DOCUMENT RESUME

ED 242 964 CE 038 820

AUTHOR Heath, Betty; Camp, William G.
TITLE Microcomputers in Small Business Management. Leadership and Training Series No. 64.
INSTITUTION Ohio State Univ., Columbus. National Center for Research in Vocational Education.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE 84
CONTRACT 300-83-0016
NOTE 106p.
AVAILABLE FROM National Center Publications, National Center for Research in Vocational Education, 1960 Kenny Road, Columbus, OH 43210 (LT64--$6.50).
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Adult Education; *Business Administration; *Business Education; Computer Oriented Programs; *Computer Software; Evaluation Criteria; Instructional Materials; Media Selection; *Microcomputers; Postsecondary Education; School Role; Secondary Education; *Small Businesses; *Telecommunications; Vocational Education

ABSTRACT

This guide is designed to assist vocational educators in training individuals at the secondary, postsecondary, and adult levels to use microcomputers in small business management. An overview of the use of microcomputers in the small business setting is provided in the introduction. Included in the next section is a multi-page matrix dealing with software that is available for use in the three top-selling computers to perform small business functions. A review of 49 business software packages from the matrix is also provided. Discussed next are organizational structures at the secondary, postsecondary, and adult levels and methods for training potential and presently employed business personnel to use microcomputers. The section on software packages suggests criteria to guide purchasers in reviewing, evaluating, and selecting software packages based on their individual needs and resources. Concluding the guide is a discussion of telecommunications that examines the implications of networking and telecommunicating for small businesses. Appendixes to the guide include information about business software sources, journals, books, software directories and guides, and business and instructional software evaluation instruments. (MN)

Leadership and Training Series No. 64

MICROCOMPUTERS IN SMALL BUSINESS MANAGEMENT

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1984

FUNDING INFORMATION

Project Title:	National Center for Research in Vocational Education, Dissemination and Utilization
Contract Number:	300830016
Project Number:	051MH30001
Act under Which Funds Administered:	Education Amendments of 1976, P.L. 94-482
Source of Contract:	Office of Vocational and Adult Education U.S. Department of Education Washington, D.C. 20202
Contractor:	The National Center for Research in Vocational Education The Ohio State University 1960 Kenny Road Columbus, Ohio 43210
Executive Director:	Robert E. Taylor
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FOREWORD

Microcomputers in Small Business Management will serve as a resource in developing training programs for microcomputer users in small business operations. Software reviews demonstrate the microcomputer's capabilities to perform management tasks and to teach management concepts and skills. Vocational educators and others will benefit from the discussion of organizational structure and training methods to use in designing programs and criteria to use in evaluating and selecting appropriate software packages. Finally, the broader aspect of telecommunications and its application to the small business operation is presented.

The profession is indebted to Dr. Betty Heath and Dr. William G. Camp for their scholarship in preparing this guide. Dr. Heath is Assistant Professor of Marketing Education and Dr. Camp is Assistant Professor of Agricultural Education at Virginia Polytechnic Institute and State University. E. Gene Coulson contributed to the paper by reviewing information about software programs.

Dr. Don Kohns, University of North Dakota; Gregory Glau, Glau Gas Equipment Company; and Dr. James Long and Dr. Ida Halasz of the National Center for Research in Vocational Education contributed to the development of the paper by their critical review of the manuscript. Staff who assisted in the production of this guide included Judy Balogh, Dr. Judith Samuelson, and Dr. Jay Smink. Ruth Nunley typed the manuscript and Janet Ray served as word processor operator. Editorial assistance was provided by Christie Durtschi of the Field Services staff.

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

EXECUTIVE SUMMARY

This guide has been prepared to assist vocational educators in training individuals at the secondary, postsecondary, and adult levels to use microcomputers in small business management. The guide could also be used by business personnel to identify programs to be used as management tools and as a resource to use in training their own employees.

This guide took the form presented due to a decision by the authors to limit the discussion of business applications software to that available for three types of microcomputers. The selection of microcomputers was made based on the availability of a wide variety of software packages for each. No endorsement of any microcomputer hardware or software or telecommunication system is intended.

The search conducted for available software was thorough but not exhaustive. Cost figures given are those reported as of December 1, 1983.

An overview of microcomputers in the small business setting is provided in the introduction. Included in this overview are (1) benefits to the overall business operation and uses of the microcomputer as a management tool; (2) current status of microcomputer sales along with predictions for market growth and future trends in business; and (3) a review of the role of vocational education in training individuals to use the microcomputer. The following sections deal in depth with applications of microcomputers in small businesses; training approaches and methods that can be used by vocational educators; evaluation of business and instructional software; and the broad scope of telecommunications.

To demonstrate the various applications of the microcomputer and wide-range capabilities of software, a multipage matrix is provided for the three top-selling microcomputers—Apple, IBM, and TRS-80. This matrix shows eleven functional areas in the small business operation and selected software packages available to perform tasks within each area. The functional areas covered by the matrix are data base/file management, distribution, financial records, inventory control, marketing and sales, planning, production planning and control, purchasing, specialty programs, miscellaneous, and word processing.

In addition, forty-nine business software packages from the matrix are reviewed with respect to source, cost, hardware equipment, and description. These packages were selected for review because of their popularity and positive reports by users and vendors.

The discussion of organizational structures at the secondary, postsecondary, and adult levels, and methods for training potential and presently employed business personnel to use microcomputers is supported by a review of twenty-seven instructional software packages. These packages are currently available to teach small business management concepts and skills.

The section on software evaluation suggests criteria to guide purchasers in reviewing, evaluating, and selecting software packages based on their individual needs and resources. Suggested

criteria include motivational incentives, reliability, documentation, user friendliness, and reproducibility. This section is especially useful to the novice because of the overwhelming number of software packages on the market today and the varying capabilities of these packages.

Finally, telecommunications is discussed with respect to the requirements for telecommunicating, available commercial databases, and the implications that networking and telecommunicating have for small businesses.

The appendices include information about business software sources, journals, books, software directories and guides, and business and instructional software evaluation instruments.

INTRODUCTION

Purpose

The purpose of this guide is to provide vocational educators with a resource for developing curricula for training individuals to use microcomputers in small businesses. This guide may be used to develop programs at the secondary, postsecondary, and adult levels. In addition, the guide will serve as a resource for business personnel who wish to identify programs to be used as management tools and for those who wish to use the guide as a resource for training their own employees.

Microcomputers in Small Businesses

Benefits

Should a business computerize? The answer is "yes" if a computer (1) helps business personnel to better manage the business; (2) provides information the business needs, and (3) is cost beneficial to the business (Copley 1983). The advent of the microcomputer and user-friendly, inexpensive software has made it possible for small businesses to take advantage of the many benefits a computer offers. Following are several applications of a microcomputer that can benefit small business management.

- A microcomputer stores information and retrieves it upon command and performs mathematical operations and comparisons.
- Software packages are available to eliminate the need for manually performed routine calculations, for example, budgets, payroll, employee records, and sales commissions.
- Manufacturing packages control manufacturing processes, monitor production quality, count production quantities, and report malfunctions (Veit 1981).
- Manuscripts and correspondence are typed and easily corrected through word processing packages, eliminating the need for retyping to correct errors. Also, word processing packages facilitate personalized mass mailings by accessing mailing lists.
- Since approximately 110 pages can be stored on one side of a 5 1/4-inch diskette, information storage space is reduced.
- Inventory control and daily transaction packages provide an accurate, up-to-date account of inventory levels, back orders, stock turnover, and daily, monthly, and year-to-date sales. In addition the package automatically provides inventory checklists, inventory value reports, receiving reports, reorder reports, purchase orders, and packing slips.

- A microcomputer can tie into networking systems to provide additional services such as making airline reservations, sending and receiving electronic mail, buying and selling items, and performing banking transactions.

Potential Uses

Microcomputers and their software are being used to perform a variety of management tasks in small businesses. Following are six functional areas in business where microcomputer programs can be used and a brief description of the types of programs in these areas. (Software packages are discussed further in the second and fourth chapters of the guide.)

- **File Management:** Programs allow the user to create, retrieve, sort, and modify files of information according to any desired format or category.

- **Word Processing:** Programs allow the user to enter, store, and print text material. The user can quickly correct mistakes, move lines and paragraphs, and reformat without retyping.

- **Financial Modeling:** Usually this software will transform the video monitor into a spreadsheet of rows and columns. Programs can be used to create and to perform number crunching and data manipulation activities and calculations using formulas and data entered by the user. Uses include cash flow forecasting and analysis, budget planning and consolidation, sales planning and forecasting, and material and labor requirements planning.

- **Graphical Presentation:** Programs allow the user to create and display graphs and charts of data.

- **Accounting and Cash Management:** Using these programs, activities such as payroll, general ledger, accounts receivable/payable, inventory control, and purchasing can be performed on the microcomputer (Freeland 1983, pp. 58-59).

- **Special Applications:** A variety of programs perform functions designed for specific businesses, for example, job cost estimators for the construction industry, property listings for the real estate industry, cost analysis for the restaurant industry, patient accounts and records for medical offices, livestock and crop production records for agriculture, and point-of-purchase transactions for retailing establishments.

Status

In the last few years, microcomputer sales have grown extensively, with major sales occurring in professional and business markets (ibid., p. 57). In 1980, hardware dollar sales reached $1.8 billion and sales estimates for 1982 were $4.9 billion (Friedrich 1983). Daniel Flystra of VisiCorp estimates that there are 2.3 million potential users in the very small business segment and 2.5 million potential users in the self-employed professional market (Freeland 1983, p. 58).

A recent study revealed that of the two hundred microcomputer models manufactured today, those leading the market are Apple, IBM, and TRS-80 ("PC Survey" 1983). Portable computers such as the Kaypro Corona and Compaq seem to be most popular for people who need to trans-

port their computers. It is predicted that in the near future two microcomputers will emerge to set the industry standards and all other microcomputers will need to be compatible with those two

The supply of software currently on the market can be overwhelming to a potential user. Time, an educated public, and competition to produce quality programs will enable the better software developers and programs to survive. Meanwhile, it is important that users carefully evaluate and select the software most appropriate for their needs.

Outlook

As stated previously, the trend thus far in business has been toward use of the microcomputer for electronic manipulation, storage, and transmission of information. Numerous programs to eliminate the monotonous routine of manual calculation and handling of data are already in use. Predictions for future trends include—

- increasing use of desktop computers by managers, particularly in home office situations—with capabilities for connection with other computers and networking systems,
- videotext systems in wide use by 1990 (Harris 1982),
- electronic catalogs accessible from computer users' homes through terminals or microcomputers with modems (ibid.),
- small businesses ordering supplies and merchandise from manufacturers through their business computers.

Ultimately the microcomputer will become important to all small business managers, whether farm, auto shop, store, home, office, or service—as important perhaps as the telephone, cash register, calculator, or file cabinet, and quite possibly replacing them all.

The Role of Vocational Education

The introduction of the microcomputer to small business situations allows personnel to perform routine tasks and a variety of management functions faster and sometimes more thoroughly than ever before. In the long run, the microcomputer will help small businesses become more competitive with larger businesses. The growing emphasis on computers and the need for technically knowledgeable, competent personnel signals the need for a change in present training programs. In order to accomplish this, jobs will need to be analyzed within the areas of vocational education training to determine emerging technological trends. Once new training needs have been identified, vocational educators will need to design programs and materials to help their students become employable in this rapidly growing technological world.

At the secondary and postsecondary levels, vocational personnel have the responsibility to include computer training in their vocational programs. Training should not be treated as a separate unit or course, but should be incorporated, where appropriate, into the curriculum of each vocational program. In addition, teacher education programs, state departments of education, and local education agencies are accountable for seeing that vocational teachers are prepared to train their students in the use of the computer for creating and handling information in their respective vocational fields.

It is predicted that by the year 2000, two-thirds of the population will earn a living by creating, managing, and controlling information ("Shopper's Guide—Rates and Information" 1983, p. 48). Computers will be the medium through which this is accomplished. Therefore, it is the role of vocational education to see that vocational students are able to meet the demands of this coming information age.

APPLICATIONS IN SMALL BUSINESSES

With two hundred microcomputer models being manufactured, 2,900 software manufacturers, and more than 21,000 software programs commercially available to date, for the purpose of this publication, it was necessary to limit the software to be identified and reviewed. Therefore, discussion will be limited to the three microcomputers for which the largest number of software programs for business applications are available. They are the Apple with approximately 1,044 programs, the IBM with 842, and the TRS-80 with 1,072 (*Software Directory* 1983).

The following matrix shows a breakdown of the small business operation into eleven functional areas and itemizes alternative software packages available to perform tasks within each functional area. Software packages included in the matrix were selected based on popularity, positive reviews, availability, and reputation of software packages and software publishers. Sources are listed also on the matrix beside the package title. (Sources' addresses and phone numbers are found in appendix A.)

To show the capabilities of various software, selected packages—indicated by an asterisk on the matrix—are reviewed at the end of this section. These reviews should provide direction to individuals interested in exploring microcomputer software.

BUSINESS SOFTWARE MATRIX

(For the Apple, IBM, and TRS-80 Microcomputers)

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	**Software**	**Source**	**Software**	**Source**	**Software**	**Source**
DATA BASE/FILE MANAGEMENT						
General	Quick File IIe & III	Apple Computer	VisiFile	VisiCorp	Data Base Management	Universal Data Research
	Supersort	MicroPro International	Total Recal	PCEZ Business Software	Profile Plus	Radio Shack
	The General Master	Sierra-On-Line	*VisiDex	VisiCorp	VersaFile	Radio Shack
	DB Master	Stoneware Microcomputer Products	*PFS File	Software Publishing	Profile III Plus	Radio Shack
	VisiFile	VisiCorp	Comdata	Comsen	Business Data Base	CMA Microcomputer Division
	File Fax	TMO Software	Data Base Manager II	Alpha Software	Data Base Manager	Micro Architect
	*PFS File	Software Publishing	Data Writer	Software Options	Maxi Manager	Adventure International
	Information Master	High Technology Software Products	DataFax	Link Systems	MicroBase	Compumax
	Data Star	MicroPro International	EasyFiler	Information Unlimited Software	Data Master	High Technology Software Products
	Conquest	United Software of America	EasyData	Novell Data Systems	Information Master	High Technology Software Products
	*VisiDex	VisiCorp	Fast Facts	Innovative Software	The Data Reporter	Synergistic Software
	DataFax	Link Systems	FileMaster	NF Systems	Masterlite	Libra Laboratories
	DataDex	Information Unlimited Software	FileKeeper	Holland Automation USA	IDM X	Micro Architect
	Data Factory	MicroLab	ISAM DataBase	Ensign Software	The Datahandler	Miller Microcomputer Services
	Data Reporter	Synergistic Software	MAG SAM	Micro Applications Group	Member	Simplified Software Systems
	PFS Report	Software Publishing	Product Filing System	Microbase Software	MMS Datahandler	Miller Microcomputer Services
	List Handler II & IIe	Silicon Valley Systems	PFS Report	Software Publishing		
	D Base II	Ashton-Tate	MicroBase	Compumax		
	MicroBase	Compumax	FileFax	TMO Software		
	VersaForm	Applied Software Technology	VersaForm	Applied Software Technology		
	The Incredible Jack	The Business Solutions	Data Ace	Computer Software Design		
	Data Master	High Technology Software Products	Card File	Digital Marketing		
	The Tool	High Technology Software Products	Officer Filer	Digital Marketing		
	Data Perfect	LJK Enterprises	Ferox DBMS	Ferox Microsystems		
	IFO	Software Technology for Computers	Power Base	GMS Systems		
	The Data Bank	Flowersoft	Data Design	Infosoft		
	InfoStar	MicroPro International	IDM X	Micro Architect		
			The Datahandler	Miller Microcomputer Services		
			UltraFile	Continental Software		

NOTE: appendix A for software sources' addresses

*Business software reviews follow this matrix

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source
Telephone Directories	Telephone Dialer	Conceptual Instruments	Automated Telephone Director	Microbase Software	Autodialer	Alphanetics
	PhoneDex I	Starside Engineering	Autodialer	Alphanetics	Telephone Rotary Index File	FCT
	Phone Chronicle	Syscon	Telephone Dialer	Conceptual Instruments	Dial	Snappware
	Magic Memory	Artsci	Phonedex I	Starside Engineering		
	Mail Phone List	Compu-Tations	Phone Chronicle	Syscon		
	*PFS File	Software Publishing	Phone Chronicle	Tecmar		
			*PFS File	Software Publishing		
Mailing Lists	Master Mailing List	CMA Microcomputer Division	EZ Mail Label	Data Consulting Associates	Roster	Microcode
	1st Class Mail	Continental Software	1st Class Mail	Continental Software	Mailing Lists	Radio Shack
	Address Book	Muse Software	EZ Label	Systemics	Business Mailing Lists	Radio Shack
	Bulkmailer	Salon Software	Label Printing Program	Jack Strick & Associates	The Bench Mark Mail List	Metasoft
	Mail List Manager	Apple Computer	Mail List	Heigen	Address Directory & Mailing Labels	Douglas Tam
	Applepost	Apple Computer	Mail Manager	Starware	Address Factory	Computerware
	Easy Mailer	Information Unlimited Software	The Bench Mark Mail List	Metasoft	Label Maker	Practical Programs
	Mail Merge	MicroPro International	Mail X	Micro Architect	Maxi Mail	Adventure International
	Magic Address	Peachtree Software	Mailer	PCC Systems	Mailing Lists	Lizcom Computer Systems
	Benchmark Mail List	Metasoft	Mailing List	NL Nehring	Demi Mail Mailing List System	Demi-Software
	PFS File	Software Publishing	Mailing List	Alphanetics	Universal Label Printer	Demi-Software
	The Incredible Jack	Business Solutions	Mailroom II	Software Works	One Disk Mail List Manager	Manhattan Software
	Mail List 3.0	Artworx Software	Mailtrack	TCI Software	Two Disk Mail List Manager	Manhattan Software
	The Complete Mailing Label and Filing System	Avant-Garde Creations	Sapana-Mail-Track-I	Sapana Micro Software	Mail X	Micro Architect
	Mailing List Program	Software Technology for Computers	Bulkmailer	Salon Software		
	Mail Phone List	Compu-Tations	Mail Merge	MicroPro International		
	PFS File	Software Publishing				
	SCM	Continental Software				
DISTRIBUTION	The Order Scheduler	High Technology Software Products	The Order Scheduler	High Technology Software Products	Wholesale/Retail Distribution	International Micro Systems
	MicroDispatch	Comsis	Route Master	Digital Marketing	Trucking Company Dispatch Office	TRL Consulting
			DeMaile Speed Disk	Tecmar		
			Lab Master	Tecmar		
			Act-Rating Settlements	Comsen		
			MicroDispatch	Comsis		
FINANCIAL RECORDS						
Accounts Payable	MicroPay	Compumax	Accounts Payable	MPSI	*Accounts Payable	Radio Shack
	*The Computer Programmed Accountant	Continental Software	Accounts Payable	Muse Software	MicroPay	Compumax
	BPI System	Apple Computer	Accounts Payable	Computer Systems Design	Accounts Receivable Accounts Payable General Ledger and Payroll	Micro Architect
	VersaBusiness	H&E Compultronics	*Accounts Payable by Peachtree	IBM	Accounts Payable	Micro Business Systems
	Accounts Payable	Great Plains Software	Hailine Accounts Payable	Holland Automation USA	Accounts Payable	Computer Systems Design
			TCS Accounts Payable	Rocky Mountain Software System	VersaBusiness Pay	H&E Compultronics
			VersaBusiness Payables	H&E Compultronics	Accounts Payable	TCS Software
			MicroPay	Compumax	Accounts Payable	Micro Business Software
			Accounts Payable by BPI Systems	IBM		

