

COMPUTER CONNECTION

Monthly Newsletter of the
Rockland PC Users Group

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COME ONE, COME ALL! MICROSOFT'S ROAD SHOW

Lions and tigers and dinosaurs, oh my! Just when we need gift ideas for the holiday season, Microsoft will demonstrate several products from its Home line at the December 9 meeting. It seems as though Microsoft announces its intention every year to abandon this attractive line of products, only to have them bounce back, stronger than ever.

We'll have a chance to size up *Chaos Island*, a real-time strategy game for kids based on *The Lost World: Jurassic Park*, *Dilbert's Desktop Games*: eleven games, activities and components based on the popular Dilbert comic strip and designed to wreak havoc on your desktop, *Microsoft Greetings Workshop Deluxe version*, two CDs full of projects, including the ability to create Hallmark-quality cards, invitations, banners, posters and calendars, and *Flight Simulator 98*, an all-new edition of the number one selling PC game of all time.

We'll also get a chance to check out *Encarta 98*, Microsoft's multimedia encyclopedia, and—we're not sure how this fits into the holiday tour—*Microsoft Internet Explorer 4.0*, which Microsoft is trying to slip past a Justice Department investigation into its proposed integration with the Windows 98 operating system.

We're expecting an fun-filled evening. Microsoft is invariably generous with door prizes, and we're sure they won't let us down this holiday season. ■



New Users SIG

The New Users SIG got off to a grand start on November 6. Twenty-five enthusiastic registered members and a group of auditors gathered at the New City Library to fill in the blanks in their computer know-how. Leader Sandy Coulter covered the evolution of today's powerful microprocessors, explained how digital information is processed and stored, and began a discussion of storage devices and hardware components.

The second meeting, scheduled for December 2, will feature an in-depth look at keyboard, mouse and other peripherals, storage devices, the CPU, the CMOS and the BIOS.

Ms. Coulter has agreed to include an additional twenty-five enrollees in the remaining sessions. Late enrollees will receive Session 1 materials. Contact Sandy at 446-3444 or at MsCoulter@aol.com to arrange a place in this valuable SIG. ■

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MEETING SCHEDULE

Rockland Conservatory of Music 7:30 P.M.

Tuesday, December 9 – Microsoft Road Show

Tuesday, January 13 – Citibank Direct Access

Tuesday, February 10 – Backup and Recovery

(All are welcome)

PRESIDENT'S MESSAGE

by Stan Smith



We're on our way! The first session of our New Users (Beginners) Special Interest Group took place last month. Attendance was excellent (about 35!), the instructor (our own veep, Sandy Coulter) was prepared, the attendees actively participated in discussions, interesting and informative material was covered, and lecture handouts were distributed. If you missed the first session, it's not too late to start attending. (Video tapes of the lessons will be available to anyone missing a session.)

The SIG will meet next on December 2. January's meeting will be held on Thursday, January 8. All meetings are held at 7:15 P.M. at the New City Library.

If you are interested in attending these monthly presentations covering the basic information that all computer users need, contact SIG Leader Sandy Coulter at 446-3444 or by e-mail at MsCoulter@aol.com.

Membership Surveys

The membership survey mentioned in last month's column will (really!) take place at our December meeting. We are asking for your thoughts regarding our monthly meeting contents, format, etc., and about volunteering to assist our group.

If you are asked to fill out a survey, please take the few minutes required to fill it out. As an incentive, an extra raffle ticket will be handed to you when you return the

completed form. Please speak to us. Let us know your feelings.

RPCUG Dues Increase

At our November general meeting our attending members almost unanimously approved the board's recommended dues increase. Starting December 1, 1997, dues categories will be as follows: Regular Membership: \$35, Joint Membership: \$40, Family Membership: \$45, Student Membership: \$15, and Corporate Sponsor: \$100. Please remember the new amounts when you join or renew. (And remember that all dues paid to RPCUG are deductible on both Federal and State income tax returns as charitable, educational contributions.)

The board thanks members for their support and assistance in keeping RPCUG in sound financial shape.

