

BARON'S MicroComputing REPORTS

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TEMPLATES: EASING SPREADSHEET BLUES

Most personal computer users are aware that spreadsheet programs can be used to solve a variety of problems. However, some users believe that spreadsheets are too difficult to use. Therefore, they frequently purchase different special purpose application programs instead.

Often there are good reasons to use a special purpose application program for solving a given problem. For example, it typically executes faster and more efficiently than a spreadsheet constructed to solve the same problem. (Some special purpose application programs are actually designed to be easier or more natural to use.) A spreadsheet solution procedure, however, is generally easier to build and

change; therefore it may be a better choice.

Just as you can purchase application programs off the shelf to handle your special purpose application needs, you can now also purchase spreadsheet solutions to problems. Preconstructed spreadsheets, available from both commercial and public domain sources, are called "templates". Templates come as printed listings (to be entered manually), or in machine readable form on disk or, far less frequently, on tape.

Because spreadsheet solutions are easier to build, templates are generally less expensive than special purpose programs. They are also easier to change and adapt for individual

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Creating the Video-PC Connection

Until recently, combining video and computer technology was possible only with minis and mainframes. Even when the technology finally filtered down to the microcomputer level, it was usually directed toward the video industry and its graphics-dedicated workstations for production of television commercials, corporate training films, and classroom instruction materials. Today, however, not only are prices coming down, but new hardware is making interfacing the two technologies easier and more attractive to personal computer owners.

Whether you use your personal computer for business, programming or entertainment, by interfacing microcomputers and video, you can look forward to developing a broad range of innovative capabilities. Among them are: combining computer text and graphics with video images; storing program, text or data files on videotape; and playing interactive videodisc games.

What you can do with video

There are two types of video media—videodiscs and videotapes. Videodiscs can only be read from and not written to, so interaction is limited to prerecorded discs. The most common consumer applications for videodiscs are entertainment and education, with the videodisc pausing image display at certain stages in the scenario to offer the viewer a choice of options for "plot" continuation. Once a choice is made, the program branches to the appropriate frame.

At present only a few games such as *Murder, Anyone?*, an interactive mystery, and *Go For The Green*, an interactive golf game, are available. However, a number of companies, including Coleco Industries which bought the rights to the coin-operated videodisc game, *Dragon's Lair*, are planning to inundate the field with relatively inexpensive videodisc players and games. For educational purposes,

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DATA BRIEFS...

○ **How much software is there for your computer?** The widest choice is yours if you own an Apple micro. According to a study by Sofsearch International, Inc., 6,428 software products were available for Apple computers at the end of 1983. There were 5,047 for TRS-80 computers, and 4,111 for IBM systems. IBM software, however, was the fastest growing. Figures for other 16-bit software includes 1,314 MS-DOS packages vs. 852 CP/M-86 products. At the lower end of the scale is Commodore with 2,136 education/home software packages.

○ **Does your house of worship need a computer?** Churches of all denominations can participate in a computer-exchange association formed to help member churches in the acquisition of computers and word processors. For information, send a self-addressed, stamped envelope to the *Unitarian Computer Exchange*, c/o D.P. Lantz, 1373 Howell Dr., Newark, OH 43055.

○ **Linguanet computerized foreign language translation network** permits users to transmit original documents and receive translations via their personal computers. Translation centers in San Francisco, Los Angeles, Houston, Chicago, Philadelphia, Washington, D.C., and New York City are interconnected with each other and with the main computerized center in Woodland Hills, near Los Angeles. Linguanet uses CAT (computer-aided translation) systems interactively with human translators. Electronic glossaries for technical terms in various languages have been incorporated in CAT systems. An innovative aspect of Linguanet is that translators can work at home using their own PCs to access the CAT database. Linguanet claims its rates are "very competitive" due to the shortened translation time that CAT provides. *Berlitz Translation Services*, 3345 Wilshire Blvd., Suite 410, Los Angeles, CA 90010. 213-380-1144.

○ **C-PRO**, a national group for users of CompuPro microcomputers, has been formed to share technical information, solutions to problems and special purpose application information. Charter

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TEMPLATES (continued)

needs. However, since they are slower to execute and not as easy to use, templates should be considered only for certain applications. For example, they are extremely useful for small, rarely-used applications which frequently change.

Templates have become important, widely-used add-on software for spreadsheet packages. If you're already a spreadsheet user, you'll find it advantageous to know how properly selected templates can help make your spreadsheet program a more versatile and valuable tool. If you're planning to purchase a spreadsheet package, it will be worthwhile to look into the template packages which are available for the spreadsheets you are considering. If you intend to use the spreadsheet for a specific application or class of problems, the availability of satisfactory templates for the purpose may be an important reason for choosing one spreadsheet package over another.

• What they do

Template packages avail you of someone else's expertise in complex formulas. You can get templates, for example, which automate the calculations involved in lease/buy decisions, saving you the effort of working out the value, depreciation and tax calculations which are required to complete the analysis. Even when the formulas are relatively straightforward, a template can spare you the chore of entering all the labels and laying out the spreadsheet.

• Advantages

The major tradeoff between using templates rather than a special purpose program is the economy, flexibility and adaptability of the spreadsheet as against the speed, efficiency and refinement of design of the special purpose program. The latter can also perform special kinds of data validation, thereby being somewhat more protective than templates. Protectiveness is gained at the expense of flexibility.

There are other advantages to a template. It's often quite easy to learn to use because in interacting, it makes use of the common spreadsheet commands. Also data in one application is readily available to any other application you may want to run with the same spreadsheet. If you use an integrated spreadsheet, such as SuperCalc3 or Lotus 1-2-3, its graphics capability can be used for the data generated with the template.

As spreadsheets become more powerful and programmable, templates are becoming more sophisticated. Lotus 1-2-3's macro capability, for example, allows template authors to embed menu-directed actions within their spreadsheets. As a result, some of these templates are virtually indistinguishable from application programs written in higher level languages.

• Sources

Besides commercial outlets, templates may be obtained from public domain sources. Many user groups have excellent template libraries, and templates can be downloaded from many bulletin boards. Even though some public domain products are crude or simplistic, they often provide a good foundation for a better template.

Templates also appear in many application books, often accompanied by excellent explanations of their construction customization. One that we find useful is Jack Grushcow's "The VisiCalc Applications

Book" from Reston Publishing Co., Inc. (Reston, VA, 800/336-0338) which provides an excellent tutorial as well as a variety of templates. Que Corporation (P.O. Box 50507, Indianapolis, IN 46250) publishes a collection of templates for a variety of business applications in special versions adapted to several popular spreadsheets (VisiCalc Models for Business, SuperCalc Models for Business, MultiPlan Models for Business, 1-2-3 for Business). In many cases, machine readable versions of the templates may be purchased separately.

— Joel Pitt

APPLICATIONS AND SOURCES

Although the majority of templates available today are for spreadsheet programs, some have been written for other application programs. What they all have in common is ease of use and pre-constructed solutions.

After spreadsheet programs, word processors best lend themselves to templating because certain types of documents are widely used. Such templates should contain as many generic documents as possible. These can then be loaded into memory and edited with the word processor.