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source
			Accounts Payable	Great Plains Software		
			Accounts Payable	Software Technology for Computers		
Accounts Receivable	MicroRec	Compumax	Accounts Receivable	Micro Business Software	'Accounts Receivable	Radio Shack
	'The Computer Programmed Accountant	Continental Software	Accounts Receivable	Spectrum Software	MicroRec	Compumax
	BPI Accounts Receivable	Apple Computer	Accounts Receivable	MPSI	Accounts Receivable	Micro Business Systems
	VersaBusiness	H&E Computronics	Accounts Receivable	American Business Systems	Accounts Receivable	Computer Systems Design
	Accounts Receivable	Great Plains Software	Accounts Receivable 2.1	Computer Systems Design	VersaBusiness Record	H&E Computronics
	Accounts Receivable	Verbatim Software	Accounts Receivable by BPI Systems	IBM	Accounts Receivable	Micro Architect
			'Accounts Receivable by Peachtree	IBM	Accounts Receivable	Micro Business Software
			Hadine Accounts Receivable	Holland Automation USA	Accounts Receivable	TCS Software
			TCS Accounts Receivable	Rocky Mountain Software Systems	Accounts Receivable	Holman Data Processing Services
			VersaBusiness Receivables	H&E Computronics		
			MicroRec	Compumax		
			Accounts Receivable	Great Plains Software		
Billing	Billing	Lifeboat Associates	Billing	Lifeboat Associates	Automatic Billing Program	ECT
	Billing	Serendipity Systems	Client Billing	Cybernetics	Billing	Joe Agrella
	Client Billing	Starsoft	Client Billing	High Technology Software Products	Billing	Computer Shack
	Client Billing	TCS Software	Client Billing	TCS Software	Billing	Computers Plus
	'Client Billing System	High Technology Software Products			Bill Payer	Micro Data Business Forms
					Client Billing	Stuff
						High Technology Software Products
					Client Billing	TCS Software
					Client Billing	Teaching Assistant
Cash Flow	'Discounted Cash Flow Analysis		Doughflo	Alphanetics	Doughflow	Alphanetics
	Cash Flow	Isaac Software	Forecast Cast Flow	MicroSystems Software	Cash Flow	Centec Process Systems
	Sir Isaac's Yield Calculator	Centec Process Systems			Disbursements	International Micro Systems
		Isaac Software			Proforma Cash/Budget	Management Systems Software
					Cash Flow Analysis	Computer Systems Design
General Accounting	Personal Accounting	CMA Microcomputer Division	Accounting Master	ASTEC	Big 5	Cybernetics
	Home Accountant	Continental Software	General Accounting by BPI Systems	IBM	Small Business	Howe Software
	Accounting Plus II and IIe	Software Dimensions	The Home Accountant	Continental Software	Small Business Accounting	Small Business Systems Group
	Project Viking	Ventureom	Accountant	Infosoft	Home Accountant	Continental Software
	Superchief Financial Systems	Data Train Service	Financier	Financier		
	EZ Ledger	Highlands Computer Services	Solomon I & II	Computech Group		
	Accountant	Infosoft	BusinessMaster Plus	BusinessMaster		
General Ledger	MicroLedger	Compumax	Bookkeeping	Datasmith	'General Ledger	Radio Shack
	MaxiLedger	Compumax	General Ledger	Spectrum Software	MicroLedger	Compumax
	'The Computer Programmed Accountant	Continental Software	General Ledger	MPSI	MaxiLedger	Compumas
	'BPI General Ledger	Apple Computer	General Ledger	American Business Systems	General Ledger	Micro Business Software, Inc
	General Ledger	State of the Art	General Ledger 2.0	Computer Systems Design	General Ledger	Micro Architect
			'General Ledger by Peachtree	IBM	General Ledger	PCD Systems

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source
	Micro General Ledger	Serendipity Systems	General Ledger	Micro Business Software	VersaBusiness	H&E Computronics
	General Ledger Plus	Verbatim Software	Hallne General Ledger	Holland Automation USA	General Ledger	H&E Computronics
	VersaBusiness	H&E Computronics	TCS General Ledger	Rocky Mountain Software Systems	General Ledger	Instant Software
	General Ledger	Peachtree Software	VersaBusiness Ledger II	H&E Computronics	General Ledger	Holman Data Processing Services
	General Ledger	Great Plains Software	MicroLedger	Compumax		
			MaxiLedger	Compumax		
			General Ledger	Great Plains Software		
Financial Analysis	Micro DSS Finance	Addison-Wesley Publishing	Project Viking	Venturcom	Financial Analysis/ Management	American Business Systems
	Project Viking	Venturcom	Micro DSS Finance	Addison-Wesley Publishing	Financial Analysis/ Management	Cybernetics
	Plan 80	Business Planning Systems	Plan 80	Business Planning Systems	Financial Analysis/ Management	Ellis Computing Software
	Financial Analysis/ Management	Computerware	Financial Analysis/ Management	Cybernetics	Financial Analysis/ Management	Micro Architect
	Financial Analysis Management	Ellis Computing Software	Financial Analysis/ Management	Micro Architect	Modeling	Radio Shack
	Financial Analysis Management	State of the Art	Financial Analysis/ Management	State of the Art	Mini Model	Westico Inc
Amortization	Schedule	Really Software	Compu-Loan	Benchmark Creations	Loan Comp	Contract Services Associates
			Loan Comp	Contract Services Associates	Amortization	Precision Prototypes
			Amortization	Software Laboratories	Schedule	Really Software
Depreciation	Depreciation	Basic Business Software	The 25th Hour 25 03	Softrend	Depreciation	Eigen Systems
	VisaCount	Computer Services	Depreciation	Basic Business Software	Asset Depreciation	Creative Solutions International
	Asset Manager	MicroLab	Asset Manager	MicroLab		
	Analysis	Really Software	Fixed Asset System	Best Programs	Depreciation	Diversified Computer Services
	Life Cycle Analysis and Depreciation	Dynacomp	Depreciation ACRS	Really Software	Depreciation schedule	J. Michael Healy
	Depreciation/ACRS	Really Software			Depreciation/ACRS	Really Software
Tax Management	Fixed Asset Accounting System	Peachtree Software	Fixed Asset Accounting System	Peachtree Software	TaxPro	Contract Services Associates
	Individual	Aardvark Software	Tax Pro	Contract Services Associates	Optimizer	Dynacomp
	Optimizer	Dynacomp	The Tax Manager	MicroLab		
	Tax Manager	MicroLab	Micro-Tax	Microcomputer Tax Systems		
	Personal Report System	Software Publishing				
Payroll	VersaPayroll	H&E Computronics	VersaPayroll	H&E Computronics	VersaBusiness Payroll	H&E Computronics
	PayWare	Computer Products	Payroll	Datasmith	Payroll	Radio Shack
	Payroll I	CMA Microcomputer Division	Payroll	Micro Business Software	Disk Payroll	Radio Shack
	Paycheck	CMA Microcomputer Division	Payroll	Solid State Software	MicroPers	Compumax
	Payrecord	CMA Microcomputer Division	Payroll 2.0	Computer Systems Design	Payroll System	Accounting Information Systems
	MicroPers	Compumax	Payroll System Multiuser	American Business Systems		
	BPI Systems	Apple Computer	TCS Payroll	Rocky Mountain Software Systems	Payroll	American Business Systems
	Payroll	Broderbund Software			Payroll	Micro Business Software
	Peachtree 140 Payroll System	Peachtree Software	VersaBusiness Payroll	H&E Computronics	Payroll	Solid State Software
	VersaBusiness Payroll	H&E Computronics	Payroll by Peachtree	IBM		
		Great Plains Software	SAPANA Payroll Tracker	Sapana Micro Software		

Microcomputers:		APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source	
	Advanced Payroll Package	Software Technology for Computers	MicroPers Payroll Payroll	Compumax Great Plains Software ASTEC			
INVENTORY CONTROL	'The Store Manager EOQ MicroInv VersaBusiness Inventory Control Inventory Control 'Infotory Inventory Control Micro Inventory Inventory Control Filo-Lifo Stock Control Inventory Control	High Technology Software Products Execuware Microcomputer Software Compumax H&E Computronics High Technology Software Products Micro Business Software SSR BPI Systems Serendipity Systems Software Technology for Computers Great Plains Software Hayden Book Charles Mann & Associates	'Infotory 'Inventory Control by BPI Systems IMS Wholesale Distribution EOQ Hallne Inventory Inventory Control Inventory Control by Peachtree Order Entry 'Inventory Control VersaBusiness Inventory Inv-X MicroInv Inventory Control Inventory Control Inventory Control Accounts Receivable Inventory Inventory Control	SSR IBM International Micro Systems Execuware Microcomputer Software Holland Automation USA MPSI IBM American Business Systems H&E Computronics Micro Architect Compumax High Technology Software Products Micro Business Software Great Plains Software Microcomputer Sales Software Technology for Computers	'Order Entry Inventory Control' System Inventory Management 'Inventory Control System MicroInv VersaBusiness Inv Advanced INV-X Inventory Control Inventory Control Inventory System Small Business Tape Inventory Inv X Accounts Receivable/ Inventory Inventory Control Stock Control Inventory Control	Radio Shack Radio Shack Radio Shack Compumax H&E Computronics Micro Architect Micro Architect Micro Business Software Accounting Information Systems Data Soft of New Hampshire Micro Architect Microcomputer Sales American Business Systems Hayden Book Charles Mann & Associates
MARKETING AND SALES							
Order Entry	VersaForm 'The Order Scheduler Order Entry Order Entry MicroDispatch Invoice File	Applied Software Technology High Technology Software Products Compumax Micro Business Software Comsis Phoenix	Order Entry 'Inventory Control 'EZEntry Hallne Invoicing Invoicing Order Entry Management System Order Entry The Field Companion MicroDispatch	American Business Systems Systemics Holland Automation USA MPSI American Business Systems Compumax Digital Marketing Comsis	Order Entry ICS Order Entry With Inventory Control Order Entry Order Entry	Radio Shack Radio Shack Compumax Micro Business Software
Transactions	Point of Sales	TCS Software	Cash Register System Store Manager Cash Register System CashMaster Point of Sale Point of Sale The Invoice Factory	Adventure International High Technology Software Production ICR/Futuresoft Versa Computing TCS Software Versa Computing MicroLab	Sales Cash Register System Cash Register 80 Cash Register Point of Sale Point of Sales Terminal Tracks Sales Commissions and Inventory Sales Tax Accountant	Bluebird's Adventure International Edu-Ware East ICII Futuresoft TCS Software Computer Consultants Manhattan Software

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source
Sales Analysis	Sales Log With Invoicing	Micro Associates	Hasline Sales Analysis	Holland Automation USA	*Sales Analysis	Radio Shack
	*Sales Analysis	Micro Business Software	Sales Analysis	Micro Business Software	Sales Analysis	Cybernetics
	Forecast Sales or Activity	Northwest Analytical	Forecast Sales or Activity	Northwest Analytical	Sales Analysis	American Business Systems
			The Sales Manager	Market Power	Sales Log With Invoicing	Micro Associates
					Sales Analysis	National Software Marketing
					Sales Analysis	Wilson Jones
					Sales Analysis	Apparat
					Spades	Institute for Scientific Analysis
					Sales Analysis	Micro Business Software
Promotion/ Prospecting	*KYC (Know Your Client)	Executive Microcomputing Software	*KYC (Know Your Client)	Executive Microcomputing Software		
	PCAT	Arlington Software Systems	*The Prospector	Executive Data Systems		
			Profiles	Whelan Associates		
			The Sales Manager	Market Power		

PLANNING

Financial Planning/ Spreadsheets	*Multiplan	MicroSoft	*Multiplan	MicroSoft	*Multiplan	MicroSoft
	*VisiCalc	VisiCorp	*VisiCalc	VisiCorp	*VisiCalc	VisiCorp
	LP Master	Applied Operations Research	LP Master	Applied Operations Research	LP Master	Applied Operations Research
	The Spreadsheet	Apple Computer	BPT	Starsoft	PlannerCalc	Comshare Target Software
	PlannerCalc	Comshare Target Software	1-2-3	Lotus Development	Budget System	Carey Moeller and Associates
	CalcStar	MicroPro International	Desktop Plan	VisiCorp	Calcstar	MicroPro International
	Senior Analyst	Business Solutions	Easy Planner	Information Unlimited Software	Desktop Plan	VisiCorp
	SuperCalc	Sorcim		Novell Data Systems	SuperCalc	Sorcim
	MasterPlanner	Comshare Target Software	EasyCalc Spreadsheet	American Business Systems	Money Decisions	Eagle Software Publishers
	Desktop Plan-II	VisiCorp	Financial Modeling	Comshare Target Software	MagicCalc	Peachtree Software
	MagiCalc	Artsci	Master Planner	Westico		
	Decision Support System/ Finance	Ferox Microsystems	MiniModel	Sorcim		
	*Money Decisions	Eagle Software Publishers	SuperCalc	H&E Computronics		
	The Incredible Jack	Business Solutions	Business PAC 100	Alphanetics		
			Business Program PAC 1	Alphanetics		
			Doughflo	Comshare Target Software		
			PlannerCalc			
			Decision Support System/ Finance	Ferox Microsystems		
			*Money Decisions	Eagle Software Publishers		
			Business Planning Tool	Softstar		
			The Financial Planner	Ashton-Tate		
Tax Planning	*Tax Decisions	Eagle Software Publishers	Corporate 1120	CPAids	*Tax Decisions	Eagle Software Publishers
	Tax Planning	Executive Data Systems	Master Tax Program	CPAids	Plan 1040	Success Management Consultants
	Tax Saver	MicroLab	Professional Tax Plan	Aardvark Software		BAPs Software
	Tax Planning	Pansophics	Tax Plan	Contract Services Associates	Tax Estimates	Micromatic Programming
	Personal Investor	PBI	Tax Pro	Contract Services Associates	Forecast Income Tax	Micromatic Programming
	Tax Planning	Professional Software Technology	Shortax	Syntax	Tax Forecaster	Micromatic Programming
	Plan 1040	Success Management Consultants	Tax Planner	CPAids	Taxsaver	CPAids
	Tax Preparer	Howard Software Services	*Tax Decisions	Eagle Software Publishers	Corporate 1120	Quick Tax
	Tax Mini Miser	Starsoft	Plan 1040	Success Management Consultants	Planning	

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source
PRODUCTION PLANNING & CONTROL	Bill of Materials	Compumax	Bill of Materials	Compumax	Manufacturing Inventory System	Radio Shack
	Manufacturing Systems	Computerware	PCM 1	Automated Office Systems	Manufacturing Inventory Control	Radio Shack
	Manufacturing Systems	Serendipity Systems	Hasline Bill of Materials	Holland Automation USA	Bill of Materials	Compumax
	*VisiSchedule	VisiCorp	MicroGantt	Westico	Manufacturing Systems	Serendipity Systems
	Job Control System	High Technology Software Products	Milestone	Digital Marketing	Project Manager	Radio Shack
	Project Management	CMA Microcomputer Division	*VisiSchedule	VisiCorp	Production Control	Mayday Software
	Apple Project Manager (APM)	Apple Computer	Project Manager	Datamensions	Budget/Project Monitoring System	Southfork Software
	Critical Path Scheduling	Utilities Engineering			Manufacturing Job Costing	ElTech Associates
					Manufacturing Labor Reporting Performance	ElTech Associates
					Manufacturing Shop Order Control	ElTech Associates
PURCHASING (Also see Inventory Control)	Purchase Order	SSR	Purchase Order	SSR	Purchase Order	Micro Data Business Forms
	Purchase Order	Star Computer Systems	Purchase Order	Star Computer Systems	Purchase Order	Time Management Software
					Purchases & Purchasing	Computers Plus
					Procurement	Management Systems Software
SPECIALTY PROGRAMS						
Agricultural	AG Disk Financial Management	Harris Technology Systems	Working Record	Red Wing Business Systems	*Computerized Farm Records	Micro LearningWare
	Working Record	Red Wing Business Systems	Dairy Herd	Farm Management Group of Mississippi	Agricultural	Agri-Computer Services
	Farm Plan	Farmplan Computer Systems	Farming	Farm Management Group of Mississippi	Working Record	Red Wing Business Systems
	Agricultural Farming		AG Finance 4.0	Countryside Data	Chemical Dealer	Summerville Enterprises
	Electronic Spreadsheet FarmCalc		AG Marketer	Countryside Data	Dairy Herd	Farm Management Group of Mississippi
	Financial		AG Payroll	Countryside Data	Dairy Farming	Marathon Microsystems
	Farm Filler		AG Planner	Countryside Data	Farming	American Small Business Computers
	Crop Management		Dairyherd Management	Countryside Data	Farming	Computer Systems
	Pig Management				Farming	Farm Management Group of Mississippi
	Farming	Harris Technology Systems			Homestead Farm Management	Marathon Microsystems
	Farm Records	Micro LearningWare			Feed Mills	Galactic Software
	Farming	Relational Systems Int'l				
	Farming	Scorpion Systems				
	The Hog Analyzer	CE Software				
	AG Marketer	Countryside Data Inc				
Trades	BPI Job Costing	Apple Computer	Estimator	Enterprise Computer Systems	Estimator	Rotary File
	Estimator	Rotary File	*PACE	High Technology Software Products	Estimator	Mendocino Software
	Job Costing	Westware Software	Contractor's Job Costing	Solid State Software	Job Costing	Radio Shack
	Pricing Analysis	Software Solutions	BPI Job Costing	BPI Systems	Job Cost Analysis	TBL Consulting
	*PACE	High Technology Software Products	Job Costing	Scripps Data Systems	Construction Est-Mate	Construction Data Control
	Job Control System	High Technology Software Products	Solomon Series-Users MDBS-DBM	TLB Consulting	Contractor	Joe Agrella
	Job Cost Accounting	CMA Microcomputer Division	Electricity	Spectrum Software	Advanced Contractor Package	Integrity Systems
	Construction Accounting Systems	CMA Microcomputer Division	Lumber Dealers Record System	Johnson Associates	Electricity	G&L Software Enterprises
			Job Costs	Garfield Grossed & Pustarfi	100 Electronics Notebook	KSoft
					Dealer	Johnson Associates
					Basic Builder Package	Integrity Systems

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source
	Job Costing	Kleinhammer	Electricity	Spectrum Software	Construction Cost/Profit Analysis	Really Software
	ACT	Charles Mann & Associates	Dealers	Johnson Associates		
	Job Costing	Micro Mike's	Job Costs	Peachtree Software		
	Job Costing	Scripps Data Systems	*Autoshop	Dale-Data Data Processing Service		
	Job Costing	Serendipity Systems				
	Circuit Analysis Program	CMA Microcomputer Division	Costs Estimator	High Technology Software Products		
	Contractor	Utilities Engineering				
	Electricity	Spectrum Software	Construction Cost Profit Analysis	Really Software		
	Electricity	Ziggural Software				
	Hi-Rise Architectural Design	Avant-Garde Creations				
	Construction Accounting Systems	CMA Microcomputer Division				
	Cost Estimator	High Technology Software Products				
	Construction Cost/Profit Analysis	Really Software				
	Air Conditioning Calculations Furnace Design	Utilities Engineering				
	Lighting Calculations	Utilities Engineering				
	Pipe Design for Gravity Flow	Utilities Engineering				
	Wood Joist-Rafter Design	Utilities Engineering				
	Compuquote	Peripheral Visions				
Health	Andent's Dental Office Date	Medical Software Consortium	Andent's Dental Office Date	Medical Software Consortium	Andent's Dental Office Date	Medical Software Consortium
	Doctor's Office Companion	High Technology Software Products	Dentist Invoice Generator for Public Aid	Sapana Micro Software	Medical Office System	Radio Shack
	Easylab	Synapse Video	Medical Data Management	Solid State Software	Laboratory Test Pricing	Downeast Digital
	Ambulance Dispatching	Spectrum Software	Patient Files	Professional Medical Software	Quality Controls	Downeast Digital
			DateBook II	Digital Marketing	Laboratory	Hexagon Systems
			Medical Office Management Package	Charles Mann & Associates	Doctor's Office	High Technology Software Products
			Medical Systems	Johnson Associates	Medical Systems	Micro Architect
			Medical Systems	Micro Architect	Ambulance Dispatching	Joe Agrella
			*AMOS	Computer Software International		
			Ambulance Dispatching	Spectrum Software		
			IMS Dental Office Management System	International Micro Systems		
Home Economics	Nutri-Calc	PCD Systems	Diet	Metamorphics	Nutrition	Pocket Information
	Nutrition	Pillsbury	Dietary Analysis	SimSoft Associates	Restaurant	Computation
	The Menu II	C&H Video	Restaurant	Computer Systems Design	Restaurant	Computer Systems Design
	Micro Cookbook	Virtual Combinatics	Personal Computer Home Budget Program	IBM		
	Home Accountant	Continental Software	Home Accountant	Continental Software		
	Nutrichec	WIMS Computer Consulting	AACS Restaurant Accounting Programs	Advanced Analytical Computer Systems		
	Nutritionist	N-Squared Computing	*Restaurant Inventory Control and Cost Analyses	Advanced Analytical Computer Systems		

