SLO Bytes
SAN LUIS OBISPO PC USERS GROUP

HARD COPY

Volume 6, Number 1
January, 1990

What's New

By Bob Ward

Last month the Prez says, "I can't make it to the meeting... I've got the flu." So hurriedly I grew a beard (so no one would know me from George) and took over the early meeting. Most of the discussion was centered around hard disks. We briefly discussed some of the commercial backup programs such as FastBack, PCTools, and DOS BACKUP. Other questions related to interleave and seek times. I can remember a few years back when these questions would have been in a special interest group relating to those few people who were lucky enough to own a 10 megabyte hard disk. Now 40 megabytes is the norm with 80's and 120's not uncommon.

Our general meeting started at 2:30 with some opening comments about the bulk mailing of our newsletter. The further from San Luis Obispo the longer it will take to receive your newsletter. The post office says 3 to 4 days anywhere within the state. If you don't receive your newsletter in a timely manner let me know.

French Morgan, long time SLO Bytes member gave us a hardware demonstration on the installation of a MicroSolution's 3.5" high density drive in a PC. MicroSolutions looks like the answer to your 3.5" floppy drive problem if you have an older computer with no empty spaces. They have several different packages for the computer user. French installed their Megamate - a kit which includes everything you need to install an external 3.5" floppy drive in your computer in about 5 minutes! It comes with a card, a cable, and an external 3.5" floppy drive. Plug in the card, attach the cable and run their setup program and you're in business. No extra power cords or cables strung all over the place. It's fast, it's slick, and even a novice who has never seen the inside of a computer could do it with ease. The nice thing about it is the ability to run 1.4 Meg floppies on a PC using their proprietary

Continued page 3

Two Hard Disk Managers

Q-DOS II & XTreePro Gold

By Hugh Bayless

MBUG-PC Newsletter, January 1990

Both Q-DOS II and XTreePro Gold are first-class hard disk managers, but their approaches are somewhat different and the end results are not quite the same.

Q-DOS II is fast, easy to use, and easy to learn. The instruction manual is not indexed but Gazelle Systems probably realized that most people don't read their manuals anyhow, so they made the program pretty much self-teaching. The menus are simple and generally easy to use. With it you can read and change file attributes (including making directories "Hidden"), copy files singly or in tagged groups, delete, view and even edit files. You can also find, move, print and

Continued page 4

CONTENTS

What's New 1
Hard Disk Managers 1
By Hugh Bayless
Data Communications Tutorial 2
By James Walker
Bits n' Bytes 3
Calendar 4
PC Backup & the Confessions of an Insomoniac 4
By George Henderson
Library News 5
Getting Technical with Documentation 5
By Janet Carter
Humor & Diskettes 7
By Gail Hodgson
Get More From Your Hard Disk 7
By Mike Murdock
New Members 8

Club Officers

President George Campbell
Vice President Sam Powers
Treasurer Teri Sorgatz
Secretary/Editor Bob Ward

A Data Communications Tutorial

By James Walker
Palmetto PC Chronicles

Reprinted from the BUG Report, Newsletter of the Greater South Bay Users Group, December 1989

Much has been written about the intricacies of data communications. Most of them written by very knowledgeable authors. Still, I question an author's credibility when he makes reference to 9600 baud modems. It has become more and more apparent that people are using the term bit and baud interchangeably. This usage, more times than not, is incorrect. Additionally, I view BBS messages referencing modem speeds at baud rates, not bits per second (bps). Perhaps it is a pet peeve of mine, but I wanted to do something for my new endeavor (hobby wise) and make a contribution which could be considered worthy. So, I decided to draft this tutorial. I hope it is of benefit to those who read it and aides them in understanding the difference between a "bit" and a "baud".

A FOUNDATION OF UNDERSTANDING

In order to proceed, a common ground of understanding must be established. The purpose and function of a modem is to convert binary information into a signal compatible with today's analog telephone lines; and visa versa.

The term "modem" is derived from the major functions performed by a modem. These are MOdulation and DEModulation. Although this is not a tutorial or text on analog transmission techniques, you must know that modems can modulate a signal in a variety of ways. Common techniques used are: Amplitude shift Keying (ASK), Frequency shift Keying (FSK) and Phase shift keying (PSK).