Year 2000 for DOS Users

In past columns I have briefly covered some important problem issues relating to the (not so far off) leap into the 21st century. I will continue to present additional information on these issues in the future. However, an opportunity exists for DOS users—and there are estimated to be over 100,000,000 (worldwide) of us still out here enjoying our DOS command line and Windows 3.x—to rectify the problem.

All versions of DOS later than DOS 4 from Microsoft (MS-DOS) and IBM (PC DOS) do not have Year 2000 problems within the DOS kernel—the basic DOS supervisor or control program. But both companies have bundled various utilities with DOS to assist users in such operations as system backup, unerasing files, etc. These DOS add-ons do have problems with file dates that have a year 2000+ creation or modification date.

IBM has released a fix for PC DOS 7 that supports Year 2000 applications. IBM's

fixes only apply to PC DOS, not MS-DOS. Also, IBM is offering a reduced price upgrade for anyone interested in upgrading to PC DOS version 7. All current DOS users, even those with MS-DOS, are eligible to upgrade.

For existing PC DOS 7 users, visit IBM's Web site: <http://www.software.ibm.com/os/dos/2000/index.html> to download the free upgrade. It is an easy download and an easy upgrade.

Microsoft has stated they will not add Year 2000 readiness to Windows 3.x or MS-DOS. If you, or your business, depend on the DOS operating system or Windows 3.x, you might want to contact Microsoft and request that they change their minds and produce and distribute an MS-DOS/WIN 3.x Year 2000-compliant upgrade. (Or you might want to consider taking advantage of IBM's competitive product upgrade to PC DOS 7!)

Newsletter Advertising

Last month was the inauguration of our new **ComputerConnection** advertising program. Do support our advertisers by considering their services and products. Be sure to let them know that you saw their ads in **ComputerConnection**. Lacking evidence that their advertisements are producing additional business, they will stop advertising with us. So let them know you are doing business with them because they are supporting RPCUG.

Our Wonderful Volunteers

This month we focus on the volunteer efforts and contributions of Vincent Cina, Irene Kleiner, and Thea Zendell.

Vinny has been a member of numerous general meeting panels, where he has offered advice, tips and techniques, and discussed many of his computing experiences from his extensive background.

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THE EDITOR'S DESK

by Sy Ribakove

When I started computing you could dial an 800 number and be connected to someone at WordPerfect in Orem, Utah. None of this "If you are calling about x, press 1, if you are calling about y, press 2." You asked your question and received a helpful answer. You were never asked to give your name, address, phone number and product serial number. You were never told to reinstall Windows.

That was then. Now we pay for answers to reasonable questions, usually on a per call basis, and the person we finally talk to often does not have the answers.

Luckily, there are satisfying workarounds. One is online documentation. The other is the Internet. Two examples:

Info Select, my personal information manager, suddenly refused to open; the screen displayed this Error Message: *The IS.EXE file is linked to missing export MFC42.DLL:6453*. And then this message: *A device attached to the system is not functioning*. I knew enough to search Info Select's own directory and Windows 95's System directory for the so-called missing "device" or "export link." MFC42.DLL was, in fact, present in the System directory. I copied it into Info Select's own directory thinking that it would clear up the problem, but when I tried to start Info

Select the same error messages appeared. I thought of looking in the online documentation, but how, if I couldn't get into the program, could I read its Help file? Brainstorm! In Explorer, I located the Help file and double-clicked. Yes! (Application Help files are stored either in an application's own directory or in the catchall Windows\Help directory. Take a look inside Windows\Help. You'll be surprised at what you find.)

I then searched Help for the word "trouble" and, with a little scrolling, found the answer to my problem: *If you encounter difficulties after installing another application it may be because Info Select uses a newer version of MFC42.DLL. Some setup programs incorrectly replace a newer version of this DLL with an older version. Reinstalling Info Select will correct this*. Five minutes later, Info Select was up and running again.

The lesson here: Because of the fragile nature of today's applications, many users are experiencing identical problems. Manufacturers place answers and workarounds in Frequently Asked Questions (FAQ), in README files and in Help files. As we have seen, an application's Help file can be read independent of the application itself by



double-clicking its filename. (This is true in any Windows version.) So, when problems arise, check out any .TXT file you can locate in the application's directory and also investigate its Help files before running up an expensive phone bill.