If in your definition of a template, you are willing to include special purpose programs created with database programs, then the number of existing templates increases enormously. But such a definition raises the question of where to draw the line. Are application programs, such as Ashton-Tate's Friday!, templates of the database language they were written in? If they are, then are high-level languages all templates of machine language?

Let's you think templates are only for 16-bit machines, remember VisiCalc is available on 8-bit micros. There are even books with templates for the Color Computer (*Spreadsheets for the TRS-80 Color Computer with Spectaculator*, \$22.95, by Harry Anbarlian) and the Timex Sinclair 1000 (*Introduction to VuCalc*, \$22.95 by Harry Anbarlian).

The following is only a partial list of template programs and books that are available. One of the best sources for obtaining templates is the manufacturer of the application program with which the template will be used. Some manufacturers, such as Microsoft, have developed their own template applications; others, such as Sorcim, provide third-party software through the mail. You should also check your local computer book store.

For a book you cannot find locally, call or write Dan Doernberg, Computer Literacy Bookstore, 520 Lawrence Expressway #310, Sunnyvale, CA 94086,

408-730-9955. He'll be more than glad to help you find the template you need.

Spreadsheet Templates

SUPERCALC

- *Super Conversions*, \$39.
- *Real Estate Overlays for SuperCalc*, \$105.
- *Financial Planning for SuperCalc*, \$89.95.
- *Quickcalc Loan Analyzer*, \$99.95.
- *Financial Fastrax*, \$125.

All five above are available via Sorcim Access, P.O. Box 32505, San Jose, CA 95152, 408-942-0771.

LOTUS 1-2-3

- *The 1983 Tax Templates* (also VisiCalc version), \$89.95. Omega Microware, Inc., 222 S. Riverside Plz., Chicago, IL 60606, 312-648-4844.
- *The Stock and Option Profit Graph*, \$125. Ohlsen Financial Mgmt. Corp., 132 Longview Drive, Los Alamos, NM 87544, 505-672-1472.
- *1-2-3 Business User's Guide Series*, Three books, \$16.95 each; disks, \$29.95 each. Curtain & London Publishers.

VISICALC

- *Financial Analysis Statement Templates*, \$99.95. Continental Software, 11223 South Hindry Ave., Los Angeles, CA 90045.
- *Power of VisiCalc Real Estate*, \$14.95 (book). Prentice-Hall, Inc. P.O. Box 500, Englewood Cliffs, NJ 07632, 201-440-8591.

MULTIPLAN

- *Power of Financial Calculation for Multiplan*, \$14.95 (book). Prentice-Hall, Inc., P.O. Box 500, Englewood Cliffs, NJ 07632, 201-440-8591.
- *Financial Statistical Analysis*, \$100.
- *Budget*, \$150.
- *Cash Flow*, \$150.

All three are available through Microsoft Corp., 10700 Northrup Way, Bellevue, WA 98004, 800-426-9400.

Word Processor Templates

- *The Letter Writer*, for Idea Processor, \$59.95. Idea Ware, Inc., 225 Lafayette Street, New York, NY 10012, 212-334-8043.
- *Practical Word Star Uses*, \$16.95 (book). Sybex 2344 6th Street, Berkeley, CA 94710, 800-227-2346.

Video-PC (continued)

there are firms offering educational materials in such fields as art, chemistry and space exploration.

Videotape, on the other hand, can be written to, as well as read from, so you can use blank tapes much as you would other forms of storage media. The only difference is that you can also manipulate visual data. Videotape manipulation is relatively slow, however, because tapes are sequentially-oriented.

The business potential of video/computer interface applications are as varied as the imagination allows. For instance, video images of products or services can be mixed with graphs and charts for presentation. A residential real estate developer can window a video film of the interior and exterior of a model home unit while working with a spreadsheet in the remaining portion of the screen. Election campaigners can join a videotape of their candidate in action with a database filled with his stands on various issues for ad-hoc questioning. Engineers can increase their CAD/CAM productivity by being able to work with images. The medical profession can combine a videotape of surgical or other procedures with a computerized tutorial. Whatever your business or profession, bringing together video images and computer text and graphics can increase the effectiveness of your presentation.

Videotape can also be used creatively in the home. For example, if you have access to a number of prerecorded sports games, you could program an interactive game in which you are the coach. After logging the individual frames, you would display the starting frames, call the plays, and then display the results. The displays would be actual game footage, but what you would be reenacting would not be an actual game but one of your invention. (Bally/Midway, a coin-operated machine manufacturer, already has such a game in video game arcades.)

At home, interfaces which allow the use of video cameras can be used for security purposes, such as monitoring front doors or long hallways. You can supervise children in another room while you work on an application program.

Procedures and Costs

To create a combined video/computer presentation you begin by logging in the individual video frames, usually with the interface card operating system. If you use an authoring system, the program will prompt you for the starting and ending frame numbers. It will then ask whether you wish to include text or graphics. If the text is in the form of questions, it will prompt you for the correct answer and any other possible answers you may wish to include. If necessary, it will also ask for the

frame numbers to which it should branch. You may also have to instruct the program regarding which signal (video or computer) should take precedence on the screen when both are occupying the same area on the screen.

In addition to a videodisc or tape player, you will need appropriate software. You will also need an interface card to enable the computer to address the video unit. These cards have two functions. First, they identify individual video frames, either by assigning each a number or by referring to the elapsed time from the beginning of the tape. Naturally, the former method of identification is the more accurate. Second, the interface card enables the computer to access the frames according to programmed instructions. The instructions can range from freezing a certain frame to looping back to a previous frame. Because the capabilities of interface cards differ, prices run from \$199 to over \$1,000.

Authoring languages enable even non-programmers to create interactive video programs. (In computer terms, the video can be thought of as a database and the authoring language as an application program.) By asking in plain English what your requirements are, they organize your video program so that it selects only the frames needed, prints out text or graphics where you wish, and branches to the appropriate frame when required. However, you may have to do some searching to find an authoring system specific to your computer. Expect to pay anywhere from \$300 to \$800.

One of the latest innovations is the Video C-77, an inexpensive interface produced by Rapitech Systems. It allows virtually any computer to mix its input or output with video images from a genlock camera (one capable of external synchronization such as those used for closed-circuit televisions). Essentially, the video image is displayed in an on-screen window alongside the computer text or graphics. The video and computer signals can then be rated according to priority, so either the video, the computer, or neither takes precedence on the screen. The cost of the unit is \$349.

Other software

Virtually any computer can be interfaced with a video player, usually through the RS232 port. However, the vast majority of software available for interactive video is for Apple or IBM systems. Therefore, users of other computers may have to write their own programs. If you fall into this category, PILOT may be a better language to work in than Basic because it processes text more easily.

If you decide to use this technology for major ongoing business projects, there is at least one software company, *Comprehensive Video Supply Corp.* (see listing under

Vertical Software) which provides a number of packages oriented towards the video production. These programs include: *Associate Producer*, a spreadsheet-like program which schedules and budgets video productions; *Edit Lister*, a program which facilitates the editing process; and *Power Script WordProcessor*.