The easiest way to understand modulation is to picture a sine wave in your mind. Through electronic technology, we are able to change or alter the characteristics of a sine wave's shape, frequency, phase and amplitude. Modulation, as it is implemented within a modem, is the creation of a sine wave at a certain frequency (called a carrier frequency), then alters or changes its frequency, phase or amplitude. A modem when connected to a telephone line, transmits the sine wave which is received at the distant end by another modem.

Now complete the picture. Your PC or terminal sends binary ones and zeros, or "bits" of data to the modem where it is received and then converted to a modulated sine wave, transmitted to the distant modem where the sine wave is demodulated and binary "1's and 0's" are sent to the receiving PC or terminal. Job Complete.

We all know that a "bit" is binary 1 and 0 and when 7 or 8 of them are grouped together, we have a byte or character information.

Webster defines baud as "a variable unit of data transmission speed usually equal to one bit per second." The two keys words are "variable" and "usually". It is variable, but in todays technology and higher transmission speeds, it is not usually equal to one bit per second.

A more correct definition for "baud" would be: a variable unit of data transmission speed determined by the rate of change of a modulated signal.

WHAT THEN IS A BAUD?

As we discussed, data, in its analog form, is represented by a sine wave. If we were to change or alter this sine wave in a predetermined and meaningful manner, we can allow the sine wave to carry information. A baud is simply a change in amplitude, frequency or phase of a sine wave. Baud rate is the speed at which we perform this change.

Let's look at an example. Today's standard for transmitting at 300 bps was established many years ago by AT&T. We utilize the frequency shift keying schemes developed from Western Electric manufactured 103J modem. In order to simplify this discussion, I will deal only with half of the full duplex link. When you originate a call to another modem at 300 bps, you transmit to the other modem by shifting the frequency of your sine wave between the 1270 Hz signal and a 1070 Hz. A binary 1 is represented by the 1270 Hz signal and a 0 is represented by the 1070 Hz signal. If you were to connect an oscilloscope to the analog line, you would be able to see the sine wave change its frequency back and forth as data is transmitted. In this example, we are transmitting at 300 bits per second and at 300 baud because each change of the sine wave represented one bit of data.

This relationship between a bit and a baud being equal stops very quickly. It was determined many years ago by two acclaimed scientists and researchers named Shannon and Nyquist that the maximum allowable changes of state of a sine wave was in direct relationship with the bandwidth of an analog line. They developed the Shannon/Nyquist theory, a mathematical formula proving that the maximum baud rate for a typical unconditioned line having a bandwidth of 2700 Hz is approximately 3000 baud per second. So, only 3000 changes to a sine wave per second can take place before you surpass the capabilities of a typical analog line. How then, do we transmit at speeds in excess of 2400 bits per second (bps)?

THE EVOLUTION OF SPEED AND TECHNOLOGY

The need to be able to communicate remotely with and between computers dictated advancements in analog data communications. To do so economically meant that we would have to utilize the existing analog network built by AT&T and its operating companies. To do so efficiently required that we communicate at high

Continued next page

What's New

software. If you want to spend an extra $100, MicroSolutions offers their Megamate 2.8. Using special high density 3.5" floppy disks ($7 each right now) you can pack 2.8 megabytes on one disk. List price for the Megamate (1.4) is $349. Prices vary and are considerably lower through catalog outlets.

Next month we have invited one of the few national software companies that resides within the city limits of San Luis Obispo - Xtree Company. If you are not familiar with their product, come to the meeting and watch Jayme Nozzi, support technician from Xtree dazzle us with XtreePro Gold. This is a total disk management program which save the user computer time, keystrokes, and increases productivity. See the accompanying review article on QDOS II and XtreePro Gold.

###

Data Communications

speeds. To do so accurately meant that we could not exceed the limitations of the analog network.

Modem manufacturers rose to the challenge by developing multi-level modems. And here is where we truly delineate between a bit and a baud. Multi-level modem means that a single change to the sine wave can represent more than one bit of data. Therefore, one baud can represent two, three or perhaps four bits.

At a speed of 1200 bits per second, our modems utilize Phase shift Keying as the method of modulation. The transmit carrier frequency (after handshake) is 1200 Hz for the originator of the call and 2400 Hz for the answerer of the call (for full duplex operation). Our modems are also 4-level. That is, our modems use four different shifts in the phase of the sine wave in order to transmit bits of data. The question now is, how many bits can each of the four different phase shifts carry? The answer is 2. Let's look at all the possible combinations, 00,01,10,11.

