

Reference Encyclopedia For The IBM Personal Computer

Second Edition

Gary and Karen Phillips

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**Reference Encyclopedia
For The IBM Personal Computer**

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Other special features of the Encyclopedia:

- All DOS messages listed alphabetically
- Brief summaries of hundreds of hardware and software products for the PC
- List of vendors for product information
- Hundreds of tips on programming and use of the PC
- Background information on hundreds of PC and general computer terms and concepts
- dBASE II, BASIC and DOS commands and functions explained

The Encyclopedia is organized to provide instant access to any information you need regarding operation and function of the PC and its accessories. The letters of the alphabet are indicated with tabs, and each letter is numbered separately — i.e., page numbers start anew with each letter of the alphabet. This system will allow you to update your book easily.

At the end of the alphabet you will find a special section called Numbers and Symbols. These include entries for hexadecimal numbers (and software packages that begin with numbers), plus symbols and special characters in DOS and BASIC. Following these listings is a special section called Vendor List, which is a guide to the suppliers of all products described in the Encyclopedia. Please note that all products compatible with the PC are indicated with an asterisk (*). Not all of these products have been tested by the authors or editors; all claims attributed to the products have been made by manufacturers or by firms marketing these items. Their inclusion in the Encyclopedia should not be taken as an endorsement by the publisher.

Note also that the Vendor List, as well as a complete index, are found at the end of each of the Encyclopedia's two volumes. This makes it easier and faster to locate the information you need.

We know the Reference Encyclopedia for the IBM Personal Computer will provide the information required by the beginning to intermediate PC user for day to day operation of the PC. While the Encyclopedia does not cover highly technical material such as assembly language programming, wiring diagrams or DOS internals, experienced PC users will find it of great value for quick access to fundamental facts. The increased ease and speed of finding information in the Encyclopedia will make it your first (and nearly always your last) IBM PC reference source.

Preface

The Reference Encyclopædia for the IBM Personal Computer brings together information from dozens of sources into a single alphabetical list. Here, in two volumes, is the one reference that all PC users — beginners and advanced — can consult for quick and easy access to all facets of the PC. From DOS to BASIC, from ASCII codes to Zork III, from PC hardware to software products — you'll find it all here. Many of these facts could be found by searching through the five main IBM manuals with their various subdivisions, a few dozen books on the PC, back issues of magazines, club newsletters, telecommunications network bulletin boards, and various other sources. The PC Reference Encyclopedia makes this information available in seconds, eliminating hours or days of research.

The Encyclopedia is thoroughly cross-referenced by the common sense terms that describe what you want to do on the PC, leading you to simply worded versions of just the information you need. This allows you to quickly answer everyday computing questions and get on with making your PC work with you.

Many topics offer detailed explanations for the beginner, and others provide short informational entries for the more experienced user. Here is a sampling of these "mini-tutorials" of special interest.

- Address notation for the PC
- BASIC Compiler
- BASIC — Statements cross-referenced by function
- BASIC 2.0
- Batch Processing, with DOS 2.0 enhancements
- C Programming Language
- dBASE II®
- DOS 2.0 — Overview and comparison to DOS 1.1
- EDLIN
- Files — kinds and extensions
- Friday!™
- JFORMAT (Quad density 800K diskette drives)
- 1-2-3™
- Memory
- Multiplan™
- Prompts
- SuperCalc™
- Type Fonts (IBM/EPSON Printer control characters explained)
- VisiCalc®
- WordStar™
- WordStar Customizer/patches

A — Append Lines. Command in EDLIN. DOS line editor EDLIN.COM provides the ability to create and modify text files on the PC. It is a line oriented text editor with simple commands, adequate to make simple and local changes. While EDLIN is not a replacement for a full text editor or word processor, it is a realistic way to create and modify .BAT files, short memos, and short Assembler programs.

EDLIN's operation is based on line numbers running sequentially from 1 by 1 to the number of the last line. The line numbers are renumbered when lines are inserted or deleted. An asterisk identifies the line EDLIN is currently prepared to modify. The current line to be modified can be changed by entering a new line number or by utilizing the I (insert) or S (search) commands. The maximum line length is 253 characters.