Video/Computer Products and Sources INTERFACES

- **Apple II, III; IBM PC.** \$595. Software available. BCD Associates, 5809 SW 5th, Suite 101, Oklahoma City, OK 73128. 405-948-1293.
- **PC-DOS, MS-DOS, CP/M-86.** \$350. Software available. Meta Media Systems, 20010 Century Blvd., Suite 101, Germantown, MD 20874. 301-428-9160.
- **Commodore 64.** \$199. Educational programs available. Micro Ed, Inc., P.O. Box 444005, Eden Prairie, MN 55344. 612-944-8750.
- **Any computer with an RS232 port.** \$395. New Media Graphics, 139 Main St., Cambridge, MA 02142. 617-547-4344.
- **Any computer with an RS232 port.** \$275. Pioneer, 200 W. Grand, Montvale, NJ 07645. 201-573-1122.
- **Apple II, IIe.** \$125. Educational programs available. Video Vision Associates, 7 Waverly Place, Madison, NJ 07940. 201-377-0302.
- **Apple II, IIe, IBM PC.** \$695-\$990. Software available. Whitney Educational Services, 1777 Borel Place, Suite 416, San Mateo, CA 94402. 415-341-5818.

CAMERA INTERFACE

- **Any computer with an RS232 port.** \$349. VIDEO C-77. Rapitech Systems, Inc., 565 Fifth Avenue, New York, NY 10017. 212-687-6255.

VERTICAL SOFTWARE

- **Apple, MS-DOS, CP/M.** \$499-\$549, *Associate Producer*; \$599-\$699, *Edit Lister*; \$349-\$499, *Power Script Wordprocessor*. Comprehensive Video Supply Corp., 148 Veterans Drive, Northvale, NJ 07467. 800-526-0242. ●

BMR subscribers can now receive monthly reports for more than one make of computer. The charge for this service (which includes first-class mailing of the monthly newsletter with inserts) is \$10/yr. per additional computer make.

Reports are available for:

- | | |
|-------------|---------------------|
| • Apple | • Osborne |
| • Atari | • Texas Instruments |
| • Commodore | • Timex Sinclair |
| • IBM | • TRS-80 |
| • Kaypro | |

DATA BRIEFS . . . (continued)

membership is \$10. For additional information, contact C-PRO's founder, William C. Hess, 14075 Jefferson Davis Highway, Woodbridge, VA 22191. 703-690-3312.

○ **Software compatibility guide** allows physicians and dentists, construction industry professionals and school administrators to find out which of the over 300 CMA professional software products are available for them. There are also general purpose accounting and word processing programs. The publication includes formats from Apple, IBM and Wang systems, and MS-DOS and CP/M-86 computers. The CMA Guide to Software Compatibility is available free from *CMA Micro Computer*, 55722 Santa Fe Trail, Yucca Valley, CA 92284. 619-365-9718.

PUBLIC NETWORK SERVICES

○ **CompuServe - AOPA Forum** allows members of the Aircraft Owners and Pilots Association to exchange information via the Forum's center and on-line conferencing section. The Forum also provides an on-line reference library that can be accessed for current developments in the field of aviation including state and Federal government news, aviation safety issue and schedules of ASOPA courses. According to a 1983 survey, 43% of the nearly 114,000 AOPA members own or have immediate access to personal computers. *AOPA*, 421 Aviation Way, Frederick, MD 21701. 301-695-2130.

○ **Telenet-SchoolNet** is a multilevel information exchange network for educators. It enables subscribers to communicate directly with one another or to address messages to an on-line conference. For general distribution, messages can be placed on a master bulletin board. The network also offers an on-line "store" from which subscribers can order computer supplies and educational programs on an open account. Prices are competitive with discounts generally available to educators. Also available are fee-based teleconsulting services on the use of personal computers in education and/or on the teaching of computer literacy. The annual membership subscription is \$100. There is a one-time initial connect charge of \$200. For further information: *Techware Telecommunications Services*, 474 Wilamette St., Suite 201, Eugene, OR 97401. 503-484-0520.

Baron's Microcomputing Reports (ISSN 0746-598X) is published 12 times a year, monthly, by Computer Information Resources, at 344 East 49th Street, New York, NY 10017. \$39.95/yr. (Canadian and foreign, add \$5.00.) Second class postage paid at New York, N.Y. and at additional mailing offices. Copyright © 1984 by Computer Information Resources. Reproduction in whole or in part without permission is prohibited. POSTMASTER: Send address changes to *Baron's Microcomputing Reports*, P.O. Box 305, Dover, NJ 07801.

FINDING AFFORDABLE INVESTMENT SOFTWARE

If you've been shopping around for personal computer software to help you manage your investment portfolio and make it grow, you have probably made two unpleasant discoveries. First, portfolio management programs and single modules of technical analysis packages can cost \$350 or more — affordable for brokers and professional traders, perhaps, but likely to give private investors pause. Second, in many retail outlets, investment software is usually restricted to the heavily promoted products and, as a result, you do not find much of a price choice or even variety.

BMR recently interviewed various investment software market observers and participants. Their responses indicate a consensus that investment software prices today are a reflection of marketing as much as development costs, and that the investor should not always equate price with value.

Technically, the quality of most investment products now on the market is advanced—in fact, innovation seems to be the name of the game. Software developers are working actively to bring out new enhancements. Among these products, *Investment Manager*, a fully-featured portfolio management program, has a new feature that could be quite valuable. It combines beta measurement of the price volatility of a particular security with the security's formal rate of return so as to adjust it for risk. Thus, you get a fuller picture of the security's performance compared to alternative investments. (*Investment Manager* cost \$275 and runs on 128K IBM PC's and 48K CP/M computers.)

Despite the lack of choice on store shelves, there actually is a great variety of investment programs available. Developed by generally small, new firms which cannot afford much promotion and have minimal retail distribution, most are sold by mail-order. You have to go through the back pages of financial publications carefully to spot these ads. However, the search can be very worthwhile—prices can be significantly lower than those of established software publishers.

Whether your requirement is portfolio management or fundamental or technical analysis, there are numerous opportunities around to find software you can afford—from retail, mail-order and, also, non-profit sources. In some cases, products can be obtained free or at nominal cost.

You can also obtain useful advice and, frequently, program listings in manuals and reference texts. Two useful texts are:

• **Guide to Computer-Assisted Investment Analysis** by William B. Riley, Jr. and Austin H. Montgomery, Jr.; \$14.95. McGraw-

Hill Book Co., 1221 Ave. of the Americas, New York, NY 10020.

• **Computer-Assisted Investment Handbook** by Albert I.A. Bookbinder; \$19.95. Programmed Press, 2301 Baylis Ave., Elmont, NY 11003. 516-775-0933 (see April, 1984 BMR issue for description).

The do-it-yourself solution

The best way to avoid paying inflated software prices is, of course, to write your own—a common practice just two or three years ago when off-the-shelf investment programs were still rare. The next low-cost alternative is public domain software which involves no expense, save for a small fee for disk media, copying and handling. The chief drawback of public domain software libraries is that they are far richer in system software than in application programs and the latter are of uneven quality. They do contain, however, packages for portfolio management, and valuation forecasting and research for securities, real estate, insurance and, of course, taxes on the resulting gains.