In one change of the phase of the sine wave, let's say 45 degrees, I am really transmitting 2 bits of data (00). A change of 90 degrees conveys the bits (01). A change of 1.35 degrees means (10). And a change of 180 degrees means (11). In this example, we are transmitting 1200 bits per second while actually transmitting at a baud rate of 600, half the bit rate. (Note: A 4-level modem transmitting two bits of data for each baud is referred to as a di-bit modem.)

A tri-bit modem transmits 3 data bits for each baud. Most modem manufacturers utilize tri-bit technology for speeds of 4800 bits per second. The modulation technique is usually Phase Shift Keying. Eight different combinations of three bits can be transmitted (000,001,010, etc). The data rate is 4800 bits per second, the baud rate is 1600.

Quadrature Amplitude Modulation combines Phase Shift Keying and Amplitude Shift Keying. It utilizes both the sine and cosine wave forms. Each of the waves carries two bits of data which are combined into four-bit groups after reception. So, at 2400 bits per second, we are transmitting at a baud rate of 600).

SUMMARY

Are a bit and a baud the same? Sometimes. They should each be used when referring to different aspects of the speed at which data is transmitted. Can they be used interchangeably? Absolutely not! Is there such a thing as a 9600 Baud modem? There may be, but it won't be on Ma Bell's lines. Shannon and Nyquist proved them to be correct. What is the baud rate of a 9600 bit per second modem? Most 9600 modems are 16-level or 16 point, in which case they are transferring data at a baud rate of 2400.

###

Bits n' Bytes

- Will the person who donated the Computer Monitor to the Lung Association please contact John Rohde @ 546-8381
- Our many thanks to Cuesta Systems, manufacturer of uninterruptable power supplies for giving us all their computer magazines. Due to their national advertising they receive a large number of computer magazines which they make available to us each month. The magazines are located in the library room, Fisher 292, and are on a first come first serve basis.
- Would the individual who was interested in ATI Training Disks for Lotus 1- 2-3 please contact Bob Ward.
- Dick Trueman was kind enough to give us a 5 disk Trial Demo version of Quattro Pro. It will be available for review along with our other training disks. Check with Teri Sorgatz (treasurer) or any other officer to reserve this program or any one of our training disks.

Reprints

Pat Farley's article A:Copy Readme.* LPT1 was reprinted in the January 1990 PC Report; a publication of the Boston Computer Society.

Hard Disk Managers

rename files from within Q-DOS II. There is a HEX dump display.

There are several useful non-DOS commands, such as the status screen which displays date and time, files selected for display, startup drive, sort sequence, and memory status.

Today, more and more users have hard disks that exceed the DOS limit of 32 megabytes and therefore have to divide their disks into two DOS portions, usually C: and D:. Q-DOS II does not handle a second hard disk well. It has a "Change Directory" command, but it only displays the current directory on the named disk and refuses to provide a directory tree for the second drive. Unless it is installed on both C: and D: drives, it cannot really handle both with facility.

XTreePro Gold has much better documentation, takes a bit longer to learn, and is considerably more powerful. It can perform its functions within any partition on the hard disk by simply logging in the new drive.

XTreePro Gold is the latest update of the XTree program we briefly reviewed last September and which was the standard by which we measured other hard disk management programs. This new version is even better than before and retains its leading role. It now includes an editor to edit the contents of a text file, a number of new commands, and much greater flexibility.

There are a number of other functions offered by XTreePro Gold which do not appear in Q-DOS II, such as the ability to change the time and date of a file, or create a batch file that contains a command line for each tagged file. In addition to finding a specific file, XTreePro can search all tagged files for a specified text string, in HEX and even edit it; and it can even display text files in ASCII or in a simplified word processor format. While compatible with WordPerfect 5.0, it choked on displaying WordPerfect 5.1 output formats.

XTreePro Gold is the fastest, the most comprehensive, and the most competent file manager available today, but it is no the only file manager.

For the user who has only a single hard disk of less that 32 megabytes and whose file management requirements are modest, Q-DOS II, which sells for $79.95 retail and $39 street price in the Bay Area, is an excellent choice. For the demanding user, who has a lot of files and perhaps more than one hard disk, XTreePro Gold, which retails for $129 is unquestionably the best program around. It is so new that we do not yet have a street price, but check around.