The Internet example

After experiencing a very minor glitch during Windows 95's booting, I investigated the BOOTLOG.TXT file in the root directory of C:. (If you ever wonder why Win95 takes so long to boot, take a look at this file, which is created each time Win95 boots up. (You can look at BOOTLOG.TXT in Notepad.) On my system more than *five hundred* items

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The Rockland PC Users Group, a tax-exempt educational organization, meets monthly, usually on the second Tuesday. Meetings begin at 7:30 P.M. The Rockland PC Users Group supports the computing interests of the community as well as the interests of its own members. The latest information about meeting programs and dates is available on the Internet at <http://www.rpcug.org>.

NEWSLETTER EDITOR

Sy Ribakove

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PARTITION MAGIC

by Robert B. Sieffert

[Ed: Modifying hard disk partitions was once a nightmarish task. You had to back up your data, delete existing partitions, create and format new partitions, reinstall your operating system and finally, restore your data. PartitionMagic makes it possible to enlarge or shrink partitions on the fly without destroying data. For anyone who is running out of room on the Windows partition, but has room to spare elsewhere on the disk, PartitionMagic can, with a mouse click or two, rearrange things before you can say William Gates. By adjusting a large hard disk's partitions, precious hard drive space can easily be reclaimed, as the following review by longtime member Bob Sieffert explains.]

One of the things that frustrates users of personal computers is dealing with some of the inherent limitations built into the hardware and software. Back in the early 1980's when the IBM PC was first developed, 640K of main memory was considered luxurious; the first hard disk drives only had capacities of 5MB to 20MB. The original DOS developers could not imagine what is very common today: main memory of 32MB and disk drives with capacities of more than 2GB (a gigabyte equals 1,000 megabytes).

Software developers have devised a wide range of tools to help us get around the old DOS limitations. One of these tools is PowerQuest's **PartitionMagic**. Among other capabilities, **PartitionMagic** enables the user to make more efficient use of the space on today's large capacity disk drives.

The space on a disk drive is subdivided into smaller units called "clusters." These clusters are always a fixed size: a power of 2K (2, 4, 8, 16, 32, 64, etc.). When DOS needs to store a file on the disk it must find one or more currently unused clusters in which to store the file. One approach would be to look through these clusters one at a time, to see if data is stored there already. This would be a very slow process. Instead, the operating system makes use of a data structure called a "bitmap" to efficiently manage the disk space. Think of a bitmap as a large number of on/off

switches (technically speaking, "bits"), one bit for each cluster of space available on the disk. When a cluster is used to store a file the bit is turned "on." When the file is erased the bit is turned "off." So, to find an available cluster the operating system need only look at the bitmap, looking for bits that are "off," indicating which clusters are available.

Unfortunately, when those early DOS developers designed the bitmap itself, they designed it to contain a maximum of 65,525 bits, enough to manage 65,525 clusters. It is now easy to see that the size of a cluster of space on a given hard disk will be the size of the whole disk divided by 65,525, rounded up to the nearest power of 2K. On one of the early 20MB disks, that comes out to 2K bytes per cluster, but on one of today's 2GB disks it comes out to 32KB per cluster.

So what's the big deal?

Suppose you needed to store a very small file, say 1,500 bytes, on each of these two drives. In both cases you would only need one cluster; the rest of the cluster after the 1,500 bytes of the file could not be used for any other file. On the 20MB disk you would be "wasting" 548 bytes (2,048 minus 1,500), whereas on the 2GB disk you would lose 31,268 (32,768 minus 1,500) bytes. At that rate your large capacity hard disk would run out of usable space much more quickly.