To obtain public domain software, try local user groups, non-profit organizations, or public domain software libraries such as the *SIG/M Library*, Box 97, Iselin, NJ 08830; or the *American Association of Individual Investors*, 612 N. Michigan Ave., Suite 317, Chicago, IL 60611. Public domain software can also be obtained at moderate cost from commercial copying services such as *Elliam Associates*, 24000 Bessemer St., Woodland Hills, CA 91367. 213-348-4278.

Another do-it-yourself option is to use a spreadsheet program you already own for monitoring your portfolio's net worth, and conducting technical analyses of securities. Spreadsheets are flexible, so that you can customize portfolio measurements to your specific needs. However, this procedure is apt to be time-consuming, so weigh the time vs. cost tradeoff before deciding on a spreadsheet program.

Don't pay for extras

You can avoid paying for hidden marketing costs (which can represent the greater part of a program's retail price) by using *freeware* (also called "personal domain" software). This is software offered by its author at no cost—save a suggested donation which you send to the author if you are satisfied with the program after trying it out. These donations seldom exceed \$40, but authors find it ample repayment because there are no marketing costs.

The non-profit American Association of Microcomputer Investors (AAMI), a new source of investment software, currently distributes both public domain and freeware packages. Included is a portfolio management program, *Stock Portfolio Manager*, by Kate Frickler, which also formats data for transfer to spreadsheets for analysis. In addition, it provides access to Dow Jones

News Retrieval, a feature which, according to AAMI president Tom Meyers, is seldom offered by a low-cost program. Stock Portfolio Manager may be ordered from the **American Association of Microcomputer Investors, Inc.** P.O. Box 1384, Princeton, NJ 08542. 609-921-6494. The suggested donation is \$20, and there is a \$9 AAMI distribution fee to cover diskette, handling and first-class mailing.

Look at the price tag

Careful research of product prices, claims and reviews will help you find moderate-cost programs for performing every investment function. The most universal of these functions is probably portfolio management. A selection of portfolio management programs, grouped by price category, follows. (In future issues, we will bring you selections of fundamental and technical software.)

which provide

\$100 and under

- **Andromeda Stock Trader and Calculator** — \$35.50; TRS-80 Model I, III; Spiral Enterprises, 308 Crown Rd., Willow Park, TX 76086. 817-441-8901. Maintains records of costs of securities transactions and automatically posts closed positions to a sales file. Prepares tax and other summary reports.
- **Blue Chip Portfolio Manager** — \$79.95; IBM PC; Xor Corporation, 5421 Opportunity Court, Minnetonka, MN 55343. 612-938-0095. This easy-to-use program produces two reports: the estimated value of your portfolio and estimated gain or loss, and an analysis of all stock sales. (Blue Chip is reviewed in this month's IBM Report.)

• **Networth Calculator** — \$50-\$75; Apple II, III; Mesa Research, Inc., Rt. 1, Box 1456A, Waco, TX 76710. 817-848-5272. Portfolio value calculator.

• **Personal Portfolio Manager** — \$49.45 disk, \$44.95 tape; Commodore-64, VIC-20; Embassy Computer Products, Inc., P.O. Box 88, Little Neck, NY 11363. 212-961-9806. Investment valuation and record-keeping system.

• **Portfolio Management** — \$50.00; Columbia, Corona, IBM PC, Lobo Max 80, TRS-80 Model I, III, IV; Dogwood Software, 3905 Dogwood Drive, Greensboro, NC 27410. Manages two 35-stock portfolios per disk. Highlights above average performers and underachievers.

• **Stock-Folio** — \$79.50; Apple II; Micro Program Design, 5440 Crestline Road, Wilmington, DE 19808. 302-738-3798. Maintains a stock price and volume database of 62 periodic entries for daily, weekly, or longer intervals; up to 48 stocks per diskette.

• **The Monitor** — \$100; Apple II; First Flight Data Systems, P.O. Box 555, Kitty Hawk, NC 27949. 919-441-6480. Portfolio monitoring system.

• **The Financial Package** — \$49.95; Apple II, IIe; Computer Asset Management, P.O. Box 26743, Salt Lake City, UT 84126. 801-964-0391. Performs yield, valuation, amortization and financial planning applications.

• **The Stock Market Analysis Package** — \$100; Apple II, CP/M, IBM PC, TRS-80; Computronics, 50 N. Pascack Rd., Spring Valley, NY 10977. 800-431-2818. Programs for evaluation, selection and management of investment portfolios.

\$100 to \$200

• **Investment Master** — \$129; IBM PC; Alro Computer Software Services, 3100 E. High St., P.O. Box 927, Jackson MI 49204. 517-787-2204. Menu-driven investment portfolio system. Controls up to 2,000 investments, and exchanges files in DIF format.

• **Portfol I (\$100) and II (\$500)** — IBM PC, TRS-80; R&M Associates, P.O. Box 377, Sea Girt, NJ 08750. 201-449-2210. Generates updated investment portfolio status reports.

• **Portfolio Master** — \$195.00; Apple II; Investor's Software, P.O. Box 2605, San Francisco, CA 94126. Tracks stock holdings, including multiple lots of the same security; and monitors performance of multiple portfolios.

• **The Personal Investor** — \$195.00 IBM PC; PBL Corp., P.O. Box 559, Wayzata, MN 55391. 612-473-8998. Retrieves quotations, analyzes portfolios; and interfaces with spreadsheet software.

Over \$200

• **Investment Manager** — \$275.00; IBM PC, CP/M; International Microcomputer Software, Inc., 633 Fifth Avenue, San Rafael, CA 94901. 415-454-7101. Portfolio management program with capability for beta measurement of volatility of given securities to adjust their rates of return for risk.

• **The Stock Manager** — \$150.00; IBM PC, North Star; Omni Software Systems, Inc. 146 N. Broad St., Griffith, IN 46319. 219-924-3522. Automatically calculates costs of individual and total shares; and gains and losses from transactions. Generates tax schedules and other reports.

INSIDE INFO

► What is a benchmark?

Benchmarks are tests for measuring speed, accuracy, or other operational parameters. Using benchmarks, you can test computer hardware and software efficiency. One of the most common benchmarks used is a looped program. For example, the code — FOR I=1 TO 10000: NEXT I — permits you to see how fast a given system interprets and executes simple Basic statements. A frequently used benchmark for databases is a multiple level sort. Disk drives can be benchmarked by running a program that saves a predetermined number of records in random and sequential files.

Although benchmarks are designed for evaluation of a system's capability, they should be given weight only if certain considerations have been addressed. For example, were the programs or equipment tested with the same configurations? A sort benchmark that pits a 64K computer against a 256K computer isn't really valid unless the

effect of additional memory on a given program is being benchmarked. Even if all benchmarks performed are valid and point to a certain system or program, purchasers should take into account other considerations, such as program and service availability, documentation, cost, etc.