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source
Marketing	Real Estate Analyzer	Howard Software Services	Real Estate Property Management	Tomar Productions	Real Estate Series	Radio Shack
	Property Management	Continental Software	Commercial Property Management System		Apartment Management	Emeritus Software Library
	Real Estate Models for the Eighties	Commercial Software Systems	Real Estate System	Solid State Software	Real Estate Agent	American Business Systems
	Real Estate Property Management	Tomar Productions	Real Estate Analyser	American Business Systems	The Profitrade System	Micro Data Business Forms
	Originater (auto, homeowners & renters commercial truck and commercial liability)		*Property Listings Comparables	Howard Software Services	Electronic Broker	Nevins Microsystems
	Stock Tracker	Orion Business Systems	Independent Agency	Really Software	Standard & Poors Stockpak	Radio Shack
	The Stock Portfolio System	H&H Trading	The Producer	Univar International	Banking Programs	Radio Shack
	Analysis and Prices	Smith Micro Software	Risk	Metamorphics	Savings & Loan	GB Lenz
	Compound Interest	PBC Data Systems	LP Gas Distributors	Metamorphics	Beverage Distributors	Data Automation Service Int'l
	The Bar Wand	Data Systems	Hotel System	Johnson Associates	LP Gas Distributors	Microcon Digital Systems
		Advanced Business Technology	Stock Charting	Automation Management	Station Management	Johnson Associates
	Point of Sale	Versa Computing	Personal Investor	Diamond Head Software		Institute for Scientific Analysis
	Retail Manager	Advanced Business Technology	Point of Sale	PBL		
		C&D Software	Auto Clerk	TCS Software		
	Automobile Dealer		Microbase Ad Agency System	MPSI		
			Auto Parts Inventory	Microbase Software		
			*Insure	Rainbow Enterprises		
			Key Spread (Banking)	The Software Terminal		
				Analytic Systems		

MISCELLANEOUS

Time Management	Appointment Calendar	CMA Microcomputer Division	Agenda	TCI Software	Time Accounting	Radio Shack
	Desk Calendar II	Telephone Software Connection	Micromінder	Alphanetics	*Time Manager	Radio Shack
	*Time Manager	Image Computer Production	Personal Secretary	Computer Aided Design	Daily Appointment Calendar	International Computer Product
	The Organizer	Conceptual Instruments	The 25th Hour Time Scheduler/Organizer	Softrend		
	Appointments	Andent	*Time Manager	IBM		
	*VisiDex	VisiCorp	Desk Organizer	Conceptual Instruments		
			Shoebox	Techland Systems		
			Time Scheduler	Information Solutions		
			*VisiDex	VisiCorp		
Graphics/ Plotting	Graph Power	Ferox Microsystems	PGL	Peachtree Software	*Business Graphics Analysis	Radio Shack
	Apple Plot	Apple Computer	1-2-3	Lotus Development	CopyArt II	Simutek Computer Products
	VisiTrend/Plot	VisiCorp	GraphWriter	Graphic Communications		
	Apple II & III Business Graphics	Apple Computer	Graph Power	Ferox Microsystems	Graipak	Microcode
	ANA I	Galaxy	Chart Pro	Micro Control Systems	80 Graphics	MicroLabs
	*PFS Graph	Software Publishing	Chart Master	Decision Resources	Graphics	Quality Software
	Trend Spotter	Software Resources	Chartman	Graphic Software	Graphics	System Design Lab Software
	Executive Briefing System (EBS)		BPS Business Graphics	Business and Professional Software		
		Professional Software Technology	Graph N Calc	Desktop Computer Software		
	Money Decisions Vol I & II	Eagle Software Publishers	Graphit	Tetrad Computer Applications		
	Chart-Master	Decision Resources	Business Graphics System	Peachtree Software		
	Graph Magic	International Software Marketing	Graph Magic	International Software Marketing		
			Energraphics	Enertronics Research		
			*VisiTrend Plot	VisiCorp		

Microcomputers:	APPLE		IBM		TRS-80	
Functional Area	Software	Source	Software	Source	Software	Source
Check Systems/ Writing	Disk-O-Check	High Technology Software Products	Check Writer/Check Book	Computerized Management Systems	Business Checkbook	BIO Data
	Print Check Accounting	CMA Microcomputer Division	Check Writer Check Book	Spectrum Software	Business Checkwriter	Radio Shack
	Check Writer	SouthWest EdPsych Services			Checkbook Accountant	TBL Consulting
	Money Street	Computer Tax Service			Maxi CRAS	Adventure International
					Check Petty Cash Register	Data Soft of New Hampshire
General Business	Practical Basic Programs	High Technology Software Products	Interactive Business System	Marc Fogg Software	Desk Topper-Pac I	CMA Microcomputer Division
	Professional Office Management	CMA Microcomputer Division	Business Master	Masterworks Software	Interactive Business Systems	Marc Fogg Software
	The Financial Partner	Denver Software	The Business Manager	Business Manager		
	Some Common Basic Programs	High Technology Software Products				
	Business Master	Masterworks Software				
WORD PROCESSING	Word Handler II	Silicon Valley Systems	EasyWriter	IBM	'Scripsit	Radio Shack
	'Apple Writer II and IIe	Apple Computer	EasyWriter II	Information Unlimited Software	Super Scripsit	Radio Shack
	'Wordstar Version 3.00	MicroPro International		Perfect Software	Text Processor	Creative Computing Software
	Peachtext (Magic Wand)	Peachtree Software	Perfect Writer	Mark of the Unicorn	Pie Writer	Hayden Book
	PieWriter	Hayden Software	The Final Word		Lazywriter	Soft Sector Marketing
	ScreenWriter	Sierra On-Line	Versa Text Word Processing and Database System	TexaSoft	Docuwriter	Charles Mann & Associates
	Applewriter III	Apple Computer	'WordStar	MicroPro International	Final Word	Mark of the Unicorn
	Bankstreet Writer	Broderbund Software	SuperWriter	Sorcim	WORDIV	Micro Architect
	Format II	Kensington Microware	PeachText	Peachtree Software	Visi-Word	Quality Software
	Magic Window II	Artsci	PowerText	Beauman Porter	'LazyWriter	AlphaBit Communications
	Sensible Speller	Sensible Software	Volkswriter	Lifetree Software	EasyText	Artworx Software
	The Executive Speller	Sof Sys	Spelling Proofreader	Peachtree Software	DeskTopper-Pac I	CMA Microcomputer Division
	Spellstar	MicroPro International	EasySpeller	Information Unlimited Software	Electric Webster Dictionary	Cornucopia Software
	Project Viking	Venturcom	SpellStar	MicroPro International	DemiText Word Processor	Demi-Software
	The Incredible Jack	Business Solutions	Project Viking	Venturcom	Forth Write	Miller Microcomputer Services
	SuperText	Muse Software	Screen Writer	Micro Architect	Newscript	Prosoft
	PowerText	Beauman Porter	Word X	Micro Architect	Docurite	Simplified Software Systems
	EasyText	Artworx Software	Forth Write	Miller Microcomputer Services	Kwikrite	Simplified Software Systems
	Write Away	Avant-Garde Creations	Word Plus PC	Professional Software Technology		
	Docuwriter	CMA Microcomputer Division	The Executive Secretary	Sof Sys		
	Letter Perfect	LJK Enterprises	Pinewriter	Hayden Software		
	Super Text Home Office	Muse Software	PFS Write	Software Publishing		
	Super Text Professional (40 80)	Muse Software				
	The Dic-tio-nary	Sierra On-Line Systems				
	The Executive Secretary	Sof Sys				
	Zardax	Action Research Northwest				

BUSINESS SOFTWARE REVIEWS

The software reviews appear in alphabetical order by title. Source, cost, hardware requirement, and description are included. An index is provided.

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NOTE: In all cases, the disk operating system (DOS) required is the standard machine DOS, that is, DOS 3.3 or 3.2.1 for Apple, TRS DOS for TRS-80, and PC DOS 1.1 or 2.0 for IBM, unless specified otherwise.

Title: **Accounts Payable**

Source: Continental Software

Cost: $250 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, 2 disk drives, printer

Description: Continental's Accounts Payable is one of a set of related accounting programs, each sold under the title The Computer Programmed Accountant (CPA). Although this package is fully capable of stand-alone use, in the set each package can interact with all the others in sharing data. This package accepts invoice data from the user and maintains all the standard files: vendor lists, cash requirements, discounts, payment due dates, aging data, a list of open invoices, and a transaction register. The user directs the program to pay selected invoices, or to pay specified categories of invoices. The computer then prints required checks and enters the data in the check register.

Title: **Accounts Payable**

Source: Peachtree Software

Cost: $595 (as of 12/1/83)

Hardware Requirements: IBM PC, 2 disk drives, printer

Description: As a part of a larger, integrated accounting system for the IBM PC, Peachtree's Accounts Payable provides the small business manager with many valuable tools. Included are vendor records, payment due dates, discount amounts and dates, and cash requirements. The package contains fifteen separate programs that accept input, create further data, prepare reports, and instruct the user as to what further information is needed. Available reports include cash requirements, open invoices, transaction register, aging report, and a vendor file. Once the user directs the computer to pay an invoice, it prints the check and updates the internal check register. The system is menu driven for simplicity of operation.

Title: **Accounts Payable**

Source: Radio Shack

Cost: $499 for Model II and 12; $599 for Model 16 (as of 12/1/83)

Hardware Requirements: TRS-80 Model II, 12, or 16, 2 disk drives or hard disk, 15" tractor printer

Description: This program is part of a complete accounting package, all of which can interact with mutually useable files. This is an accrual system that provides: vendor file, alphabetical vendor list, accounts payable transaction register, aging report, cash requirements, precheck writing accounts, check register, general ledger distribution, and manufacturer analysis.

Title: **Accounts Receivable**

Source: Continental Software

Cost: $250 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, 2 disk drives, printer

Description: This program is one component of the Computer Programmed Accountant (CPA) by Continental. It can be used as a stand-alone system. Accounts Receivable allows for printing invoices or statement billing on purchases. The vendor sells preprinted invoice forms or the user can use regular computer paper. Reports include current receivables, aging receivables, monthly sales, year-to-date sales, customer lists, mailing labels, and general ledger posting reports. The detailed aging report includes customer phone number for quick follow-up.

Title: **Accounts Receivable**

Source: Peachtree Software

Cost: $595 (as of 12/1/83)

Hardware Requirements: IBM PC, 64K, 2 disk drives, printer

Description: This program is designed to interface with the General Ledger System by Peachtree, however, either package can operate alone. This is a complete invoicing and statement-generating package that is fully menu driven for simplicity of use. Customer records including credit information and payment records are maintained automatically. The program provides current accounts receivable as well as three periods of aged receivables. It can also handle customer credit limits, overpayments, prepayments, credits to accounts, and multiple transactions to open accounts.

Title: **Accounts Receivable**

Source: Radio Shack

Cost: $499 for Models II and 12; $599 for Model III (as of 12/1/83)

Hardware Requirements: TRS-80 Models II and 12 require 2 disk drives or hard disk, 15" tractor printer

Description: Part of a fully integrated accounting system, Accounts Receivable allows for open item or balance forward operation that provides for invoicing either at sale or statement billing; current receivables as well as aging reports, with or without details; customer account details such as payment record, discounts, balances, and amount due at any given time; and customer sales tax variations based on tax codes, figuring of commissions, and discounts in computing net amounts due.

Title: **AMOS**

Source: Computer Software International

Cost: $1,850 (as of 12/1/83)

Hardware Requirements: IBM PC, 64K, 2 disk drives, printer

Description: AMOS is a medical database management system that can be used to serve only one doctor or a multidoctor office, or can be used on a networking basis to serve multiple offices. It features medical data and history collection using the national AMA format that lets doctors collect directly from Medicare, Medicaid, Blue Cross/Blue Shield, and EMC. Charges can be specified to patient accounts, statements are generated, mailing labels are printed, and payments are recorded and credited. Appointment scheduling is maintained and the doctor's free time is indicated.

Title: **AppleWriter II**

Source: Apple Computer

Cost: $195 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe with 80-column card, 48K, printer

Description: This is a much improved version of Apple's original AppleWriter. It is a good word processing system for the money and quite adequate for most home and small business applications. It provides a tutorial section in the appendix, which leads the beginner through simple commands. This is not a menu-driven system, so the user must memorize a large number of CTRL keys and special commands. It does, however, have a very complete help subprogram that can be viewed at any time without losing any text in the computer. One advantage of this program is its efficiency. Relatively little memory space is occupied by AppleWriter II at any time, thus allowing for much larger text files than many other word processing packages.

Title: **Autoshop**

Source: Dale-Data Data Processing Service

Cost: $865 & up (as of 12/1/83)

Hardware Requirements: IBM PC, 64K, 2 disk drives, printer

Description: This package solves day-to-day problems associated with the management of an auto repair shop: maintains customer repair orders, customer order invoicing, supplier lists, and mailing lists, and provides profit reports by single jobs or by time frame. It includes a payroll system for employees using any one of four methods to figure gross pay.

Title: **Business Graphics Analysis Pak**

Source: Radio Shack

Cost: $174.95 (as of 12/1/83)

Hardware Requirements: TRS-80 Model III, 48K, disk drive, graphics printer or multipen plotter

Description: The user supplies the type of graphic required, the number of elements, labels, and item values. The program does the rest. Disk files, such as VisiCalc, can be used to provide the data. TRS-80's excellent color graphic printer produces high-quality reproductions of the graphics as seen on the screen.

Title: **Client Billing System**

Source: High Technology Software Products

Cost: $100 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, 132 column printer, 1 or 2 disk drives

Description: Client Billing System keeps track of customer/client transactions using either an hourly or a fixed rate charge. The system will accommodate up to five hundred different rates. Menu driven, the package handles job cost analysis, payments, and charges.

Title: **Computerized Farm Records**

Source: Micro LearningWare

Cost: $99 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, TRS-80, 32K, disk drive, printer

Description: This package provides a very simple general ledger system, tailored specifically for farm operation. It accepts expenses, receipts, and enterprise records. Transactions can be taken directly from the checkbook and deposit slips. It provides reports showing cash receipts and disbursements on a month-to-date and a year-to-date basis either by enterprise or in total. Also available are capital purchase status reports, financial statements, and an income statement. Noncash transactions can be accommodated. The program is fully menu driven. While more expensive

packages provide more sophisticated capabilities, this package performs many functions for a relatively low price.

Title: **Discounted Cash Flow Analysis**

Source: Isaac Software

Cost: $35 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, disk drive, printer

Description: This package discounts or accumulates cash flow at specified interest rates or solves for yield. Cash flow data can be entered for any day in a year from 1950 to 2049. It includes extensive editing and data handling capabilities. Files can be updated or merged as needed.

Title: **EZEntry**

Source: Systemics

Cost: $99.95 (as of 12/1/83)

Hardware Requirements: IBM PC, 64k, 2 disk drives, printer

Description: EZEntry is an order-entry program that stores up to two hundred product codes and can handle up to five hundred orders per storage diskette. It accepts order entries and computes costs, tax, discounts, and wholesale and retail price. It also prints customized invoices. For the user with some computer experience, the files can be interfaced with accounting software; however, this package does not offer that capability.

Title: **General Ledger**

Source: BPI Systems

Cost: $395 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, 2 disk drives, printer

Description: General Ledger by BPI is well respected in the industry. It can be used as a stand-alone system or it can function as a part of the integrated general accounting system by BPI. The very thorough documentation is designed for the nonexpert and a simulated business is set up on diskette to illustrate the program for the beginner. It works from a general journal that interfaces with all other subsidiary ledgers in the system. This system allows for the creation of up to four hundred general ledger accounts, one hundred payroll ledgers, five hundred accounts receivable ledgers, two hundred accounts payable ledgers, two hundred cash disbursements records, and an invoice register. The BPI system includes accounting functions that must be purchased separately in many other systems.

Title: **General Ledger**

Source: Peachtree Software

Cost: $595 (as of 12/1/83)

Hardware Requirements: IBM PC, 2 disk drives, 64K, IBM PC DOS and disk BASIC extension, printer

Description: IBM considers this package to be the "heart" of its total accounting system. It can stand alone or interact with an integrated series of general accounting programs by the same vendor. It maintains a detailed account of all financial transactions and produces balance sheets and income statements. A transaction register is generated by account number, source, entry session, or department, at the user's discretion. It allows for comparison of prior-year records to budget amounts for the current year. Repeating entries are made automatically. The system contains a depreciation-schedule-generating function.

Title: **General Ledger**

Source: Radio Shack

Cost: $499 for Model II and 12; $599 for Model 16 (as of 12/1/83)

Hardware Requirements: TRS-80 Model II, 12, or 16, 2 disk drives or hard drive, 15" printer with tractor drive

Description: This program is designed to stand alone or to interact with the complete accounting system marketed by Radio Shack. It allows for establishment of accounts payable, accounts receivable, and payroll ledgers. The system generates the following reports: income statement, balance sheet, supporting schedules, accounts chart, financial statements, a register of general ledger transactions, trial balance work sheets, and cash flow statements.

Title: **Infotory**

Source: SSR

Cost: $425 for IBM; $295 for Apple (versions are not interchangable) (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, IBM PC, 64K, 2 disk drives, printer

Description: Infotory is a complete inventory management system on Apple with DOS 3.3 and can maintain about 1,200 inventory items; DOS 3.2.1 can handle about 1,000 different items. On IBM, single-sided drives can maintain records on 2,600 different items; double sided drives can handle about 5,000. Documentation is quite complete and the package is menu driven. Infotory allows the user to make entries and inquiries on individual items at will. Inventory reports, sales analyses, cost analyses, and price lists can be obtained, as well as on-hand and on-order cost and numbers for individual items. The program includes a reorder reminder when items are running low in stock and provides a reorder list on command.

Title: **Insure**

Source: The Software Terminal

Cost: $250 (as of 12/1/83)

Hardware Requirements: IBM PC, 128K, 2 disk drives, printer

Description: This package is designed to assist in the management of a small-to medium-sized insurance agency. It stores client records of almost forty items in the client master file. Also included are separate files on policies and paid and pending business. Mailing lists and labels are available on demand.

Title: **Inventory Control**

Source: BPI Systems

Cost: $425 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, IBM PC, 2 disk drives, printer

Description: The BPI Inventory Control package is designed to operate alone or in conjunction with the General Accounting System that includes a total of five applications packages: payroll, general ledger, accounts receivable, accounts payable, and inventory control. This highly automated system is fully menu driven and includes tutorial materials in the documentation to teach the beginning user. Each inventory record includes fifteen items of information. The program takes orders, inquiries, updates, purchases, credit memos, and other user input; produces shipping orders, routing slips, purchase orders, invoices, customer lists, and vendor lists; and provides numerous management reports such as inventory control general ledger, profit and loss statements, trial balances, order lists, and cash receipts, among many others. This is a very complete and versatile system.

Title: **Inventory Control System**

Source: Radio Shack

Cost: $299 for Model II; $399 for Model II and 16 (as of 12/1/83)

Hardware Requirements: TRS-80 Model II with floppy or hard disk, Model 16 with hard disk

Description: The program assists in cycle counting, ordering, and report generation. As purchases are made, the program posts receipts, prints mailing labels, and fully maintains files on listed items. Inventories are updated as purchases are made and reorder lists and company purchase orders are prepared as inventories are depleted.

Title: **KYC (Know Your Client)**

Source: Executive Microcomputing Software

Cost: $124.95 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, IBM PC, 48K, disk drive, printer optional

Description: KYC is a client-prospecting and follow-up system. It maintains information on client name, title, address, phone, company name, and data on last contact; keeps track of "callback requests"; and provides lists of clients who have not been contacted in the last thirty and sixty days. Mailing lists and mailing labels can be generated.