So how do we get around this problem? We can't change the bitmap size, which is "engraved in stone." But suppose we could make the operating system think our one large disk was really several smaller ones, each with its own bitmap? Then each would use its disk space more efficiently because each bitmap would manage a smaller "disk." In a nutshell, this is exactly what **PartitionMagic** does. The ease with which this is done is where the

"magic" comes in. The repartitioning could be done with the FDISK and FORMAT utility programs but it would not only be much more difficult, it would totally annihilate your existing operating system, applications and files. **PartitionMagic** manipulates partitions while leaving all of your files in place and intact.

Put simply, **PartitionMagic** provides a nondestructive way to make one large physical disk appear to be several smaller disks to the operating system. (These smaller pseudo-disks are sometimes referred to as "virtual" or "logical" disks.) The operating system cannot tell the difference between a PC with several physical disks and one with several logical disks.

For example, the PC on which I installed and tested **PartitionMagic** has a single 1.3GB disk drive, and the operating system managed it as a single disk designated as C:. So each cluster was initially 32K in size. I used **Partition-Magic** to set up three different partitions on that disk drive with total sizes of approximately 700MB, 300MB, and 300MB. To the operating system, and all of my other programs, these would be referred to as drives C:, D:, and E:, each with its own bitmap, and cluster sizes of 16KB, 8KB, and 8KB respectively. This uses the disk storage space far more efficiently.

The install procedure for **Partition-Magic** was straightforward and simple. The install procedure recommends that you create a "rescue disk" before using the program and provides an install option for doing so. I concur: there's no such thing as being too safe. I also recommend making a current backup of all of your files, programs and data, before starting. Remember, **PartitionMagic** is going to change your disk structure at the lowest level and if something goes wrong...

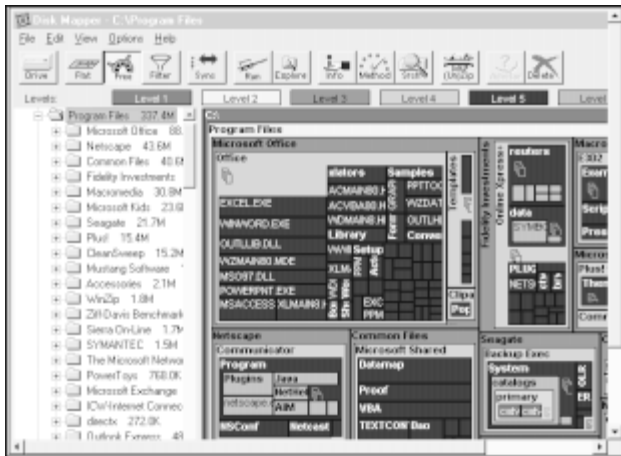
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DISKMAPPER 2.0

by Stan Tishler

DiskMapper is designed to display the contents of your hard drive as a graphical map of nested rectangles. If you want to know exactly what is using up your hard drive space, this is the program for you.

Version 1 of **DiskMapper** was reviewed about a year ago; there have been some significant changes in the program. The most important developments are the addition of an Explorer-like file tree, faster performance, a full right-click Context menu, a duplicate file finder and drag and drop file management.



Right click on any rectangle and it will tell you the number of bytes used by a particular folder or directory. The size of each rectangle is proportional to its size in bytes. Double-clicking on a rectangle activates that item: if it's a program, it will run; if it's a graphic or font, it will be shown; if it's a text file, it will be shown as such, etc. Moving to and from each level of folders is accomplished by a simple click.

The **DiskMapper** screen shows seven layers of folders—a different color for each folder level. Files can be deleted, compressed or moved directly from the graphic display or the file tree. (Be careful when moving executable files since the Windows pointers are not moved with the file.) I found the tree listing to be very useful and the graphic portrayal to be a little confusing. It's likely that more experience with the program will help me understand everything I am looking at.

The right-click menu, like the right-click menu in Windows Explorer, is very useful. You can send, view, cut, copy, print, delete or check the properties of any folder or file visible on the screen. Filtering capability enables you to specify and display only the types of files you want. An interesting addition is the ability to specify how much free disk space you wish to maintain.

DiskMapper will sound the alarm when you when you exceed your set limit.

