

ADELAIDE MICRO USER News

APRIL 1991

The Adelaide Micro User Group Inc. was formed in 1979 as a forum for owners of Tandy computers to exchange information in a spirit of self-help.

Special interest sections form from time to time as members feel a need for them. Currently there are such groups for Models 1,3,4; Color Computers; and IBM PCs and clones. These groups gather at the general monthly meeting after the conclusion of the major topic.

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For particular information, please contact any committee member, who will direct you to someone whose interest is in that specific area.

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Next newsletter deadline is Sunday 14th April

Next general meeting is Thursday 4th April, 7-30
at the Combined Car Clubrooms, Clark Avenue, Glandore
The topic will be hard disks

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NEWS SPOT

NEW MEMBERS

Two Members have joined our ranks this Month, David Shelly and Reg Dutton. Welcome to AMUG and hope you will enjoy both the technical activities and the fellowship.

Members will be pleased to assist with information and /or refer you to other members with an expertise in a specific field.

Bob Mills is available to guide new members by way of a "Minor" held after the main meeting. Also some of the earlier years' Newsletters are available gratis to new members.

LAST MEETING (March)

John Fielke, the evening's Chairman, opened the meeting and read out the notices, including some equipment for sale.

The subject for the evening was "Spreadsheet Techniques". John still uses VISICALC as well as LOTUS 1-2-3. VISICALC was available for the Commodore and TRS 80. It was written in Machine Code due to the limited memory available to the earlier machines. However, the machine

coding results in a relatively fast processing for VISICALC. It was the forerunner of more recent Spreadsheets. The use of Cells for the program provides possibilities for use in a great variety of business and technical (or combined) applications alike, limited only by the needs and ingenuity of the user. The Cells are arranged and referenced in X-Y fashion, Rows and Columns.

If used for numerical data records, any desired mathematical relationship may be used on the variables in the rows and columns. If such a relationship is desired to be varied, it can be done simply and all dependent variables are altered automatically wherever occurring in the spreadsheet. This is a great time-saver and reduces the possibility of mistakes. This facility is ideal for a "What if" approach either for numerical trials or the spreadsheet layout for later presentation. Mathematical relationships can be as complicated as need be using the functions available in the computer or one's own.

Many spreadsheets may need just simple totals, averages, maximum, minimum or other values important to the user's Spreadsheet. The Spreadsheet is capable of great expansion and cells or groups of cells can be accessed quickly and directly. Column widths are 9 characters by

default or adjustable for the Model IV.

Some of the uses of VISICALC by members at the meeting were Income Tax, Labels, Bank account, Family history, Shares market, Frequency calcs. from capacity, inductance, and resistance, Rainfall and other weather records, Quotations for works. Also delving into a more abstruse field, calculations on the mechanisms of Neurons. (Could be just what I need. -Sec.)

DIF files (Data Interchange Format) extend the versatility of VISICALC even more. VISICALC formulae can be extracted and put into DIF file format. Data can be printed directly to an ASCII file and used later in a wordprocessor program to be included in a report. Data can be shifted out of one spreadsheet into another.

Quattro Lotus 1-2-3. Similar in use to V/Calc. It has been used in an unconventional way as a disjointed Database to keep information in any order, using a number which is common to different files. This is not strictly the way it was meant to be used but been found to be very practical and quick.

An opinion was expressed that the great success of VISICALC gave a significant boost to computer sales in the early years. VISICALC has a worthy place in computer history.

Using Macros, 'Hangman' has been played on a V/Calc type program !

'As Easy As' is a V/Calc type program for PC type machines.

NEXT MEETING: (April)

Hard disks (see article elsewhere this issue)

MAY MEETING:

Computers in Banking

JUNE MEETING:

Painless Accounting

JULY MEETING

Our Annual General Meeting, followed by a demonstration of Midi Interfaced to a Roland Synthesiser; also various other sound equipment.

AUGUST MEETING

Computer Viruses

PROGRAM DISK SALES:

Tandy Public Domain - Jack Birks
PC Shareware - John Hall

BLANK DISK SALES

Blank disks will be sold by John Fielke after the main meeting. We prefer to sell in lots of 10 disks, but will sell singles if absolutely required. Prices are:

5¼ DSDD	\$0.50
5¼ DSHD	\$1.50
3½ DSDD	\$1.50

FOR SALE:

A Model IV and Tandy Printer is for sale. Contact Max Morris.

BEGINNERS' CORNER conducted by Bob Mills

As a result of a suggestion made at a recent meeting I have agreed to start/reintroduce what is known as Beginners Corner at the monthly meetings. My aim is to provide a service to the newer/beginner users of computers in order that they may get more enjoyment or more effective use out of their computer, hopefully with much less struggle than they might normally have.

Last meeting saw the spreadsheet topic of the main meeting being further discussed at an appropriate level.

I do not plan on scheduling particular topics for discussion; I believe there is more to be achieved by those seeking assistance being the ones to raise the topic. The newer beginners will be my first priority; however the not so new beginner and more experienced are also welcome to grab my attention if I'm free.

Want to know something? - don't stand back, come forward and ask - I'm doing this to help YOU and I don't bite either. See you at a meeting soon,

[Editor's Note: I strongly encourage anyone considering they might fall even vaguely into the categories Bob welcomes above, to avail themselves of his offer. Bob has a wealth of experience, not only with PCs and TRSs, but from his daily work on a PC in the commercial sector. And his particular hobby interests lie more towards 'the leading edge of technology' than many of us. So, not only is there the potential benefit Bob is offering to all-comers with a particular problem, but to all in sharing his 'way of thinking'; regulars will recall this is what I consider is the vital aspect of understanding and doing battle with computers. So, I implore: don't let this very valuable free potential go to waste! Snap it up!]

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#### YOU TOO CAN HANDLE A BIG HARD ONE

By John Fielke

Hard disks are by no means a new thing. They have been used with mainframes for many years, and were available for the TRS 80 microcomputers. With the advent of the IBM PC and compatibles, they have become almost standard equipment, although it is interesting to note that the first version of MS-DOS did not include support for hard drives.

Even people who are not particularly familiar with computer systems would probably recognise a floppy disk. It's a circular piece of plastic, covered with magnetic material, and enclosed in a protective jacket. When inserted in a floppy disk drive, it can be spun around, and magnetic signals "read" or "written" by the drive in conjunction with the floppy disk controller. These signals are actually data stored on disk to be used by the computer in the future. The data is stored in concentric rings called "tracks" or more accurately "cylinders". These are further divided into blocks called "sectors".

