

TINY TIME SHARING???

Dear Editor,

6/2/76

I would like to get readers to start thinking about the possibilities of constructing multiple-user or time-shared systems using table-top hardware.

The development which I think makes this possible is the Video Display Module VDM-1 from Processor Technology Corp. (6200 Hollis St., Emeryville CA 94608). I happen to have designed it, in part for the money, but also so that people more skilled in software than I (and that's almost anyone) could put together multi-user systems.

The VDM-1 is a memory module (1024 bytes) with a window (the video monitor screen). It has an upper/lower case character set which includes control characters (128 characters). There is a video inversion cursor which can be set at each character by setting the high-order bit of that character. This effectively doubles the character set to 256. Display format is 64 characters by 16 lines.

Since it is memory, the processor can read from the VDM as well as write to it. This means that information specific to a given user can be stored in that user's VDM, and pulled out for use when desired, modified, and put back in. This can happen in a memory area which is masked from the view of the user by the "window shade." As its name implies, this is a blanked area of the screen which can be "pulled down" from the top to blank a maximum of 15 text lines. The CPU determines the length of the shade through a status byte which it outputs to the VDM through an OUT instruction.

Suppose that Tiny BASIC (or Tiny ALGOL or Tiny FORTRAN or whatever) is set up in the CPU's main memory area. Several users with VDM's could be building programs, the object code of which is stored in the first few lines of their screens. (Here my ignorance of systems software will probably become laughably apparent. It's the vision that counts.) The CPU runs through a schedule in which it pulls out the object code and tables of parameters in a user's in a user's screen, runs the program until a convenient point is reached, stuffs the code and new parameters back under the window shade, and goes on to the next user. One of the parameters would obviously be the location on the screen of the cursor. If the total number of bytes used for this storage were 512 per user, that would still leave 8 lines of 64 characters. These could be configured as two columns of 32 characters, having a total length of 16 lines.

The more ambitious a user got, the lower the window shade would go as the hidden area filled up with stuff. This would provide a "negative feedback" effect which might serve to keep the user reminded of the limited nature of the machine resources. Users of *Incredible Big Monster* machines will throw tantrums at the thought of this, but they will have to be brought into the real world somehow, whether they like it or not.

I have been talking about a multi-user operation, in which several people use the same program. True time-sharing requires (I think) that each time the CPU steps to the next user, it be able to call up the program (meaning Tiny BASIC or Tiny ALGOL) that that user wants. Clearly these programs cannot be kept under the window shade, but, if they are tiny enough, there should be enough RAM available on a full-blown 65K system (providing the power supply holds out).

Incidentally, it might be a tickle to keep object code and parameters on the screen without pulling the window shade down over them. They would appear to flicker, sparkle and otherwise rearrange themselves in operation. This would

IVERSONS INITIATE APL NEWSLETTER

Dear Editor:

5/24/76

APL Press is a new publishing house devoted exclusively to APL. Its first book, to appear this summer, is a high school text on elementary analysis by Ken Iverson, the inventor of APL. Several other titles are planned for publication this year, and further manuscripts are being sought.

A newsletter is also planned, to present brief articles, problems, definitions of functions, reports on conferences, correspondence, and others items of interest to the APL community. The first issue, which is scheduled for July, will include a report by Professor Jenkins on a recent APL Implementors' Workshop, an article on magic cubes by Professor Mauldon, and material on a new form of function definition excerpted from a forthcoming book.

Readers interested in receiving the newsletter and information on other publications, or in submitting material for publication, should write to APL Press, Box 27, Swarthmore PA 19081.

Jean Iverson

[Jean Iverson is in charge of the APL Press. She is "closely associated" with Ken Iverson. -JCW]

A SOFTWARE EXCHANGE FOR 6800's

Dear Sirs:

5-15-76

I am sponsoring a SOFTWARE EXCHANGE for those interested. Anyone interested in receiving software for any of the microcomputers, send your name, address, and any software you have available. I have some software for the 6800 for immediate distribution. When I receive software from other individuals, I will distribute the material to those interested. Please include \$3 to cover the cost of mailing and photocopying. You need not submit software to benefit.

Very truly yours,

Howard Berenbon

2681 Peterboro
W. Bloomfield MI 48033
313 851-7966

We would be happy to save you the cost of photocopying listings and documentation by publishing your 6800 programs in *Dr. Dobb's Journal*. Also, if you don't want to spend the time and energy running your software exchange operation, you could submit your programs to Community Computer Center for their non-profit Program Repository & Tape Duplication Facility (please see *Dr. Dobb's Journal* Vol. 1, No. 3).

IMS ASSOCIATES, Inc. recently moved into new facilities which more than quadruple the company's manufacturing space. The company's new address in San Leandro, California, is 14860 Wicks Blvd, 94577; (415) 483-2093. The rapid growth of IMSAI has been attributed to the demand for the new IMSAI 8080 Microcomputer which was introduced earlier this year.

be a much better show than black screen, and might serve as a debugging aid, together with a chart of the binary equivalent of the character set.

That's about as much as I can offer, except for help in interpreting the VDM-1 manual, which is available for \$4 from PTCO. It's a pretty good manual, so I don't think there will be too much call on that score.

Do it!

Lee Felsenstein
LGC Engineering

1807 Delaware St.
Berkeley CA 94703
415 845-4736