

\$25 FOR 6502 EDITOR & ASSEMBLER HEX LISTING & MANUAL

Dear Jim,

Received: 77-Oct-4

I have just developed the following 6502 software.
MCS 6502 Resident Assembler/Text Editor
ASSM/TED

ASSM/TED, coresident in less than 4K (0200-1200, 0400-1400, 1000-2000, 2000-3000 please specify version desired). Produces relocatable object code on tape and can store executable code in memory during assembly. Using the relocating loader program, one can reload the relocatable object code at practically any location, can assemble from tape or memory. 17 commands are provided which direct the TED to load from tape (LO), assemble (AS), run a program (RU), create a relocatable object file (PU), record text on tape (RE) and other operations.

ASSM has 16 pseudo ops, provides listing consisting of source, object code, and symbol table. The user specifies the upper and lower boundaries of source file and symbol table (practically no limit to number of labels). Labels may be up to 10 characters in length. Text file and symbol table feature variable length storage of each entry in order to conserve memory. 18 error codes pinpoint any errors. TED features auto line numbering, file formatting, and a manuscript feature. This software supports up to 2 tape decks, CRT and keyboard, and an optional printer. Shipped preconfigured for TIM based systems but info is supplied in order to modify for other systems.

Hex listing and operators manual — \$25.00.

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References

1. E. W. Dijkstra, "The structure of the 'THE' — Multiprogramming System", Comm. ACM 11(5) 1968, 341-346.
2. K. Donovan and S. Madnick, *Operating Systems*, McGraw-Hill Book Co., New York, 1974.
3. P. Brinch Hansen, *Operating System Principles*, Prentice-Hall, Inc., New Jersey, 1973.
4. B. H. Liskov, "The design of the Venus operating system", Comm. ACM 15(3) 1972, 144-149.
5. D. M. Ritchie and K. Thompson, "The UNIX timesharing system", Comm. ACM 17(7) 1974, 365-375.
6. A. C. Shaw, *The Logical Design of Operating Systems*, Prentice-Hall, Inc., New Jersey, 1974.
7. D. C. Tschritzis and P. A. Bernstein, *Operating Systems*, Academic Press, New York, 1974.
8. R. Watson, *Timesharing System Design Concepts*, McGraw-Hill Book Co., New York, 1970.
9. *Operating Systems Survey*, the Comtre Corp., editor: A. P. Sayers, Auerbach Publ. Inc., 1971.

NAME-THE-USERS'-GROUP CONTEST ANNOUNCED BY HEATH

news release

Received: 77 Jun

A five-year membership is the prize in a name-the-users'-group contest sponsored by computer hobbyists exchanging information on the use of Heathkits. The more obvious choices will be ruled out by Heath Co.'s objections to use of their trademarks by an independent organization. Entries and requests for further information should be sent to Charles A. Floto, 267 Willow Street, Apt. 27, New Haven, CT. 06511.

PACE DOS SYSTEM FOR \$4500

news release

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A new disk-operating system (DOS) for the PACE Micro-processor Development System substantially reduces the time to assemble, edit and execute microprocessor and microcomputer operating and application programs. Designated the IPC-16P/840 by the Microcomputer Systems group of National Semiconductor Corporation, the system includes a dual-floppy disk drive in a stand-alone enclosure, an interface circuit subsystem card, a read-only memory (ROM) card containing firmware and complete operating software on a diskette.

The PACE DOS includes a comprehensive file management capability, support for assembly programs, Editors, Linking Loaders, Utility Programs and Diagnostics. The system may be installed on any IPC-16P PACE Microprocessor Development System with 12K words of Random-access memory (RAM) and heavy-duty power supply.

Each disk drive accepts a diskette capable of storing 2.528 megabits (158K words) of unformatted data. The diskettes have a maximum of 268 hexadecimal or 616 decimal sectors each. To ensure media interchangeability between drives, a single-element read/write head straddles an erase element which provides a blank area between data tracks. The PACE DOS Interface card, and the ROM Firmware card are inserted in any available slots in the PACE Microprocessor Development System. The interface card provides protocol for the dual disk drive and an optional user-supplied cathode-ray-tube (CRT) terminal such as the LSI ADM-3 or the Beehive Bee. Firmware, located on the card, operates both disk mechanisms, formats data, and controls data transfers.

Other firmware handles data formatting and transfer between the PACE central processing unit and the CRT terminal. CRT Input/output is RS-232 compatible at transmission rates of 300 baud or 1200 baud. A 20 milliamp current-loop I/O, with a 110 baud rate, is also available for teletypewriters.

The PACE DOS software and firmware combines an effective Monitor, a comprehensive File Manager, and a convenient File I/O Subsystem. With the combination, users reduce development time, speed debug procedures and simplify program testing.

The ROM-resident Monitor provides the user with simplified management control over system configuration and program execution. Single-word commands supply linkage to paper-tape loader, card-reader loader, diskettes, and the DEBUG subsystem.

The PACE DOS File Manager, residing on diskette, facilitates file maintenance, handles space allocation and provides file protection. The user has symbolic naming of program and data files as well as simplified control over directories, disk file specification, and data-file manipulation to and from disk. The system provides four levels of file protection to prevent accidental program destruction.

THE ROM resident PACE DOS File I/O Subsystem contains a collection of software routines that are useful for building microcomputer or microprocessor-based programs.

Upon naming source and destination files, the PACE Assembler automatically performs the assembly operation. The DOS EDITOR speeds generation of new source-statement text and aids modification of existing text in preparation for assembly. It can also be used to edit non-assembler-formatted source such as lists, tables, and directories.

The DOS Linkage Editor (LINKEDIT) relocates and links one or more load modules produced by the assemblers into a main program. LINKEDIT is command driven accepting commands from the console and from paper tape, punched cards, or the diskette itself.

Also included in the DOS Software are the PROM paper-tape/punch utility (PACPRO) and a disk-patching utility (DPATCH). PACPRO permits transferring load modules from card or diskette to paper tape for PROM or ROM programming or from load module paper tape to PROM paper tape. DPATCH allows the user to make permanent patches to a main program file in a manner similar to the way temporary patches are made in memory with a Debug program.

The PACE DOS, IPC 16P/840 is priced at \$4500 which includes the dual-floppy disk with complete electronics and power supply, the PROM card for firmware routine, the DISK/CRT interface card and cables. Delivery is 30 days ARO.

National Semiconductor Corporation, Microcomputer Systems Group, 2900 Semiconductor Drive, Santa Clara, CA., 95051.