Title: **Lazy Writer**

Source: AlphaBit Communications

Cost: under $50 (as of 12/1/83)

Hardware Requirements: TRS-80, 32K, disk drive, printer

Description: Using this standard word processing package, the operator can produce letters, forms, memoranda, mail labels and lists, manuscripts, and other written material of any length. Features are fairly standard. Included are boldface and underlining, which are not contained in many word processing packages.

Title: **Money Decisions, Vol. I, Vol. II**

Source: Eagle Software Publishers

Cost: $199 for Vol. I; $229 for Vol. II; $399 for Vol. I and II (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, IBM PC, TRS-80 (TRS-80 uses CP/M), disk drive, printer

Description: This is a sophisticated set of programs that facilitates management decisions. It allows such comparisons as lease versus buy and provides analyses of break-even points. Trend analysis and projection and pricing and production decisions are handled as well as capital budgeting. In addition, the program has extensive graphics capability for graphic analysis and additional applications for accounting, banking, manufacturing, medicine, construction, civil engineering, and equipment leasing. Vol. I consists of thirty-four programs, Vol. II has thirty-six programs.

Title: **Multiplan**

Source: MicroSoft

Cost: $250 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, IBM PC, TRS-80 Model I, II, III, disk drive, printer

Description: Multiplan is an electronic spreadsheet with up to 255 rows and up to 63 columns. Each cell in the matrix starts out blank, but the user can enter numbers, labels, or formulas as desired. No knowledge of programming is required; however, effective use of such programs requires that the user learn the package and its commands thoroughly. Tutorial examples are included in the documentation for this purpose. Multiplan allows the user to "link" up to eight different files on the diskette for more complex analyses. This feature allows the user to make an entry on one spreadsheet and have all of the cells that are affected in the other sheets automatically updated. Electronic spreadsheets are ideal for financial projections, comparison of management alternatives, and answering "what if" questions using budget data or production data. Like other spreadsheets, Multiplan can be used in such "modeling" or simulation roles.

Title: **Order Entry/ICS**

Source: Radio Shack

Cost: $499 for Model II; $599 for Model 16 (as of 12/1/83)

Hardware Requirements: TRS-80 Model II and 12 with 4 disk drives or hard disk, Model 16 with 3 disk drives or hard disk, 15" wide printer

Description: This package is one part of a complete accounting system marketed by Radio Shack. It requires and interacts with the Accounts Receivable package and feeds information to the Sales Analysis Program. Orders are entered and edited as needed. The program provides the following reports: item receipt register, billing register, picking tickets, order list, price list, item stock status report, and a purchasing advice report. The program allows either single-pass invoicing or a two-pass order with separate billing.

Title: **The Order Scheduler**

Source: High Technology Software Products

Cost: $150 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, printer, 2 disk drives

Description: The Order Scheduler accepts purchase order entries from the user and maintains them on a first-in, first-out basis until they are shipped. It prints a complete daily shipping list, maintains a current inventory of shipped items, and deletes items from inventory as they are purchased. Purchases that are to be filled repeatedly can be entered once and reactivated at the specified interval. The system can handle up to five hundred separate purchase orders at a time.

Title: **P.A.C.E. (Prompt Accurate Cost Estimator)**

Source: High Technology Software Products

Cost: $395 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, III, IBM PC, 64K; 2 or 3 disk drives, 132-column printer

Description: P.A.C.E. is a general purpose cost estimation system that accepts detailed budgetary input from the user. As in all spreadsheet-type programs, it is not a substitute for accurate budgeting and record keeping on the part of the user. It provides a detailed statement of estimated cost, including a list of resources needed and time requirements. When prices or estimated data change, the program automatically recalculates and updates throughout the system.

Title: **Payroll**

Source: Continental Software

Cost: $250 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, 2 disk drives, printer

Description: Continental Software has assembled a complete four-module accounting system, of which Payroll is one part. Complete personnel files are maintained on each employee to include: time worked, wage or salary, earnings, withholdings, vacation time earned and used, sick leave time earned and used, and more. The program includes current federal income tax and FICA tables that can be updated by the user as they change. The program calculates the payroll, prints the checks, and updates the payroll account automatically. For an additional fifty dollars yearly, Continental will supply updated tax data disks.

Title: **Payroll**

Source: Radio Shack

Cost: $599 for Model II and 12; $699 for Model 16 (as of 12/1/83)

Hardware Requirements: TRS-80 Model II, 12, or 16 with 2 disk drives or hard disk; 15" printer with tractor drive

Description: This is a complete payroll system that accepts wage or salary data, computes payroll, and prints checks. It then interfaces with the general ledger system to update the payroll account contained there. It handles hourly or salaried employees and allows up to seven different payroll frequencies. Vacation, sick leave, and recall information are maintained, and up to one year of detailed pay history can be recalled. The package computes deductions for taxes and prints out W-2 forms at the end of the year.

Title: **PFS:File**

Source: Software Publishing

Cost: $125 for Apple; $140 for IBM (as of 12/1/83)

Hardware Requirements: IBM PC with 64K, Apple II, II+, IIe, with 48K; 1 disk drive required, 2 disk drives preferred; printer

Description: A very sophisticated data management system, PFS:File has excellent documentation and is easy to learn and simple to use. It allows the user to develop virtually any data format required. The screen shows exactly what the printed matter will look like to facilitate form design. Item lengths are completely open up to the maximum length of a given form. This feature allows for descriptive material or remarks sections to be included. The current version includes numerical or alphabetic searches and sorts: keyword, greater than, less than, between, and "not" searches. Updating of existing entries, addition of new entries, and reformatting of existing formats can be accomplished without loss of data previously entered. Mailing labels, checks, and forms of almost any kind can be printed. Only one type of form can be maintained per disk, which seems a bit wasteful of disk space; however, this cuts down on the likelihood of errors. The programs can search any combination of fields at one time. If the form is developed with sorting in mind, the program can sort more than one field at a time.

Title: **PFS:Graph**

Source: Software Publishing

Cost: $175 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 64K, 2 disk drives, graphics capable printer with graphics interface, color monitor preferred but not required for monochrome display

Description: PFS:Graph produces line, bar, and pie graphs in monochrome or color. While true text is not available, the high-resolution graphics text generator provides a labeling capability for this program. Data stored on PFS:File can be used to generate graphs, or data can be specified separately. Pictures are saved as binary files that can be "dumped" onto graphics-capable printers.

Title: **Property Listings Comparables**

Source: Realty Software

Cost: $325 (as of 12/1/83)

Hardware Requirements: IBM PC, disk drive, printer

Description: This package provides a system for the maintenance of property listings and comparable recent sales. It allows for the selection of appropriate listings by price range, number of bedrooms, number of units, city, and zone. One characteristic or a combination of characteristics can be specified by the prospect and the program selects all appropriate listings. Performance selections can be made based on a maximum gross factor, maximum price per square foot of improvements, and minimum cash flow required, in any combination.

Title: **The Prospector**

Source: Executive Data Systems

Cost: $300 (as of 12/1/83)

Hardware Requirements: IBM PC, 128K, disk drive, printer

Decription: This is a sales prospect and follow-up organizer. It supports sales efforts using personal sales calls, keeps a file on customers, assists in direct mail advertising by printing mailing lists, separates regular clients from prospects, maintains supplier lists, and prints mailing labels. All lists can be broken down into subsets based on user-specified criteria.

Title: **Restaurant Inventory Control and Cost Analysis Program**

Source: Advanced Analytical Computer Systems

Cost: Contact vendor for quote

Hardware Requirements: IBM PC, 128K, 2 disk drives, 132-column printer

Description: This program maintains a perpetual inventory and supply reorder list and provides the capability to conduct a food cost analysis, menu item analysis, sales mix analysis, and a current menu item cost analysis. As the inventory control detects an upcoming shortage, a list of food item reorders is generated along with printed purchase orders. This program can be used in all types of restaurants and bars. Vendor/supplier lists are maintained and can be updated as needed.

Title: **Sales Analysis**

Source: Micro Business Software

Cost: $1,000 for source code; $200 for object code (as of 12/1/83)

Hardware Requirements: Apple II, II+, and IIe with CP/M only with 4 disk drives, IBM PC 64K using PC DOS with 4 single-sided or 2 double-sided disk drives, printer

Description: This package is designed for use with the vendor's Accounts Receivable and Order Entry/Inventory Control packages. For that reason, it is not a stand-alone system. This system produces the sales analysis reports by customer, customer category, state, item, item category, sales person, and for total sales.

Title: **Sales Analysis**

Source: Radio Shack

Cost: $299 for Model II and 12; $399 for Model III (as of 12/1/83)

Hardware Requirements: TR-80 Model II or 12 with 4 disk drives or hard disk; Model 16 with 3 disk drives or hard disk, 15" printer with tractor feed

Description: This is the final component in the complete accounting system from Radio Shack. It takes data from the customer file of the Accounts Receivable package or the item file of the Order Entry/ICS program. Analyses include sales activity by customer, sales activity by type of customer (determined by user), sales volume by customer, sales volume by salesperson, summary by state, summary by item or item category, and total sales volume.

Title: **Scripsit**

Source: Radio Shack

Cost: $399 (as of 12/1/83)

Hardware Requirements: TRS-80 Model II or 12, disk drive, printer

Description: Scripsit is Radio Shack's answer to AppleWriter II and IBM's EasyWriter. It is a very good general purpose word processing system and includes all of the expected features. In addition, this program allows for underlining, subscripts, superscripts, and boldface type. Scripsit is a screen-oriented system, which means that the printed material will be essentially identical to the screen version, with the exception that formatting of printed copy can be done by means of commands embedded in the text itself.

Title: **The Store Manager**

Source: High Technology Software Products

Cost: $250 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, 2 or 3 disk drives

Description: The Store Manager accepts order entries and maintains continually updated inventory on a maximum of 1,160 different items. It provides up-to-the-minute sales totals for the entire store or by item. In addition, it prints customer invoices, price quotations, receiving reports, packing slips, purchase orders, and expense vouchers. The program is menu driven and uses plain English to communicate with the user. Also available on command are inventory reports, reorder lists, item movement report, item turnover report, alphabetized listings, and presorted mailing lists.

Title: **Tax Decisions**

Source: Eagle Software Publishers

Cost: $299 for IBM; under $200 for Apple and TRS-80 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model I, II, III using CP/M, IBM PC, printer

Description: Tax Decisions was developed by tax professionals to be used by members of the profession. It performs most routine tax number crunching to allow the tax planner to concentrate on tax planning instead of computation. As with any tax program, the user should make sure the program version is the current one and conforms to present tax laws and regulations.

Title: **Time Manager**

Source: Image Computer Products

Cost: $150 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K, printer (An internal clock and 80-column board are optional.)

Description: Time Manager provides a personal or professional desk calendar. It generates daily agenda and "to do" lists. Uncompleted items move to the next day. Items are given priority according to a user-assigned code. Permanent dates such as holidays need be entered only for the first year; they will appear each year thereafter.

Title: **Time Manager**

Source: IBM

Cost: $100 (as of 12/1/83)

Hardware Requirements: IBM PC with, 64K, 1 or 2 disk drives, printer

Description: A simple-to-use program, Time Manager provides the user with a computerized desk calendar. Not only does it maintain a schedule of appointments, it provides daily agenda, a daily "to do" list, and an automatic reminder of important deadlines. It tracks events and expenses individually or by category; data can later be collected in several categories to support, for instance, tax records.

Title: **Time Manager**

Source: Radio Shack

Cost: $99.95 (as of 12/1/83)

Hardware Requirements: TRS-80 Model I and III, 48K, disk drive, printer optional

Description: This relatively simple program maintains a personal or professional appointment calendar and provides a reminder for scheduled meetings and deadlines. In addition, Time Manager provides a permanent record, daily "to do" lists and agenda, and uncompleted items are automatically transferred to the next day's list.

Title: **VersaPayroll**

Source: H&E Computronics

Cost: $99.95 (as of 12/1/83)

Hardware Requirements: IBM PC, 2 disk drives, printer, 48K

Description: This is one component of the complete five-program VersaBusiness System, but can be operated as a stand-alone system. It maintains complete payroll and financial data on all employees of a small business. It includes current tax tables that can be manually updated as the rates change. The program computes payroll, prints the checks, updates the payroll accounts, and prints out employee data sheets and quarterly reports. At year-end, W-2 forms are provided. A thirty-day money-back guarantee is included with the purchase.

Title: **VisiCalc**

Source: VisiCorp

Cost: $200 for IBM; $250 for Apple; $299 for TSR-80 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, IBM PC, TRS-80 Model I, II, III, disk drive, printer

Description: The all time best seller among electronic spreadsheets, VisiCalc provides a maximum of 254 rows by 63 columns. Each cell can accept a number, label, or a formula that automatically calculates a numerical entry for the user. Formulas can be specified for individual cells or replicated easily for segments or complete rows or columns. The excellent documentation includes tutorial materials to help the user learn the package's features and commands, which do tend to be a bit cryptic and confusing at times. Electronic spreadsheets are very useful for making economic projections, alternative comparisons, and answering "what if" questions using budget or production data. Routine calculations and recalculations resulting from additions or changes in any data cell are done automatically, resulting in greater accuracy and less work than manual spreadsheet work.

Title: **VisiDex**

Source: VisiCorp

Cost: $250 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe with 48K; IBM PC with 64K, disk drive, printer

Description: VisiDex is a data and time management system. It allows the user to organize business or personal information and provides a file maintenance system. Names, addresses, phone numbers, dates, "to do" lists, records of decisions and meetings, highlights of reports, tax information, and stock can be maintained. The program allows unlimited cross-referencing. A daily calendar is provided for maintaining appointments and for keeping track of upcoming events.

Title: **VisiSchedule**

Source: VisiCorp

Cost: $300 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe with 48K; IBM PC with 64K, at least 2 disk drives, printer

Description: Complex project planning and scheduling are done with relative ease using VisiCorp's new VisiSchedule. Critical time paths are determined, automatically based on input characteristics. It allocates time, costs, specifies start and end time, vacation days, intermediate deadlines, and project slack time for machines and workers. This is a powerful simulation-modeling tool for decision making as well, because the user can address "what if" questions simply by changing input characteristics.

Title: **VisiTrend/Plot**

Source: VisiCorp

Cost: $300 (as of 12/1/83)

Hardware Requirements: IBM PC, 128K, disk drive, color graphics monitor adapter, color monitor, printer with graphics capability and graphics dump interface

Description: VisiTrend/Plot produces professional quality graphic displays of line, bar, pie, and hi-low charts, with IBM's superior graphics and mixed text capability. It accepts data manually or from VisiCalc files. Linear multiple regression projections are calculated from VisiCalc data and the projections are graphically presented. Trend projection is done with straight line, smoothing, or moving averages.

Title: **WordStar**

Source: MicroPro International

Cost: $495 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, with CP/M capability and 80-column card, IBM PC, 48K, 1 or 2 disk drives, printer

Description: This is generally regarded as one of the better commercial quality word processing systems, although somewhat complicated to master. WordStar is a screen-oriented system, which means that the text will appear on paper as it appears on the screen. While this decreases the amount of text that can be stored as a single file, the advantages of this system are obvious. WordStar is the single most popular word processing system for the Apple.

MICROCOMPUTER TRAINING

To assist vocational educators in planning and implementing programs, advisory committees should be represented by industry personnel currently using computers in their operations. Business personnel could also be contracted to teach specialized courses when qualified teachers are not available. In addition, working partnerships with (or at least frequent visits to) local small businesses in the teacher's occupational area that use computers could be excellent sources of information. Beyond this, vocational educators should seek additional microcomputer applications. Just because local farmers, for example, are not using electronic marketing is no reason the agriculture teacher should not organize adult classes on the subject. In fact, that is probably the best reason to do so. Similar examples could be given for any vocational program.

Simply knowing what the uses of the microcomputer are in an occupational area is not enough. Vocational teachers must be able to perform those tasks before they can teach them. There are several ways for teachers to gain the skills needed. Teacher education institutions offer courses and noncredit inservice workshops. State departments of education provide inservice workshops. Computer companies offer free or low-cost classes.* Computer users groups have sprung up all over the country. Moreover, most applications software can be self-taught by using tutorials in the program documentation. In addition, there are texts and programmed instruction available for using the more popular software packages.

Program planners may benefit also by attending the workshop designed to complement this guide. The workshop is offered by the National Center for Research in Vocational Education. In addition to familiarizing participants with instructional software and software with application for small business management, the workshop is designed to develop skills in systematic program planning.

In short, small businesses are rapidly adopting the microcomputer as a management tool and are in need of intelligent, unbiased advice and instruction on microcomputer use. If schools do not provide this instruction through existing adult education programs, then the microcomputer industry may be small businesses' only source for such instruction.

Organizational Approaches

Consideration must be given to the infusion of microcomputer training into vocational education at all levels—from prevocational exploratory programs to postsecondary programs to out-of-school programs. Vocational educators frequently think first of traditional in-school groups, ignoring less-structured adult programs. Certainly both of these audiences need and deserve this important new training.

*Instruction provided by vendors is usually slanted toward the products that they sell.

Adult education has been a traditional function of vocational education for many years, from informal short courses adjunct to the secondary program to structured, certificated programs at the postsecondary level. Following are suggested organizational structures and training methods vocational educators can use in training small business employees and potential employees to use microcomputers.

Secondary Level

A number of existing vocational education structures should incorporate microcomputer business applications instruction into their curricula. The first and most obvious is the traditional secondary school vocational program.

If the responsibility of secondary-level vocational educators is to train their students for entry-level employment, then instruction in microcomputer applications must be made an integral part of literally every vocational program. The farmer or agribusinessperson, for example, who is not computer literate will be at a serious disadvantage to his or her competitors who have mastered this important management tool. The prospective salesperson who cannot effectively deal with computers will find unnecessary limitations on available jobs.

This is not to imply that all vocational education teachers should teach word processing and other generic office skills in their classrooms and labs. Clearly this responsibility remains with business and office education. However, the rapid shift toward office automation dictates parallel changes in the traditional business and office education program in the secondary schools. Businesses of all sizes are coming to rely ever more heavily on the computer. In the case of small businesses, this usually means microcomputers because of their lower cost and more ready availability compared to mainframe computers and minicomputers. For the same reasons, this also means microcomputers in the business and office education departments of our secondary schools.

In a few schools this translates into computer programming and data processing offerings in the business department. In fewer cases, this means separate computer programming and operating offerings under some other vocational service area, normally trades and industry. In still fewer cases, this becomes specialized computer repair courses. All have implications for small business operations that need trained computer technicians, word processor operators, data processing specialists, and other workers whose work involves using computers.

Vocational education teachers have a responsibility to train entry-level workers in occupation-specific functions. For example, workers in virtually every occupational area use computers to perform functions peculiar to that occupation. For example, the tool and die and metals fabrication industries rely upon computer-assisted design (CAD), computer-assisted manufacturing (CAM), and computer-controlled robotics in their operations. No doubt, the future will see more rather than less reliance on computers in this very technical field.

Another traditional program that should be including occupation-specific computer applications is consumer and homemaking education. Diet analysis and planning, household budgeting, family income tax management, investment planning, information networking, and time management planning are just a few of the microcomputer applications that will be important to the homemaker of the future. It is the responsibility of home economics teachers to train their students in these emerging skills.

Order entry, inventory control, and many other computerized functions should be taught in marketing and distributive education. Feed content analysis and enterprise planning should be included in vocational agriculture.

Similar examples could be given for other vocational programs. The important thing to recognize is that it is the responsibility of vocational teachers to train their secondary students to use computers as occupational tools—particularly microcomputers—since they are the most affordable and numerous. This does not mean separate computer courses for each vocational program. Rather, it means using microcomputers as a routine part of the regular courses, just as cash registers, typewriters, welders, and sewing machines have been used as occupational tools. This basic responsibility is the first step in training for the use of microcomputers in small businesses.

Postsecondary Programs

Similar logic leads to the same conclusion regarding both credit and noncredit postsecondary programs. At this level instructors train students for specific occupations that currently use computers. Also, as at the secondary level, generic business and office skill instruction is, and should remain, the responsibility of business education departments.

Further, business education departments may need more microcomputers than most other programs. Just as traditional typewriting is rapidly being replaced by word processing, so too must the typewriter eventually be replaced by word processors in the vocational laboratory. And, as record keeping on paper ledgers is rapidly being replaced by computerized accounting systems, so too must vocational educators begin to teach these more advanced skills to students—that is, if these students are to be adequately prepared for occupations in the business world of the future.

