few exceptions, such as the DOS Programmer's Tool Kit, little or no tutorial information is provided with the Workbench software—just informative, well-organized reference materials. These reference materials are packaged in simple loose-leaf format, with separate binders available so you can organize the reference materials according to your own needs.

If there are updates to an Apple Workbench software package, will I be notified?

If you fill in and return the software registration card included with each software package, Apple will record the information in an update file and notify you by mail when updates become available. The notification will describe the update package, its price, and ordering instructions. An update may include additional written material or software, such as enhancements, bug fixes or workarounds, answers to frequently asked questions, and manual corrections or additions.

If I have any technical questions regarding my Apple Workbench package, how can I get the answers I need?

Contact your authorized Apple dealer if you have questions about any Apple Workbench product. If, for any reason, the dealer cannot immediately help you, the dealer can call Apple's Technical Assistance and receive an answer to your question.

Apple *III* Pascal Tool Kit

This software package, for use in developing Pascal programs on the Apple *III* system, includes the following powerful tools to enhance your productivity:

- Apple *III* Pascal Compiler, enhanced version*
- Compare *III**
- SortDir*
- Xref*
- DirStuff
- ProcNames*
- Paging
- PasMat *III**

Apple *III* Pascal Tool Kit requires Apple *III* Pascal, version 1.1.

*These tools are useful for developing Apple Pascal programs for the Apple *II* family on the Apple *III*.

Apple *III* Pascal Compiler. This is an enhanced version of the Apple *III* Pascal Compiler (version 1.1). It includes a much friendlier user interface than the Pascal 1.1 compiler, which is upward compatible with the new compiler. The new compiler includes directives, which make the compilation more efficient, and provides more information in listings, such as p-code, symbol tables, and a separate error file. Following the ISO standard, many new enhancements were made to the Pascal language itself, such as constant expressions, nondecimal numbers, and ranges in case statements.

Compare *III*. When you want to know exactly what the differences are between two versions of a program, or compare the data text files resulting from two runs, Compare *III* will do the job. Although simple to use, Compare *III* incorporates a sophisticated resynchronizing algorithm which reads both files in sequence, compares them line for line, and produces a complete report of the differences.

Xref. To really understand how your program works, you have to know where your variables are declared and how they're used. Xref reads a Pascal program and displays all references to variables. In addition to the line numbers, each reference indicates whether it defines, modifies, or simply references the variable, thus providing a wealth of useful information about your program.

ProcNames. Further information about the structure of a program can be obtained by running it through ProcNames. This utility produces an outline of a program by producing a report containing just the names of procedures and functions, along with nesting levels, segments, and procedure numbers.

PasMat *III*. After many modifications by different people, a program can become visually messy (or maybe you just don't want to format your code while you initially type it). PasMat *III* will reformat Pascal source into a standardized format with many options to reflect your personal style. PasMat *III* accepts full programs, external procedures, blocks, and groups of statements; and it will check syntax at the same time.

SortDir. Getting lost in your directory structures? SortDir is a useful utility which allows you to sort your SOS and ProDOS directories. You can sort them based on file type, name, or size; modification or creation date; and time. In fact, you can use any combination of these criteria to sort your directories. So you can, for example, group files first by file type, then alphabetically by name. If none of the five criteria meet your needs, SortDir also allows you to sort your directories manually.

DirStuff. This unit provides the building blocks of the Apple *III* user interface (utilized as well by the other tools), making it easy to design good user interface in your programs. Following the user interface guidelines exemplified by the SOS Utility Filer, DirStuff provides routines to enter strings, select files from a menu, and display error messages and help information.

Paging. If you need to manipulate larger amounts of data than can fit in memory, you'll find this unit invaluable. Easy to add to your programs, Paging gives you an efficient tool for simulating virtual memory on ProFile™ hard disks or other large disks.

Pronto: Apple *III* Pascal Debugger

With Pronto, you can now walk through your Pascal programs and find out what's going on inside. It's fully interactive, with help capabilities and macros. It also displays values of variables.
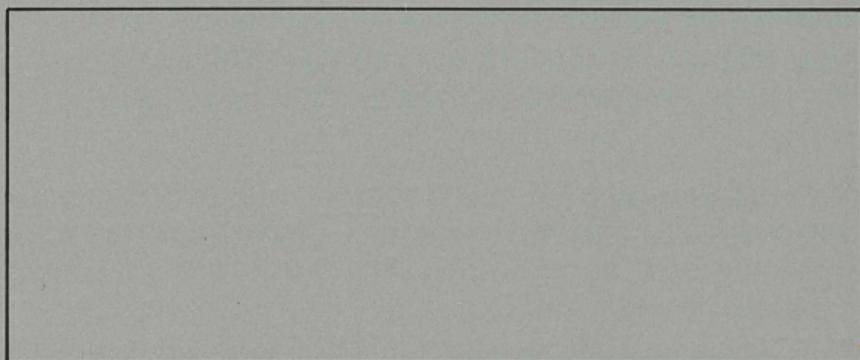
Pronto gives you complete control over execution. You may break from the keyboard at any point, review the execution path, and insert breakpoints in various parts of the program. Nonintrusive, it allows you to debug while executing the program at full speed, with no recompilation necessary; and it produces no effects on the application screens.

Pronto requires Apple *III* Pascal (version 1.1). The Apple *III* Pascal Technical Reference Manual is recommended.

For more information on the Apple Workbench...

Visit your local authorized Apple dealer for further details and a demonstration on any Apple system. Because of the special nature of the Workbench products, your Apple dealer may not have them all in stock, but can order them for you from Apple for immediate delivery.