If anyone is already a registered owner of XTree or XTreePro and wishes to upgrade to XTreePro Gold, the XTree Company is offering upgrades for $25 through the end of January 1990. After that, upgrades will be $40. Also, during the same period, anyone who owns PCTools, Magellan, or Norton Commander may trade it in for XTreePro Gold for only $35 plus California sales tax of 6.25%. For further details, call XTree Company in San Luis Obispo at (805)541-0604.

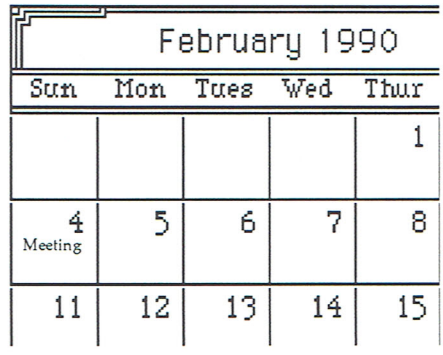
###

PC BACKUP & the Confessions of an Insomoniac

By George Henderson
SLO Bytes PCUG

At the New User's meeting on January 7th, I managed to prove that a little knowledge can be a bad thing. Those who were there may recall the discussion of BACKUP and RESTORE. You may also recall (I'd rather you didn't) that I stated that BACKUP and RESTORE loses hidden files. I thought I'd read that somewhere! By the time I got home I'd forgotten it. I went to bed rather early (for me), but, at around 1:00 am when a call of nature woke me up, I remembered. Worse luck. It wouldn't let me go back to sleep so I got up to see if I'd goofed. I backed up a system disk and restored it to a blank disk, used Ctrl-Alt-Del and sure enough, it wouldn't boot. The hidden files were gone. I looked at the directory, and was puzzled by the absence of COMMAND.COM. Checking the DOS manual I found that RESTORE will not replace the system files. I went back to bed thinking I'd lucked out, but later, when I finally woke for the day, I remembered that ANSI.SYS and CONFIG.SYS had been restored. Back to the computer to see if they would be lost if they were ;hidden. I copied CONFIG.SYS to a couple of different names and hid ;them with Read Only both on and off. I backed up and restored, and, SHUCKS, everything came back exactly right except for COMMAND.COM, IO.SYS, and MSDOS.SYS. I'd goofed in front of GOD , people,and everyone. But, since the system files ARE lost I don't feel entirely wrong, so I'll have my crow nicely roasted, if you please.

###



February 1990

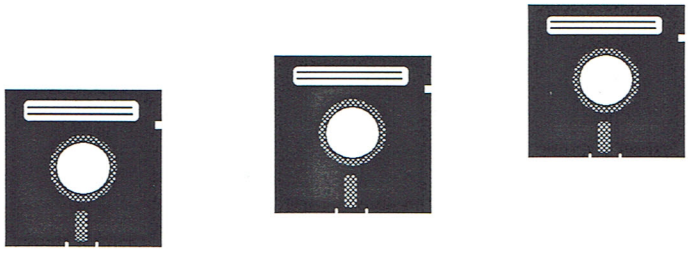
Sun	Mon	Tues	Wed	Thur
				1
4 Meeting	5	6	7	8
11	12	13	14	15

Calendar

February 4th XTreePro Gold by Jayme Nozzi from Xtree's program support division.

March 4th Wordstar will be demonstrated by a representative from MicroPro.

###



SLO Bytes Library

We have added several new programs to out shareware library this past month. Bring your blank floppies if you wish to copy them during the meeting or give us 90 cents and we will give you a disk with the software already on it. Here's what we are adding:

#172 For the electrically inclined person - **CIRCUITS**, and **SOLVE310**. Both of these programs are circuit design programs. Quite shocking depending on where you put your finger.

#173 **MRDOS** - Mr. DOS (ver 2.31) is an excellent DOS tutorial including different levels of expertise. It also covers hard disks. You'll like this one.

#190 **SCHOOL-MOM** is a great program for youngsters between the ages of 4 and 14. It covers music, art, spelling, and math. Certain modules require CGA and joystick.

#365 **PC-Glossary** (ver 1.4) is a comprehensive glossary of computer terms. I found this one quite informative.