As at the secondary level, virtually every postsecondary vocational instructor should be prepared to train students in the occupation-specific computer skills required by their respective industries. One example is the health field. Postsecondary programs training practical nurses, laboratory technicians, emergency medical technicians, and medical and dental office workers cannot afford to ignore the role of computers. The majority of graduates of these programs will go into individual medical offices and small businesses where they will no doubt be using microcomputers.

It could be argued that certain workers such as electricians have less need for computer training than do other workers. Such an assertion is valid only to a limited degree. For those workers who find employment in small businesses, it becomes even less valid. The general contractor or subcontractor who must make job cost estimates; maintain inventories, financial records, income tax records, and employee records; develop financial reports; apply for loans; and generally function as a small businessperson, needs to use the microcomputer. Admittedly, small businesspersons may have survived in the past very well without computers. However, in the future the small businessperson who effectively uses the capabilities of the microcomputer will have a decided advantage over the businessperson who relies entirely on paper, pencil, and calculator.

Adult Education

It is at the level of adult education that vocational educators can have the most immediate impact on the small business community. Large industries invest many millions of dollars annually in updating, training, or retraining their workers, whereas small businesses must rely on either

public or proprietary educational systems, particularly vocational education, to provide training for their workers.

Adult education programs traditionally have been real-world, problem-oriented, short courses offered periodically under the auspices of vocational education. The advent of microcomputer technology now provides an additional real-world problem that deserves immediate attention by all vocational educators. Examples of program areas and appropriate courses for adults are as follows:

- The business instructor at both secondary and postsecondary levels should offer word processing and automated data processing courses on their microcomputers.
- The industrial arts teacher should teach robotics and CAD/CAM for small business.
- The agriculture teacher should teach farm management and decision making through the Young Farmer program or other adult programs.
- The automotive instructor should teach automated parts management.
- The marketing teacher should teach inventory control on the microcomputer.

Training Methods

In teaching computer use, there are three specific training methods, or approaches to instruction, that can be utilized by vocational educators. These are computer-assisted instruction (CAI), in-school businesses, and the project approach to instruction.

Computer-assisted Instruction (CAI)

One intriguing capability of the microcomputer is its ability to interact with its user. This characteristic allows the machine to give instruction. This approach is called computer-assisted instruction and consists of any actual instruction that a computer presents to the learner.

CAI can take many forms. The simplest form is drill and practice. A drill and practice CAI package teaches a specific skill to the student by reinforced repetitions of the task. For small businesspersons, this is exemplified by various typing instructional packages available for most major microcomputers today. These typing packages teach typing by means of practice sessions of increasing difficulty; keep track of learner progress; and administer typing tests, score them, and point out areas of strength and weakness. Thus, businesspeople who need to learn or improve their typing can do so without attending formal classes.

A somewhat higher level of learning can be accomplished by means of CAI tutorials. A tutorial package teaches cognitive or psychomotor skills. Many of the better commercial applications software packages include tutorial materials as a part of the initial purchase. Often these include not only computer software, but also written tutorial materials. A large number of CAI tutorials are available to teach concepts not limited to specific applications software. Several major microcomputer manufacturers have tutorials that teach users how to write their own programs.

The form of CAI that takes most advantage of the computer's inherent capabilities is the simulation. A simulation is simply a model designed to represent some real-life situation. Typical simu-

lations use mathematical models to allow learners to respond to a particular situation and then tell students what the probable result of their responses would have been. A variety of microcomputer CAI simulations are available today to teach economic and business concepts and skills, and several are reviewed in the next section.

Although excellent commercial CAI simulations are available, probably the most valuable instructional program for the small businesspeople is one that applies to their actual situations. For example, the most useful simulations are those that vocational teachers can develop using business programs such as electronic spreadsheets. The use of commercial applications software in this mode does not take up that much extra time. Essentially, the teacher constructs sample data sets and then enters them on an electronic spreadsheet such as VisiCalc, MagicCalc, and SuperCalc. By varying any parts of the data in class, the instructor can show the probable results of real-world business decisions. As an example, a farmer may be interested in the effects of deleting an acre of corn and adding an acre of soybeans. By using such a spreadsheet, the adult agriculture teacher not only teaches the farmer the value of adequate records and how to construct budgets, but can answer numerous "what if" questions.

In-School Businesses

One of the long-standing teaching tools of vocational education has been the in-school business. Whether the school store that sells student supplies, the auto shop that performs live work, or the greenhouse that sells plants to the public, such enterprises offer opportunities for vocational students to learn real-world skills in structured settings. The teacher who makes all the management decisions without student input is missing a great teaching vehicle. Moreover, as microcomputers continue to invade the small business world, it is incumbent upon the vocational teachers to ensure that their students receive realistic training—and that means business-related computer experience.

Does that mean teaching vocational students to program computers? Must every vocational teacher become a computer programmer? Hardly! It would be difficult to imagine a more superfluous skill for the average vocational teacher or student. However, it does mean learning to operate the computer as one learns to operate a typewriter or a duplicating machine. It does mean learning to run a business applications program as one would learn to play a videotape or fill out a records book.

Additionally, the school farm equipment inventory, depreciation schedule, financial records, and production records should be computerized and the students should learn to operate the programs. The school store should computerize its inventory control, purchasing, and financial records and the students should perform the routine data processing and analysis functions. Every vocational area operating any type of school business should computerize its business operations and teach its students to access, use, and analyze those records. This not only allows for a more efficient operation of the school business, the student gains additional job skills.

Project Approach

Much work has been done in recent years regarding entrepreneurship training in vocational education. This concept does not differ substantively from the farm project approach traditionally used in vocational agriculture before the Smith-Hughes Act of 1917 was enacted. For the purposes of this guide, these approaches will be referred to collectively as the project approach.

In the project approach to instruction, students are expected to establish and manage their own business enterprises. It may be as small as operating a newspaper route, or it can be as large as carrying out a farming operation. Regardless of its nature, all of the responsibilities, risks, and opportunities normally inherent in small business operation accrue to the students, except on a smaller scale and with the advantage of a teacher to provide advice and guidance.

Students who have accepted the responsibility to carry out business enterprises on their own, and who stand to earn or lose money as a result of their efforts, are easily motivated. The project approach provides an ideal vehicle to train future entrepreneurs to use microcomputers in small business operation. In fact, it is in this setting that the microcomputer becomes most valuable. Keeping project records, expenses, receipts, and customer and vendor lists; preparing business correspondence; and performing other routine business operations are perfect examples. In general, students like to work with computers. For the student with profit as the additional motivation, the value of the microcomputer as a business tool makes learning business applications software important. Although this approach would not be appropriate for use with a small business operator or manager, it does provide excellent preparation for potential employees of small businesses.

INSTRUCTIONAL SOFTWARE REVIEWS

Instructional software differs in both form and substance from business applications software. The former is concerned with user self motivation, instruction, evaluation, and feedback. It must be attractive and often relies on graphics and sound effects. The latter assumes user motivation, provides instruction only in the documentation, and is concerned with performing a function efficiently. For more explanation of these differences, see the section entitled Evaluation of Software.

Following is an alphabetical listing and description of selected instructional software packages available for teaching concepts and skills in small business management. Each review includes title, source, cost, hardware requirements, and description. Sources' addresses and phone numbers are in appendix A.

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Guide to Instructional Software Reviews

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Title: **Accounting Applications for the Microcomputer**

Source: Gregg/McGraw-Hill

Cost: Check with vendor

Hardware Requirements: Apple II, II+, IIe, 32K, TRS-80 Model III, 2 disk drives, printer

Description: This tutorial and simulation teaches the student concepts and procedures in general ledger, accounts receivable, accounts payable, and payroll. This is not a self-contained course, but should be used as a supplement to regular instruction in accounting or computerized accounting.

Title: **Advertising Techniques**

Source: Micro LearningWare

Cost: $24.95 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, minimum 32K, disk drive

Description: This tutorial package teaches general advertising concepts rather than providing realistic "how to" instruction for small businesspeople who need to learn how to do their own advertising; however, it would serve as an introduction to the topic.

Title: **Agriculture Marketing and Commodity Futures**

Source: Micro LearningWare

Cost: $449 (as of 12/1/83)

Hardware Requirements: Apple II, disk drive, printer

Description: Although this software is actually designed as an industry applications package, it provides tutorial materials and can easily be used with real or simulated data to teach farm management decision making. Included are programs to compare storage alternatives, new crop alternatives, and livestock alternatives; to maintain storage, crop, and livestock budgets; and to examine and maintain up to ten future accounts.

Title: **A Microcomputer Testing Program for Accounting: Systems and Procedures**

Source: Gregg/McGraw-Hill

Cost: $175 for 4-disk set; $2.40 for teacher's manual (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model III, disk drive, printer

Description: This is an objective test covering concepts and skills learned in the accompanying text. The program gives immediate feedback to students and prints class reports for the teacher.

Title: **Automated Accounting for the Microcomputer**

Source: South-Western Publishing

Cost: Individual student diskette for $37.50 (only available to one student at a time); driver program for $59.50 that allows any number of students to use the program; text and workbook for $6.83 (advanced version that allows networking to a teacher-controlled computer available for TRS-80 Model III & IV only) (as of 12/1/83)

Hardware Requirements: Apple II; II+; IIe; TRS-80 Model I & II, 32K, disk drive, printer

Description: In this computer program system for teaching automated accounting, the student moves through ten chapters, while receiving related classroom instruction specified in the teacher's manual. Simulations with tutorial materials are used to teach computerized general ledger, processing journal entries, production of financial statements, accounts receivable, accounts payable, and payroll.

Title: **Business Education Package I**

Source: Micro LearningWare

Cost: $24.95 complete (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model I & III; 32K when used with disk; 16K required for TRS-80 cassette version, printer optional

Description: A combined tutorial and simulation, this package teaches students how to calculate loan amortization, bank statement reconciliation, and depreciation in three separate programs. A fourth program provides a stock market simulation game.

Title: **Business Education Package II**

Source: Micro LearningWare

Cost: $24.95 complete (as of 12/1/83)

Hardware Requirements: TRS-80 Model I & III, disk and 32K or cassette and 16K

Description: A tutorial provides instruction in basic accounting concepts such as the T-account, double entry journals, ledgers, and financial statements. A simulation of a general ledger allows students to make entries and to display but not print trial balances, account balances, and financial statements. An additional program allows students to calculate annuity values based on amount invested, interest rate, and amount and frequency of withdrawals.

Title: **Business Education Package III**

Source: Micro LearningWare

Cost: $24.95 (as of 12/1/83)

Hardware Requirements: Apple II, IIe, II+, TRS-80 Model I & III, disk drive, 32K, printer

Description: This package contains a complete general ledger system. Essentially it is an applications package, except that it includes two complete simulation project sets with solutions.

Title: **Business Volume I**

Source: MECC

Cost: $37 (as of 12/1/83)

Hardware Requirements: Apple II (32K), disk drive

Description: This is a collection of practical programs—i.e., interest on installment buying, effects of simple and compound interest, loan amortization, business financial reports, money supply, payroll, and the 1040A form—that are useful in a variety of business education settings. A tutorial format is used.

Title: **Business Volume II - Payroll**

Source: MECC

Cost: $39 (as of 12/1/83)

Hardware Requirements: Apple II, 32K, two disk drives, printer

Description: A simulation allows the class to set up and operate a complete payroll for a hypothetical company's automated payroll, print checks, and prepare quarterly reports and W-2 forms.

Title: **Business Volume III - Accounting**

Source: MECC

Cost: $56 (as of 12/1/83)

Hardware Requirements: Apple II, 32K, disk drive, 132-column printer

Description: A simulation provides students with structured experiences on accounts payable, accounts receivable, general ledger, and inventory control systems. The set includes source documents from which students extract information. Complete sets of reports are returned to students in printed form.

Title: **Cartels & Cutthroats**

Source: Strategic Simulations

Cost: $39.95 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, 48K

Description: This is a business management simulation game designed for use at either high school or college level. The game accepts up to six players or teams. Each player is required to set production levels, purchase raw materials, set selling price, make advertising decisions, and perform several management functions. In addition, the program provides complicating factors with which companies must contend, such as strikes, technological advances, changing interest rates, and others. Each player receives profit and loss statements, balance sheets, sales reports, and other management reports.

Title: **Change Maker**

Source: Micro LearningWare

Cost: $8.95 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, disk drive, 32K

Description: In this very simple drill and practice for making change, the student is given no instruction in how to make change, but must practice listing the correct number of pennies, nickles, and so forth, given a cost and amount tendered.

Title: **Data Entry Activities for the Microcomputer**

Source: South-Western Publishing

Cost: $59.50 for diskette; $4.16 for text and workbook (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model I and III; minimum 32K; disk drive

Description: Through a sequence of eleven progressive learning activities guided by a workbook with problems and solutions, the students look at the history of data entry, inventory control, accounts receivable, accounts payable, bank statement reconciliation, payroll, general ledger, and point-of-sale terminals. The teacher's manual includes exams and answers.

Title: **The Electronic Spreadsheet**

Source: MECC

Cost: $42 for software; $4.50 for student's manual (as of 12/1/83)

Hardware Requirements: Apple II; disk drive, printer (user supplies VisiCalc)

Description: This tutorial introduces the student to the VisiCalc spreadsheet and its commands and provides practice problems along with solution sheets. The diskette includes templates for use in solving some of the practice problems. Problems are grouped for use in specific business courses.

Title: **Enterprise Sandwich Shops**

Source: Gregg/McGraw-Hill

Cost: $199 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model III; minimum 32K, disk drive, printer

Description: In this simulation game of a small business operation, the student is required to make purchasing, advertising, and pricing decisions. Seasonal demand shifts are taken into account, as well as spoilage, personnel decisions, equipment, and inventory.

Title: **Free Enterprise**

Source: SRA Software

Cost: $100 (as of 12/1/83)

Hardware Requirements: Apple II+ (48K), IBM PC (64K), disk drive, printer

Description: This is a simulation of competing companies making the same product. Up to six students or groups of students are allowed to compete against each other. The measure of success is overall profit or some other agreed-upon criterion.

Title: **KeyStrokes**

Source: Houghton Mifflin

Cost: $30 for user's manual and diskette; $2.25 for teacher's manual (as of 12/1/83)

Hardware Requirements: Apple II+, Apple IIe, IBM PC, TRS-80 Model III, disk drive, printer

Description: This drill and practice touch-typing package teaches keyboard skills in an increasingly difficult progression. It uses real prose rather than "nonsense" letters. This package is suitable for the beginner who needs to learn the keyboard and the advanced student who needs to improve speed and accuracy.

Title: **Market Trend Program**

Source: Southern Minnesota Software

Cost: $19.95 (as of 12/1/83)

Hardware Requirements: TRS-80 Model I or III, 16K, disk drive or cassette recorder

Description: A very simple applications package, this program allows the user to track stock market highs, lows, closes, and volumes on a daily or weekly basis. It is useful as a class activity with real data as a teaching tool.

Title: **Metro Office Systems: A Computerized Payroll Application**

Source: Gregg/McGraw-Hill

Cost: $110 for software, $4 for student's manual, $4 for teacher's manual and key (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model III, 2 disk drives, printer

Description: This package was designed for use with the software package Payroll Records and Procedures by the same manufacturer. Students use a practice set of source documents and other data to construct computerized payroll for a simulated company.

Title: **Microcomputer Accounting Applications**

Source: Gregg/McGraw-Hill

Cost: $150 for software; $4.20 for text and workbook, $2.52 for teacher's manual (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model III, disk drive, printer

Description: This simulation allows students to apply accounting procedures taught in a regular class setting to gain experience in computerized accounts receivable, accounts payable, payroll, and general ledger.

Title: **Microcomputer Activities for Recordkeeping**

Source: Houghton Mifflin

Cost: $4.50 for student activities book, $59.97 for 2 diskettes, $2.25 for teacher's manual (as of 12/1/83)

Hardware Requirements: Apple II+, Apple IIe, IBM PC TRS-80 Model III; disk drive; printer

Description: In this simulation of eight entry-level, record-keeping transactions, the student uses source documents such as invoices and purchase orders to produce a daily sales report, cash receipts summary, cash payments summary, purchase order register, payroll register, and weekly time report.

Title: **Profit & Loss**

Source: Gregg/McGraw-Hill

Cost: $99 complete package (as of 12/1/83)

Hardware Requirements: Apple II, Apple II+, Apple IIe, TRS-80 Model III, minimum 32K, disk drive, printer

Description: Profit & Loss is a simulation game of the operation of a small business. It requires students to make business decisions, particularly with regard to pricing, supply-and-demand relationships, advertising, and the interpretation of income statements.

Title: **The Shoebox Accounting Practice Set**

Source: Gregg/McGraw-Hill

Cost: Check with manufacturer

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model III; 2 disk drives, printer

Description: Students are given practice sets of source documents from which they extract data for analysis and decision making. Students set up a simulated accounting system for a hypothetical small business.

Title: **Sounds Abound: An Accounting Simulation for Microcomputer and Manual Application**

Source: Houghton Mifflin

Cost: $3.39 for text and workbook; $29.97 for diskette, $2.25 for teacher's manual (as of 12/1/83)

Hardware Requirements: Apple II+, Apple IIe, IBM PC, TRS-80 Model III, disk drive, printer

Description: A simulation of accounting records of a business, this package includes source documents, accompanying stationary, and instructions.

Title: **Typing Tutor**

Source: MicroSoft Consumer Products

Cost: Approximately $30 (as of 12/1/83)

Hardware Requirements: Apple II, II+, IIe, TRS-80 Model I and III, IBM PC, disk drive or cassette

Description: Currently the single most popular keyboard drill and practice, this package uses nonsense letters in a progressively difficult sequence to teach touch-typing skills and to develop speed and accuracy. The keyboard is monitored twenty times per second to keep track of learner's familiarity with individual keys. Speed, percentage accuracy, and number of mistakes are displayed for the student. It is useful for anyone who needs to learn or relearn typing without attending formal typing classes.

Title: **Using the VisiCalc Program**

Source: SRA Software

Cost: $70 complete (user supplies VisiCalc) (as of 12/1/83)

Hardware Requirements: IBM PC, 64K, 2 disk drives (user must have VisiCalc package to use this instructional package)

Description: This tutorial teaches the user to use VisiCalc to perform general business operations. It includes eight predetermined applications models ready for actual business use.

EVALUATION OF SOFTWARE

As previously stated, there are some 21,000 commercial software packages already on the market. The Business Software Matrix in this guide, lists over fifty software packages for some of the functional areas that are available for just one microcomputer. One researcher estimated that 150 new packages were developed each month in early 1983 and that this figure would rise to 250 new packages each month by late 1984. No wonder potential software purchasers often are overwhelmed when attempting to select software packages.

The purpose of this section is to answer specific questions concerning the purchase of software and to suggest criteria that will guide the selection process. Efficient use of software is not possible without giving consideration to software evaluation. A systematic means for assessing various software aspects such as hardware requirements, documentation, and content is required. This section describes also a software evaluation system designed for vocational educators and provides sample rating forms.

Software Purchase Overview

If you are in the process of buying software packages for your business or for home use (and especially if you are a novice), you may find the following commonly asked questions/answers concerning software purchase both informative and beneficial to the task.

1. **What are you getting when you pay $535 for a software package?**

   The typical software purchaser assumes that such a purchase carries with it all rights associated with ownership, but that is not usually the case. Most developers do not actually sell their software; rather they license the right to use their software diskette to the purchaser, while maintaining ownership of the diskette and the program contained on it. The purchase price of such software is not a purchase in the traditional sense of the word, but is more like a one-time rental fee. Such an arrangement is called a program license fee.

2. **Can I copy the program or change it to suit my particular needs?**

   Since the software remains the property of the developer, its contents are not legally the property of the renter and as such cannot be legally copied, modified, or in any other way tampered with by the renter. Even when the vendor actually sells the software to a purchaser and conveys ownership, the program itself is almost invariably copyrighted. In fact, the developer's prohibitions often prevent purchasers from even making backups for their own use. These prohibitions may extend to using the same package in more than one location or on more than one computer in the same office.

