FORTRAN Compilers
Zeidenberg, Matt
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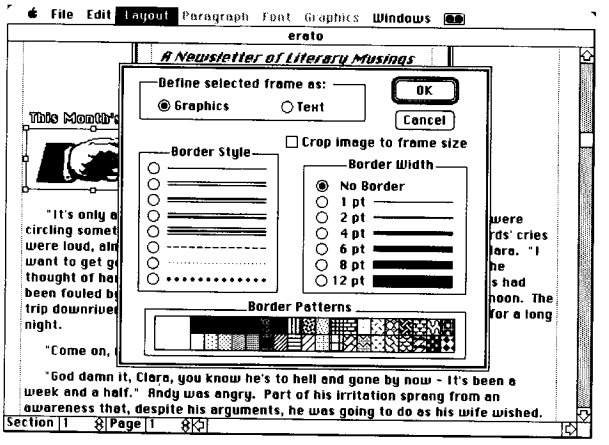


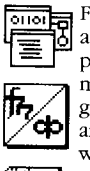
Frames with Flair *Every time you create a frame, Springboard Publisher displays this dialog box. You define the frame as graphic or text, and choose a border style, width, and pattern. You can even crop the graphic to fit in the frame.*

FORTRAN Compilers

Language Systems Fortran Compiler 1.1 ***Pros:*** *Easy to use; MPW interface; many language extensions; built-in editor; segmentation capability.* ***Cons:*** *Large overhead with MPW; no on-screen listing during compile; no symbolic debugger.* ***Company:*** *Language Systems.* ***List price:*** *$345 with MPW, $250 without.* ***Requires:*** *1MB.*

Mactran Plus 3.0 ***Pros:*** *Easy to use, built-in editor; easy Toolbox interface and control of compilation process; many language extensions; on-screen listing during compile; symbolic debugger; batch capability.* ***Cons:*** *No MPW compatibility; unnecessary switching between compiler and editor.* ***Company:*** *DCM Data Products.* ***List price:*** *$399.* ***Requires:*** *512KE.*

MacFortran/MacFortran/020 ***Pros:*** *Many language extensions; symbolic debugger; segmentation capability; batch capability.* ***Cons:*** *No built-in editor; no on-screen listing during compile.* ***Company:*** *Absoft.* ***List price:*** *MacFortran $295, MacFortran/020 $495.* ***Requires:*** *Mac 512K.*



FORTRAN is a favorite language among engineers and scientists, primarily because it predates many other programming languages and because large amounts of software have been written in it. Three new FORTRAN compilers are vying for this lucrative market—Language Systems Fortran Compiler 1.1, Mactran Plus 3.0, and MacFortran 2.3 (as well as its Mac II variant, MacFortran/020).

Because the programming process can be long and arduous, it is important to have a compiler that provides more than basic compilation (as all three reviewed here do). A compiler should create a whole programming environment that makes it easy for programmers to do exactly what they want—repeating commands or switching between editing and compiling, for example.

Basic Features and Performance

The three compilers share certain features and offer similar performance. For in-

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Putting Pizzazz on the Page

Although much of Springboard Publisher consists of no-nonsense features for quick and easy publishing, the program does offer a few of the snazzy features found in QuarkXpress or PageMaker—for instance, wrapping text around a frame or an object. You can define boundaries for wrapping text by tracing the outline of a graphic or let the program do it for you. Springboard Publisher was more accurate in tracing than I was, but by tracing an object myself, I could close off areas where I did not want text to appear. For instance, when the program traced a drawing of a horse, the word *the* fit in between the horse's ears. Somehow that just didn't look natural. So I traced the horse's outline with the freeform tool, treating the space between the ears as though it were filled in.