Using the program to clean up your hard drive is easy. As noted above, moving around from folder to folder and file to file is simple as is deleting and determining a file's function. I found the file tree as useful as the graphical representation even though looking at the graphic shows at a glance where disk space is being used. The toughest part is determining what to discard. The program could not help here. No program can. You need to make the hard decisions yourself.

DiskMapper 2 is only for Windows 95/NT even though the box it came in said it was also for Win 3.x. (Perhaps they used a Version 1 box.) The entire program is distributed on one diskette. Installation posed no problems. You'll need a 486 or higher computer and a relatively small 600K of disk space. **DiskMapper** is available from Micro Logic (www.miclog.com) directly and costs \$49.95 or \$29.95 for the upgrade from Version 1. ■

Partition Magic *(continued from page 4)*

PartitionMagic makes very good use of the Windows graphical interface to show your disk partition structure, and the changes you propose to make to it. For instance, the size of a partition is illustrated as a rectangular bar, and to re-size it you simply use your mouse to grab a little handle on the end of the bar and slide it left or right to change its size. Colors are used to illustrate different characteristics of the disk partitions. **PartitionMagic** also goes to great lengths to keep you out of harm's way. It will check a partition for internal errors (and require that those errors be repaired) before you can resize it.

The manual is well-written and very informative. The Concepts chapter and Glossary tell you everything you'll ever want to know about disk partitions. You are alerted to potential pitfalls and how to avoid them. **PartitionMagic** also has many features designed for the power user, such as the ability to manage multiple operating systems on the same disk, but that's beyond the scope of this review. **PartitionMagic** has a street price of \$65.

One final note. Most of the forgoing discussion on wasted disk space applies to the original disk structure design for IBM-compatible PCs. This design takes its name from its main data structure, the File Allocation Table, or FAT. Newer versions of Windows 95 make use of a different design, usually referred to as FAT32. In FAT32, cluster sizes are always 4KB so the wasted space problem is greatly reduced, regardless of disk size. However, the ability to adjust partitions can still help a user solve nagging hard disk problems. ■

COMPUTER READING

with Steve Weinberg



KILLER WEB DESIGN, NETOBJECTS FUSION by Stella Gassaway; Hayden Books; \$49.99; ISBN: 1-56830-340-8

NetObjects Fusion is a powerful program used to design and maintain Web sites. In this profusely illustrated volume, printed on very fine quality paper, we get a mixture of advice on using NetObjects Fusion 2.0 software and on designing visually inspiring Web sites.

The book wisely stresses the importance of involving a client in the early design phases. It suggests that a process called DADI (Definition, Architecture, Design, Implementation) will ensure the success of the Web site and prevent reworking major portions of code and navigation specifications. Creating test pages, organizing the site and documenting the navigation links must all be accomplished keeping the client's ultimate goal for the Web site in clear focus.

The book has three major sections. Part 1 explores the design process in theory. Part 2 centers on the use of NetObjects Fusion software, but is no substitute for the product's manual. It shows how to apply the software to the design process. Part 3 is a set of detailed case studies for three actual Web sites. I found the discussion of the use of NetObjects Fusion to create and maintain a database of particular interest.

This book would prove helpful for any person involved with developing Web sites for clients.

REDESIGNING PRINT FOR THE WEB by Dr. Mario R. Garcia; Hayden Books; \$45; ISBN: 1-56830-343-2

Redesigning Print for the Web is another beautifully illustrated, high-quality volume from Hayden Books. It describes information design for the World Wide Web—making the right choices to get the information to a viewer in the most effective and fastest manner. It responds to the question: "How do I present printed matter on the Web successfully?"

Just about every aspect of Web publishing is covered—integrating graphics with text, color harmony, shapes that provide visual impact, font selection, white space, contrast. The basic recipe for making the transition from print media to Web presentation includes sectionalizing, indexing, headlines, graphics and the process of creating baskets of information. A Web site needs some of the elements we associate with television—appealing visuals, movement, energy and color. The Web designer must consider the dimensions of the screen, the way users handle the keyboard and maneuver with the mouse.