While in EDLIN you may append lines from the original file by using the A command. A appends lines into memory from the original file being edited. This is used only with files too long to fit into memory. You know the file is too large for memory if EDLIN does not give the "End of input file" message when starting up. The command format is:

(number of lines to append)A.

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If no number of lines is specified, EDLIN will read in and append lines to the lines currently in memory until memory is 75% full. This probably is the best way to use A(ppend) — let EDLIN figure out how many lines to bring in. A(ppend) is ordinarily used after W(rite) has freed up some memory by writing lines out to the .\$\$\$ file.

See EDLIN.

A (/A) — COPY Command. /A controls copying of ASCII text files vs. non-text files (such as compiled programs) which may contain the Ctrl-Z end of file character. The default mode for copy is to assume text (ASCII) files when concatenation is being performed (+) and non-text (/B) when not concatenating.

In ASCII (/A) mode, the (from) file is copied up to a Ctrl-Z (end of file mark). Also, a Ctrl-Z is used to mark the end of the (to) file. This works fine for text files. Since compiled programs and some other types of non-text files may contain Ctrl-Z as data, they must be copied to the end of the allocated space regardless of any Ctrl-Z encountered. And, putting a Ctrl-Z on the end of a compiled program (.EXE, .OBJ, etc.) could cause problems. Non-text copy mode (/B) avoids these problems. For most copies this will never be something you need to think about, since the default values work 99% of the time.

A — Diagram symbol meaning accumulator. Also stands for address line, and the hexadecimal sign for the decimal integer 10: A base 16 = 10 base 10 = 12 base 8 = 1010 base 2

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A – Abort

A — To SAVE a BASIC program in ASCII format. See ASCII — Save a program.

Å — Symbol for angstrom, equaling one billionth of a meter (one nanometer).

A> — Prompt. This is a program's way of letting you know it is waiting for you to type in information. A> is a prompt from DOS if you are working on diskette drive A (the leftmost drive) as the default drive. Other prompts are B>, ?, and OK. OK is the prompt from BASIC or BASICA, indicating that you can now enter a BASIC command or statement. B> is a DOS prompt when the default drive is B, the rightmost drive.

To determine which is the default diskette drive, look at the prompt (A> or B>) from DOS or FILES from BASIC and see which diskette drive is indexed on the screen. The DOS prompt itself specifies the default drive (A> for drive A: on the left; B> for drive B: on the right). Under BASIC, enter FILES; if the LED on the leftmost drive goes on, A is the default. If the LED on the rightmost drive goes on, B is the default drive. If neither LED goes on, perhaps the electronic disk C: or drive D: is the default.

A-2 A.C.T. Series* — This full-macro cross-assembler for CP/M 2.2 supports the 8080/8085/Z80, 6800, 6809, 6502, and 8088/8086 processors and generates nonrelocatable Intel-format hexadecimal files. Sorcim Corporation.

AACS Restaurant Accounting Programs* — This program provides everything needed to turn the IBM PC into a restaurant back-office system. It includes general ledger, accounts payable, accounts receivable, and payroll. Meals, uniforms, and other deductions are accommodated by payroll, as well as 8% tip reporting requirements. This system is also suitable for general business applications, and can be used in conjunction with AACS Restaurant Inventory Control programs. See AACS Restaurant Inventory Control and Cost Analysis Program. Advanced Analytical Computer Systems.

AACS Restaurant Inventory Control and Cost Analysis Program* — Designed to reduce food cost by comprehensive inventory control and cost analysis, provided in time to be useful. This system features perpetual inventory, sales mix and menu-item analysis for standard food cost, absolute food cost analysis, theft/overportion detection, inflation evaluation, current menu-item costing, automatic inventory reorder and much more. This fast, friendly and thoroughly documented program can be used with any p.o.s. system. Written by restaurateurs, this program is used in all types of restaurants and bars. Advanced Analytical Computer Systems.

Abort — The process of ending a program, which has encountered an error condition, in an orderly manner and returning the control to an operator or operating system. For the PC, this is accomplished by pressing Ctrl-Break together.

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About to generate .EXE file — DOS Message. Change disks <hit Enter> LINK produced. This message appears when you indicate the parameter /PAUSE. Place into the default drive the diskette on which you want the runfile, then press Enter.