Nonartists will find Springboard Publisher's graphics features sufficient. On the simplest level, the program imports graphics in MacPaint, FullPaint, or PICT format. (For $5 postage and handling, you can order either a Holiday Series or an Assortment Series of clip art images when you buy Springboard Publisher.) All graphics can be scaled up or down to any percentage from 1 to 200 to fit into a defined area on a layout. You can also crop imported images. While Springboard does import color graphics, once it converts every nonwhite pixel to black, few color images are usable.

Springboard Publisher offers MacDraw and MacPaint-like tools for creating your own graphics within a layout. The program includes a freehand drawing tool, paintbrush, spray can, paint bucket, pencil, and eraser. A shapes palette contains rounded and straight-edged rectangles, an oval, and a polygon.

Images can be flipped horizontally or vertically. You can also freely rotate an image, although I had a hard time doing so without chopping part of it off. The skew and distort options are a lot of fun, especially when you use them to slant text. (You have to enter the text in a graphic frame to slant or rotate it.)

Fast and Easy Design

In one day, I was able to create several nice layouts using Springboard Publisher. The only thing that bugged me about the program was trying to align frames to the margins of a document or connect two lines. Springboard Publisher is not as accurate as PageMaker, so sometimes I had to redraw a frame or line a few times before I got it perfectly aligned. Still, it's accurate enough that I doubt anyone viewing a printed document would notice the slight misalignment.

Springboard Publisher is a cooperative, straightforward program that excels in creating attractive layouts quickly and easily. And, if you have the time, you can fuss over details, such as creating perfect character spacing or getting words to wrap as tightly as possible around graphics. If desktop publishing isn't the main part of your job, but you need to create snazzier pages than your word processor allows, Springboard Publisher is the package you need.
—Cheryl Spencer

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stance, all three are full implementations of Fortran-77, the standard for FORTRAN compilers. (I tested this by compiling some standard Fortran-77 programs on each of them, and I did not encounter any problems.) All offer debugging facilities, a linker to merge several modules into a single program, and various language extensions.

On a Mac Plus with 1 megabyte of RAM and an Apple Hard Disk 20, all three compilers were reasonably fast at compiling my programs. Mactran Plus took 18 seconds to launch and compile 28 lines of FORTRAN code. Absoft's MacFortran took just 14 seconds to do the same. The Language Systems compiler, which runs under the Macintosh Programmer's Workshop (MPW), took a minute and a half; but most of the difference is due to the overhead of MPW. However, the advantages of using MPW outweigh the increased time.

Using the Sieve of Eratosthenes benchmark, a program that calculates prime numbers, I ran a program to determine all the prime numbers lower than 30,000. Mactran Plus took 6 seconds, MacFortran took 5 seconds, and Language Systems Fortran clocked in at 2 seconds. Thus, run times are likely to be roughly comparable.

Finally, all three compilers can create 68020 code for the Mac II (although from Absoft, you get this support only if you buy the MacFortran/020 compiler); and all three also offer support for the 68881, the Mac II's math coprocessor.

Language Systems Fortran

As of this writing, only Language Systems Fortran runs with MPW (version 2.0.2), which gives it a clear advantage over the others. Because Language Systems Fortran does not have its own stand-alone application, you must access its compiler from within MPW. But MPW provides dozens of programming tools, which makes it invaluable.

Language Systems Fortran also uses the MPW editor, which is a standard Mac cut-and-paste editor. It allows both editing and compilation windows to be open on the same desktop, allowing for easy switching. LS Fortran has a standard Mac Toolbox interface, as described in the several volumes of *Inside Macintosh*. Because the program runs under MPW, it allows for easy linking with program modules written in other languages, such as C and Pascal. One serious disadvantage of LS Fortran is that it lacks a symbolic debugger and relies instead on the low-level debugging facilities offered by the MacsBug debugger under MPW.

Language Systems Fortran offers a number of extensions to the standard Fortran-77 language, many of them based on FORTRAN on the DEC VAX—convenient for the many scientists and engineers who use the VAX. The program also offers a large variety of data types. And for people who write large programs that exceed the available memory in the machine, LS Fortran offers segmentation. This enables you to divide your program into segments that are loaded into memory separately on demand.