This book has served to enlighten me as to how I can approach the ongoing process of designing our RPCUG Web Site. I have been involved primarily with the technical aspects of creating pages that display properly and links that work smoothly. This book has made me aware of concepts I have not considered before. It would make good reading for journalists and Web designers who want to present well-organized, alluring pages.

Reviewed by Steve Weinberg



THE NON-DESIGNERS WEB BOOK by Robin Williams and John Tollett; Peachpit Press; 288 pages; \$29.99; ISBN 0-201-68859-X

NETSCAPE COMMUNICATOR FOR WINDOWS: VISUAL QUICKSTART GUIDE by Elizabeth Castro; Peachpit Press; 366 pages; \$17.95; ISBN 0-201-68864-6

PAGEMAKER 6.5 FOR WINDOWS: VISUAL QUICKSTART GUIDE by Ted Alspach; Peachpit Press; 288 pages; \$18.95; ISBN 0-201-69650-9

REAL WORLD ILLUSTRATOR 7 by Deke McClelland; Peachpit Press; 788 pages; \$29.95; ISBN 0-201-69612-6

Peachpit Press is one of my favorite publishers, and not just because they put out super books by Robin Williams (the writer, not the actor). Peachpit specializes in material for the graphically-inclined, and graphics is what keeps me glued to my computer for days at a time.

Williams and Follett have put together an altogether delightful book, one that's even fun when you flip through its pages. The first time I opened it, I saw a cartoon of a frightened-looking cow at a computer, surfing to www.stockyard.com. Despite this slim book's lighthearted tone, there are treasures of Web design wisdom within its pages. You start off with an introduction to the World Wide Web and end with color chips of the 216 browser-safe colors. In between, in addition to enjoying a great read, you'll discover not only what it takes to turn out gorgeous Web pages, but just about everything you have to know to get your own pages out there for the world to see. Grab it.

The two Visual QuickStart Guides continue the series' mission to have pictures guide you through the software, to let you look up what you need to know and then get right to work, and to provide all this at an affordable price because, as each Quick-

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MORE READING

with Sy Ribakove

Computer Books *(continued from page 6)*

Start book states on its cover, “buying a computer book shouldn’t be an investment in itself.”

The Netscape volume is a godsend if you’re new to Communicator. Because I have found Netscape’s online documentation exceedingly stingy about explaining the interface and the features that differ from version 3, this pictorial guide was exactly right for filling in the blanks. It covers every module: the browser, the Message Center where e-mail and newsgroups live, setting preferences, managing bookmarks and using the Address Book. There is a helpful section on creating Web pages with Composer, but I’m not inclined to give up *The Non-Designer’s Web Book* (covered above.)

The PageMaker 6.5 Visual QuickStart Guide is an excellent supplement to the program’s documentation. I’ve been using PageMaker since version 3, but I learned a thing or two from this book. In addition to providing general orientation to PageMaker, this book describes, step by step, how to accomplish specific page layout tasks. In that sense, it is an excellent tutorial as well as a guidebook. I keep my copy next to the computer.

I’ve saved the thickest book, *Real World Illustrator 7*, for last. You’ll find Adobe Illustrator in the toolbox of every professional graphic designer. It is a necessary companion program to Adobe Photoshop and Adobe PageMaker. Many graphic artists spend their working lives using these programs. All appeared first for the Macintosh. Windows versions came later. Because they realized that Apple, the company that produces the Macintosh, has fallen on hard times, Adobe has released recent versions of its major applications for the Windows platform simultaneously or even, in a few cases, earlier than the Macintosh version.

This lesson has evidently been lost on the team that produced *Real World Illustrator 7* for Peachpit Press. While claiming to support (in this order) Windows 95, Windows NT and Macintosh, the book gives mere lip service to PC users. Every screen shot is of the Macintosh version of Illustrator. Every instruction is given using Command and Option rather than Control and Alt. There is not even the customary “Windows users should substitute Control for Command and Alt for Option.”

That said, *Real World Illustrator 7* is a very worthwhile, immensely helpful book. Deke McClelland is a terrific writer who knows his material inside out and explains it engagingly. If your brain doesn’t grow weary of the necessary Command-Ctrl, Option-Alt translations, you’ll find this book so full of graphic ideas that it will keep you engaged for hours at a time. Resentfully recommended.