#366 **Hugo's House of Horrors** is a Leisure Suit Larry look-a-like. Requires CGA and a hard disk. It upsqueezes to 800 K. Good graphics. I'll put it up there with BASSTOUR for games.

Updates:

#309 **Con-Format**: it formates floppy disks while you are in another program. Upgraded to version 1.06

#311 Added **BASSLAK1** and **BASSMAP** to **BASSTOUR**. Now you can create your own lakes for **BASSTOUR**. The ultimate for fishing fanatics. This one runs in EGA mode.

#320, 321, and 322 - **Qmodem** updated to version 4.1.

#350 Update **Virus Scan** to version 2.0V55. Now scans 60 viruses. Added **CLEANV55** which removes viruses from infected programs.

#352 Added **PCMPR89** - Index to PC Magazines Productivity Columns for 1989 & **PCWH589** - Index to PC Worlds Productivity articles for 1989

Demos:

#141 **Publisher's POWERPAK** - Add font excitement on any printer.

#142 **ConneXion-1** an electronic postal system by Connex Systems

#143 **One-Write Plus** Easy Demo by Great American Software, Inc.

#144 **ES:** The Estate Plan Analyzer & **CF:** Cash Flow Analysis by Superior Software, Inc.

#145 **Lotus Magellan** Trial Version by Lotus Development Corp.

#146 **XTreePro Gold** by Xtree Corporation.

#147 **C-NETT** Project Management System by W.R. Conner & Associates.

#148 **Simple Checker**, a personal checkbook planner by Sunrise Software.

###

Getting Technical with Documentation

By Janet Carter
CHIPS, October 1989
Navy Regional Data Automation Center

Reprinted from Space Coast PCUG Newsletter, November 1989

Programmers admit the ugliest part of their job is writing technical documentation. They consider it a gross task - at least most of them do. I shouldn't admit this, but I like writing documentation. It's fun, and I'm going to convince you that it's fun. It's also very important in the development of a complete system.

Documentation usually involves documenting your programming code for maintenance purposes and creating a user's manual describing the how-to steps. It's my guess that a large percentage of programmers don't document their code or document it poorly. If my first guess is correct then it's also true that most of the user's manuals accompanying software applications are worthless.

The best way to fully understand the importance of documenting programming code is to put yourself in the shoes of a maintenance programmer. If you are unlucky enough to inherit a system for maintenance, the first thing you want to see is the documentation. If you're lucky,the previous programmer did such a good job of documenting the code that you could easily follow the logic. Chances are your luck won't hold.

Now from a user's perspective. We've all been subjected to a user's manuals - good and bad. Did they answer your questions? Did they completely explain how- to? How many times have you slammed a manual

Continued next page

DOCS

down in disgust because you couldn't figure something out? If the user's manual had been comprehensive, thorough and easy-to-use, you wouldn't have had any problems.

If you're a programmer writing documentation, think of your user. They're the ones who will rely on the documentation. Just because you know how the program works, don't assume they will. Don't assume your users will be technical enough to figure something out on their own.

Finally, let's get technical with documentation. I'm going to focus on documentation for the end user. But first I want to take the following quiz. If you answer **NO** to one or more of the questions, continue reading.

DOCUMENTATION QUIZ

If you've written documentation take another look at it then ask yourself the following questions:

- Is it comprehensive?
- Does it match the system exactly?
- Is it accurate?
- Is it grammatically correct?
- Is it easy to read?
- Is it well organized?
- Are the instructions clear and concise?
- Do you have installation instructions?
- Is it neat?

I recently finished a complete system user's manual for *GENUS* Travel, a generic travel processing system designed by NARDAC, Norfolk, Virginia. The system is big and includes a lot of material. The task seemed overwhelming at first, but I started small and worked my way through. Here are some tips on how to organize and create a user's manual.

Create an Outline

Before I started, I made an outline of all the components in the manual. The program has six main options, so I used each main option as the first level of the outline. The sub-options of each main option served as the second level and so on. I also listed what I wanted to include in the manual such as a table of contents, a list of system features, installation instructions, data entry requirements, a list of system errors, descriptions of each module, etc. Brainstorm and list everything you can think of. You can condense and refine your outline later.