ABS — BASIC Function. ABS returns the positive (absolute) value of the argument x (without regard of negative signs). The format is:

(variable) = ABS(x)

x must be a numeric expression. For example:

```
Ok
PRINT ABS(-100)
100
```

Ok
The positive (absolute) value of -100 is 100.

Absolute Loader — A program which functions as part of an operating system and loads a program into memory at a fixed numerical address. See also Relocating Loader, which is the type used in PC DOS.

Absolute Run Time Address — To find the actual addresses used by a program module from the link map. See Run Time — Address.

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Absolute Value — The value of a number expressed as a positive number. Denoted by enclosure within vertical bars. Thus, if a number is positive or zero: $|x| = x$. If x is negative: $|x| = -x$. See ABS.

ABSTAT* — A fully interactive statistics and data analysis package. This program combines ease of use with fast processing speed. Strong data manipulation capabilities are possible and data can be shared with other software. A well documented program which requires 128K memory. Anderson-Bell.

A-bus — The primary internal source-bus to the arithmetic logical unit in any processor.

AC — Alternating Electrical Current.

AC or ACC — Accumulator, or Access Time. The time required to retrieve a word from memory of any type.

Accept ('prompt message') TO (memvar) — dBASE II Command. Used in command files (.PRG) to prompt the user to enter character string information into the designated memory variable (memvar). See dBASE II.

Access Manager-86* — Access Manager-86's versatility as a B-Tree index structured file access method is compatible with all of Digital Research's "86" compiled languages. The system maintains in-

Accessories – Accounting

dividual index and data files to eliminate the process of sorting the data records. The index is accessed in either ascending or descending order to quickly search for and retrieve information from an unsorted data file. Access Manager-86 supports both single-user and multitasking operating systems. File and record locking is provided to ensure data integrity. Record lengths defined by the user are also supported.

Accessories — See PerfectData Micro Maintenance Kit, PerfectData Tech Maintenance Kit, PerfectData Type Element Cleaning Kit, and PerfectData Video Display Cleaning Kit.

The Accountant Finance Database System* — This double-entry bookkeeping system comes with a demonstration database to help users set up their home financial or business system. Features include user-definable accounts and codes, a built-in desktop calculator, and split and back dating of transactions. User may define nine sets of automatic transactions and post them to the database as desired. Decision Support Services. .

Accountant Finance Database System (Business Version)* — A double-entry bookkeeping system that helps manage the user's finances. See Accountant Finance Database System (Personal Version). Decision Support Software.

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Accountant Finance Database System (Personal Version)* — This double-entry bookkeeping system helps manage the user's finances. A demonstration database comes with each system to help users set up their home financial or business system. Split and back dating of transactions, user-definable accounts and codes, and a built-in desktop calculator are included. Decision Support Software.

Accounting, Integrated AP/AR/GL — See TCS Accounting System.

Accounting, Integrated AP/AR/GL/OE/INV — See Accounts Payable, and Payroll System.

Accounting Master* — This complete business accounting package includes A/R, A/P, G/L, and a true manufacturing inventory Control system. Each module may be combined with others, for a completely integrated accounting system, or run alone. ASTEC, Inc.

Accounting (Miscellaneous) — See Commercial Property Management System, Contractors Job Costing, Job Costing 2.1, and The 25th Hour:25:03.

Accounting Software — See Accounts Payable, Accounts Receivable, General Ledger, Inventory, Order Entry, Payroll, CPA Client Accounting, Tax Packages, Medical/Dental, and Accounting (Miscellaneous). See also Business Application Systems.

Accounts Payable — See Accounts Payable, Accounts Payable 2.1, Accounts Payable by Peachtree Software, Inc., HAILINE Accounts Payable, TCS Accounts System, VERSAPAYABLES, and The Accountant.

Accounts Payable* — A multiuser accounts payable system designed to keep expenses and clerical processing costs to a minimum. It maintains vendor purchases history, automatically computes and takes vendor discounts, pays standard expenses, allows for multiple payments from banks and checking accounts, and supports user-defined aging categories. Full integration with ABS general ledger system. American Business Systems, Inc.