Hard disks are essentially the same, although there are some

differences. The actual disks are usually never seen, as they are sealed inside the drive to exclude dust and other contaminants. They are rigid metal, also covered with magnetic material. The disks are spun many times faster than in floppy drives, and the read/write heads sit much closer to the surface. This enables more tracks to be written on the disk, and hence the capacity of the disk is far greater. A check of advertised AT systems seems to suggest that 42 megabyte capacity hard drives are getting to be the standard. Compare that with a 3.5" DSHD floppy disk, at 1.44mb capacity. Hard drives of 150 MB and greater are becoming more common all the time. It should be mentioned that drive capacities are increased by fitting multiple disks or "platters" inside the one drive.

When new, both types of disks are unsuitable for storage of data. The tracks and sectors must be laid out on the surface, ready to receive data. This is called "formatting" and for floppy disks, is performed fully by the DOS command FORMAT. However, FORMAT will recognise a hard disk and will operate differently - it won't work on a brand new unformatted hard disk.

Firstly, the tracks and sectors must be laid out by what is commonly called a "low level format". This is accomplished by a utility program or in the case of some systems, a utility in the ROM BIOS. The next operation is to create one or more disk partitions. By doing this, while having one physical disk drive, you may have several logical drives (C, D, E etc). To the uninitiated, this may seem perfectly illogical, but there are good reasons for doing so.

LIMITATIONS OF DOS - DOS versions before 4.01 were incapable of recognising drive capacities in excess of 32 MB. Therefore, if your drive had more than 32 MB, that was the limit, unless partitioned into chunks of lesser capacity.

DIFFERENT OPERATING SYSTEMS - While MS DOS is the dominant PC operating system, it is definitely not the only one. Forth, Unix, UCSD Pascal, and CP/M 86 can all be used, but they will each need separate partitions if present on the one physical drive.

EFFICIENCY - Access times can be improved by having multiple partitions with shorter directory paths rather than one partition with long path names. I am told that DOS is a lot quicker in reading the partition table than threading its way down a directory path to find a file. Partitioning is accomplished with the DOS command FDISK, which will create up to four partitions. Operation of this command is fully explained in the MS DOS handbook.

After all that, you can FORMAT the hard disk, but it's a bit of an anti-climax. What FORMAT does for a hard disk is create the File Allocation Table, or FAT, which contains the information necessary to locate files anywhere on the disk. So if you were to accidentally FORMAT your hard disk the data would be intact, but the means to find it would have been destroyed. Utilities are available for recovery of this situation, and in some cases all data may be recovered. There is no way to recover from a floppy disk format.

## TRS PUBLIC DOMAIN NOTES by Jack Birks

Jack Birks has disks of Model 1/III/4 Public Domain programs available for \$5 each. These are available on the spot at most meetings. A list of the programs on each disk can be perused at the meetings to allow choice of the disks required. The disks cover the following categories:-

### MODELS 1/III

| <u>Category</u>           | <u>No. of disks</u> |
|---------------------------|---------------------|
| Educational               | 2                   |
| Business & Financial      | 2                   |
| Communications            | 2                   |
| Scientific & Mathematical | 2                   |
| NEWDOS Software           | 2                   |
| Disk Index Software       | 1                   |
| DOS Software              | 1                   |
| General Purpose           | 2                   |
| Games                     | 11                  |
| Miscellaneous             | 2                   |
| Utilities                 | 2                   |

### MODEL 4/4P

|                  |   |
|------------------|---|
| Mainly Utilities | 7 |
| Shareware        | 1 |
| CP/M             | 1 |

(More CP/M available if required)

### MISCELLANEOUS

Disks of Quick Reference Files or Mini manuals for NEWDOS 80, NEWDOS 86, LDOS 5.1.4, TRSDOS 1.3, TRSDOS 6.2, DOSPLUS 3.4 AND 3.5, MULTIDOS, TANDY 1000, VISICALC Spreadsheet, SCRIPSIT Word Processor, NEWSRIP Word Processor, NEWDOS BASIC & DOS, ELECTRIC WEBSTER Spelling Checker, and PRODUCER database.

TRS-LINK (US) Magazine on disk - 2 months to a disk.

## PC CORNER by Peter Lyon

MARCH was another very lively minor with questions covering subjects such as:

Can higher capacity hard disks be used with controllers that can handle up to 10M or 20M drives? The general consensus is that the drives can be used but will be limited in available capacity by the controller - ie some disk space will be wasted. The controller has to be replaced by one that accommodates the hard disk size.

Many other topics were covered with everybody present contributing to the discussions - something I hope will continue as I believe that the minor is the place to ask questions and to try to supply answers rather than having a formal type presentation. I would appreciate any comments on the format of the minor.

Peter Lyon commenced a discussion of the ATTRIB command but it had to be curtailed due to a major problem with the colour monitor - as a result of the smoke test, two transistors, one resistor and one diode have been

transferred to the rubbish bin (the count to date - have to find replacements for the transistors - type 2SD1609).

#### TIPS and TECHNIQUES.

##### Tidying hard disks.

If you add and remove large numbers of files to/from your hard disk/s, there comes a time when the files on the disk become fragmented (not stored on adjacent sectors). Use a disk organiser program such as that supplied with Norton's or Pctools or some shareware program such as DOG (disk organiser) to tidy up the disk or compress the files. Doing this can increase the amount of free disk space and can improve the loading times of programs/files.

#### OTHER TOPICS

I have a file on disk - VIRUSSUM - which contains all the known viruses up till October 1990 (courtesy of Ray Lehmann). It is a detailed list with a description of each virus. If anyone is interested in a copy, they can contact me at the general meeting or by phone (263-7800). It is a very large file (approximately 300k) and if there is sufficient interest it can be divided into smaller files and could be printed in the newsletter.

#### THIS MONTH'S MINOR TOPIC

Due to a change in the topic for the main talk, the proposed discussion of directory structures and file management has been re scheduled to next month.

The subject this month will be a continuation of the main talk on low level formatting of hard disks and installation of hard disks in general.

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HEADLINE NEWS FROM TAN80 BBS

by Erik Rasmussen, Sysop Tan80 BBS fido 3:680/822

Well it is time to meet the Editor's deadline yet again. The news from Tan80 this time isn't happy tidings. The landlord has succumbed to the pressure from Mr. Keating and co. and has been declared bankrupt, so Tan80 it yet again hunting for a roof to rest under. It is hoped that the Housing Trust will be able to provide a house for us so we won't run into this hassle ever again. Even as you read this think of me busily moving - the deadline is April 2nd to vacate these premises.

It is hoped that we can get a house close to here so we can get the BBS number transferred to the new place and so avoid the otherwise ensuing confusion with user ringing the old number and getting nowhere. For those of you that do log on at times, the saga will be printed on the bulletin screen so you can keep up with the news as it breaks (bit like the Gulf war eh!).

The new modem (a NetComm ES v32 9600b) is settling into its job nicely after a few teething problems, but as with all new technology it was expected that a few gremlins would be present. All is now ironed out and the daily mail run has

shrunk from 15 minutes average a day to a mere 2, so it is really paying its way. I have also been practising raiding a few boards inter-state for some interesting files and will do that more often as there are a lot of goodies to be had out there. The board now has 3075 files online (will be more by the time you read this).