► What is the difference between a file manager and a relational database?

The biggest difference between the two is the way data is handled by the program. In a file manager, data is dependent upon the file structure. The application and utility programs (report, sort, etc.) expect to find the data at a certain location in the record. As a result, changes in the number of fields, field types, or field lengths are extremely difficult, if not impossible. Generally, a new file must be defined and the data imported or re-entered.

In relational databases, fields are inde-

pendent of the file structure and data within them can be related. The DBMS, database management system, maintains a data dictionary which contains all the data parameters. The actual data is stored separately and only once for all the files. This means that changes can be made easily, with only a few commands.

Another area where the two differ is in the number of files which can be active at one time. File managers generally permit only one; databases allow multiple files to be open. Therefore, when one file is updated in a database, the other related files are updated automatically. Databases also provide a number of key indexes so that sophisticated searches can be done.

► Can the second side of single-sided disks be used?

There are devices sold to do just that. If used as directed, they work properly. However, when disks are created, the manufacturer tests them for storage capability and

(continued on page 6)

HANDS ON...

• **SUPER-TEXT Professional Word Processor.** MUSE, 347 N. Charles Street, Baltimore, MD 21202, 301-659-7212. Available for the Atari and Commodore 64 (\$99.00) and the Apple and IBM PC (\$175.00). (Atari version reviewed.)

Whether you are interested in upgrading your word processor or purchasing your first one, SUPER-TEXT is overall an excellent choice. Not only is it relatively inexpensive, but it is easy to learn and use because of its on-screen help module, good documentation and quick reference.

SUPER-TEXT offers a number of features which can make document creation and printing much easier. First, it allows you to define a single keyboard macro (called THE key) of up to 30 characters. Second, you can print any number of linked files automatically in as many copies as desired. You can also preview the copy on-screen as it would appear in print. This last feature is especially helpful to those users whose systems do not have an 80-column card.

There are four modes in SUPER-TEXT: Add, Change, Cursor and Print. The Cur-

sor mode allows the user to perform all of the editing features, such as block movements; and disk utility functions, such as saving and loading files and exiting to DOS. (Files are listed in a catalog by name and number, so access is permitted by either identification.) The Print mode permits form, sheet and preview printing.

In each of the modes, a status line appears on the bottom of the screen. This line shows the mode being used, the file being worked on and whether it has been altered since last saved, the direction of the cursor movement (plus or minus), the amount of available RAM memory, and the number of characters currently in the file. SUPER-TEXT also displays a system query line which shows the status of the autolink, the THE key macro, the number of occurrences of the last word being replaced, whether the help or print mode is in memory, and which of the three print formats is being used.

Block operations are fairly straightforward. First, the text to be blocked is defined; then the actual operation is performed. Operations include: saving, ap-

pending copying or moving the block. SUPER-TEXT also allows you to identify the last four changes made on the file since it was loaded. This option, along with the ability to insert invisible markers, enables the user to locate certain areas within the file quickly and easily.

Format lines can be placed anywhere within the document. Besides the normal features, SUPER-TEXT permits tab setting for column printing, temporary margin resets, page breaks, normal and alternate page numbering, and headers. There are some drawbacks to the formatting features. Printing can only be set for single or double space, and when printing a header with a page number, the positioning of both must be calculated by the user.

SUPER-TEXT provides other printing options. For example, multiple files can be printed simply by including their file numbers when prompted. Printing to disk is also possible. Finally, there is autolink printing. This permits the printing of all linked files with one command.

Additional SUPER-TEXT features include multiple-drive access and, in the case of the Apple and IBM PC versions, arithmetic calculation. The presence of these capabilities should indicate that SUPER-TEXT can be used for serious business word processing.

INSIDE INFO (continued)

then certifies them for single or double-sided use. If you are willing to gamble that the second side of a single-sided disk can hold data, then go ahead and use it. But we cannot recommend its use for anything important.

► How is graphics quality determined?

The ability of a computer to generate graphics depends upon three factors: The chip processing the graphics, the type of monitor being used, and the software generating the graphics.

Some processors were never created to produce good graphics output, for example the Z-80. Others, such as the 6502 used in Apples, are capable of producing graphics of very high quality. Certain computers, such as the Atari, even use a separate chip to output the graphics, thereby providing even better graphics. Another factor is the method of output. Some processors provide for player/missile graphics, or sprites.

Monitors are divided into distinct groups, such as monochrome composite video and RGB. If the monitor is capable of accessing a large number of individual pixels (picture elements), it is said to be of high resolution.

Finally, if the software being used is capable of addressing only large numbers of pixels, the graphics will be blocky. If it addresses pixels individually, the graphics will be smoother.

PC Money Talk

• **Public domain software source.** The Public Domain Users Group will send you free public domain software which run on 17 different computers. Their library contains over 200 programs. Membership is \$10/yr. Public Domain Users Group, POB 1442, Orange Park, FL 32067.

• **What do you do with your game cassettes once you add a disk drive to your home computer?** Leading game producers who will replace your cassettes with disks at low cost are listed below. Indicate which computer you use and, unless otherwise noted, include your old cassette when you send your check:

• **Avalon Hill, 4517 Hartford Road, Baltimore, MD 21214** — \$5.50 per replacement.

• **Sublogic Corp., 713 Edgebrook Drive, Champaign, IL 61828** — \$5 per replacement.

• **Strategic Simulations, Inc., 883 Stierlin Rd., Bldg. A-288, Mountain View, CA 94043, Attn. Order Processing** — \$10 per replacement plus \$2 for shipping (keep cassette).

• **Epyx, Inc., 1043 Kiel Court, Sunnyvale, CA 94089** — \$5 per replacement (or malfunctioning disk), \$10 for ROMs.

PRICE CUTS AND PROMOTIONS

• **Consumer sweepstakes promotion** by Verbatim Corporation offers a trip to Athens, Greece as a Grand Prize. Other

prizes range from a trip to the Summer Olympic Games in Los Angeles, to cameras and sport clothing. Entries must be received by June 29. No purchase is necessary to be eligible for prizes, but you will receive a bonus of a "Great Performer" T-shirt if you also purchase a Verbatim Datalife or Valulife 10-pack of floppy disks when you fill out your entry form at participating retailers.

• **Lap computer prices coming down... down... down...** NEC has responded to Radio Shack's "temporary" \$200 price reduction of the Model 100 lap computer with an equivalent price cut. Accordingly, both the NEC 8200 and the TRS-80 Model 100 16K units are currently retailing for \$599, while the 24K versions sell for \$799. (The 16K 8200 has already been offered for \$499 at regional computer shows.) Among the other low-end lap computer vendors, Sord told BMR that it will not reduce the price of its IS-11 unit (the basic 32K version sells for \$995). Olivetti has yet to announce the price of its soon-to-be introduced M-10 computer.

Watch for lap computer prices to fall further with the introduction of the new portables. These are slightly more expensive but power-packed 8-to-9 pound models such as the recently announced 128K Apple IIc for \$1,295 (a monitor is \$200 more) or under-\$2,000, IBM-compatible Hewlett-Packard HP100. Both feature 3½-inch disk drives.