Know Your Audience

Before you can actually compose the text of the manual, understand who you're writing it for. If you are writing for highly technical programmers or experts, it's fine to write on a sophisticated technical level. If you're writing for secretaries or non-technical types, think about their needs and stay away from technical jargon they won't understand.

Keep It Simple

Don't use 10 words when five will do.

Be detailed, Consistent and Accurate

Don't assume the user is going to automatically understand what the system is supposed to do. Write detailed instructions making sure the verbiage is consistent and the instructions are accurate. It's important to match the documentation to the system - exactly. If it doesn't, it won't do the user any good.

Format the Documentation With Desktop Publishing

I recommend using a desktop publishing package to format the documentation in an easy-to-read fashion that's eye-pleasing and organized. Use desktop publishing design techniques such as typefaces and styles to create a visual effect. Ventura Publisher by Xerox works great for long, structured documents such as a user's manual. I also use the Professional Extension by Xerox, a terrific Ventura Publisher supplement, to automatically generate tables.

Test the Documentation Extensively

After I produced the documentation, I put it through extensive testing to make sure it was accurate, consistent and grammatically correct. Don't be thin skinned when folks take pot shots at your product. Some of the comments will be valuable; the rest arn't worth worrying about.

Don't be Sloppy

When you finally get the documentation finished and you're ready to go to the printer with the final copy, don't eat cheese doodles and get orange fingerprints all over it. Make sure the final product is neat and clean. Spare your readers a reproduction of your food stains.

After you've followed these tips for creating technical documentation, go back and take the documentation quiz. Chances are you'll answer **YES** to all of the questions.

About the Author: Janet Carter is Project Leader for all *GENUS* projects at NARDAC, Norfolk.

###

ZIP Code Changes

Important Notice!!! The U.S. Postal Service is in the process of adding several new ZIP codes to our local 934 prefix. **IF YOUR ZIP CODE HAS BEEN CHANGED IN THE CITY OF SAN LUIS OBISPO, CONTACT Bob Ward IMMEDIATELY!** Call 528-0121. If we're not home leave a message on our answering machine with your name and NEW ZIP CODE number. It is imperative that we get the ZIP codes changed as soon as possible to avoid any lost newsletters. There were some changes to P.O. Boxes in the cities of Arroyo Grande, Grover City, Morro Bay, and Pismo Beach. I have made the corrections to these ZIPs.

###

HUMOR

Care of Diskettes & Drives

By Gail Hodgson

Big Blue and Cousins, December 1989

1. Never leave diskettes in the disk drive as data can leak out of the disk and corrode the inner mechanics of the drive. Diskettes should be rolled up and stored in pencil holders.

2. Diskettes should be cleaned and waxed once a week. Microscopic metal particles can be removed by waving a powerful magnet over the surface of the disk. Any stubborn metallic shavings can be removed by scouring powder and steel wool. This will allow the diskette to spin faster resulting in better access time.

3. Do not fold diskettes unless they do not fit into the drive. Big diskettes may be folded and used in little disk drives.

4. Never insert a diskette into the drive upside down. The data can fall off the surface of the disk and jam the intricate machanisms of the drive.

5. Diskettes can not be backed up by running them through a photocopy machine. If your data is going to require backing up, simply insert TWO diskettes into your drive. Whenever you update a document, the data will be written onto both diskettes. A handy tip for more legible copies; keep a container of iron filings on your desk. When you have to make two copies, sprinkle the iron filings liberally between the diskettes before inserting them in the drive.

6. Diskettes should not be inserted or removed from the drive while the drive light is on or flashing. Doing so could result in smeared and possibly unreadable text. Occasionally, the light remains flashing in what is known as the "hung" or "hooked" state. If your system is "hooking," you will probably need to insert a few coins before being allowed to access to the slot.

7. If your diskette is full, and you need more storage space, remove the disk from the drive and shake vigorously for two minutes. This will pack the data (data compression) to allow for more storage. Be sure to cover all openings with masking tape to prevent loss of data.

8. Data access time can be greatly improved by cutting more holes in the disk jacket. This will provide more simultaneous access points to the disk.

9. Diskettes may be used as coasters for beverage glasses, providing they are properly waxed beforehand. Be sure to wipe the diskettes dry before using ;in the drive again.

10. Never use scissors and glue to manually edit data on a diskette. The data is stored much too small for the naked eye, and you may end up with data from some other document stuck in the middle of your file. Razor blades and masking tape may be used; however, an electron microscope is highly recommended.