I have been tied into a file distribution system that will send me the latest version of McAfee's scan series so now you should be able to keep on top of those nasties. A few new Echoes have also been activated, one especial is for great interest (and volume): international hard disk technical conference - it has a lot of useful info on all the latest types of harddrives out there and how to get them to behave etc; also covers the older types of course. And there is a special echo for NetComm owners to help them sort out any hassles they may have with configuration etc.

The lines are moderately busy, averaging 20 callers a day and about 40 files d/loaded. If you are not into communicating yet, you are missing a great addition to your computer: just think of all the information at your finger-tips and all the new programs available for the taking.

We are still waiting for number 4 harddrive this end, but there is no great urgency as there is still about 75 meg free, although it won't take too long to fill up so the additional 80 meg still coming will be needed before long.

That's about it for this issue. Just a reminder that you can upload your articles here too for Rod and don't leave it too late in the month as you will miss the boat - the deadline falls roughly on the Saturday closest to the middle of the month.

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#### DON'S TRS HARDWARE SUPPORT

Don McKenzie, 29 Ellesmere Crescent Tullamarine 3043, telephone (03) 338 6286, has for many years offered hardware 'add-ons' for Models 1, 3, 4. He is still doing so, although stocks are running down, and may not be available forever. He has sent his latest list; contact Roy Martin to have a look at it. The following is merely a very brief summary, mentioning only those items that appear they might appeal to a number of members. Therefore this selection is quite subjective: probably if you're looking for something in particular in this line it is well worth an inquiry to Don - if he doesn't have it he can tell you where to go!

##### PRINTER BUFFER

Versions available from 8k to 1Mb. First sold in 1985, it is available as a board, as a kit, and there is a 'fix-it' service available if your construction doesn't work!

##### COMPUTER SWITCHES

There is a board available to allow up to three computers to access the same printer buffer and printer via an auto-poll non-priority system.

There is also a board to connect two or more computers to one printer, with a manually switched system. It has

provision for additional handshaking.  
There is a board to allow two printers to be connected to the same computer.

#### CROSSOVER BOARD

This will connect all 25 pins of two pairs of male & female DB25 connectors. Will also connect lesser numbered pin connectors.

As well there are a number of differently configured boards for testing DB25 connections.

#### RS232 TEST BOARDS

Otherwise known as 'breakout' boards. There are a number of different configurations available for different jobs, or a multi-purpose one.

#### Z80 MICRO DEVELOPMENT TOOL

Used to accept fast downloads of Z80 machine code from a printer port. Contains 2 EPROMS and static RAM

#### CHIPS

A variety of hard-to-get chips are available, some only for prior special order.

Such as Z80A, SIMM, 4164, 41256, Z80B, 6116, 2732, 2716, 4116, static RAM, 27128, as well as chips needed for the above kits.

#### PD PC LIBRARY

There is a limited catalogue of IBM PC software. It comes in archived and compressed format, with a number of programs on each disk. Choice is limited, but price is vastly cheaper than usually available.

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LIVING WITH DOS: Hard Disk Primer. Part 1 of 2
By Barry Simon. Reprinted from The Voice of FCUG (USA) Oct 1990 & From Capital PC Monitor November 1987
AMUG input by Jack Birks

INTRODUCTION

IBM no longer sells PCs without hard disk capabilities and the overwhelming bulk of PCs bought for business use are purchased with hard disks. Given the fact that hard disks can be purchased for less than what a single sided floppy disk cost at the time of the introduction of the original PC, this is not surprising. Hard disks are remarkably convenient but their large capacity has the potential for large catastrophe as well as large benefits. As a primary theme during the next few months, I intend to discuss various software tools that will help you deal with hard disks. Since I have reviewed disk caches (in the February Monitor) and file organizers (in the June and July monitors), I will limit my discussion to other kinds of software like unerase and unformat, disk optimizers, file comparison and low level formatting utilities. Three programs: the Norton Utilities, the Mace Utilities and PC Tools will provide most of the functions that I'll discuss although often I'll include more specialized programs as well. This month, as background, I want to discuss how hard disks work under DOS primarily on the logical level but also on the physical level so you'll understand terms like FAT

and interleave and you'll understand why the apparent miracle of unerasing a file is possible.

There are two separate aspects of hard disk formatting: physical, also called low level formatting and logical or high level formatting. Understanding the difference is important if you wish to understand issues like whether to use Norton's DISK TEST program (which has to do with the physical structure of the disk) or DOS' CHKDSK program which deals with logical formatting. When you use the FORMAT program on a diskette, it does both physical and logical formatting. On a hard disk, FORMAT only does the logical formatting. Such disks are usually sold with the physical formatting already done and if you need to repeat the physical formatting you'll need special software like IBM's ADVANCED DIAGNOSTICS. By the way, FDISK, as we'll see has nothing to do with either kind of formatting. We'll discuss logical formatting first and only later turn to physical formatting. This is the opposite order to what is necessary for actually preparing a disk but emphasizes the fact that the logical formatting will be more important to you as a user.

CLUSTERS

From a logical point of view, the bytes on a disk are ordered linearly from the start of the disk to the end. At first sight, you might think that the best way of organizing files would be to place the first file at the start and immediately follow it by the second file, etc. But if you realize that you want to be able to change the size of a file, you'll see that such a method is too unwieldy: if you have 20 megabytes of files and you want to add a few bytes to the first file, you'd have to move all 20 megabytes to make room for the first file. Thus hard disks are organized in a way that does not force all files to be in one contiguous piece but allows them to be in several separated pieces. If a file is not contiguous, it is called fragmented and accessing that file can be a slow process as the disk heads need to move around finding the file. For this reason, you will want to rearrange your disk occasionally to defragment the files, that is make them all contiguous. I'll discuss fragmenting software in my next article.

Once you understand the need to allow a file to be in several pieces, you'll also realize that it would be like a complex jigsaw puzzle if you allowed the pieces to be of arbitrary size. Therefore, files are allocated space in discreet units called clusters. The hard disk (at least if it is entirely allocated to DOS), consists of four areas at the beginning with system information followed by the data area as a sequence of these clusters. Normally, there is a possible confusion in how things are numbered on a computer because numbering can begin with 0 or 1 - to keep you on your toes the makers of DOS start cluster numbering with 2! The four system areas: partition table, boot sector, FAT and root directory, will be discussed later.