SOFTWARE MART

ALL-IN-ONE SOFTWARE

Ever since Lotus 1-2-3 came out in 1982, new software packages have increasingly featured integration, the exchange of data within different applications. Some of these programs simply read datafiles from within the same family of software. Others import and export files from existing programs. A very few combine the diverse applications into one package and even allow the display of their information in separate on-screen windows. Most of these integrated packages use a database management system as the core of their integration. Whatever the form of their integration, here are some of the newest offerings.

- **Framework** is a true integrated package with windowing capabilities. Its applications include word processing, spreadsheet, business graphics, data management, forms processing and an outline generator. Framework also interfaces with a number of existing programs, including Lotus 1-2-3 and dBase II.

Whereas Lotus 1-2-3 and its recently announced successor, Symphony (see *BMR*, April, 1984 issue) specialize in analysis of numbers, Framework concentrates on manipulation of ideas and concepts. The outline generator permits listing of their elements and subheadings (to form, in effect, an outline). These can then be expanded to include features of the other applications such as text, spreadsheet data, or graphs in any combination.

Commands appear at the top of the screen, and a single keystroke provides more commands if necessary. In addition, the program includes Fred, the 140-verb procedural language. This enables users and third-party manufacturers to enhance the existing programs to fit specific needs and to develop vertical market software for use with Framework.

This \$695 package runs on a 256K IBM

PC with dual disk drives. *Aston-Tate, 10150 West Jefferson Blvd., Culver City, CA 90230, 213-204-5570.*

- **The Benchmark 4.0** is a series of stand-alone packages which integrate with each other. The application programs include: a word processor, mailing list, spelling checker, telecommunications packages, business and presentation graphics, spreadsheet and database manager. The core directory program, The Administrator, enables users to access the others with a single keystroke; it also provides configuration, disk formatting and copying utilities. The program also interfaces with a number of MS-DOS applications programs and utilities.

The cost of individual programs range from \$125 for the spelling checker to \$350 for the word processor. The entire series costs \$995 for the IBM, TI Professional, Victor 9000, and others. *Metasoft Corp., 6509 W. Frye Road, Suite 12, Chandler, AZ 85224, 602-961-0003.*

- **Kaleidoscope** is a four-module integrated package that features a relational database, spreadsheet and word processor. The program also interfaces with such spreadsheet packages as Lotus 1-2-3, Multiplan, SuperCalc and VisiCalc. Among its features are

WANTED... WANTED... WANTED...

Freeware, public domain software announcements. We will selectively publish information concerning new no-charge or suggested-donation application software for Apple, Atari, Commodore, IBM, TI, TRS-80, CP/M and MS-DOS computers. Send announcements—including charges or donations, and full ordering address—to *Freeware/Public Domain Software Editor, Baron's MicroComputing Reports, 344 E. 49th St., New York, NY 10017.*

the ability to work on nine files simultaneously, to manipulate data with a 30-word command language and to insert Basic Code into the language routine—thus allowing for specialized programs.

The database allows 294,903 records, 180 fields and unlimited relationships between records. Each file can be sorted on up to six fields and can contain 20 key fields per record.

Kaleidoscope is available for the IBM, most CP/M micros, TI Professional; Victor 9000, and costs \$695. *DBi Software Products, One Energy Place, 5805 East Pickard Road, Mt. Pleasant, MI 48858, 517-772-5055.*

- **Aladin** is a menu-driven relational DBMS compatible with MS-DOS, p-System, and Apple Pascal-based computers. It also integrates with a wide variety of existing word processing, spreadsheet and other programs.

All the modules of the Aladin system work together. They include Data, Report, Query, Calculation, Word Processing Bridge, Grouping and Statistics. The database holds up to 2 million records (164K for Apple II) making it useful for corporate database applications.

Aladin allows for 32 files per database under MS-DOS (5 for the Apple II) and as many as 64 screens (16 for the Apple).

Because of memory restraints of 64K RAM systems, the Apple II version (\$595) does not include the calculator module, help screens or printer forms capabilities. The Apple III version (\$795) requires a hard disk and 256K of RAM. The IBM version (\$795) requires two disk drives, 128K of RAM for DOS 1.1 and 192K for DOS 2.0. Other versions are available for the Corvus Concept, TI Professional, DEC Rainbow, and Victor 9000. *Advanced Data Institute, Inc., 1215 Howe Ave., Sacramento, CA 95825, 916-925-2229.*

- **10 Base**, a relational DBMS, interfaces with application programs which use DIF and delimited ASCII file formats. It also

(continued on page 8)

Words Processed

- **Terminals & Printers Buyer's Guide.** By Tony Webster. 344 pages. *BYTE Books/McGraw-Hill. \$19.95, paperback.* If you read the word "terminals" to mean "monitors", this buyer's guide will sorely disappoint you. Stand-alone CRTs are not covered; smart, dumb and user-programmable terminals are. Nor, for that matter, are many of the printers produced by home microcomputer manufacturers, such as Atari and Commodore, considered. If none of this bothers you, then read on because the book does offer some interesting information.

The first 67 pages of the guide provides an introductory and technical overview of terminals and printers. The following subjects are covered: ASCII code and serial communication standards, interface, code and protocol converters, technical aspects of alphanumeric and graphic display terminals, and receive only printing terminals. Another section covers cost-effective replacements for the IBM 3270 Information Display System.

The remainder of the guide contains product information on: visual display terminals (270 ASCII models from 55 manufac-

turers), IBM 3270 terminals (including 22 compatibles), and printers and printing terminals (400 models from 75 vendors). The IBM 3270 section includes a chapter on BSC, binary synchronous communications, and SDLC, synchronous data link control, protocols. The appendices include a glossary of relevant terms and cross-reference listings.

The guide is divided into five parts: software profiles, vendor profiles, product index, vendor index, and appendices. There are over 700 program descriptions listed by application. Each software entry includes the program's name, the publisher's name, address and phone number, the program's operating environment, source language

(continued on page 8)

SOFTWARE (continued)

comes with SQL, a fourth-generation database language used on IBM mainframes. Among 10 Base's features are: B-tree indexing, automatic updating of indexes, query routing, on-screen help, and a data dictionary so that file names and field values can be easily scanned.