3. **How do software producers protect their products from pirating?**

In a further effort to prevent unauthorized software copying, or pirating, most developers "copy protect" their products with an assortment of programming and production techniques. It is possible to copy virtually any diskette using either specially written copy programs or hardware that has been specifically developed for that purpose. However, such activities are illegal and, as such, are certainly not good practice for a small business operator. Thus, when you purchase most software packages, you are purchasing or renting a single or perhaps an original and a "backup" diskette containing a program or series of programs designed to perform some function.

4. **What provisions are provided by software producers for updating and upgrading software packages?**

Many types of programs perform functions that change frequently. For instance, tax packages are based on regulations that change with every new Internal Revenue Service update. For this reason, reputable developers and vendors of such software packages frequently provide a "maintenance" or "update" service. Typical provisions allow the purchaser to purchase such updates for less than the normal fee. In some cases, the vendor may provide such a service on a cost-recovery basis. This can be an important consideration in software purchases.

5. **What does source code mean?**

Source code is the hard copy (printed) listing of a program. Without a listing, it is impossible for the user to make any customizing modifications to the program. If the developer/manufacturer allows the purchaser to make such modifications, a copy of the source code is required. One program described in the software section lists a source code fee. This fee is not normally included in the license fee and can be substantial. As another alternative some developers/manufacturers prohibit the purchaser from making such alterations but provide such services themselves. Customizing fees can be based on a set amount or on an hourly rate for programming time.

6. **What documentation updates can be expected?**

As a rule, the purchaser receives a complete set of documentation (written instructions and explanations) with the original fee. This is not always the case, and additional documentation may be available at an additional charge. Further, as revisions are made to the basic documentation, the manufacturer may (or may not) provide it to existing licensees at reduced costs or free. This is an additional source of software costs that does not appear on the package.

7. **How can knowing the reputation of the vendor be advantageous?**

Another hidden source of potential cost lies in the financial position of the manufacturer. It is such a new industry that virtually anybody can sell software. This means there are many software manufacturers with less than stable business foundations. When one of those manufacturers declares bankruptcy, the software is routinely considered as one of the manufacturer's assets by the court. This eventuality could result in your having to repurchase rights to the software, this time from the manufacturer's creditors. Thus it is important to consider the reputation of the vendor as you make software decisions.

8. **Will user support be provided?**

User support can be extremely important. The developer/manufacturer who licenses software to you and then provides no mechanism to answer your questions or to provide advice and assistance should be viewed with suspicion in expensive software purchases. No matter how good the documentation, there will always be unforeseen problems and questions. A "hotline" using an 800 number for toll-free questions is a common service of the larger software companies.

Evaluation Criteria for Business Software

With the overwhelming supply of business software currently on the market, it is important for users to know what to look for in software packages, based, of course, on their particular needs and resources. The following criteria and discussion have been identified to help users evaluate and make appropriate software selection.

Motivational Incentives

Software developed for business purposes is typically free of many of the attention-getting gimmicks that characterize instructional software. Business software seldom uses graphics except for presentation of data and is usually presented on monochrome screens. It relies on the inherent incentive of the profit motive to drive its users and rarely, if ever, uses such personal touches as addressing the user by name. Business software, in other words, is practical and straightforward.

Business software must be simple to use and contain enough internal prompts to keep the user on track. Most users find that menu-driven software is easier to use than other formats. Menu driven means that the program returns throughout its operation to a list of the user's options and asks the user to specify which step is desired next. PFS:File, for instance, is menu driven. Whenever the user completes any operation, the program returns to the menu and presents the following options: (1) create file, (2) add form, (3) copy file, (4) search, (5) print, or (6) remove. These are all of the things that the program can do and the user must select one of them before proceeding. When one is selected, the program displays another menu that specifies all the ways it can perform that task. This format leads the user from one step to the next while decreasing the probability of human error.

If software is not menu driven, the user must remember or look up the command for each operation, such as saving files or for reading the catalog of files on the disk. This does not present a problem if the package is used frequently, because the operator quickly learns the commands when using them regularly. One disadvantage of menu-driven software is that additional programming is required to display and operate the menu itself. This may occupy memory space in the computer that could be used for working space. Thus, nonmenu-driven software can be more efficient users of memory, but menu-driven software can be easier to use.

Reliability

An additional characteristic particularly important to business software is reliable operation. Business decisions based on systematically wrong analyses can be potentially devastating. Yet that is just what can happen if incorrect formulas or procedures are programmed into a business

software package. An astute businessperson will not rely on new software for sensitive analyses until it has proven itself accurate by trial runs of sample data with known results. Reviews by reliable software critics may satisfy this requirement. Additionally, trial runs of a software package can uncover instances where the package simply does not do what it is supposed to do for a given situation and set of instructions. Again, reliable reviewers can help in this regard. Reputable software developers and manufacturers are probably the best safeguard against problems of this kind. A reputable manufacturer who discovers errors in its programs can be expected to correct those errors at no or little cost to the licensee. License agreements should indicate vendor policy on this matter.

Documentation

The first tangible evidence of quality can be noted in the program's documentation. While no amount of documentation can make a poor program into a good one, inadequate documentation can make even the best business software unusable. In the early years of the computer age, documentation for computer software was written largely by programmers for users who were familiar with computer operation, not for the general public. That was adequate until the microcomputer revolution made the general public into microcomputer users. Most small business persons do not have the time, inclination, or need to become experts on computers. For that reason, the documentation of any business software should be carefully examined before purchase. Further, documentation should be clear, concise, and written in plain language.

Documentation should also contain tutorial materials that lead the user through the solution of a sample problem or an exercise. Examples are often more valuable to the beginning program user than the clearest of instructions. If examples are given, they should work. It is amazing how often sample problems listed in software documentation simply do not work when the user tries to run them. Disk operating systems (DOS) change. Microcomputer models change. Instructions valid for one printer and interface combination are not correct for other combinations. The documentation should take these variations into account.

User Friendliness

A software package is said to be user friendly when it is easy to use. A user-friendly program prompts users whenever they make mistakes. It is forgiving of ignorance and mistakes. It does not suddenly abort a run, rudely inform the user that an error has been made, and discard all the data that has been in memory. Programs do all of these things unless the programmer foresees all the possible errors and accounts for them in the development stage. To test for user friendliness, try making a mistake. Do something that is obviously inappropriate. The more user friendly the program, the more likely it is that the computer will correct you.

Another aspect of user friendliness is in the degree to which the program is self-explanatory. VisiCalc is very unforgiving of mistakes; it simply refuses to accept any responses that it does not expect. For example, in the attempt to replicate a row of figures, if the user fails to enter one of a very limited selection of acceptable responses, the program simply returns to the spreadsheet and makes a crude beeping sound. It does not tell the user that a mistake has been made or even hint as to the nature of the mistake. In this sense, it is not very user friendly and the documentation must make up for this shortcoming or the user can experience great frustration.

Reproducibility*

As was pointed out earlier, many software developers prohibit or even physically prevent the user from making duplicate copies of programs. This means that if the user needs to use the software package in more than one place at a time, two copies will need to be purchased. For instance, the small businessperson who plans to use a general accounting package at the office, another copy at home, and even a third copy at the bookkeeper's home, will have to make copies of the program or spend an additional $400-$600 for the third copy. (A backup copy is normally provided with each purchase.)

On the other hand, some manufacturers allow users to make additional copies for their own use. This corporate generosity is not required and should certainly not be abused. For persons contemplating purchasing expensive business software, reproducibility might be a determining factor in the decision-making process.

Evaluation Criteria for Instructional Software

Likewise, there are criteria germane to software developed for instructional purposes. The following discussion will aid users in evaluating and selecting instructional software appropriate to their particular needs and resources.

Motivational Incentives

Whereas business software can rely on internally motivated users, the same is certainly not true of instructional software. This category of programs must use an array of attention-getting and motivational devices to maintain user interest. Graphics are essential in quality instructional software. (Color graphics are probably even better.) On the IBM, graphics are simply not possible without the color adapter board, so this can be a problem on microcomputers purchased strictly for business purposes. Beeps, whirring sounds, flashing displays, and moving drawings certainly add to the attractiveness of instructional software.

An additional consideration in this area is the personalization possible with interactive programming. The well-designed, instructional program doesn't just say, "Invalid response", it says, "I'm sorry, Bob, but that isn't right. Perhaps you should review that part again."

Another important motivational aspect of instructional software lies in the area of error proofing. Because computer instruction is frequently individualized, it is essential that the teacher be able to leave the student with the computer with the confidence that a mistake, either accidental or intentional, will not cause the program to abort.

Finally, the instructional format the program presents may be an influencing factor on a purchaser's decision to buy. Instructional software can take one or any combination of the following forms:

- Drill and practice packages allow the student to repeat a carefully regulated task until the skill is mastered or until proficiency is attained. Examples are the numerous typewriting programs, math drills, and language drills available.

*The term used in computer-users' jargon is "copyability."

- Tutorials present cognitive material, teach concepts, or provide remedial instruction. These often resemble electronic, interactive books.

- Simulations use models to represent other situations. An example of a simulation is the Enterprise Sandwich Shops software package reviewed under Instructional Software Reviews, which sets up a model of a business to teach economic and management concepts, skills, and attitudes. The student makes inputs and receives feedback based on the results of that input.

Documentation

The documentation for instructional software is usually not as detailed as that for business software. Except for some complex simulations, it need not supply such intricate details for the user, because instructional software must be more user friendly than business software. Business software performs a function and the user learns to use it proficiently. The basic purpose of instructional software is to teach something, and any time spent learning to use the package is time lost from the central goal of learning that task, concept, or skill.

For this reason, documentation should be as simple and brief as possible. It must contain all the information required by the student to run the package, and a description of what the package does, but no more. In the case of simulations, particularly very complex ones, sample problems with correct solutions may be supplied. Everything else should be contained in the program itself. It is not unusual for documentation of tutorials to contain only the information needed for a novice to turn on the computer and begin running the program. This is clearly inadequate documentation since it fails to indicate the purpose of the program or its intended audience.

User Friendliness

User friendliness is even more important in instructional software than it is in business software. This is because, as discussed earlier, the user of instructional software is probably a one-time user of a particular package, whereas the user of a business package trains to build proficiency in using a particular package. Just as the documentation for a business package must be very thorough, instructional packages must be very user friendly.

When input is required from the student, it should be requested clearly and in plain language. The student should not have to look up the format or command for the next input. Exceptions to this generalization are possible as in the case of some complex simulations, but in general this is a valid requirement.

Variety in presentation is important also. Any good teacher knows that students learn better when the material is presented in a variety of ways. A sixty-minute lecture or reading session can be deadly to the interest level of any class. By the same token, instructional packages should display a variety of formats. The student should be required to alternate between reading material, studying illustrations, responding to questions, and receiving feedback throughout the program.

Personalization is an important aspect of interactive computer-assisted instruction (CAI). Use of the student's name can be a good motivator. In addition, requiring students to enter their names allows the program to record the results of each student's efforts. Most good interactive CAI packages provide checks of the student's progress by asking questions or presenting problems to

which the learner must respond. By keeping track of the percentage of correct and incorrect responses for each student, the program can provide the instructor with valuable progress reports and at the same time give the learner continual feedback.

Reproducibility

Reproducibility is probably even more important to educators than businesspersons. School budgets are always tight and once funds are allocated, there are usually no more forthcoming. Moreover, the number of students who will be using a package at one time can be very large. For instance, a word processing class may need thirty to fifty copies of a program such as WordStar. At $495 (as of 12/1/83) per package, thirty copies would be quite expensive. Some software manufacturers allow schools to make additional copies of programs. This consideration must be taken into account when making purchasing decisions for instructional software. Such a corporate policy is quite generous, and instructors should be careful not to violate the conditions of such copying or risk losing the privilege.

Also, many software packages are written in such a way that, once loaded into the machine, the diskette can be removed and the program loaded into more machines. Teachers should be aware that this is a violation of standard software leasing agreements which limit the use of any given diskette to a single machine. Again, some manufacturers allow the use of their packages in multiple machines for schools only. This corporate policy is also very generous and the limitations imposed by the manufacturer should be strictly observed.

Systematic Software Evaluation

Selection of quality software is of prime importance to vocational education curriculum planners. Limited resources mandate systematic software evaluation. A systematic approach to software evaluation ensures that standardized criteria are used in comparing all software packages under purchase consideration.

In response to the need for a systematic approach to evaluating software, the Office of Adult and Vocational Education, U.S. Department of Education, sponsored a study designated to result in a system (instrument and guide) for evaluating courseware (computer instructional programs and support materials) for vocational education. More information about this project may be obtained from the National Center for Research in Vocational Education.

In the absence of a tested evaluation instrument to facilitate evaluation of business software packages, program planners are urged to use some sort of standardized checklist. Sample forms designed by the authors for use in rating business and instructional software are presented in appendix C.

TELECOMMUNICATIONS

For years, airline ticket agents have been able to check seat vacancies and make reservations by directly accessing a central computer. Researchers could turn on their terminals and talk directly with computers in another building or even another city. By the early 1980s, farm management groups, real estate agencies, stock brokers, medical groups, and literally hundreds of other groups had established computer networks for business and recreational use. All that was required was a mainframe computer with communications ports and terminals connected to the central computer by a direct line (more recently a telephone line).

The remote unit used in the above situations is known as a *dumb* terminal. The term *dumb* is applied because the terminal cannot do any of the electronic *thinking* which characterizes a computer. Since these terminals cannot store information to send it in batches, or perform routine computations, all their work involves actual connect time to the mainframe, which means additional cost for computer time and telephone use.

The advent of the microcomputer offers answers to both of these problems. In terms of cost, microcomputers range from $100 to $10,000 and an additional $100 to $400 will give them telecommunication capabilities. If the small business already has microcomputers, then telecommunications becomes much more affordable. In terms of flexibility, the microcomputer is a thinking computer with all the power of a room-size computer of just a few years ago.

This section deals with the equipment requirements for telecommunications and the implications networking and telecommunicating have for the small business.

Requirements

The first requirement for telecommunications is a microcomputer capable of accepting and transmitting data through a communications port. For the three computers discussed in this publication, telecommunication capability is a significant feature.

Required hardware consists of a communications interface board (or card) and modem unit. The communications board is used to convert the computer's symbols (ASCII codes expressed in bytes) into a sequential series of impulses (bits) and to direct them to the modem and a telephone. The modem (MOdulator/DEModulator) then converts these bits of information to electrical impulses of varying currents that can be transmitted over the telephone line. The receiving modem reconverts the impulses into ASCII codes expressed in bytes and feeds them into its attached microcomputer. The receiving computer reassembles the code into information it can use.

There are two types of modems: the acoustic coupler modem and the direct-connect modem. The acoustic coupler modem generates sounds that are converted to electrical impulses by the telephone and are then carried just like your voice is carried. If you were to listen through the other end, you would hear a series of beeps and clicks. The direct-connect modem does not generate sounds, but generates the impulses directly into the telephone line.

The acoustic coupler modem requires a regular telephone, which rests in a cradle in the modem unit. The direct-connect unit plugs into the telephone jack and requires a standard phone company cord to connect to the modem. Although the acoustic coupler is the older system, the direct-connect has all of the advantages and none of the disadvantages of the acoustic coupler type. It is more reliable, less trouble, and less expensive. Also, by purchasing a double jack outlet for the wall telephone, both telephone and microcomputer can be connected to the same wall jack and used without having to disconnect and reconnect the units.

Selecting a modem can be a complicated matter because a number of good ones are available. Important features to look for include—

- the modem's ability to answer incoming calls so that the phone can be left unattended,
- an adjustable baud rate (this is the rate at which the modem can accept and translate data; both sending and receiving modems must be "talking" at the same rate),
- a modem that can both originate (send) and answer, and
- the capability to download and upload.

Once the modem has been selected, communications software is needed to assist in sending and capturing messages. Some software allows users to take data from the sending computer and save it on their own disks, or to print the incoming information as it is being captured. Some of the large databases have their own software that is necessary in order to utilize their services fully.

Finally, a communications port, or database, is needed to complete the telecommunications process. Although there are hundreds of commerical data bases, there are three that overshadow the telecommunications market (Grossbrenner 1983). As part of their regular services, they provide their customers with access to many other databases. These three databases are—

- The Source, operated by *Reader's Digest*, McLean, Virginia;
- CompuServe, operated as a subsidiary of H&R Block, Columbus, Ohio;
- The Dow Jones News/Retrieval Service (DJNS), owned by Dow Jones, Inc.

In addition, a database vendor that may be of special interest to vocational educators is BRS (Bibliographical Retrieval Services), operated from Latham, New York. This vendor accesses numerous educational resources, for example—

- ERIC (Educational Research Information Center), ERIC Clearinghouse on Adult, Career, and Vocational Education, The National Center for Research in Vocational Education, Columbus, Ohio;
- RIVE (Research in Vocational Education), National Center Clearinghouse, The National Center for Research in Vocational Education, Columbus, Ohio;
- SPIN (School Practices Information Network), BRS, Latham, New York; and
- SPIF (School Practices Information File), BRS, Latham, New York.

Probably the one most important database to the typical small businessperson is Dow Jones News Service (DJNS). A subscription to DJNS puts the user on-line with such publications as the *Wall Street Journal* and *Barron's*; current quotes from the floor of The New York, American, Midwest, and Pacific Stock Exchanges—at the same time the information is available to stockbrokers; *Weekly Economic Survey* from Money Market Services, Inc.; The Media General DataBank that includes more than fifty-eight statistics on each of the 3,200 companies listed; *Wall Street Week*; and *The Academic American Encyclopedia*.

There are also many special purpose databases, for example, medical, legal, accounting, sociology, and library databases. Banking systems, specifically large banks, are beginning to use telecommunications for electronic banking. This will no doubt expand over the next few years.

For further information, "Getting the Best from Data Banks" (Grosswirth 1985, p. 111) provides a listing of on-line commercial databases, and the appendix of *The Complete Handbook of Personal Computer Communications* (Grossbrenner 1983) gives an excellent summary of on-line databases.

Networking Implications

Perhaps the single most important implication of the telecommunications revolution lies in the area of microcomputer networking. Free computer bulletin boards (CBB) are operated by computer software companies, hardware companies, and hobbyists all over the country. All that is needed to get into one of these is a telephone number and a password. An extensive directory of free CBBs is available from (Grossbrenner 1983):

J. A. Cambron Company, Inc.
P.O. Box 10005
Kansas City, MO 64111
(816) 756-1847

Also, an on-line directory is available from Novation Inc. (Grossbrenner 1983). [Dial (215) 881-6680 and type in CAT when "log on" appears on the screen.]

As more small businesspersons become comfortable with their microcomputers and modems, networks and bulletin boards will develop for this special interest group. As more individuals get home computers with communications capabilities, even small businesses will be able to set up information and direct order computer systems using the same technology currently in use for the CBBs.

Telecommuting

Many workers perform tasks that do not require their presence at a particular location while performing them. Professional writers, computer programmers, consultants, and many small businesspersons could do all or part of their work at home as well as they do at the office. All that is needed are two microcomputers with modems and communications software. Then, the small businessperson whose financial and business records are all stored on hard disk at the office can leave the office computer with the power on and go home. There he or she can use the home computer to pull any of these records, eliminating the necessity of carting all of the office files home or working extra hours at the office.

Further, as long as a telephone line is available, appointment schedules, personnel files, and other business information, whether on hard disk or on the mainframe computer at the office, would be available to the manager or entrepreneur from home, a hotel room, or a vacation site. Writing letters and memos, making inquiries, and handling many routine functions could also be done at these locations. Moreover, telecommuting is not just limited to the manager. Typists could record dictation over the telephone, then use a word processing package at home to prepare a finished copy. A quick phone call between computers and the text is printed at the office for review.

What are some of the overall advantages of telecommuting? Transportation costs are lowered. Commuting time can be spent with the family. Office operating costs for lights, heating or cooling, and janitorial services can be lowered. Child-care costs and clothing costs may be lowered. Work can be done at odd hours and at the worker's convenience.

Indeed, the possibilities and advantages for the "electronic home office" in small businesses are endless.