The cluster size is a power of 2 times 512 bytes. For floppy diskettes, it is 1K bytes. For hard disks under DOS 3.x, it is typically 2K while under DOS 2.x, it is usually

4K or even 8K as we will discuss. Ideal cluster size represents a tradeoff between a tendency to fragment and a desire to avoid waste space. As cluster sizes get larger, the need for new allocation becomes less frequent as files grow and there is less fragmentation. On the other hand, if your file sizes are large, you'll waste on average half a cluster per file since the file allocation is always an integral multiple of clusters while actually sizes tend to be distributed randomly (if you have lots of really small files, then you'll waste even more than half a cluster per file). For hard disks, the 2K size under DOS 3.x seems to be a good compromise. For reasons connected with FATs that we'll explain, under DOS 2.x, you are limited to 4096 clusters - with 2K clusters, this works out to 8 Meg and with 4K clusters to 16 Meg. Thus, under DOS 2.x, 10 Meg hard disks must have 4K clusters and 20 or 30 Meg disks must have 8K clusters. A 20 Meg disk will typically have about 1600 files. If you upgrade from DOS 2.x to DOS 3.x, your cluster size will change from 8K to 2K so that you'll save roughly 3K per file or almost 5 Meg! Maybe that upgrade is worth it after all! If you make the upgrade, you should first use DOS 2.x FDISK to remove the DOS partition. Then power off (don't just do a warm reboot) boot with DOS 3.x and run its FDISK to create a DOS partition. The reformat using the /s option of FORMAT. Since all your data will be destroyed when you remove the DOS partition (actually, it will still be on the disk, just inaccessible!), be sure to do a complete backup before you begin. Because of some misguided desire for downward compatibility, PC DOS 3.x actually still uses 4K clusters if you use it on a 10 Meg disk. If you have access to a disk sector editor like the one in Norton Utilities Advanced Edition, you can arrange for 2K clusters; see the file DOS 31A.PAT prepared by the Compuserve user's group available on MIX.

THE ROOT DIRECTORY

The root directory is simply a small database with one record for each file in the root. It is a length delimited database, that is DOS knows where a new record begins simply by counting bytes, 32 for each file. 10 of those bytes are currently unused and marked as "reserved for future use". 11 are taken by the file name and extension - there is no need for a period as DOS knows that the extension begins at byte 9 in the record for each file. But is it necessary to use a full 8 bytes for the filename and it is padded out with blanks if necessary. Another 8 bytes are taken by the other information that is displayed by the directory listing: 2 each to store the file date and time in encoded form and 4 bytes for file size (this limits theoretical file sizes to 4 gigabytes). That leaves 3 bytes which are used in the database but not shown to you by the standard directory listing. One is the attribute byte that we'll discuss in a moment and two are used to store a cluster number, the number of the first cluster assigned to a file. Thus when DOS needs to locate the data assigned to a file, it looks first at the directory listing which tells it where to find the beginning of the file. We'll see in a little while how it uses the FAT to find the rest of the file.

The attribute byte, like any other byte has eight bits which allow it to keep track of 8 different properties that a file

can have or not have. Actually, only 6 bits are used: hidden, system, read only, archive, volume label and subdirectory. So whether a file is hidden or not involves one little bit out of 256 bits in the directory entry for the file. DOS end user services like DIR, COPY and ERASE cannot operate on hidden files but DOS does allow programmers access to such files so that they do not provide much real security except against unsophisticated users. For example, QDOS will display, copy and erase hidden files with ease as making them hidden or un hiding them. When DOS boots up, it loads three programs in succession: in PCDOS they are called IBMBIOS.COM, IBMDOS.COM and COMMAND.COM. The first two are hidden so you may not even be aware that they are there. There is a reason for them to be hidden: until they are loaded, the usual directory reading services are unavailable so they are found by looking at the first two entries in the directory. Since a disk will become unbootable if their position is moved, there is good reason to prevent their erasure and so they are hidden. When a disk is unbootable, either by using the the /S option of FORMAT or with the SYS command, these first two files are also given the system attribute (i.e. the bit in the attribute byte that keeps track of the system attribute is turned on). But this attribute seems to serve no purpose whatsoever. A bootable disk will remain bootable even if you turn off the system bits on these two files. Indeed, you can change those bits in an arbitrary way (for example, you could unhide them and make them into subdirectories!) without changing the bootability of the disk (although you will get into serious trouble if you make them into subdirectories and try to cd to them!).

As the name implies, if the read only bit is turned on, you cannot use any DOS services to modify or erase the file. But, a program that directly modifies disk data without going through DOS can change such files if it wishes. The ATTRIB command that comes with DOS 3.x as well as many commercial and shareware programs allow you to make a file read only or to remove this attribute if it is turned on. You should not make data files which you are likely to change read only but you might want to make executable files and certain configuration files read only, especially if you are preparing a system for a less experienced user. If you try to modify a read only file you get the not so informative message "Access denied".

Every time a file is created anew, copied from elsewhere or modified, the archive bit is turned on if it was previously off. DOS' BACKUP program and many backup programs turn this attribute off when a file is backed up. Thus one can keep track of which files have not been backed up by seeing which have their archive bit on. This would allow you to make periodic full backups and more frequent incremental backups, i.e. backups of those files created or changed since the last full or incremental backup.

The volume label is supposed to be a single file in the root directory of a disk with a size of zero bytes. DOS' directory command, looks for this file whenever a directory is displayed. It is located by checking for a file whose volume label attribute is turned on. There is no problem if more than one file has this attribute turned on (although

this will normally only happen if you use a special program that lets you play with directories on the byte level). DOS just finds the first such file and stops looking. A volume label created by DOS with the /V option of FORMAT or with the LABEL command will have all caps but there is no reason that you can't create one with lowercase letters using a specialized program - indeed the VL program of the Norton utilities allows precisely that. In fact, with a byte level directory editing program, you could even place spaces or a happy face or ANSI.SYS color setting commands into the volume label. However, be warned that with DOS 3.2 and later, you cannot format a hard disk without giving its label and FORMAT only understands labels which are all caps - so if you label a hard disk with lowercase letters, you won't be able to reformat it without relabelling it or using FDISK. We'll discuss the meaning of the subdirectory attribute next.

SUBDIRECTORIES

There is no logical reason that the root directory couldn't be set up as a file rather than as part of the system area (although with the present set up one has a small protection against corrupted FATs that one wouldn't if the root directory were a file). But, in fact, the root directory is fixed at the time that the disk is formatted which means that the number of files that it can contain is fixed. It is fixed at 112 entries for a 360K diskette or 720K minifloppy, 224 for a 1.2 Meg floppy or 1.44 Meg minifloppy and 512 for a hard disk. If you try to copy a file to the root directory of a diskette which has its allotment of files, you will get the unhelpful message "File creation error". For diskettes, this allotment is sufficient although there are often good reasons to use subdirectories for organizational purposes. On a hard disk, subdirectories are essential for both organizational purposes and for being able to place more than 512 files on a disk. A subdirectory is simply a file in the data area of the disk which happens to have its directory attribute set. It has the exact same 32 bytes/file database structure as the root directory but as an ordinary file, it can be expanded indefinitely. In fact, a subdirectory is created with only one cluster initially, that is with room for 64 files. If you put more than that number of files in a subdirectory, additional clusters are allocated to it but the directory is almost surely going to be fragmented and accessing the directory is likely to be slow - this is a good reason to use suitable defragmenting software and/or to use a big disk cache for storing the directories in RAM.