11. Periodically spray diskettes with insecticide to prevent system bugs from spreading.

Originally reprinted from FREMENS - B.C. and Yukon Mensa Newsletter.

###

WANTED

Dbase III+

I need both manuals and the original system disks, all in good condition

Call Jim Borland @ 544-6418
with price.

Get More From Your Hard Disk

By Mike Murdock
Pinellas PCUG

Reprinted in p-bug, newsletter of the Palm Beach Users Group, May 1989

Many users initially formatted their disk with DOS 2.xx and are either still using DOS 2.xx or have upgraded to DOS 3.xx. They many not realize, however, that their hard disk may contain as much as 30% wasted space. "Wasted space on my hard disk--never," you may say. Well, the facts of DOS life may surprise you.

In an effort to make PC hard disks as efficient as possible, DOS allocates space in "chunks" called allocation units. These allocation units reserve a block of the disk for your file to expand or contract within. Let me explain. Suppose you wanted to store the word "fun" on a disk. You would require three bytes, but DOS figures you may need more room for more words in the future, so it gives you one allocation unit (or block) of space.

Under DOS 2.xx, the allocation unit was 4K or 8K. That means a three byte file takes 4,000 or 8,000 bytes of hard disk space. OK, I know some of you won't believe me, so try this experiment. At the DOS prompt, run CHKDSK.

CHKDSK (press enter)

Note the amount of free space, then type the following to create a small file:
COPY CON TEST (press enter)
FUN (press enter)
(press the F6 key and then press Enter)

Run CHKDSK again and note the difference in free disk space (this is the allocation unit on your system). With

Next page

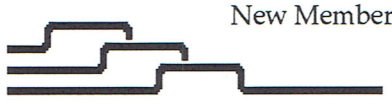
More Hard Disk

the advent of DOS 3.xx, the standard allocation unit was reduced to 2K. However, many users are still strapped to the larger allocation unit because their disks were originally formatted with DOS 2.xx. To take advantage of the 2K allocation unit, you must back-up your hard disk, run the DOS 3.xx FDISK utility, reformat your hard disk using the DOS 3.xx FORMAT command and then restore your backup.

Note: If you are unfamiliar with these functions, consult your DOS manual and/or a knowledgeable person before attempting this procedure. The resulting free space may surprise you; I have seen six megabytes regained after performing this procedure on a full 20 Megabyte hard disk.

(An extra note from SLO Bytes... If you used the DOS BACKUP program to backup your data you must use the following procedure to RESTORE your data to your newly formatted hard disk. Reboot your computer with a floppy disk containing the 2.xx system, any hard disk partitioning software, and the DOS 2.xx RESTORE program. You may then RESTORE data backed up under DOS 2.xx. This must be done since the DOS RESTORE programs between two versions of DOS are incompatible.)

###



Welcome to the following new members who joined us in December, 1989:

Orville Haworth 528-0158
Beth Mahoney 929-5741
Ken Monroe 773-1559
Bob Porter 772-7885
Stephen Reichert 595-7523
Randy Scott 541-3015

Database User's Group

Got a database problem? Need to know how to effectively use dBASE, or maybe FoxBase? All these questions and more can be answered by attending dSLO dBUG User's Group. Meetings are free and open to the public. If you want to take full advantage of the club, join for $12 and use the club's library of public domain and shareware software plus receive their monthly newsletter. And... ocassionally receive discounts on hardware and software products offered directly from manufacturers. That's a lot for a buck a month!

Meetings are held the 4th Tuesday of each month at Cal Poly. Unfortunately you may receive this newsletter after their January meeting (January 23rd) but they will be back February 27th and March 27th to answer all your questions. The next meeting will be held at Cal Poly, Science North 313 starting at 6:30 pm. If you have other questions give French Morgan, the Club President, a call at 544-3691 or write to the Central Coast dBASE Users Group, c/o French Morgan, P.O. Box 13109, San Luis Obispo, CA 93406. dSLO dBUG is not affiliated with SLO Bytes although many of their officers are also members of our group.

###

Membership Expired

Before income tax takes your last penny, why not renew you membership in SLO Bytes. A friendly reminder to those below.