Accounts Payable* — Features standard to this system are cash requirement reports and detailed examination of current expenditures. The system allocates every invoice up to 10 general ledger accounts, ensures vendor discounts, maintains year-to-date statistics, prepares vendor checks, provides complete and detailed audit trails, and automatically updates the ABS general ledger system. American Business Systems, Inc.

Accounts Payable* — An accounts payable system for small businesses. Possesses vendor file maintenance and lists. Permits entry, editing, and posting of new payables, adjustments, credits and pre-pays, with journal and edit list. Prints open item reports and permits flexible payment selection, with partial payments, with pre-check writing report. Prints accounts payable checks, the check register report showing A/P distributions to the G/L, and the vendor analysis report. May be interfaced to the MBSI general ledger. Micro Business Software, Inc.

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Accounts Payable* — This system maintains vendor accounts, and prints checks. It provides a range of management and accounting reports. Use may be stand-alone or integrated with general ledger. MPSI.

Accounts Payable* — Designed specifically for the first-time computer user, this program is comprehensive and easy to use. All the standard features are included, plus a total-design orientation for the end user. This voucher system has the ability to enter, authorize, and pay invoices on vendor checks. Multiple stores, divisions, and companies can be kept on the same disk or diskette. Journals for payables can be produced by ledger account, inventory item and job. BCC, Inc.

Accounts Payable* — User-customization of check printing and unlimited distribution per invoice are highlights of this accounts payable system. Also included in this program are outstanding invoices, total purchases, discounts taken or missed, date and amount of last payment, current year, prior year, last invoice, number of outstanding invoices, and account balance. Automatic check and remittance advice printing, with user-control of the maximum pay-

Accounts Payable

ment amount, are also available. This system will integrate with general ledger and requires 64K memory. Information Unlimited Software, Inc.

Accounts Payable* — This full, open voucher system allows the user to pay bills by individual or partial voucher. One check per vendor is printed along with a check register. If the voucher is paid in time, prompt payment discounts are automatically applied to the check. Lists of itemized cash requirements for the next three months, all vendors and their addresses, and the total payments made to each vendor so far this year can be generated. Commonly used procedures are selected with a single keystroke and most important instructions appear on the screen. International Micro Systems, Inc.

Accounts Payable* — A complete vendor/voucher history is maintained by this program, along with check writing capabilities. Determination of vouchers to pay by due date, discount, or within cash requirements is also provided. Micro Architect, Inc.

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Accounts Payable* — Processing of vendor invoices with automatic expense distribution to general ledger and job costing are allowed in this system. Also featured are full-screen data entry, fast machine-language sorts, cash or accrual methods of accounting, keyed access, cash requirements report (variable periods), automatic voucher-ing, processing of hand-written checks, flexible payment selection, automatic cash discount computation, monthly check register, check writer, and general ledger summary or detail expense distribution. Occupational Computing Company, Inc.

Accounts Payable* — Written in Pascal MT+86, this highly parameter-driven program eliminates the need to modify software for minor screen, report or file revisions. Source code is available and requires 128K memory. Small Business Systems, Inc.

Accounts Payable* — Designed to keep track of current and aged accounts payable, generate a cash requirements report and print checks, this program may be used as part of an integrated system or used separately. Accounts Payable will interact with the general ledger system. Software Laboratories, Inc.

Accounts Payable* — Vouchers may be paid by vendor for less check writing or by due date for better cash management. Recurring payables such as rent are maintained. Posted entries can be disbursed to multiple accounts in G/L; or a proof file can be maintained to print and post to another B/L system. Solid Software, Inc.

Accounts Payable* — This comprehensive package that processes sales commissions and maintains multiple sales tax collection records is available to microcomputer users with CP/M and MS DOS operating systems, and may be purchased through any of 300 dealers. The user may tailor customer service charges on a customer-by-customer basis. The accounts receivable system provides monthly

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Accounts Payable – Accounts Receivable

statements in addition to standard invoices and reports. A five-year warranty against errors is included along with documentation. Solid Software, Inc.

Accounts Payable by Peachtree Software, Inc.* —

Management software keeps track of accounts payable and incorporates routines that retain records for all vendors. It is possible to print checks, and to produce reports, such as aged accounts payable trial balance, cash requirements reports, and vendor listings. The software permits repeated payments to be set and automatically posted on a periodic basis with 300 vendors and 150 general ledger posting accounts. This software possesses a transaction capacity of approximately 370 items per period. IBM Corporation.