Reviewed by Sy Ribakove



Editor *(continued from page 3)*

loaded successfully during the boot process. Wondering if there had been any load failures, I used Search to locate the word “fail.” Three items turned up as LoadFails: vshare, ebios and n2dis32.dll.

Something’s wrong! I thought. Am I headed for a crash? A Fatal Error or Stack Dump? I needed to find out quickly.

I wasn’t going to phone Microsoft. They charge \$35 per incident plus the cost of a toll call to Washington State. Then you are likely to talk to some third-party agency in Texas or Florida and not even to a Microsoft technician.

So I headed to Microsoft’s Win95 Knowledge Base, bookmarked in my Netscape browser (try this; it’s a goodie: <http://premium.microsoft.com/support/kb/articles/q127/9/70.asp>)

A search for EBIOS produced an article called: “Load Failures Listed in the Bootlog.txt File.” There it was, neatly described:

“When you review the Bootlog.txt file in the root folder on your hard disk, you may see the following lines even though your computer seems to function properly:

```
LoadFailed = ebios
LoadFailed = ndis2sup.vxd
LoadFailed = vshare
```

“These load failures do not necessarily mean that there is a problem. It is common for some, if not all, of these to fail, depending on your system configuration.”

Then each item was explained.

“EBIOS: The extended BIOS driver did not find an extended BIOS, so it does not load.

“Ndis2sup.vxd: The NDIS 2 support driver did not find any NDIS 2 drivers to support, so it does not load.

“VSHARE: If you examine the Bootlog.txt file, you will notice that VSHARE loaded successfully earlier in the boot process. The second copy of VSHARE detects that VSHARE is already loaded and does not load.”

It was true. My machine does not have an extended BIOS. And I discovered that VSHARE had indeed loaded successfully earlier in the boot sequence (I have no idea why Win95 keeps trying to load VSHARE a second and third time.) The NDIS 2 drivers are probably needed for networked machines. My computer is a standalone.

The impression I’m hoping to leave here is that self-help is the least expensive, most satisfying kind. And it’s free. ■

WHAT IS CACHE MEMORY?

from Kingston Technology

Cache (pronounced “cash”) memory is special high speed memory designed to supply the processor with the most frequently requested instructions and data. Instructions and data located in cache memory can be accessed many times faster than instructions and data located in main memory. The more instructions and data the processor can access directly from cache memory, the faster the computer runs as a whole.

Levels of Cache

In general, there are two levels of cache memory: internal cache, which is typically located inside the CPU chip, and external cache, which is normally located on the system board. Internal cache is sometimes referred to as primary cache or level 1 (L1) cache. External cache is sometimes referred to as secondary cache or level 2 (L2) cache. In most desktop personal computers, the internal cache will range from 1KB to 32KB (1,000 to 32,000 bytes) in size. In contrast, external cache configurations are usually much larger, ranging in size from 64KB to 1MB (64,000 to 1,000,000 bytes). When we talk about upgrading cache, we are most often talking about external cache. Upgrading external cache may involve plugging individual cache components into sockets located on the system board or plugging a cache module into a dedicated cache expansion socket. In most cases, upgrading internal cache would require the replacement of the CPU.

Note: Some early model personal computers, i.e., 286 and 386 based systems, have CPU chips that contain no internal cache. In these cases, the external cache (if present) would actually be the primary cache, also referred to as the level 1 (L1) cache.

How does Cache Memory work?

