

applications cannot be as thorough and as complete as a word processor that stands on its own. The main reason for this is that a stand-alone program can take up as much memory by itself as the integrated programs take together.

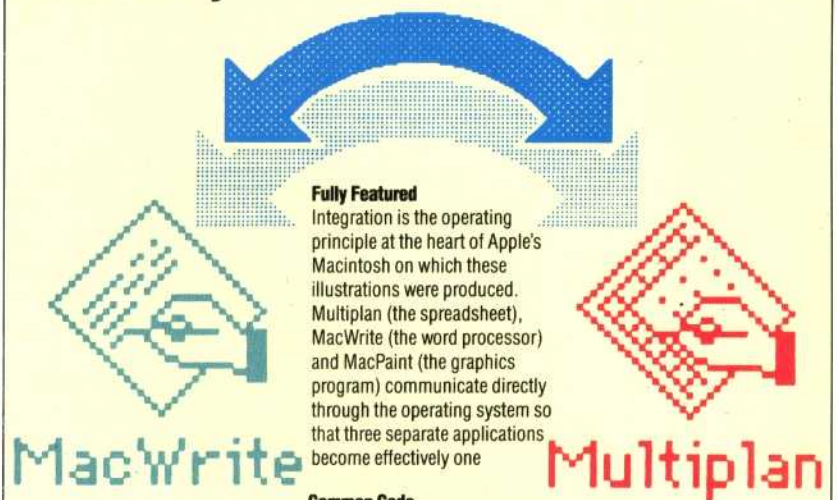
One example can be found with two programs that run on the IBM PC and similar computers. Multimate is a program designed around the software that is used in Wang dedicated word processing equipment. It has many options for creating and formatting text that are not found in smaller programs, which makes creating very large and complex documents fairly simple. Multimate by itself requires 192 Kbytes of RAM to operate. Lotus 1-2-3, an integrated word processor, spreadsheet and database program, also requires 192 Kbytes. Yet the same space used by Multimate for one application must now handle all the software required for three complete programs in Lotus. As a result, the word processor in Lotus 1-2-3 is limited to simple memo writing.

A third disadvantage of integration also arises from one of its strengths. It is important, as we have seen, for integrated programs to look alike, so they are easy to learn and operate. Unfortunately, certain compromises have to be made by the software writers for this to be possible. The best way to operate a spreadsheet might not be the best way to use a database or word processor, so elements of the optimum design for each tend to be blended into a usable mixture. Microsoft found this to be a problem when designing a stand-alone word processor, Microsoft Word. The company wanted the screen display and the program's operation to be compatible with their hugely successful spreadsheet, Multiplan, so it would be easy to integrate the two programs. Microsoft included the same on-screen menu in Word that Multiplan users found so helpful, only to discover that the writers who needed a program like Word disliked having a menu on the screen all the time.

The point to remember about all software is that it has to do what the user wants. If a person has several tasks to do, like letter writing, simple accounts, and mailing lists, integrated software can make the job much easier. But there are sacrifices, and someone who wants to write a novel or very lengthy company reports on his microcomputer may have to continue to use separate, stand-alone word processors, spreadsheets, and database programs. Nevertheless, as software writers learn more about compressing computer instructions into smaller and smaller spaces in memory, and the memory in home machines starts to inch its way upward, integrated software will become more and more important to the home user as well as the business user. As a hint of things to come, two under-£500 computers are being sold with integrated software: Sinclair's QL, and the Commodore Plus/4.

In future instalments of this series, we will take a closer look at some of the integrated programs that are having a large effect on software development.

Rules Of Play



Transferred Charges
Data has been moved directly from the spreadsheet into the word processor, demonstrating the importance of data compatibility and transfer in integrated software

We will examine two distinct approaches to integration: one exemplified by Lotus 1-2-3 and similar programs, in which the applications, although working together, look very much like typical computer programs have always looked and the second type found on machines like Lisa and Macintosh, where the whole operating environment is designed for integration.