Accounts Payable 2.1* — This accounts payable system operates by pay date, allowing invoices to be entered as they arrive and then assigning a date. When that pay date arrives, the check is produced by the system and the invoice is removed from the system. Produced reports include a vendor masterfile, name/address listing, general ledger distribution, pre-list cash requirements, check register, and aged trial balance with all invoices aged over five time periods. Also possible is automatic update to general ledger. Computer Systems Design, Inc.

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Accounts Receivable - See Accounts Receivable, Accounts Receivable 2.1, Accounts Receivable by BPI Systems, Inc., Accounts Receivable by Peachtree Software Inc., HAILINE Accounts Receivable, TCS Accounts Receivable, and VERSARECEIVABLES.

Accounts Receivable* -- This A/R package provides users with complete control over accounts receivable and management reports. It maintains open item and balance forward customers, variable aging intervals, allocates up to 10 general ledger accounts invoices, distributes up to 10 general ledger accounts adjustments, distributes cash receipts up to eight invoices, provides detailed audit trails and customer statements, and automatically updates the ABS general ledger system. American Business Systems, Inc.

Accounts Receivable* — This multiuser system provides extensive accounts receivable functions. Supported are open items and balance-forward customers, user-defined aging categories, flexible payment entry, user-defined finance charges, and complete customer profiles. Provided are immediate screen access to all data and integration with the BACS general ledger system. American Business Systems, Inc.

Accounts Receivable* — This system is an open item and balance forward accounts receivable for small businesses. Maintenance lists of salespersons and customer files are provided by the system. Accounts receivable allows: sales transactions entry, editing and posting, with edit list and journal; cash receipt entry, editing and posting, with edit list and journal; and customer account status in-

Accounts Receivable

quiry. The system prints the aging report, a report showing accounts receivable distributions to the G L, statements, and the commissions due report. It automatically calculates the finance charges, with edit list and journal, and controls commissions due. This system may be interfaced to the MBSI general ledger and may be used with MBSI sales analysis. Micro Business Software, Inc.

Accounts Receivable* — This system maintains customer accounts, produces an entire range of accounting and management reports (including aged debt analysis), and prints customer statements. Provided are open-item and balance-forward accounts. The system integrates with invoicing and inventory control. MPSI.

Accounts Receivable* — This is a user-friendly, comprehensive double-entry accounting system using screen-oriented data input forms, extensive error-trapping, data validation, and machine-language routines for high-speed operation. Features: interfaces to general ledger; holds up to 500 accounts and 500 invoices per diskette; prints customer statements, invoices, and address labels; includes interactive screen-based invoice work sheets. These reports can be produced: sales analysis, aged receivables, invoice search, and customer listings. Spectrum Software.

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Accounts Receivable* — This comprehensive, easy-to-use system is designed specifically for the first-time user. The total-design orientation is for the end user; plus all of the standard features are included. All required data are displayed at once, and suggested answers filled in for convenience. Invoices can be entered efficiently and quickly. Receivable journals can be produced by job number or/and ledger account number. Multiple divisions, companies, and profit and cost centers can be kept on the same disk or diskette. BCC Inc.

Accounts Receivable* — User-customization of customer statements, collection letters, and mailing labels is featured in this program. Customer accounts may be maintained on either a balance-forward basis or an open-item basis. Printed reports may be produced for any range of customer accounts. Information Unlimited Software, Inc.

Accounts Receivable* — Instant customer account information and complete invoicing and statement capabilities are combined in this program. Open-items and balance-forward accounts, automatic billing, and open credit reconciliation are supported. A customer file list, statements, a customer accounts detail listing, invoices, a transaction register, a B/L register and much more are included. Micro Architect, Inc.

Accounts Receivable* — Written in Pascal MT+86, this highly parameter-driven program is designed to eliminate the need to modify software for minor screen, file, or report revisions. Small Business Systems, Inc.

Accounts Receivable – ACCULINK

Accounts Receivable* — This program is designed as a complete invoicing and monthly statement-generating system to be used alone or as part of an integrated system. Included are four programs to keep track of customers, make debit and credit entries, inquire on account, and generate aging reports. Software Laboratories, Inc.