APPENDICES

Appendix A

BUSINESS SOFTWARE SOURCES' ADDRESSES

Aardvark Software, Inc.
783 North Water Street
Milwaukee, WI 53202
(414) 289-9988

Accounting Information Systems
9845 Jutland Avenue
Northridge, CA 91325
(213) 349-8349

Action-Research Northwest
11442 Marine View Drive, SW
Seattle, WA 98146
(206) 241-1645

Addison-Wesley Publishing Company
Software Marketing
3 Jacob Way
Reading, MA 01867
(617) 944-3700

Advanced Analytical Computer Systems
19301 Ventura Blvd., Suite 203
Tarzana, CA 91356
(213) 708-3917

Advanced Business Technology, Inc.
12033 Saratoga-Sunnyvale Road
Saratoga, CA 95070
(408) 446-2013

Adventure International
Division of Scott Adams, Inc.
736 Commerce Circle
PO Box 3435
Longwood, FL 32750
(305) 330-8194

Agri-Computer Services
104 Broad Street, SE
Aliceville, AL 35442
(205) 373-6383

Alpha Software Corporation
Six New England Park
Burlington, MA 01803
(617) 229-2924

AlphaBit Communications, Inc.
13349 Michigan Avenue
Dearborn, MI 48126
(313) 581-2896

Alphanetics
PO Box 339
Forestville, CA 95436
(707) 887-7237

American Business Systems, Inc.
439 Littleton Road
Westford, MA 01886
(617) 692-2600

American Small Business Computers
118 Mill
Pryor, OR 74361
(918) 825-4844

Analytic Systems
24 Old Kings Highway, S
Darien, CT 06820
(203) 655-7426

Andent, Inc.
1000 North Avenue
Waukegan, IL 60085
(312) 223-5077

Apparat, Inc.
4401 South Tamarac Parkway
Denver, CO 80237
(303) 741-1778

Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010

Applied Operations Research, Inc.
22056 Saticaoy Street
Canoga Park, CA 91303
(213) 340-1419

Applied Software Technology
14125 Capri Drive
Los Gatos, CA 85030
(408) 370-2662

Arlington Software Systems
97 Bartlett Avenue
Arlington, MA 02174
(617) 641-0290

Artsci, Inc.
5547 Satsuma
North Hollywood, CA 91601
(213) 985-2922

Artworx Software Company, Inc
150 Main Street
Fairport, NY 14450
(716) 425-2833
(800) 828-6573

Ashton-Tate
10150 Jefferson Blvd.
Culver City, CA 90230
(213) 204-5570

ASTEC, Inc.
400 Hillside Avenue
Needham, MA 02194
(614) 444-5551

Automated Office Systems
602 Lookout Drive, #213
Richardson, TX 75080
(214) 669-9966

Automation Management, Inc.
PO Box 3159
Texas City, TX 77590
(713) 948-3050

Avant-Garde Creations
PO Box 30160
Eugene, OR 97403
(503) 345-3043

BAPS Software
6011 San Felipe
Houston, TX 77057
(713) 683-1426

Basic Business Software, Inc.
PO Box 26311
Las Vegas, NV 89126
(702) 876-9493

Beauman Porter, Inc.
Pleasant Ridge Road
Harrison, NY 10528
(914) 967-3504

Benchmark Creations
PO Box 31861
Raleigh, NC 27622
No Listing

Best Programs
3614 Oval Drive
Alexandria, VA 22305
(703) 549-3663

BIO Data
1953 South River Avenue
Springfield, MO 65804
(417) 882-6301

Bluebirds, Inc.
2267 23rd Street
Wyandotte, MI 48192
(313) 285-4455

BPI Systems, Inc.
3423 Gaudalupe
Austin, TX 78705
(512) 454-7191

Broderbund Software, Inc.
1938 Fourth Street
San Rafael, CA 94901
(415) 456-6424

The Business Manager
1420 East Edinger Avenue, Suite 115
Santa Ana, CA 92705
(714) 836-3560

BusinessMaster, Inc.
1207 Elm Avenue, Suite M
Carlsbad, CA 92008
(619) 434-6165
(800) 521-9277

Business and Professional Software, Inc.
143 Benney Street
Cambridge, MA 02142
(614) 491-3377

Business Planning Systems
Two North State Street
Dover, DE 19901
(302) 674-5500

The Business Solutions, Inc.
60 East Main Street
Kings Park L.I., NY 11754
(516) 269-1120

Carey Moeller & Associates
1926 Farwell
San Antonio, TX 78213
(512) 341-0771

C&D Software
Claude Duplissey
Little Rock, AR 72204
(501) 569-3252

CE Software
801 73rd Street
Des Moines, IA 50312
(515) 224-1995

Centec Process Systems
Centec Bldg.
11260 Roger Bacon Drive
Reston, VA 22090
(703) 471-6300

Charles Mann & Associates
Microcomputer Division
55722 Santa Fe Trail
Yucca Valley, CA 92284
(619) 365-9718

C&H Video
110 West Caracao Avenue
Hershey, PA 17033
(717) 533-8480

CMA Microcomputer Division
55722 Santa Fe Trail
Yucca Valley, CA 92284
(619) 365-9718

Commercial Software Systems
7689 West Frost Drive
Littleton, CO 80123
(303) 761-8062

Compumax, Inc.
PO Box 7239
Menlo Park, CA 94025
(415) 854-6700

Compu-Tations, Inc.
PO Box 502
Troy, MI 48099
(313) 689-5059

Computech Group, Inc.
Main Line Industrial Park
Lee Blvd.
Frazer, PA 19355
(215) 644-3344

Computer Aided Design
764 24th Avenue
San Francisco, CA 94121
(415) 387-0263

Computer Consultants
312 Hoyt Street
Dunkirk, NY 14048
(716) 366-0766

Computer Products, Inc.
3225 Danny Park
Metairie, LA 70002
(504) 455-5330

Computer Services
14 Pierce Avenue
Oak Ridge, NJ 07430
No Listing

Computer Shack
1691 Eason
Pontiac, MI 48054
(313) 673-2224

Computer Software International
15 Grand Avenue
Englewood, NJ 07631
(201) 894-0653

Computer Software Design, Inc.
1911 Wright Circle
Anaheim, CA 92806
(714) 634-9012

Computer Systems Design, Inc.
PO Box 735
Yakima, WA 98902
(509) 453-2956

Computer Tax Service
PO Box 7915
Incline Village, NV 89450
(702) 832-1001

Computerized Management Systems
1039 Cadix Drive
Simi Valley, CA 93065
(805) 526-0151

Computers Plus
PO Box 658
Montecello, AZ 71655
(501) 367-5235

Computerware
PO Box 668
Encinitas, CA 92024
(619) 436-3512

Comsen, Inc.
20-A Erford Road
Lemoyne, PA 17043
(717) 737-6971

Comshare Target Software, Inc.
1935 Cliff Valley Way, Suite 200
Atlanta, GA 30329
(404) 634-9535

Comsis Corporation
2685 Marine Way, Bldg. A
Mountain View, CA 94043
(415) 964-5911

Conceptual Instruments Company
4730 Warrington Avenue
Philadelphia, PA 19143
(215) 726-7856

Construction Data Control, Inc.
2000 Weems Road
Tucker, GA 30084
(404) 934-4722

Continental Software Company
11223 South Hindry Avenue
Los Angeles, CA 90045
(213) 417-3003

Contract Service Associates
706 South Euclid
Anaheim, CA 92802
(714) 635-4055

Cornucopia Software
1625 Beverly Place
Berkeley, CA 94707
(415) 524-8098

Countryside Data, Inc.
718 Skyline
Idaho Falls, ID 83402
(208) 529-8576

CPAids, Inc.
1640 Franklin Avenue
Kent, OH 44240
(216) 678-9015

Creative Solutions International
10597 Humbolt Street
Los Alamitos, CA 90720
(213) 493-1446

Cybernetics, Inc.
8041 Newman Avenue, Suite 208
Huntington Beach, CA 92647
(714) 848-1922

Cybernetics Resource Corporation
10 Maple Street
Port Washington, NY 11050
(516) 883-7676

Dale-Data Data Processing Service
5840 Southwest Cheldenham Drive
Portland, OR 97201
(503) 245-8798

Data Automation Service International
2145 N.W. Tenth Street
Gainsville, IL 32601
(904) 372-?367

Data Consulting Associates
18000 Coleman Valley Road
Occidental, CA 95465
(707) 874-3067

Datamensions Corporation
615 Academy Drive
Northbook, IL 60062
(312) 564-4060

Datasmith, Inc.
PO Box 8036
Shawnee Mission, KS 66208
(913) 381-9118

Data Soft of New Hampshire
22 Stevens Avenue
Merrimack, N.H 03054
(603) 424-5217

Data Systems, Inc.
PO Box 6008
Bakersfield, CA 93386
(805) 395-3260

Data Train Service
840 N.W. Sixth Street, Suite 3
Grants Pass, OR
(503) 476-1467

Decision Resources
44 White Birch Road
Weston, CT 06883
(203) 222-1974

Demi-Software
6 Lee Road
Medfield, MA 02052
(617) 359-4502

The Denver Software Company
14100 East Jewell Avenue, Suite 15
Aurora, CO 80012
(303) 750-9980

Desktop Computer Software, Inc.
303 Potrero Street, 29/305
Santa Cruz, CA 95060
(40[illegible]3-9095

Diamond Head Software
2737 Kalakaua Avenue, Suite 28
Honolulu, HI 96815
(808) 922-1113

Digital Marketing Corporation
2670 Cherry Lane
Walnut Creek, CA 94596
(415) 938-2880

Diversified Computer Services
5601 Penn Avenue, A-23
Pittsburgh, PA 15206
(412) 361-7540

Douglas Tam
41-78 Forley Street
Elmhurst, NY 11373
(212) 457-0932

Downeast Digital
RD 1, Box 4130
S[illegible]on, ME 04979
(207) 643-2437

Dynacomp, Inc.
1427 Monroe Avenue
Rochester, NY 14618
(716) 442-8960

Eagle Software Publishers, Inc.
993 Old Eagle School Road, Suite 409
Wayne, PA 19087
(215) 964-8660

Edu-Ware East
PO Box 336
Maynard, MA 01754
(617) 568-8641

Elgen Systems
PO Box 10234
Austin, TX 78766
(512) 837-4665

Ellis Computing Software
3917 Noriega Street
San Francisco, CA 94122
(415) 753-0186

ElTech Associates
2466 Moreno Drive
Los Angeles, CA 90039
(213) 663-0347

Emeritus Software Library
5110 East Clinton Way, Suite 202
Fresno, CA 93
(209) 251-3525

Enertronics Research, Inc.
150 North Meramec, Suite 207
St. Louis, MO 63105
(314) 725-5566

Ensign Software
2312 North Cole Road, Suite E
Boise, ID 83704
(208) 378-8086

Enterprise Computer Systems, Inc.
Suite G-15 IBM Building
PO Box 10156
Jacksonville, FL 32207
(904) 399-3895

Executive Data Systems
290 Interstate North, Suite 116
Atlanta, GA 30339
(404) 955-3374

Execuware Microcomputer Software
7415 Pineville-Matthews R
Suite 300, Box 10
Charlotte, NC 28211
(800) 438-3636
(704) 541-1199

Farm Management Group of Mississippi
PO Box 646
McComb, MS 39648
(601) 684-6402

Farmplan Computer Systems, Inc.
PO Box 65
Campbell, CA 95009
(408) 379-3932

FCT, Inc.
12250 Hawthorne Plaza
Hawthorne, CA 90250
(213) 973-2086

Ferox Microsystems, Inc.
1701 North Fort Meyer Dr., 6th Floor
Arlington, VA 22209
(703) 841-0800

Financier, Inc.
2400 Computer Drive
PO Box 6
Westboro, MA 01581
(617) 366-0950

Flowersoft
564 Tara
Manteca, CA 95336
No Listing

G&L Software Enterprises
2304 North First Street
Upland, CA 91786
No Listing

Galactic Software
11520 North Port Washington Road
Mequon, WI 53902
(414) 241-8030

Galaxy, Inc
Department LP2, PO Box 22072
San Diego, CA 92122
(619) 231-4945

Garfield, Grossed & Pustariff
1101 Chestnut Street
Roselle, NJ 07203
(201) 245-5933

GB Lenz
3231 Vineyard, 42
Pleasanton, CA 64566
(415) 846-8406

GMS Systems, Inc.
12 West 37th Street
New York, NY 10018
(212) 947-3590

Graphic Communications, Inc.
200 Fifth Avenue
Waltham, MA 02254
(617) 890-8778

Graphic Software, Inc.
PO Box 367
Kenmore Station
Boston, MA 02215
(617) 491-2434

Great Plains Software
123 15th Street
North Fargo, ND 58102
(701) 293-8483

Gregg/McGraw-Hill
1221 Avenue of the Americas
New York, NY 10025
(212) 997-1221

H&E Computronics, Inc.
50 North Pascack Road
Spring Valley, NY 10977
(914) 425-1535

H&H Trading Company
PO Box 549
Clayton, CA 94517
(415) 672-3233

Harris Technology Systems, In
PO Box 80837
624 Peach Street
Lincoln, NE 68501
(402) 476-2811

Hayden Book Company
50 Essex Street
New Rochelle Park, NJ 07662
(201) 843-0550
(800) 631-0856

Hayden Software Company
600 Suffolk Street
Lowell, MA 01853
(800) 343-1218
(617) 937-0200

Heigen Corporation
2201 Pacific Avenue, Suite 401
San Francisco, CA 94115
(415) 929-7443

Hexagon Systems
PO Box 397, Station A
Vancouver, BC
Canada V6C 2N2
(604) 682-7646

High Technology Software Products, Inc
PO Box 60406
1611 N.W. 23rd Street
Oklahoma City, OK 73146
(405) 524-4359

Highlands Computer Services
14422 S.E. 132nd Street
Renton, WA 98056
(206) 228-6691

Holland Automation USA, Inc.
3400-D, West MacArthur Blvd.
Santa Ana, CA 92704
(714) 647-2844

Holman Data Processing Service
2059 West Lincoln
Oroville, CA 95965
(916) 533-5992

Houghton Mifflin Company
One Beacon Street
Boston, MA 02108
(617) 725-5526

Howard Software Services
8008 Girard Avenue, Suite 310
La Jolla, CA 92037
(619) 454-0121

Howe Software
14 Lexington Road
New City, NY 10956
(914) 634-1821

IBM Corporation
Software Publishing Division
PO Box 1328, Dept. 2C6/232-2
Boca Raton, FL 33432
(305) 998-1727

ICR/Futuresoft
PO Box 1446
Orange Park, FL 32073
(904) 269-1918

Image Computer Production, Inc.
615 Academy Drive
Northbrook, IL 60062
(312) 564-5050

Informatio. Solutions, Inc.
Softtrend Division
PO Box 198
Charlottesvil , VA 22902
(800) 368-3542

Information Unlimited Software
2401 Marinship Way
Sausalito, CA 94965
(415) 331-6700

Infosoft, Inc.
80 Washington Street
PO Box 640
Norwalk, CT 06856
(203) 866-8833

Innovative Software, Inc.
9300 West 110th Street
Bldg. 55, Suite 380
Overland Park, KS 66210
(913) 888-0154

Instant Software
Petersborough, NM 03458
(603) 924-0271

Institute for Scientific Analysis
PO Box 7186
Wilmington, DE 19803
(215) 358-3735

Integrity Systems, Inc.
4812 Interstate Drive
Cincinnati, OH 45246
(513) 874-8100

International Computer Products
346 North Western Avenue
Los Angeles, CA 90004
(213) 462-8381

International Micro Systems, Inc.
6445 Metcalf
Shawnee Mission, KS 66202
(913) 677-1137

International Software Marketing, Ltd.
120 East Washington Street Suite 421
Syracuse, NY 13202
(315) 474-3400

Isaac Software
841 West Nebraska Avenue
St. Paul, MN 55117
No Listing

J. Michael Healy
137 Citation Court
Birmingham, AL 35209
(205) 942-6740

Jack Strick & Associates
949 South Southlake Drive
Hollywood, FL 33019
(305) 925-7004

Joe Agrella
1226 N.W. Fourth Avenue
Fort Lauderdale, FL 33311
305) 525-1192

Johnson Associates
PO Box 3069
1570 Hartwell Avenue
Redding, CA 96049
(916) 221-0740

[illegible]nsington Microwave, Ltd.
[illegible] Third Avenue
New York, NY 10022
(212, 486-7707

Kleinhammer
PO Box 1065
Morro Bay, CA 93442
(805) 772-2766

KSoft
845 Wellner Road
Naperville, IL 60546
(312) 961-1250
and
318 Lakeside Drive
Brandon, MS 39042
(601) 992-2239

Libra Laboratories
495 Main Street
Metuchen, NJ 08840
(201) 494-2224

Lifeboat Associates
1651 Third Avenue
New York, NY 10028
(212) 860-0300

[illegible]tree Software, Inc.
[illegible] Webster Street
Suite 342
Monterey, CA 93940
(408) 373-4718

Link Systems
1640 19th Street
Santa Monica, CA 90404
(213) 453-1851

Lizcon Computer Systems
1140 Brickyard Road
Salt Lake City, UT 84106
(801) 467-0702 or 484-8179

LJK Enterprises, Inc.
7852 Big Bend Blvd.
St. Louis, MO 63119
(314) 962-1855

Lotus Development Company
55 Wheeler Street
Cambridge, MA 02138
(800) 343-5414
(617) 492-7870

Management Systems Software
5200 Brittany Drive, #1006
St. Petersburg, FL 33715
(813) 864-4347

Manhattan Software
PO Box 1063
Woodland Hills, CA 91365
(213) 453-6013

Marathon Microsystems, Inc.
2610 Grant Street
Evanston, IL 60201
(312) 864-6209

Marc Fogg Software
2550 Webster Street
San Francisco, CA 91786
No Listing

Mark of the Unicorn, Inc.
222 Third Street
Cambridge, MA 02139
(617) 576-2760

Market Power
11780 Rough & Ready Road
Rough & Ready, CA 95975
(916) 432-1200

Masterworks Software, Inc.
25834 Narbonne Avenue
Lomita, CA 90717
(213) 539-7486

Mayday Software
PO Box 66
Phillips, WI 54550
(715) 339-3966

MECC
2520 Broadway Drive
St. Paul, MN 55113
(612) 638-0683

Medical Software Consortium
502 Springmont Drive
Hopkinsville, KY 42240
(502) 886-0208

Mendocino Software
PO Box 1564
Willits, CA 95490
(707) 459-9130

Metamorphics, Inc.
154 Montgomery Avenue
Bala Cynwyd, PA 19004
(215) 668-9000

Metasoft Corporation
711 East Cottonwood Lane, Suite E
Casa Grande, AZ 85222
(602) 961-0003

Micro Applications Group
7300 Caldais Avenue
Van Nuys, CA 91406
(213) 881-3076

Micro Architect, Inc.
96 Dothan Street
Arlington, MA 02174
(617) 643-4713

Micro Associates, Inc.
Suite 510, 2300 Highway 365
Nederland, TX 77627
(713) 724-6580

Microbase Software, Inc.
PO Box 40353
Indianapolis, IN 46240
(317) 877-4304

Micro Business Software, Inc.
Willow Hill Bldg
Dover Road
Chichester, NH 03263
(603) 798-5700

Microcode
683 Oak Street
Columbus, Ohio 43215
(614) 221-8777

Microcomputer Sales Corporation
PO Box 53376
223 Fairway Drive
Fayetteville, NC 28305
(919) 483-2003

Microcomputer Tax Systems, Inc.
22458 Ventura Blvd., Suite F
Woodland Hills, CA 91364
(213) 704-7800

Microcon Digital Systems, Inc.
116 West Walnut Street
Kokomo, IN 46901
(317) 457-6623

Micro Control Systems, Inc.
431 Vineyard Point Road
Guilford, CT 06437
(203) 643-4897

Micro Data Business Forms
5707 Lacey Blvd., #4
Olympia, WA 98503
(206) 459-3300

MicroLab
2310 Skokie Valley Road
Highland Park, IL 60035
(312) 433-7550

Micro LearningWare
Highway 66 South, PO Box 307
Mankato, MN 56002-0307
(507) 625-2205

Micromatic Programming Company
PO Box 158
Georgetown, CT 06829
(203) 324-3009

Micro Mike's, Inc.
3015 Plains Blvd.
PO Box 1440
Amarillo, TX 79102
(806) 372-3633