Language Systems has provided clear and complete documentation, which is designed to be used in conjunction with the MPW documentation.

Mactran Plus

Mactran Plus has features that set it apart from the other compilers. First, it automatically lists a program on the screen as it compiles it, so you can see lines containing errors when they are detected. Since you can also suspend, resume, and stop program compilation and execution at any time, you can correct the error immediately. Mactran Plus offers a symbolic debugger that enables you to set breakpoints in a program, step through a program, examine and modify variables, and observe variables as they change. It also shows you statements as they are being executed.

Mactran Plus has a built-in cut-and-paste editor, but using it is a bit cumbersome. After you compile or run a program, you have to select the Edit option from one of the menus in order to return to editing. Mactran Plus removes the editing window from the screen automatically after you have used the editor, regardless of whether or not you wish to close it—so you have to keep reselecting Edit.

Besides supporting the standard FORTRAN-77 language, Mactran Plus offers various language extensions, from the next version of the American National Standards Institute (ANSI) FORTRAN standard and from VAX FORTRAN. It offers several data types, although not as many as Language Systems FORTRAN.

Mactran Plus is the only one of the three compilers to offer a simple toolbox interface, which DCM calls the High Level Toolbox Interface. Using the commands in this interface, I was able to program a simple figure-drawing program, complete with menus, in less than an hour. This interface is fairly complete and is easier to program than the Apple Toolbox (also offered by Mactran Plus).

Mactran Plus offers a batch mode, in which complex sequences of program compilations, module linkages, and program executions can be written in a command (batch) file, which can then be run. This allows the user to avoid repeating complex sequences of commands.

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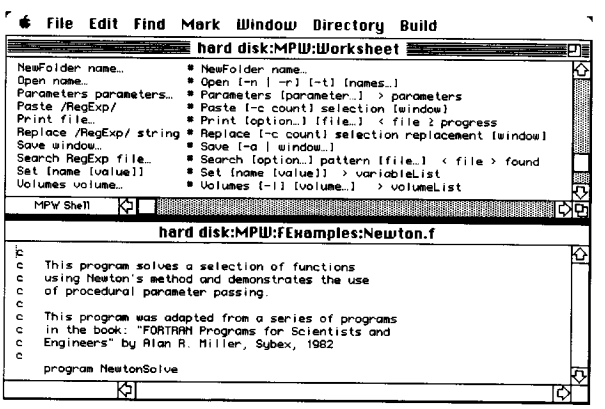

Fortran under MPW *Language Systems Fortran enables you to edit your program using the editor within MPW. You type commands for compilation and linking into the worksheet window, and MPW executes them, saving the results in the worksheet for reference. Since all commands are retained in the worksheet, commands never need to be retyped.*

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Mactran Plus has easy-to-read documentation, divided into a users' guide, describing how to use the system, and a language guide, describing features of the language.

MacFortran

Absoft was involved in Microsoft Fortran's development, so it is not surprising that Absoft's MacFortran is similar to Microsoft Fortran, the first FORTRAN available for the Mac. Microsoft Fortran had several deficiencies, and these have not been remedied in MacFortran.

MacFortran does not have a built-in editor, relying instead on the Apple-supplied Edit program. This means you frequently have to switch between MacFortran and Edit during the program-development process. For efficient use of MacFortran, you need to load both MacFortran and Edit into MultiFinder, and use MultiFinder to switch between them.

MacFortran has the ability to load modules that have not been explicitly linked into a program, as the program executes. Like Mactran Plus, it enables you to execute batch command files, called *scripts,* in MacFortran. Like its two competitors, it can also call the Mac Toolbox.

MacFortran has a symbolic debugger, so you can single-step through a program, set breakpoints, and examine and set program variables.

MacFortran's documentation is generally well-written, but several sections of it seem haphazardly appended.