Within DOS constraints, the number of fields per record, records per file, files per database and indexes per file are unlimited. 10 Base allows for 32,000 characters per record, 9,999 characters per field and per index key. When integrated with 10 Net, a local area network, security and multi-user capability is provided for. 10 Base requires an IBM or compatible, MS-DOS 2.0, and 192K of RAM. \$495. *Fox Research, Inc., 7005 Corporate Way, Dayton, OH 45459. 800-358-1010 or 513-433-2238.*

• **The Profit Center** will eventually consist of 21 integrated stand-alone programs, grouped into four areas: accounting, word processing, planning and analysis, and database management. Each of the programs shares common commands, accesses data

from the same database in up to eight drives, and allows for security. The first six to be available are: General Accounting, Business Word Processor, NEAT: The Time and Information Manager, Accounts Receivable, Accounts Payable, and the Master Menu. The Master Menu is required for the rest; its \$25 cost is refunded upon return of the registration card. The programs also come with learning kits which consist of a manual, disk and audio cassette. Prices range from \$150 to \$695. Available for IBM and compatibles, DEC, TI Professional, Victor 9000, Wang, and others. *Prentice-Hall Inc., Englewood Cliffs, NJ 07632.*

• **PractiBase, PractiWord and PractiCalc III** make up an extremely inexpensive (\$99.95 each, \$250 for all three) integrated package for the IBM PC, with version for Apple IIe, Macintosh, Apricot and Sirius forthcoming. When possible, all three use the same commands and function keys, offer extensive help menus, make use of color (optional), and can import files from other programs. The word processor allows for macros and a feature called dynamic

abbreviations—up to 150 words or phrases up to 100 characters in length can be coded and then entered automatically. The relational database and the word processor will be available before the spreadsheet. *PractiCorp International, The Silk Mill, 44 Oak Street, Newton Upper Falls, MA 02164, 617-965-9870.*

• **Decision Manager**, an integrated package with windowing capabilities, includes a word processor, spreadsheet, telecommunications, data manager, presentation graphics and a micro/mainframe link. It also interfaces with a number of application programs from various sources, as well as Peachtree's own PeachText 5000. The system supports a mouse. The user can define up to 20 windows and display 10 at a time. The mainframe link is via 3270 emulation.

Although it runs on an IBM with 256K of RAM, a hard disk is recommended. The introductory price of \$625 will be replaced by an \$825 list price. The first upgrade is free; subsequent upgrades of the Decision Manager package will cost \$150. *Peachtree Software, 3445 Peachtree Road N.E., Atlanta, GA 30326, 800/24-Peach.*

WORDS PROCESSED (continued)

name and user availability, its usage pricing, and a short product description (probably provided by the vendor). Unfortunately, no rating system is provided. Instead, the reader is advised to consult the vendor's profile and base a purchase upon the information listed there (which was probably also provided by the vendor). The appendices include a listing of CP/M-based microcomputers and a fairly comprehensive glossary of microcomputer terms.

• **The Small Computer Connection: Telecommunications for the Home and Office.**

By Neil L. Shapiro. 190 pages. *Micro Text/McGraw-Hill. \$15.95, paperback.* Slim as it is, this volume contains almost everything a novice telecommunicator needs to know about accessing on-line database services. Everything from modem types to specific on-line database commands is covered. Best of all, summaries are listed at the end of each chapter and printouts of actual screen interaction are used as examples.

The only fault, if one exists, is that the book centers around the Apple computer. This means that other microcomputer users will need to alter some of the advice given to suit their own machines. It also means that a disproportionate number of Apple-related databases are mentioned.

The first chapter discusses the features found in all modems, such as baud rate, parity and duplex setting. The second chapter introduces such terminal software functions as edit, buffers and macros. (Unfortunately, the program used as an example is an Apple program.) By the third chapter,

the author has you making your first call. From there on, the rest of the book takes the user on a step-by-step tour of the most commonly used information services and a few of the public bulletin board services.

The final chapters deal with uploading and downloading, networking, and advanced communications techniques, such as transmitting video images and unattended telecommuting.

Shapiro stresses methods of cutting down connect time so as to keep costs to a minimum. Some of these methods include: composing text prior to access, programming the terminal software so that access is automatic, using command structures rather than menus, and programming macros for frequently used commands. Also included are listings of PAMS, Public Access Message Systems, and help files for typical systems.

• **How to Create Your Own Computer Bulletin Board.** By Larry L. Myers. 214 pages. *Tab Books. \$12.50, paper.* As the title states, this book guides the reader

through the planning and programming of a computer bulletin board. Although the majority of the program listings in this book are for the Apple, TRS-80 and Commodore 64 computers, the non-technical sections are useful to other microcomputer users. Besides the Basic listings in the main section of the book, there are assembly language smart-terminal programs for the TRS-80 and HeathKit H-89. Chapters include: Planning Your CBB (computer bulletin board); File Handling; Carrier Detection; Basic Programming Techniques; Error Handling; and Special Tech-

niques. The following topics are covered: variable handling techniques, combining machine language and Basic telecommunications errors, chat features, downloading, uploading, and on-line games.

• **Guide to CP/M Software.** Edited by Datapro Research Corporation. 241 pages. *Datapro/McGraw-Hill. \$19.95, paper.*

This guide to software products and vendors contains over 700 program descriptions, listed by application. Each software entry includes, along with the program's name and publisher data, the software's operating environment, source language and user availability, usage pricing, and a short product description (probably provided by the vendor). Unfortunately, no rating system is provided. Instead, the reader is advised to consult the vendor's profile and base purchases upon the information listed there (which may also have been provided by the vendor). The appendices include a listing of CP/M-based microcomputers and a fairly comprehensive glossary.

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PERSONALIZED REPORT FOR: **TRS-80**

June, 1984

Alan B. Abrahamson, Technical Editor

* SOFTWARE REVIEW: VERSALEDGER II

The VERSA stands for versatile, and this \$149.95 package by Richard Kaplan is versatile. It allows you to set up a simple or multiple checkbook system in as simple or complex a manner as you desire. This checkbook system can be integrated with the General Ledger system available as part of the VersaLedger II package.

The design of the system is user-friendly and little, if any, accounting knowledge is required for setup. The software comes with test data that allows you to get the feel of the program prior to organizing your real database.

Capacities of the system are approximately as follows: 615 accounts and 300 transactions per month on the Model I; 615 accounts and 2,400 transactions on the Model III; and 1,000 accounts and 3,000 transactions on the Model II.

The major drawback to the system is the slow speed in which files are manipulated in memory. However, I tested this program on a Model I; speed would certainly be improved on a Model III or 4.

The VersaLedger system may be integrated with other Versa series programs, such as Receivables, Inventory, Payables and Payroll, at additional cost. I have not had the opportunity to test these add-on modules to date, so I cannot comment on their worth.

VersaLedger II's documentation is adequate, and sample printouts of the data are provided. This could be the complete accounting system for a small to medium-size business if you do not need budgetary accounting. H&E Computronics, 50 N. Pascack Road, Spring Valley, NY 10977.

* TYDBYTES - VISICALC

VisiCalc users with Model I/III have the ability to change printer format from within the VisiCalc program. This feature, although documented in the Model III VisiCalc manual, is obscure in its usage and syntax. If you have a compressed (16.5 cpi) mode on your printer, you probably want to take advantage of the extra columns that can be produced in this mode. Before entering VisiCalc, you can "set" your printer parameters to the compressed mode and when you PRINT, get condensed type output. Well, here is how to do it from within the VisiCalc program:

Type /PP" (don't omit the quote character) which will present you with the prompt, "Setup or ENTER". Now type <Shift><3>. That is, the shift key held down while touching the 3 key. A caret will appear on your Model III edit line; Model I users will see a right arrow. Type H1B (H indicates that a hex value will follow, 1B indicates the hex value for an Escape<27 decimal>. Enter <Shift><3> again, and your caret or right arrow will appear on the command line. Finally, type H50 <ENTER>. Your prompt is now for the lower right cell. Either type the cell you want, followed by <ENTER>, or point the cursor toward the cell with the arrow keys and press <ENTER>.