MicroPro International Corporation
33 San Pablo Avenue
San Rafael, CA 94903
(415) 499-1200

MicroSoft Consumer Products
10700 Northup Way
Bellevue, WA 98004
(206) 828-8080

MicroSystems Software, Inc.
4301-18 Oak Circle
Boca Raton, FL 33431
(305) 983-9027

Miller Microcomputer Services
61 Lake Shore Road
Natick, MA 01760
(617) 653-6136

MPSI
2481 Bayshore Road, Suite 540
Palo Alto, CA 94303
(415) 856-3382

Muse Software
347 North Charles Street
Baltimore, MD 21201
(301) 659-7212

NF Systems, Ltd.
PO Box 76363
Atlanta, GA 30358
(404) 252-3300

National Software Marketing Company
PO Box 6195
4701 McKinley Street
Hollywood, FL 33021
(305) 961-4888

Nehring
PO Box 61152
Sunnyvale, CA 94088
(408) 984-2558

Nevins Microsystems, Inc.
210 Fifth Avenue
New York, NY 10010
(212) 807-7033

Novell Data Systems Corporation
3400 Wilshire Blvd.
Los Angeles, CA 90010
(213) 258-1653

Northwest Analytical Company
1532 S.W. Morrison Street
PO Box 14430
Portland, OR 97205
(503) 224-7727

N-Squared Computing
5318 Forest Ridge Road
Silverton, OR 97381
(503) 873-5906

Orion Business Systems
147 Main
Ossining, NY 10562
(914) 762-5636

Pansophics
Whistle Stop Mall
PO Box 59
Rockport, MA 01966
(617) 546-3104

PBC Data Systems, Inc.
PO Box 6008
Bakersfield, CA 93386
(805) 395-3231

PBL Corporation
PO Box 559
Wayzata, MN 55391
(612) 471-7644

PCD Systems, Inc.
PO Box 143, Penn Yan
New York, NY 14527
(315) 536-3734

PCEZ Business Software
1862 Green Bay Road
Highland Park, IL 60035
(312) 432-1116

Peachtree Software, Inc.
3445 Peachtree Road, NE
Atlanta, GA 30326
(404) 262-2376

Perfect Software, Inc.
702 Harrison Street
Berkeley, CA 94710
(415) 974-6661

Peripheral Visions
5285 Elam Young Parkway
B400
Hillsboro, OR 97123
(503) 640-1317

Phoenix
64 Lake Zurich Drive
Lake Zurich, IL 60047
(312) 438-4850

The Pillsbury Company
3286 Pillsbury Center
Minneapolis, MN 55402
(612) 330-4966

Pocket Information Corporation
PO Box 152
Beaverton, OR 97075
(503) 649-8145

Precision Prototypes
410 East Roca
Refugio, TX 78377
(512) 526-4758

Professional Medical Software, Inc.
3604 Foothill Blvd.
La Crescenda, CA 91214
(213) 248-2884

Professional Software Technology
51 Freemont Street
Needham, MA 02194
(800) 343-4074

ProSoft
PO Box 560
North Hollywood, CA 91603
(213) 763-3131

Quality Software
6660 Reseda Blvd., #105
Reseda, CA 91335
(213) 344-6599

Quick Tax, Ltd.
319 Clawson Street
Staten Island, NY 10306
(212) 351-6643

Radio Shack
1500 One Tandy Center
Fort Worth, TX 76102
(817) 390-3832

Rainbow Enterprises
7-480A I Street
Elmendorf AFB, AK
(907) 753-2291

Realty Software Co.
1116 8th Street E
Manhattan Beach, CA 90266
(213) 372-9413

Red Wing Business Systems, Inc.
PO Box 19
610 Main Street
Red Wing, MN 55066
(612) 388-1106

Relational Systems International Corp.
5003 Commercial Street, SE
Salem, OR 97309
(503) 363-8929

Rocky Mountain Software Systems
1280 C Newell Avenue, Suite 147-L1
Walnut Creek, CA 94596
(415) 680-8378
(800) 832-2244

Rotary File
PO Box 102-A
Eagle Road
Newton, PA 18940
(215) 968-2533

Sapana Micro Software
PO Box 748
Quincy, IL 92301
(217) 224-4337

Satori Software
5507 North Woodlawn
Seattle, WA 98103
(206) 633-1469

Scorpion Systems
120 North Court Street
Frederick, MD 21701
(301) 663-0539

Scripps Data Systems, Inc.
Suite 202 G
9747 Business Spark Avenue
San Diego, CA 92131
(714) 695-1540

Sensible Software
6619 Perham Drive
West Bloomfield, MI 48033
(313) 855-6112

Serendipity Systems, Inc.
419 Seneca Street
Ithaca, NY 14850
(518) 277-4889

Sierra-On-Line, Inc.
36575 Mudge Ranch Road
Coarsegold, CA 93614
(209) 683-6858

Silicon Valley Systems
1625 El Camino Real, #4
Belmont, CA 94002
(415) 595-4344

Simplified Software Systems
118 Third Avenue, NW
PO Box 1192
Hickory, NC 28601
(704) 328-2389

SimSoft Associates
1258 17th Street
Marsville, MI 48040
(313) 364-7241

Simutek Computer Products, Inc
4877 East Speedway
Tucson, AZ 85712
(602) 323-9391
(800) 528-1149

Small Business Systems Group
6 Carlisle Road
Westford, MA 01886
(617) 692-3800

Smith Micro Software
PO Box 604
Sunset Beach, CA 90742
(213) 592-1032

Snappware, Inc.
3719 Mantell
Cincinnati, OH 45236
(513) 891-4496

Sof/Sys, Inc.
4306 Upton Avenue, S
Minneapolis, MN 55410-1589
(612) 929-7104

Soft Sector Marketing, Inc.
6250 Middlebelt
Garden City, MI 48135
(313) 425-4020

Sofstar, Inc.
13935 US 1, Juno Square
Juno Beach, FL 33408
(305) 627-5511

Softrend, Inc.
PO Box 1462
Charlottesville, VA 22902
(804) 979-6194

Software Dimensions, Inc.
6341 Auburn Blvd.
Citrus Heights, CA 95610
(916) 722-8000

Software Laboratories, Inc.
3924 Riverside Drive
Dublin, OH 43017
(614) 889-5083

Software Options, Inc.
PO Box 970
19 Rector Street
New York, NY 10006
(212) 785-8295

Software Publishing Corporation
1901 Landings Drive
Mountain View, CA 94043
(415) 962-8910

Software Resources Inc.
186 Alewife Brook Parkway, Suite 310
Cambridge, MA 02138
(617) 497-5900

Software Solutions
9124 Highway 17
Scotts Valley, CA 95066
(408) 438-2433

Software Technology for Computers
430A Main Street
Watertown, MA 02172
(617) 923-4334

Software Terminal
223 Fairway Drive
Fayetteville, NC 28305
(919) 483-2003

Software Works
1032 Elwell Court, Suite 210
Palo Alto, CA 94303
(415) 960-1800

Sorcim Corporation
2310 Lundy Avenue
San Jose, CA 95131
(408) 942-1727

Southfork Software, Inc.
68 Fairlake Drive
Hattiesburg, MS 39401
(601) 545-1680

SouthWest EdPsych Services, In
PO Box 1870
Phoenix, AX 85001
(602) 253-6528

South-Western Publishing Company
5101 Madison Road
Cincinnati, OH 45227
(513) 271-9970

Spectrum Software
142 Carlow
Sunnyvale, CA 94087
(408) 738-4387

SRA Software
Science Research Associates, Inc.
155 North Wacker Drive
Chicago, IL 60606
(312) 984-7000

SSR [illegible]tion
1600 [illegible] Avenue
Roch[illegible] Y 14606
(716) 2[illegible]-3200

Star Computer Systems, Inc
18051 Crenshaw Blvd., Suite D
Torrance, CA 90504
(213) 538-2511

Starside Engineering
PO Box 8306
Rochester, NY 14618
No Listing

Starsoft Inc.
4984 El Camino Road
Suite 125
Los Altos, CA 94022
(415) 965-8000

Starware
3901 Davis Place, NW
Washington, DC 20007
(202) 488-7351

State of the Art, Inc.
3183-A Airway Avenue
Costa Mesa, CA 92626
(714) 850-0111

Stoneware Microcomputer Products
50 Belvedere Street
San Rafael, CA 94901
(415) 454-6500

Strategic Simulations
465 Fairchild, Suite 108
Mountain View, CA 94043
(415) 964-1353

Stull
12314 O[illegible]ll Road
Fairfax, VA 22033
(703) 6[illegible]

Suc[illegible] Manag[illegible]ment Consultants
31[illegible]rfview Dri[illegible]
Pa[illegible]fic P[illegible]sades CA 90272
(2[illegible]) 454-8030

Summerville Enterprises
Agri-Computer Service
104 Broad Street, SE
Aliceville, AL 35542
(205) 373-6383

Synapse Video
5221 Central Avenue
Richmond, CA 94804
(415) 527-7751

Synergistic Software
5221 120th Avenue, SE
Bellevue, WA 98006
(206) 226-3216

Syntax [illegible]poration
4500 We[illegible] 77nd Terrace
PO Box 8137
Prairie Village, KS 66208
(913) 362-9667

Syscon
3040 Scott Blvd.
Sa[illegible]a Clara, CA 95050
(408) 727-2751

System Design Lab Software
2612 Artesia Blvd., Suite B
Redondo Beach, CA 90278
(213) 374-4471

Systemics, Inc.
3050 Spring Street
West Bloomfield, MI 40033
(313) 851-2504

T3[illegible] Co[illegible]sulting, Inc.
2626 South Loop, St[illegible]400
Houston, TX 77954
(713) 661-9001

TCI Software
6107 West Mill Road
Flourtown, PA 19031
(215) 836-1406

TCS Software, Inc.
PO Box 47550
Atlanta, GA 30362
(404) 455-6162

Teaching Assistant
22 Seward Drive
Huntington Station, NY 11746
(516) 226-0534

Techland Systems, Inc.
25 Waterside Plaza
New York, NY 10010
(212) 684-7788

Tecmar, Inc.
6225 Cochran Road
Cleveland, OH 44139
(216) 349-0600

Telephone Software Connection
PO Box 0548
Torrance, CA 90504
(213) 516-9430

Tetrad Computer Applications
740 Nicola Street
Vancouver, BC V6G 2C2
(604) 685-2295

TexaSoft
1028 North Madison Avenue
Dallas, Texas 75208
(214) 941-8475

Time Management Software
PO Box 727
Cushing, OK 74023
(918) 225-6340

TLB Consulting, Inc.
1120 Commerce Parkway
PO Box 414
Findlay, OH 45840
(419) 424-0422

TMQ Software
82 Fox Hill Drive
Buffalo Grove, IL 60090
(312) 520-4440

Tomar Productions
PO Box 740871
Dallas, TX 75374
(214) 363-3059

United Software of America
750 Third Avenue
New York, NY 10017
(212) 682-0347

Univar International
10327 Lambert International Airport
St. Louis, MO 63145
(314) 426-1099

Universal Data Research, Inc.
2457 Wehrle Drive
Buffalo, NY 1422[illegible]
(716) 631-301[illegible]

Utilities Engineering
213 19th Street
PO Box 299
Brigantine, NJ 0820[illegible]
(609) 266-1774

Venturcom, Inc.
139 Main Street
Cambridge, MA 02142
(617) 661-1230

Verbatim Software Company
7000 Broadway, [illegible]04
Denver, CO 80221
(303) 422-6090

Versa Computing, Inc.
3541 Old Conejo Road, Suite 104
Westlake Village, CA 91362
(800) 358-9999
(800) 862-4999

Virtual Combinatics
PO Box 755
Rockport, MA 01966
(617) 546-6553

VisiCorp
2895 Zanker Road
San Jose, CA 95134
(408) 946-9000

Westico, Inc.
325 Van Zant Street
Norwalk, CT 06855
(203) 853-6880

Westware Software, Inc
2455 West Fourth Ave[illegible], S
Ontario, OR 97914
(503) 881-1477

Whelan Associates, [illegible]
Gwyneedd Plaza
PO Box 650
Spring House, PA [illegible]9477
(215) 643-7470

Wilson Jones Company
245 Park Avenue
New York, NY 19167
(212) 475-6900

WIMS Computer Consulting
6723 66th Place
Tulsa, OK 74171
(918) 492-9036

Ziggurat Software
PO Box 453
Arlington Heights, IL 60006
(312) 253-5350

Appendix B

ADDITIONAL RESOURCES

Journals

Business Computer System
Cohners Publishing
221 Columbus Avenue
Boston, MA 02216
(Published Monthly—$35.00 Yearly)

Business Software
MIS, Inc.
3542 Northeast Broadway
Portland, OR 97232
(Published Biannually—$18.00 Yearly)

BYTE
BYTE Subscriber Service
McGraw-Hill, Inc.
PO Box 328
Hancock, NH 03449
(Published Monthly—$21.00 Yearly)

Compute
Small System Services, Inc.
PO Box 5406
Greensboro, NC 27403
(Published Monthly—$20.00 Yearly)

ComputerWorld
PO Box 880
Framingham, MA 01701
(Published Weekly—$39.00 Yearly)

Creative Computing
PO Box 5214
Boulder, CO 80321
(Published Monthly—$24.97 Yearly)

Desktop Computing
Wayne Green, Inc.
PO Box 917
Farmingdale, NY 11737
(Published Monthly—$24.97 Yearly)

80 Micro
PO Box 981
Farmingdale, NY 11737
(Published Monthly—$25.00 Yearly)

ICP Software Business Review
9000 Keystone Crossing
PO Box 40946
Indianapolis, IN 46240
(Published Quarterly—Free)

inCider
Wayne Green, Inc.
PO Box 911
Farmingdale, NY 11737
(Published Monthly—$25.00 Yearly)

infoWorld
375 Cochituate Road, Box 880
Framingham, MA 01701
(Published Weekly—$31.00 Yearly)

Interface Age
16704 Marguardt Avenue
Cerritos, CA 90701
(Published Monthly—$21.00 Yearly)

Microcomputing
Wayne Green, Inc.
80 Pine Street
Petersborough, NH 03458
(Published Monthly—$25.00 Yearly)

Microsystems
CN 1987
Morristown, NJ 07960
(Published Monthly—$26.97 Yearly)

Mini-Micro Systems
270 St. Paul Street
Denver, CO 80206
(Free)

Nibble
Box 325
Lincoln, MA 01773
(Published Monthly—$36.50 Yearly)

PC Tech Journal
PO Box 598
Morris Plains, NJ 07950
(Published Bimonthly—$24.97 Yearly)

PC The Independent Guide to IBM Personal Computers
Ziff-Davis Publishing Company
One Park Avenue
New York, NY 10016
(Published Monthly—$26.97 Yearly)

PC World
PC World Communications, Inc.
55 DeHoro Street
San Francisco, CA 94107
(Published Monthly—$24.00 Yearly)

Peelings II
PO Box 188
Las Cruces, NM 88004
(Nine Issues Annually—$21.00 Yearly)

Personal Computer Age
Crone-Reasoner Corporation
16057 Commerce Avenue
Tujunga, CA 91042
(Published Monthly—$18.00 Yearly)

Personal Computing
Hayden Publishing Company
50 Essex Street
Rochelle Park, NJ 07662
(Published Monthly—$18.00 Yearly)

Personal Software Magazine
Hayden Publishing Company
50 Essex Street
Rochelle Park, NJ 07662
(Published Monthly—$24.00 Yearly)

Popular Computing
McGraw-Hill, Inc.
Subscriber Service
PO Box 328
Hancock, NH 03449
(Published Monthly—$15.00 Yearly)

Small Business Computers
Creative Computing
CN 1988
Morristown, NJ 07960
(Published Monthly—$19.97 Yearly)

Softside
Softside Publications, Inc.
10 Northern Blvd.
Amherst, NH 03031
(Published Monthly—$30.00 Yearly)

Softalk
PO Box 60
North Hollywood, CA 91603
(Published Monthly—$24.00 Yearly)

The Portable Companion
The Osborne Computer Corporation
26500 Corporate Avenue
Hayward, CA 94545
(Published Bimonthly—$12.50 Yearly)

TRS-80 Microcomputer News
Radio Shack Corporation
1300 One Tandy Center
Fort Worth, TX 76101
(Published Monthly—$18.00 Yearly)

Appendix C

SOFTWARE EVALUATION AND RATING FORMS

MICROCOMPUTER BUSINESS SOFTWARE EVALUATION

Package Title _____

Version _____ Price _____

Functional Area _____

Specific Tasks Performed _____

_____

_____

Vendor & Address _____ Phone _____

_____

_____

Hardware Requirements _____

_____

Medium 5 1/2" disk _____ 8" disk _____ Cassette _____ Other _____
(specify)

Other Software Required _____

_____

Package/Single Program _____

Compatible with _____

Part of Integrated Series _____

Copy Policy/Reproducibility (Copyability) _____

_____

MICROCOMPUTER BUSINESS SOFTWARE RATING FORM

Rating Scale: 1 - 10, with 10 being the highest

Documentation:

1. Clear & unambiguous _____
2. Consistent with hardware _____
3. Defines technical terms _____
4. Contains tutorial section _____
5. Provides examples that work _____
6. Completely explains all functions _____
7. Instructions produce expected results _____

User Friendliness:

1. Commands simple & easy to remember _____
2. Adequately prompts user for input _____
3. Corrections are easy to make _____
4. Menus are unambiguous _____
5. User can escape program at any point _____
6. Help menu is adequate _____
7. Program catches most errors _____

Content:

1. Program performs accurately (i.e., gives correct answers) _____
2. Output is simple to interpret _____
3. Program performs reliably (i.e., gives correct answers) _____
4. Uses procedures consistent with your business operation _____

TOTAL SCORE: _____

Critical Problem Areas _____

_____

Unusual Strengths _____

_____

Recommendation (check one): I recommend purchase of this package. _____
I do not recommend purchasing this package. _____

Reviewer Name _____ Date _____

_____

MICROCOMPUTER INSTRUCTIONAL SOFTWARE EVALUATION

Package Title _____

Version _____ Price _____

Subject _____ Grade Level _____

Specific Skills/Concepts Taught _____

_____

Vendor & Address _____ Phone _____

_____

_____

Hardware Requirements _____

_____

Medium 5 1/4" disk _____ 8" disk _____ Cassette _____ Other _____
(specify)

Other Software Required _____

_____

Package/Single Program _____

Compatible with _____

Part of Integrated Series _____

Copy Policy/Reproducibility (Copyability) _____

Instructional Purpose (check all that apply):

- Remediation _____
- Regular Instruction _____
- Enrichment _____

Instructional Technique (check all that apply):

- Drill & Practice _____
- Tutorial _____
- Simulation _____

_____

MICROCOMPUTER INSTRUCTIONAL SOFTWARE RATING FORM

Rating Scale: 1 - 10, with 10 being the highest; use NA when not applicable

Documentation:

1. Clear & unambiguous _____
2. Consistent with hardware _____
3. Defines technical terms _____
4. Contains sample problems with solutions _____

User Friendliness:

1. Commands simple & easy to remember _____
2. Adequately prompts user for input _____
3. Corrections are easy to make _____
4. Menus are unambiguous _____
5. User can escape program at any point _____
6. Provision made for review or back up _____
7. Help menu is adequate _____
8. Program catches most errors _____

Content:

1. Content is accurate _____
2. Content is complete _____
3. Performance objectives are given _____
4. Content has educational value _____
5. Material is logically arranged _____
6. Quiz administered, scored, and recorded _____
7. Reading level is appropriate _____

Presentation:

1. Illustrations appropriate/attractive _____
2. Sound effects are appropriately used _____
3. The screen is used effectively _____
4. Old material is removed prior to new material being displayed _____
5. No unnecessary delays are built in _____
6. Periodic progress checks are included _____
7. Student is recycled through material when progress is not satisfactory _____

TOTAL SCORE: _____

Critical Problem Areas _____

_____

Unusual Strengths _____

_____

Recommendation (check one): I recommend purchase of this package. _____
I do not recommend purchasing this package. _____

Reviewer Name _____ Date _____

REFERENCES

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Books and Journal Articles

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