Accounts Receivable* — This program, featuring one-entry invoicing with full-screen editing of customer data, is designed to post invoices that automatically deduct stock from inventory. Statements are fully itemized with all transactions, and daily and monthly transactions are maintained. The Software Terminal.

Accounts Receivable 2.1* — An open-item or balance forward receivables system that prepares statements from information entered from payments and invoices. Customer journal and aged trial balance reports are producible on demand to keep track of overdue accounts. Computer Systems Design, Inc.

Accounts Receivable, Billing and Inventory Control* — In one step this system reduces inventory, accumulates sales analysis information, and posts to customer general ledgers. Also included: Full-screen data entry, open-item or balance-forward, keyed access files, sales journals, aging, credit checks, inventory exception reports, inventory projections, statements with automatic finance charges, and discounts. Occupational Computing Company, Inc.

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Accounts Receivable by BPI Systems, Inc.* — This accounts receivable management system provides the following reports: list of overdue accounts, aged trial balances, cash collections reports, and a report of late accounts. Four categories of customer accounts are permitted: regular accounts receivable, repeating charging accounts, fixed payment accounts, and revolving credit accounts. Finance charges may be specified on two levels. Monthly customer statements are printed by the software. Overdue accounts are sent overdue notices. Customer accounts may be maintained either on an open-item or balance-forward basis. As many as 900 monthly transactions for up to 500 customers can be accommodated on the system. Distributed by IBM Corporation.

Accounts Receivable by Peachtree Software, Inc.* — This management software module is a full-feature accounts receivable management and invoicing program. It produces invoices and customer statements, useful reports, such as aged accounts receivable trial balance, customer lists, single customer account inquiries, sales tax reports, and sales reports. The software can maintain accounts on an open item and a balance forward basis. Sophisticated capabilities are present for posting cash to open item accounts. Maintenance is capable for as many as 500 transactions with as many as 300 customers. IBM Corporation.

ACCULINK* — An asynchronous communications program that permits file transfers between CP/M microprocessors and a variety of

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Accumulator – ACOM-300

minis and mainframes, including PDP-11, VAX, DEC-10, and DEC-20. ACCULINK can be used to control other computers for remote operation as well as for CP/M to CP/M communications. ACCULINK has two methods of operation. With datalink, ACCULINK is resident on the local micro and the remote computer, allowing ACCULINK to perform sophisticated error checking and automatic retransmission-upon-error during high-speed transmissions of ASCII or binary files. In the interactive-plus mode, ACCULINK may be resident on the local micro only. The micro appears as a terminal to the host while retaining file transfer capabilities. IE Systems, Inc.

Accumulator — A register into which the results of arithmetic operations are stored. More than one accumulator can be present in a central processor. The AX register of the PC's 8088 often functions as an accumulator.

ACCUPIPE* — A computer graphics software program that designs or checks pipe supports and seismic restraints used in fossil fuel, refinery, nuclear, and chemical plants. A complete analytical report that details the acceptability of all components on a service level basis, is generated. Also, a complete pipe support sketch is produced without operator interaction. Requires 512K memory. AC-CUPIPE Corporation.

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ACIA — Asynchronous Communication Interface Adapter.

ACK — ACKnowledge character in ASCII, a 06 base 16. This is used in communications to complete a handshaking sequence. The ACK signal indicates that the information has been accepted.

AC Line Transient Protector* — A solid state clamping device that protects equipment from spikes, surges, and transients. The protector is plugged into any three-wire duplex outlet, converting it to six outlets. This device is solid state with tested and proven semiconductors. Bitstream, Inc.

ACM — Association for Computing Machinery

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ACM is the major international society for computer technology. Through its numerous publications and special interest groups, ACM will be of interest to many PC users. For more information write to ACM or find the *Journal of the ACM* at your library.

ACOM-300* — A communications software designed specifically to connect the IBM PC to the GEISCO Mark III network. The user can send and receive files on PC disk, and list and erase local PC files while connected to Mark III; meanwhile the printer can be off or on. Allston Group.