The first two entries in a subdirectory are named . and .. : the first is a name for the directory itself and gives DOS a pointer to the first cluster of the subdirectory. The .. is a name for the parent directory. Anytime that a directory can be referred to, one can use . or .. For example, if you want to copy all of a diskette, you could use

copy A:. instead of copy A:*.*

As you know, subdirectories can have subdirectories themselves, etc. (the only limitation is that the total path name including slashes for any file is limited to 64 bytes). This leads to the inverted tree structure of

organization which can usefully organize a disk. But be wary of long pathnames, especially in the DOS search PATH. Every time that DOS needs to access a directory that it is given the full pathname for say \level1\level2\level3, it starts at the root, uses it to find where the file "level1" is, reads that directory, finds level2 in it, etc. If you have several directories in your search path and each is several levels deep and you type in a bad command name, DOS will need to thrash around a bit before rewarding you with "Bad command or file name".

[to be concluded next issue]

DEFINED FUNCTIONS by Bill Allen

Reprinted from QLD TRS80/SYS80 Newsletter October 1989

AMUG input by Jack Birks

Defined functions can be viewed in ways other than what I have read so far, especially by such a rebel as me. Some types of Basic proudly proclaim that line numbers are out -- named subroutines are the "go". Calling a defined function in our type of Basic is in reality a somewhat similar action to named subroutines, so we are not quite as far behind the '8' ball as you may have imagined. Having been defined during initialisation, a function can be used from any point in the program. Its address is placed in the Variable List Table and thus is a type of subroutine accessed as a complex variable.

Contrary to the usual subroutine action, the defined function can be supplied with a variety of parameters, depending on from where it is accessed and thus there is much less housekeeping of variables as in normal subroutines. The variables in the initialisation statement are usually looked on as "dummy", but conversely, when the whips are cracking in anger, are they not indeed used as local variables? The action is hidden from the user's view, but isn't this the concept of local variables anyway?

So how does Basic handle user defined functions. Consider the following function definition. This allows you to extract data from a string. For example (from Lewis Rosenfelder's book, BASIC FASTER and BETTER):

```
90 A1Z=12:A2Z=-12
100 DY$="JANFEBMARAPR MAYJUNJUL AUGSEP OCTNOVDEC"
    (Store the 3 letter abbreviations for each month)
110 DEF FN RR$(A1Z,A2Z,A3$) = MID$(A3$, (A1Z-1)*A2Z+1,A2Z)
    (This function will extract the month value for you.
    A1Z is the field number within the string beginning at 1
    A2Z is the length of each field
    A3$ is the string from which to extract the data)
120 PRINT FN RR$(1+1,3,DY$), FN RR$(3,3,DY$)
    (Will print FEB MAR)
```

USING NewDos86's VAR function we find that the following variables have been defined:

```
A1Z; 12
A2Z -12
DY$ JANFEBMARAPR MAYJUNJUL AUGSEP OCTNOVDEC
RR$ User defined function
A3$
```


The function code performs in the following manner. When it encounters the function definition the function name (with bit 7 set) is stored in the variable list table, then each variable in the parameter list (those variables listed between the brackets before the =). When the function is called these dummy variables are saved on BASIC's stack and the REAL arguments are then copied into the dummy variables. The function routine uses the BASIC LET routine to do the assignment, thus allowing BASIC expressions in the function call. BASIC's evaluate routine (2337H) is then called to evaluate the function. The result of the function is left stored in BASIC's accumulator ready to be printed, assigned to another variable etc. Finally the original values of the dummy variables are restored.

So what rules should be followed when using functions? Obviously all variables used in the function parameter list should be DIMmed or defined during initialisation. This should be done before defining any functions or array variables. Note that array variables are not allowed in the parameter list when defining the function, but obviously can be used when calling the function.

~~~~~

### BASIC PROGRAM FUNCTIONS

Reprinted from Voice of the 80 4/85 and from Northern Bytes AMUG input by Jack Birks

The following functions were adapted from an article by Jehangir Gazdar, which originally appeared in the Capitol PC Monitor and was later reprinted in the ABC Micro Newsletter. Although the functions were originally written for use with the IBM PC, they seem to work on the TRS-80 as well.

The first group of functions are used when you are printing a sentence which includes a numeric variable, and you want to make sure you have the correct plural ending. For example your program might say something like "X new record(s) have been added" where X is the number from zero through ?? . Surely one would think that the computer should be able to tell whether to print "record" or "records", depending on the number of records added (one, or other than one). Well, if line 130 in the sample program is included near the start of your program, you need only rewrite your print statement in this form:

```
PRINT X "new record" FNA$(X) " have been added"
```

In the above example, FNA\$ will return a null string if X=1, or the one character string "s" if X <> 1, it could be any valid variable name.

The function in line 150 (FNB\$) works exactly the same way except that a null string will be returned if the variable used equals either 0 or 1. The function in line 170 (FNC\$) is used when you need a plural "es" ending rather than a simple "s".

But what if you also need to include the words "is" or "are" in your sentence? That's where the functions in lines 220 and 240 come in. The function in line 220 (FND\$) returns

the word "is" for a value of one, while the function in line 240 (FNE\$) returns "is" for a value of either zero or one. As an example, the above sample line could be written this way:

```
PRINT X "new record" FNA$(X) " " FND$(X) " to be added"
```

Note that in this example, a space character must be inserted between the two functions. If X = 1, the above line would be printed as " 2 new records were added".

You may have noticed that a space character is printed before and after the numeric variable in the above example. The space prior to the numeric variable would have been occupied by a minus sign ("-") if the value of the variable had been negative. In many cases, you may want to extract just the number, without any leading or trailing spaces, and the function in line 290 (FNF\$) performs this function. The functions in line 310 and 330 do exactly the same thing for all non-zero values, but if the variable contains zero, either the word "no" (if function FNG\$ in line 310 is used) or the word "zero" (if function FNH\$ in line 330 is used) will be substituted. If our sample line were rewritten as follows:

```
PRINT FNF$(X) " new record" FNA$(X) " " FND$(X) " to be added"
```

then the leading space prior to a positive value of X would be eliminated, but the minus sign would not be chopped off if X<0. In this example, a value of zero would be printed as "0", but if FNG\$ or FNH\$ instead of FNF\$ on the sample line, a value of zero would be printed as "no" or "zero" respectively.

Of course, it's possible to achieve the same effects by using other BASIC programming techniques, but most of them will involve the use of multiple IF-THEN statements and may occupy several program lines. The above functions are much easier to implement in many cases.

Please note that this article presumes that the reader has at least some understanding of user-defined functions in BASIC. If this is not the case, you may wish to blow the dust off your BASIC programming manual (assuming you can find it) and read up on the subject. The main thing to remember is that the variable "N" used in the functions below is a "dummy" variable, you may use any valid variable name when you invoke the function (just as I used "X" in the above example). This is what makes user defined functions so valuable - you can use the same function over and over without having to first reassign variables (as you might have to do if you used a subroutine to accomplish the same purpose). I hope these functions are of some use to you!