Your output should be in compressed mode if you are using an Epson printer. If you have some other printer, substitute the value you need to accomplish this task for the second hex value. This information can be found in the section of your printer's manual that discusses software control codes. Multiple commands can be entered via this method, by continuing the sequence of <Shift><3> followed by the next series of Hex characters.

* LDOS COMMANDS (CONTINUED)

Last month we listed many of the commands and syntax that did not exist under Model III TRSDOS 1.3, but are found in the new version TRSDOS 6.0. This month we continue with those statements found in the new disk Basic by Logical Systems. NOTE: [] indicates optional command or parameter.

o BASIC STATEMENTS & FUNCTIONS

- . CALL address [parameter list]
Transfers program control to machine language routine at address. The parameters are the values to be passed.
- . CHAIN [MERGE] filespec [,line] [,ALL] [,DELETE line-line]
Loads a Basic program named filespec, chains it to a "main" program, and begins running it. The line is the first line to be run in the CHAINED program. The ALL option passes every variable in the main program to the CHAINED program. The MERGE option "overlays" the lines of filespec with the main program. The DELETE option erases lines in the overlay so that you can MERGE in a new overlay.
- . CLEAR [,memory location] [,stack space]
Clears the value of all variables and closes all open files. Optionally, it also sets the highest memory location for Basic to use and the amount of stack space.
CLEAR CLEAR, 75 CLEAR ,61000, 200
- . COMMON variable,...
Passes one or more variables to a CHAINED program.
100 COMMON A, B, C, D(), G\$
110 CHAIN "PROG3", 10
- . DATE\$
Returns the current date.
PRINT DATE\$
- . ERASE array,...
Erases one or more arrays from a program.
ERASE C,F
- . ERR\$
Returns a system error number and message.
PRINT "Last error was ";ERR\$
- . HEX\$ (number)
Calculates the hexadecimal value of a number.
PRINT HEX\$(30), HEX\$(50), HEX\$(90)
- . INPUT\$ (number [,buffer])
Inputs a string of number characters from either the keyboard or a sequential disk file. The number must be a value between 1 and 255.
A\$ = INPUT\$(5) A\$ = INPUT\$(11,3)
- . LPOS (number)
Returns the position of the line printer's head within the line printer's buffer.
100 IF LPOS(X) > 60 THEN PRINT CHR\$(13)
- . NAME old filespec as new filespec.
NAME "FILE" AS "FILE/OLD"
- . OCT\$ (number)
Computes the Octal value of a number.
PRINT OCT\$(30), OCT\$(40), OCT\$(50)

- . OPTION BASE number
Sets number as the minimum value for an array subscript.
OPTION BASE 1.
- . PRINT α (row,column)
Specifies X, Y coordinate for printing to CRT.
- . ROW (number)
Returns the row position of the cursor, number is dummy.
X = ROW(Y)
- . SPACE\$ (number)
Returns a string of number spaces. Number must be from 0-255.
PRINT "DESCRIPTION" SPACE\$(10)
- . SPC (number)
Prints a line of number blanks. Number must be from 0 to 255.
PRINT "HELLO" SPC(15) "THERE"
- . SWAP variable1,variable2
Exchanges the values of two variables.
SWAP F1\$, F2\$ SWAP A\$, B\$ SWAP A(1), A(2)
- . SYSTEM [command]
Returns to TRSDOS. If you specify a command it executes it and then returns you to Basic.
- . TIME\$
Returns the time in 24-hour format.
A\$ = TIME\$
- . WAIT port, integer1 [,integer2]
Suspends program execution until a machine input port develops a specific bit pattern.
100 WAIT 32,2
- . WHILE expression WEND
Executes a series of statements in a loop as long as condition is true.
WHILE WEND
- . WRITE data,...
Prints data on the display.
WRITE A,B,C\$
- . WRITE# buffer, data,...
Writes string data to a sequential file with implicit commas as delimiters.
-- WRITE#1, A\$, B\$
- o CONTROL KEYS
 <CONTROL><J>
 Line feed. Starts a new physical line without ending the current logical line. Like Model I/III Down Arrow.
- o OPERATORS
 - . (a backslash) (performs integer division)
 - . MOD (Modulus function) (Remainder after division)
 - . XOR (eXclusive OR binary arithmetic function)
 - . EQV (EQuivalent Value function)

* SEQUENTIAL FILES

Among the most frequently asked questions concerning the TRS-80 Model I/III are those which refer to their data files. There are, as you know, two basic types: sequential and random. Sequential files are the easier to comprehend, so we will begin with them in this issue.

A sequential file is one in which the data is packed closely together, with a specified delimiter between its parts. For example: If the data were a name an address, a city, a state and a zip code, we would have five separate and distinct parts to the data. In the file where this data would reside, the data might look like this:

```
JOE JONES <CR> 22 SECOND ST. <CR> NEW YORK <CR> NY <CR> 10001
```

Or the data could look like this:

```
JOE JONES,22 SECOND ST,NEW YORK,NY,10001
```

In the first case, carriage returns (13 decimal, 0D hex) separate the data fields. In the second, commas are used. Both methods require the same amount of space. Whichever method you choose, when you read this data back to BASIC through the use of the INPUT statement, you will be able to separate the parts. The only catch is that you might have a comma as part of your data. If so, you must surround the data with quotes by inputting CHR\$(34). For example, if you wish to store the name as JONES, JOE, your write statement will have to look like this:

```
100 PRINT #1, CHR$(34)+"JONES,JOE"+CHR$(34)
```

Your disk image would now be: "JONES,JOE". To read back this data from disk, you write: 200 INPUT #1,A\$. A\$ will contain the value of JONES,JOE.

Here is a complete section of code to accomplish this sequential write and subsequent read from a disk file that will store and retrieve the above data:

```
10 REM Sequential file write and read
20 CLEAR 1000: CLS
30 OPEN "O", 1, "NAMEFILE": REM Open file for write in buffer 1 with a name
  of NAMEFILE
40 LINE INPUT "NAME: ";A$: GOSUB 500: REM Use LINE INPUT so comma will be
  accepted, then send data to buffer 1 for write
50 LINE INPUT "ADDRESS: ";A$: GOSUB 500
60 LINE INPUT "CITY: ";A$: GOSUB 500
70 LINE INPUT "STATE: ";A$: GOSUB 500
80 LINE INPUT "ZIP CODE: ";A$: GOSUB 500
90 CLOSE: CLS
100 OPEN "I", 1, "NAMEFILE": REM Open file for input
110 FOR X = 1 TO 5: INPUT #1, A$: REM Begin loop to read data
120 PRINT A$: NEXT: REM Print data on screen and continue loop
130 CLOSE: END
500 A$ = CHR$(34) + A$ + CHR$(34): REM Add quotes in case of commas.
510 PRINT #1, A$: REM Send data to buffer
520 A$ = "": RETURN: REM Null A$ after write and return to main program
```