Acoustic Coupler — A mechanical instrument for connecting the telephone handset to a computer through a modem. The data is converted to tones—usually audible—for transmission over the phone lines.

ACT — ACcumulator, Temporary (in the 8080 microprocessor).

Active Trace* — This provides real-time information about a program while it executes, and can help debug non-working programs. You will see the line numbers, variable names and values on the screen as the program executes. Includes cross-references. Digital Marketing Corp.

Adam and Eve I* — These game paddles were designed to allow comfortable playing for hours without cramps or muscle soreness. Directly soldered to a miniature printed circuit board for reliability, are extra long-life switches and potentiometers. Crimp connectors with heavy-duty strain relief are attached to the five-foot flexible, flat jacketed cables. Comes with a one-year warranty. Tech Designs, Inc.

ADC — Analog to Digital Converter.

ADCCP — Advanced Data Communication Control Procedures.

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Add characters in between existing characters — BASIC. Pressing Ins (insert) inserts the next character where the cursor is currently. See BASIC EDITING for related information.

Adder — A processor unit that performs binary arithmetic.

Adding Two-Digit Numbers With Carrying* — Two different types of problems are used to drill students in the addition (with carrying) of two-digit numbers. A bank of over 3,500 choices is used to randomly generate problems. Resource Software International, Inc.

Adding Two-Digit Numbers Without Carrying* — 3,500 choices are available to randomly generate two-digit addition problems for students. Resource Software International, Inc.

Address — Position of a word in memory, expressed by a number. In the PC, addresses range from 0 to 1 megabyte.

Address — Run Time. To find the actual addresses used by a program module from the link map. See Run Time — Address.

ADDRESS-IT* — A fast, easy-to-use mailing list program which can also be used as an electronic address book that keeps names, occupations, birthdates, and addresses. Eight functions to manipulate any part of the data are included along with a fully documented users manual. JasDac Soft.

Address Mark – Address Notation

Address Mark — Eight bit code placed at the beginning of specific fields on a diskette track, such as the index, identification, data or deleted data.

ADDRESS MASTER* — Up to 1,600 addresses can be stored on one double-sided diskette with this program. Addresses can be formatted 8-1/2 by 11", or printed as labels. Labels can be selected by distribution category, expiration date, or account code. Micro Masters Software, Ltd.

Address Notation for the PC — Example: 05DC:0100 or CS:IP. You will often see an address for the PC written in these forms. They are called segment/offset forms. The format is:

(segment address):(offset within the segment)

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In the example 05DE:0100, segment address = 05DC, offset within that segment is 0100. Both numbers are written in hexadecimal. The segment address specifies memory starting at a paragraph boundary — a 16 byte block of memory. Segment address 0000 starts at address 00000. Segment 1 starts at address 00010 (the hexadecimal value for decimal 16). Paragraph 0002 starts at 00020 (the hexadecimal value for decimal 32), etc. Thus, segment address 05DC starts at 05DC0.

All actual byte addresses are 5 hexadecimal digits in length, unless non-significant leading zeros have been omitted for convenience. The internal registers used to hold addresses in the PC (the segment registers DS, CS, SS, and ES) only hold 2 bytes = 4 hex digits. The registers therefore cannot hold a complete byte address. A byte address is represented by the 4 hex digits of a segment register plus an offset (also 4 hex digits to fit a PC register).

The byte addressed by a segment/offset pair must be calculated by adding the segment and offset addresses. The segment and offset are not in the same units, however. The segment address counts memory by paragraphs (16 byte blocks) while the offset counts memory by bytes. To put them in the same units, convert the segment address to a byte address by multiplying it by 16 (= 10 hexadecimal). Multiplying a hexadecimal (base 16) number by 16 simply adds a zero on the right, just as multiplying a decimal (base 10) number by 10 does. So putting an extra zero on the right converts a segment (paragraph) address to a byte (absolute) address. Example: segment address 05DC addresses byte 05DC0. To finish converting a segment/offset address to a byte address, add the segment address in byte form (with extra zero on right) to the offset address. Example: convert 05DC:0100 to an absolute or byte address:

- 1) Convert segment address of 05DC from paragraph form to byte form by adding a zero on right (equivalent to multiplying by 16 = number of bytes in a paragraph). 05DC0

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