```
100 ' PLURAL ENDING FUNCTIONS
110 '
120 ' Return null if N=1, else "s"
130 DEF FNA$(N) = MID$("s", 1 - (N=1), 1)
140 ' Return null if N=0 or N=1, else "s"
150 DEF FNB$(N) = MID$("s", 1 - (N=0 OR N=1), 1)
160 'Return null if N=1, ELSE "es"
```



```

170 DEF FNC$(N) = MID$("es", 1 - 2 * (N=1), 2)
180 '
190 'SELECT IS/ARE
200 '
210 ' Return "is" if N=1, else "are"
220 DEF FND$(N) = MID$("areis", 1 + (N=1) * -3, 3)
230 ' Return "is" if N=0 or N=1, else "are"
240 DEF FNE$(N) = MID$("areis", 1 + (N=0 OR N=1) * -3, 3)
250 '
260 ' NUMERIC STRING HANDLING
270 '
280 ' Return digit string with no leading/trailing spaces
290 DEF FNF$(N) = MID$(STR$(N), 2 + (N<0))
300 ' Same as above but return "no" if N=0
310 DEF FNG$(N) = MID$(STR$(N) + "no", 2 + (N<0) -
    LEN(STR$(N)) - 1) * (N=0), LEN(STR$(N)) + (N>0))
320 ' Same as above but return "zero" if N=0
330 DEF FNH$(N) = MID$(STR$(N) + "zero", 2 + (N<0) -
    (LEN(STR$(N)) - 1) * (N=0), LEN(STR$(N)) + (N>0) - 2
    * (N=0))

```

**HOW TO SELL YOUR TRS** by Eric Bagai  
 Reprinted from NCTCUG (USA) Newsletter October 1990  
 and From SAGATUG Interface April 1990  
 AMUG input by Jack Birks

You say you just bought a 25 megahertz laptop Bimette from Whiz-Bang Peripherals, and now you need some cash to make the next payment? And so you took your old Trash 80 to a user group to sell it and they looked at you funny because they all had Macs? And then you took it to a swap meet and they offered you \$25 for the "dumb terminal" and that was the best offer you got? Is that what's troubling you, Bunky?

You have been trying in the worst possible places. The user group is no good, because anybody who might be interested in Model 4 has at least two of them already. A swap meet is even worse, because everybody is either a vendor or wants a gold-plated dream for two cents on the dollar. Think about it: why do YOU go to a swap meet?

You should be able to get \$300 for a Model 4, \$350 for a Model 4D or 4P, \$200 for a Model III, and \$150 for a Model I (but only if you nail down all the cable connections and mount all the parts in a case). A Model II/12 can get \$300 if you have the right software. A working printer should add \$100, and a modem or a high-res board gets another \$50. (The exception is a hard disk, for which a TRS hacker will pay big bucks). Why \$300 and not \$500? This is called price positioning: It has to be priced below the PC clones, but it's certainly better than a Timex or a Tommy Tutor. After all, your machine can do more than an IBM 360 could, and the 360 was the mainstay of American industry for almost two decades.

However you must cut these prices in half if you don't approach this in the right way. You can't just sell a computer - as they say in the advertising biz, you have to sell a solution, try to imagine the things that people wish they could do. They want to have their own business. They

want to manage their finances successfully. They want to win the lottery (and not by blind luck like all the suckers; they'll win it by their own skill and natural cunning). They want to meet people who will like them and think they are intelligent. They want all the things you and I want; and if they think that having a computer will get it for them, then they just might buy yours. (Next month we can discuss the ethics involved - this month let's just sell your machine.)

The best place to sell your computer is where the audience is very large and diverse and not terribly sophisticated. Therefore, the worst place (aside from user group or swap meet) is on a BBS, in the Computer Shopper, TRS Times, or in the Interface. The best place is in your local newspaper's want-ads. Many areas also have a weekly paper that is all want-ads. In Southern California there is The Recycler, and a slew of local publications like The Penny Shopper and the Anaheim Horsetrader. The ad rates in newspapers are not too expensive; The Recycler doesn't charge for ads at all.

The standard ad says something like:  
 TRS-80 4P, 128K, DS/DRVS, 8 MHz 20 MB HD, amber hi-res, intnl modem, softwr/docs. \$400 obo. Ask for Tommy (714) 988-3838.

Even though this is a lovely package at a great price, the ad is worthless. It is incomprehensible to anyone except another TRS owner. To your intended customer it sounds like a kid trying to dump his Pong setup.

What your customer wants to see is:  
 COMPUTER BUSINESS SYSTEM:  
 accounting, spreadsheet word processing. Complete documentation and tutorials. \$300 firm. Mr. Johnson (714) 988-3838 after 6PM.

Of course you must actually have what you advertise: a functional payables/receivables package and general ledger, maybe Visicalc, and a decent word processor. Deskmate is a real winner here.

Another good one is:  
 PROFESSIONAL WORD PROCESSING SYSTEM. For business, writer, or student: with all training manuals and spelling/grammar checker. Fast printer, large screen & good keyboard. \$350 firm. (213) 991-1919.

This package could be a single-drive Model III, an Epson MX80, Electric Webster, and the original Scripsit with its training tapes and stick-on labels. Throw in a copy of Hypercross and you can even say "IBM text-compatible". Any advantage on this setup may not get you more cash, but it will make your offer that much more solid. Keep in mind that you are not selling junk, you are not lying, and you are not promising something beyond the capability of the computer. Of course it isn't as fast, or powerful, or flashy as a '386 with super-VGA and an 80 Meg drive. But it isn't as expensive either - and that's what you're selling: ability to do the job but without all the bells and whistles.

Try thinking of how each of the following lead-ins is absolutely true, given the right software and peripherals. SUPER GAME COMPUTER TELECOMMUNICATIONS SYSTEM BEAT THE LOTTERY WITH YOUR OWN COMPUTER TAP 2,000+ DATA BASES AND LIBRARIES FROM YOUR HOME NEW-AGE COMPUTER:BIORYTHMS, ICHING, TAROT BUY YOUR SECRETARY A COMPUTER SHE CAN UNDERSTAND COMPUTER DATING WITH A REAL COMPUTER AT LAST! - A COMPUTER FOR THE REST OF US RENT-TO-OWN YOUR OWN COMPUTER.

or  
COMPUTER BLOWOUT! - NOT AVAILABLE IN ANY STORE! WE BOUGHT THE ENTIRE STOCK! - LIMIT ONE PER FAMILY! (Tandy employees and relative not eligible)

and my favourite:  
MUSEUM OVERSTOCK: ANTIQUE COMPUTERS USED BY ORIGINAL HACKERS.

Everybody is afraid of getting ripped off, and there are simple things you can do to minimize this danger. You can also screen your customers to make sure that they qualify as sane, reasonably intelligent, and able to pay. You do this screening on the phone, not at the front door. Have a list of questions ready to ask your customer - and ask them of everyone. Ask what they want to use the computer for, and follow up with more questions about their reasons for wanting a computer. If they are genuine, they will talk themselves into buying your machine - if they aren't they won't have much of anything to say. Do they need IBM compatibility, and if so, why and how much? Have they ever used a computer before and what kind was it and what software did it use? If they have never used a computer, have they ever programmed a VCR to record a week's worth of shows on different channels? Can they set the alarm on their digital watch? (There is no point in dealing with a computerphobe, or an idiot). Do they know anyone who has used this type of computer and who can help them? Can they bring cash or a money order for the exact amount - no checks, or at least no counter checks or third party checks? Have them show up at a specific time of your choosing. If you don't think they will be able to benefit from your machine, tell them so. Please remember that politeness does not require you to let people rob you and you are not obligated to give out your address to anyone. Of course you will be wary of people you don't like, but also watch for people that are exceptionally nice. A "good" con man is probably the nicest person you'll ever meet. So whom can you trust? Somebody like you: just ordinary folks: real people.