Ken Brading
Dick & Barry Burkhart
Robert Cohen
Joe Emenaker
Tim Grant
Wally Greenaway
Corki Henderson
Trudy Jacobs
Arthur Kennedy
F. Scott Zinger

###

FLOPPY DISKS
4-SALE
at the meeting

Royale Grey DSDD 360K
Unformatted Floppy Disks
with labels, tabs, and sleeves
70 Cents Each

MEI DSDD 360K
Unformatted Floppy Disks
with labels, tabs, and sleves
50 Cents Each

High Density Disks 1.2 MEG.
90 Cents Each

Sony 3.5" 720K
Unformatted Floppy Disks
90 Cents Each

New Library Disks
90 Cents Each

All Disks fully guaranteed against defects.

Club Information

The SLO BYTES Newsletter is a monthly publication of SLO BYTES PC User's Group located in San Luis Obispo, California. Information in this Newsletter is derived from both our own membership and other PC User Group Newsletters. The purpose of this publication is to inform our members of meetings and provide information related to the use of IBM PC's and compatible computers.

Membership: Dues are $18 per year. Newsletter only is $10 per year. Full membership entitles you to our monthly newsletter, full use of the public domain software library and discounts at local computer stores.

Article Submission: Deadline for submission of articles is the 15th of each month. Articles should be provided in ASCII format without any type of formatting from your wordprocessor including tabs, indents, extra spaces, or highlighting. We prefer articles on disk but will accept hardcopies if necessary.

Disclaimer: Neither SLO BYTES PC User's Group, its officers, editor, or contributors to this newsletter assume liability for damages arising out of this publication of any article, including but not limited to the listing of programming code, batch files and other helpful hints.

Reprinting of this Newsletter: Articles from this newsletter may be reprinted by other user groups if credit is given to both the author and newsletter from which it was taken. Reproduction of articles with a specific © Copyright notice is prohibited without prior permission from the original author.

Advertising: Commercial advertisers, request ad packet from Bob Ward. Members may advertise personal computer equipment or software for free. Submit your ad to Bob Ward.

Direct all correspondence to Bob Ward, 2100 Andre Ave., Los Osos, CA. 93402. Call (805)756-2164 M-F 7:30am - 5pm and (805)528-0121 all other times.

Treasurer: Teri Sorgatz, 832 S. 7th Street, Grover City, CA. 93433 Phone 489-2516

Meeting Times

General meetings are held the 1st Sunday of every month, unless noted otherwise in the newsletter calendar, at 2:30 pm in the Cal Poly University Biology Department, Fisher Hall 286. Special Interest Groups (SIGS) meet at 1:30 - 2:15 pm.

New User's SIG - F.H. 286

Our Public Domain Library is in Fisher Hall 292. Hours 12 Noon till closing.

SLO BYTES BULLLETIN BOARD

(805) 528-3753 2400/8/N/1

PC Files & Message Section

SYSOP: George Campbell

All Welcome - 24 Hours

Treasurer's Report

Here's our expenses for the month of December, 1989

Beginning Balance	$1558.70
Bulk Mail Application	$ 60.00
1 Year Permit	$60.00
MEI Micro (Disks)	$83.00
Newsletter Xerox	$92.00
Software	$37.13
* Postage (Bulk Mail)	$150.00
Deposit 1/8/90	$449.40
Balance	1525.97

* An account has been set up with the post office against which we can charge bulk mail costs.The $150 does not reflect a single month of postage expenses, more like 3 to 4 months of bulk mailings.

DISCOUNTS

Paradise Computers 3485 Sacramento, unit B San Luis Obispo 544-7127	5% 10%	All computers. peripherals and software. Ribbons, paper, disks & other expendable items.
Star Computers 855 Morro Bay Blvd. Morro Bay 772-7827	5% 10%	Any software in stock. Paper, ribbons, cables, and other supplies.
Computer Logic 973 Foothill Blvd. #4 San Luis Obispo 544-8347	10%	Off list - all computers, software, computer peripherals, and products. Contact Bruce, Paul or Dave for discount.
WITCO Computers 3563 Sueldo, Bld. B San Luis Obsipo 549-0811	10% 5%	Off complete systems, peripherals, supplies but not including software. Off computers alone.

SLO BYTES BBS is a member of the UGX on BIX, the on-line service for computer- using professionals. For information, call 1-800-227-2983.