Comparison

MacFortran has no clear advantages over its two competitors, and its lack of built-in editing is a clear disadvantage. Although it's adequate, it ranks as my third choice.

Mactran Plus, with its ability to create Mac-style applications easily, without a detailed knowledge of the Toolbox, is the best bet for the FORTRAN programmer who wants to explore programming for the Mac without exploring the intricacies of *Inside Macintosh* or learning the MPW environment.

Right now, Language Systems offers the most complete FORTRAN on the market.—*Matt Zeidenberg*

See *Where to Buy* for contact information.

StandOut 1.0

Desktop presentation program. ***Pros:*** *Includes stylesheets and templates; advanced text features.* ***Cons:*** *No readily available way to generate slides.* ***Company:*** *Letraset USA.* ***List price:*** *$395.* ***Requires:*** *1MB.*

Previously released as ReadySetShow, StandOut is a presentation program that employs the gridwork layout approach of ReadySetGo, the layout program also written by Manhattan Graphics and sold by Letraset. StandOut's design grids enable you to rough out a slide design quickly—before using detailed style sheets, templates, and other convenient design aids—to ensure an accurate, consistent presentation.

From Grids to Style Sheets

You place elements common to all slides on a Master Slide. You can design each slide individually or recall previously saved slide designs from a scrollable template field containing black-and-white design miniatures (see "Design Templates"). Style sheets let you specify font size, style, and alignment; word and paragraph spacing; leading; indents; and color designations. And although slide shows usually contain only a few words, StandOut's spelling checker and glossary come in handy.

Text, Charts, and Pictures

You can fine-tune text blocks with StandOut's precise kerning, tracking, and control over superscripts and subscripts, as well as its text- and format-sensitive find-and-replace capability. StandOut accepts a variety of formats: imported PICT, PICT2, EPS, TIFF (essential if you are planning to use scanned images), or RIFF graphics can be cropped, rescaled, and superimposed.

Charts and tables are integral to any presentation. StandOut cannot boast the chart-handling capabilities of a dedicated chart designer; however, its pie, scatter, line, column, and bar chart capabilities can probably take care of most of your charting needs. Using the Clipboard, you can import portions of Microsoft Excel spreadsheets as chartable data or as tabular material.

For flow chart diagrams, StandOut adds a triangle, a diamond, and a parallelogram to the standard line, rectangle, and ellipse objects. To facilitate the positioning of text and graphics, StandOut provides automatic text runaround. Drop-shadow effects; customized arrowheads; and automatic frame, leader, and trailer callouts are also included. Other programs can emulate these options, but having them directly available speeds up the design process considerably.

You can attach colors to backgrounds, text, and object outlines and fills. Though StandOut's pull-down color menu is limited to 9 colors, users with full color capability can access a unique StandOut 256-color scroll bar or choose a custom color from Apple's 16-million-plus color palette (see "Style and Color").

From Slide to Show

You can arrange your completed slides by dragging miniature images of them into proper sequence. StandOut will use the slide designs to generate speaker's notes and audience handouts. Each speaker's

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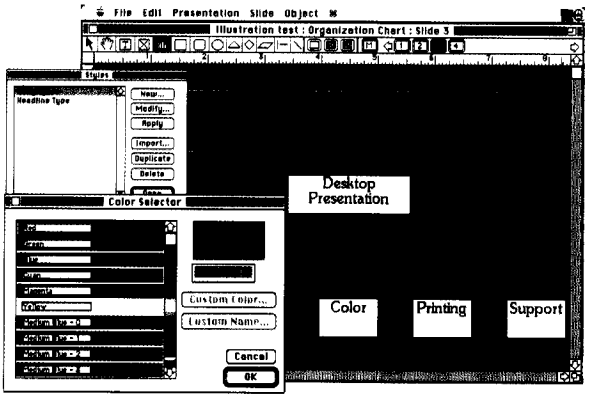

Style and Color
Pictured on top of one of StandOut's slide screens is StandOut's style selector and its unique Color Selector.

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