When he shows up, be sure to tell your customer where you get the computer serviced. This informs him that you have taken good care of it, and that he should call the service place, and not you, when things go thump. Also establish your return policy; no returns. It works now and there's no reason it shouldn't continue to do so unless it is dropped or cheese is put in the drive doors. Demonstrate the basics of the programs that he said (on the phone) he was interested in. Show him previously run, working printouts of those programs, and demonstrate the tutorials. Give him written information about local user groups, bulletin boards, software sources, and user magazines. And tell him

that he can get personal training and general hand-holding there (but only if it is true!). If you agree to train him, be sure he understands that only the first four hours are free, and make sure that all such training occurs at his place.

The software should be neatly labelled and the documentation should be in a binder. If you've mislaid the originals, you can have your xeroxes covered and comb-bound by your local quick-printer. If you still have the original disks, and docs, so much the better. If your DOS doesn't respond to the current date, then disable the date query. Everything you advertise should work off the same DOS. You should refer to the rest of the (thoroughly dusted and neatly boxed) stuff as, "programs you will find useful after you are comfortable with the basic software". Do not admit to the existence of NEWDOS 80. Look professional: five minutes with some Simple Green or Formula 409 does wonders (on the machine case, silly, not on you). It may just be an old fuzzy friend to you, but it is a miracle of modern precision and technology to your customer. Oh, yeah: don't let them see your new computer.

## BUYING OR UPGRADING A PC SYSTEM

by Michael Cooper

Reprinted from SYDTRUG News October 1990

AMUG input by Jack Birks

### INTRODUCTION

If you've got an old XT that you're thinking of upgrading or your trusty old TRS-80 is getting boring to use then this is for you. Now is a good time to buy computer hardware as the prices are dropping in several key areas.

The introduction of Windows 3.0 has opened up the full potential of the Intel 80xxx series processors running under the "IBM-PC" standard. The nature of this new software platform finally permits the sophisticated use of your PC hardware. Although it will run quite happily with an 8088 in its most basic mode it really needs an 80386 to perform amazing tricks for you. As a compromise you can run it on an AT style machine, but this shouldn't be regarded as the base hardware system.

### SOME CPU CONSIDERATIONS

The base hardware for a PC compatible from now on has become a 386SX machine. In case some of you wonder why the AT machine isn't the base model there are three reasons. First the 386 has special memory management built in, second it has a new "protected" mode and third it supports "virtual 86" or V86 mode. This last mode allows you to run several "virtual MS-DOS machines" at the same time.

The SX chip is to the 386 as was the 8088 to the 8086 i.e. the data path is only half as wide. The 8088 was a cheap version of the 8086 that used an 8-bit data path instead of the full 16-bit. The 386SX chip uses a 16-bit data path, the full 386 (called the DX) uses a 32-bit data path. For an SX the RAM memory needs to be 16-bits wide and this is supported by the standard 16-bit PC cards. For a DX you

need a special 32-bit interface to plug in extra memory cards. Since there is no standard for these you usually can only get these from the motherboard supplier at non-competitive prices.

The main other difference between the SX and DX is that the SX can directly address only 16Mb of physical memory whereas the DX can address 4Gb (Gigabyte = 1024 Mb) of RAM. Both processors are equipped to handle virtual memory using disk swapping of up to 64Tb (Terabyte = 1024 Gb). Clearly with specifications like this there is plenty of room to grow in the future.

#### CHOOSING A MOTHERBOARD

I mentioned earlier the problem of being stuck with one supplier of memory upgrade cards if you buy a full 386DX motherboard. These days most DX motherboards permit 16 Mb on-board, but make sure. The SX motherboards usually handle up to 8 Mb, but some only carry 4 Mb.

The best and latest motherboards will have the new EISA standard bus instead of the older AT style. EISA cards have full 32-bit data paths for high speed transfer from disks etc., and also can be used for memory upgrades.

In terms of processor speed, the standard for SX is 16MHz with a faster model coming out at 20MHz. For the DX you start at 16MHz and go up to 33 MHz. The best motherboards support cache memory to speed up RAM access time. Cache memory is very high speed and optimises the throughput of the processor. It comes as either 32K or 64K, but the speed difference between the two is marginal at best. Even a 32K cache will boost your performance by 15% or so.

One final consideration to make on choosing a motherboard is the arithmetic coprocessor support. This is important when using graphical interfaces and programs like Windows to speed up the screen drawing. Most boards will support the 80387 DX or SX chips, but the best will also support the Weitek chips which really scream along.

#### HOUSING THE SYSTEM

To give you room to improve and expand your system as finances permit you should start off with a Full Tower and 300W Power Supply. Adding extra Floppy or Hard Disks is no problem and you have plenty of card slots to add extra memory, CD-ROM cards etc. and plenty of power to feed them. If your finances won't go that far then a Mini Tower with a 200W Power Supply is a good compromise. The price differential is less than \$100 and since the cabinet is the place to start I encourage you to go the whole hog.

Perhaps you might want to re-use your AT case and Power Supply, that's OK too, but think of it as a temporary measure until you can afford to get yourself a Full Tower.

#### THE VIDEO SYSTEM

Let's not mess around with this one as you really have only one choice, and that is VGA 16-bit (1024 x 768). Graphical

interfaces are here to stay, and so the best resolution is mandatory. To save money buy a VGA monochrome monitor that offers 16 grey scales.

Later on you can buy a Multisync type Colour Monitor. With the Colour Monitor make sure the dot pitch is .28mm or smaller and don't be convinced by a salesman to take a .31mm pitch, it won't do a proper job.

#### A HARD DISK SUB SYSTEM

The main factor to consider here is speed. Since you've just bought this beaut motherboard with the latest high speed chip you don't want to weigh it down with a slow old 20Mb Hard Disk. The access time on it is far too slow for your new supercharged board, and 20Mb will barely hold DOS, Windows and a few Support files.

Speaking of access time, an effective maximum is 28ms and you can get down to 12ms if you need the extra speed, and can pay for it. The so called 40Mb voice-coil Hard Disk is just about the bottom line here. This will usually be coupled to an AT style controller card and provided it has a good interleave factor will do the job for you.

Interleave is the sequence in which sectors are numbered on the disk, and a 1:1 controller card is the best. Don't accept anything more than 1:2 as the card will be too slow for the drive.

The fastest Hard Disk controller interface is the SCSI (Small Computer Systems Interface). This requires a special controller card and a special SCSI type of Hard Disk drive, but will return you a very high data transfer rate. Typical SCSI drives have a 12ms access time with 1:1 interleave.

As for disk capacity, buy as big as you can afford, provided it has less than 28ms access time. I consider 80 Mb to be a practical minimum on a full 386DX based machine, and probably on the SX as well. The 40 Mb drives just fill up in no time as graphical programs have large storage requirements.

#### THE I/O PORTS

Again there is no argument here, you need 2 Serial (COM1 and COM2) plus a single Parallel port (LPT1). A games port is up to you.

#### SOME RECOMMENDATIONS

To assist you in deciding what system to get let's look at combinations for various uses. All combinations should include MS-DOS 3.3 or above, Windows 3.0 and a mouse.

First for the budget conscious hobbyist or student I would suggest a 386SX based machine with 2 Mb of memory, VGA Monochrome and a 40 Mb (28ms) AT style Hard Disk. You will currently pay no more than \$2500 for this if you shop around.

For the serious hobbyist or budget conscious small business

I would suggest a 20 MHz 386DX based machine with 4Mb of memory, VGA colour and a 80 Mb (19 ms) AT style Hard Disk. You will currently get this for about \$4000 if you shop around and bargain.

For the serious small business I would suggest a 33MHz 386DX system with 8Mb of memory, 32K Cache memory, VGA colour and a 105Mb (12ms) SCSI type Hard Disk. This will currently cost about \$6500.

In conclusion, I hope you find this briefing useful in making your decision to purchase, and wish you all the best for your bargain hunting.

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PUBLIC DOMAIN NEWDOS80v2?

By Terry Conklin.

Reprinted from an unpublished issue of Northern Bytes.

As TRS's reach their 'autumn years' and sales of TRS programs tends towards \$0, the most important thing before the TRS owner is the development of top-notch public domain or "freeware" programs. If you've delved into the PC-DOS world, you'll be shocked to find that you can get THOUSANDS of TOP quality freeware programs. Don't ask why, it's just that on the PC, the public domain became an acceptable place to "sell" freeware because people actually would send in money for programs they appreciated. Many of the public domain or freeware programs are better than what's available commercially!

On the TRS, there's more of a problem. A variety of DOSes clouds development of advanced software packages that use trickier constructs. (Ever try and write an interrupt driven program and get it to work across Dos+, Multidos, TRSDOS and Newdos/80 2.0? If you did tell me!) Lack of a "guaranteed" OS means programs are restricted to the Least Common Denominator of the operating systems. On the TRS, that's not too bad. But take a look at a CP/M program where almost no-facilities are guaranteed and the quality of software is a world apart. On the other hand, take a look at what's available on PC-DOS or TRSDOS 6. Both effectively "own" their machines. And thus, software abounds, software that does all sorts of neat things because it can tap the OS like mad. Of course it's not compatible with any other OS, but then again, so what?

Thus, what we "need" is a operating system that you can assume -everyone- will have. The first candidate is obviously TRS-DOS. But, especially on the Model I, the thought it absurd. So where do we the "public" get something better? I'm not sure, so here I am, asking Apparat publicly for Newdos80.

Asking? Well, as I understand it, (I'm sure someone will jump to inform me if I'm wrong,) Apparat has completely stopped support of Newdos80. They will make no more modifications, no more upgrades, and thus have choked any life yet to come out of a fine product. And yet, there is more to be done. TRS's need hierarchical file structures, background routine standards, and extended memory constructs. Without these "new worlds to conquer" the TRS

will indeed die. Everything else has been written. Public Domain Newdos/80 would give the TRS a chance, and as I can't believe Apparat is making any money out of Newdos, wouldn't it be nice if they could give something to the TRS community that supported them for years? They already certainly have. I'm only hoping they would like to one last time.

And this is not to preclude the option for some other OS to be put in the Public Domain. LDOS obviously wont. But what about Multidos? Probably not either, because Multidos is a very fine dos that, even if they don't use it for day to day purposes, should be in everyone's disk box, and it too still has some viable commercial life in it. Dos+? Where did the Dosplus people go, anyhow? But Dosplus was the operating system for people who wanted reliable TRSDOS. Not exactly the best base for exploration into what would be to the TRS whole new worlds. Newdos80 seems the perfect choice because not only is it designed for growth, but it is already a DOS people swear by.

Because even a Public Domain Newdos80 would require direction, by some "group", even if informal, in order to keep 100 incompatible versions from appearing, and because whoever did that work would realistically need the original source code from Apparat, it is largely in Apparat's hands. I sincerely hope that the right person will at least consider the option, and that the TRS will again have a chance for software yet to come.

[AMUG Editor's Note: At last meeting a letter was read from Warwick Sands of the Queensland TRS Group, advising he has rewritten his Newdos86 to become Newdos90. He is apparently offering this world-wide as a replacement for Newdos80, which, as mentioned above, is no longer supported by Apparat. He suggests that if any club (it was an open letter, not specifically to AMUG) wishes to undertake support, he will provide a list of any future zaps he writes for us to publish in our newsletter. Last meeting there was some discussion. My view as Editor is that we should undertake this if our own members are indeed interested, although my personal views about Newdos have been widely promulgated in these pages. I see it as indicative of the interest in Newdos that I've not received from our own membership a review of Warwick's latest re-writing, despite pointing out this is what I consider the devotee would want to do. Perhaps this is yet another issue that time will resolve?]

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