An interesting way to look at cache is to imagine yourself at a party with a host that is required to serve you the exact beverage

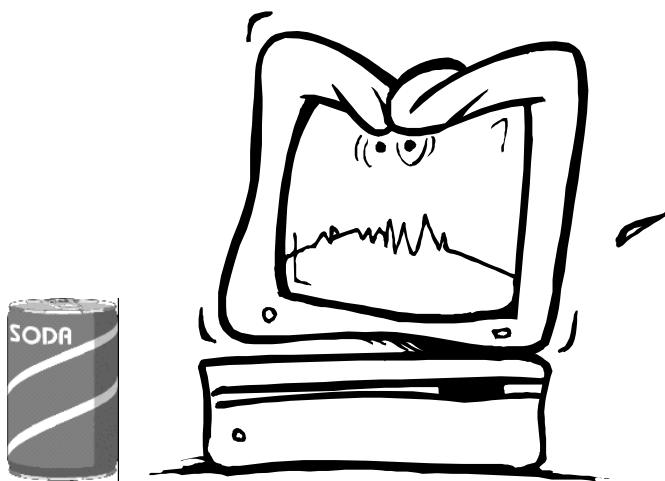
you request. The beverages are the data, the corner store is main memory, and the refrigerator is cache memory. If someone at the party requests a diet cola, the host of the party makes a trip to the refrigerator first, to see if it is there. If the diet cola is in the refrigerator, the requester can have it right away. However, if it is not in the refrigerator, the host has to run to the corner store to get it. This may take considerably longer. The host can save a lot of time by purchasing a six-pack at the store. This logic insures that most of the time, the next request can be fulfilled directly from the refrigerator.

In the same way, when the cache controller retrieves an instruction from main memory, it also takes the next several instructions back to cache with it. This increases the chances that the next instruction requested by the CPU is already in cache. (When a request from the CPU is found in cache, this is referred to as a cache hit.)

How much cache should I have?

On a typical 100MHz Intel motherboard, it takes the CPU as much as 180ns to get information from main memory versus as little as 45ns to get information from cache memory. (This represents the total memory retrieval process, including request, verification, and data access time.) With the incredible performance advantage cache memory offers, it would seem logical to use cache for all the computer’s main memory. However, cache memory typically uses SRAM (Static RAM) chips, which cost more than six times as much as the DRAM chips normally used for main memory. Thus, it is not cost effective to use a large amount of cache in a system. In our party example, using cache as main memory would be similar to buying the corner store in order to stock every type of beverage that exists. While having one refrigerator saves a lot of time and inconvenience, the added benefit of having the corner store in the back yard may not be worth the investment. This is how cache works as well. The first 256K of cache saves the computer a lot of time by holding all the most frequently used instructions. However, adding 256K more of cache for a total of 512K does not increase the overall performance of the computer as much as the first 256K does.

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GROLIER ENCYCLOPEDIA

by Jim Mullins

Two years ago I had the opportunity to review the 1996 Grolier Multimedia Encyclopedia (GME). Then I was a little critical of the product because it was not taking advantage of the capabilities of my 486 DX4/100MHz system. I now find myself reviewing a product that has me thinking about a new system in the very near future.

The **Grolier Multimedia Encyclopedia 98-two CD Deluxe Edition** requires a multimedia PC with a 486 DX/33MHz or higher processor, 8MB of memory, a 2X CD-ROM drive (300KB/sec or higher transfer rate), hard drive space of 10MB, a mouse, a SVGA 256 color monitor, sound card and speakers. Operating system requirements are Windows 95 or Windows 3.1x. You will also need Apple QuickTime v2.1.2 or later (supplied with the product).

If you want to take advantage of the online features of **GME98** you will need a modem and access to the World Wide Web. AT&T WorldNet Service and Netscape Navigator are supplied with the product and a 30-day free trial period is offered by AT&T. The online features work just as well with local Internet providers. I had difficulty trying to interface with America OnLine, although it can be done. I have put off resolving that and added it to my to-do list.

Encyclopedias, whether they are leather bound or recorded on a CD-ROM, are filled with thousands of pieces of useful information—unlike my bar friends who, when filled, are full of useless information. Which brings me to a simple search I made in **GME98** on my ancestral home of Ireland. It returned 534 items, one of which contained the story of Finn McCool, the legendary Irish hero who my favorite bar in Tappan is named after.

As a multimedia product, **GME98** contains sound and motion as historic as

JFK's inaugural address or as pleasing as the call of a song bird. As a child and later as an adult, when I would look up something for myself or was helping one of my children with a term paper, there would be at least eight books with two to five bookmarks in them strewn across the living room floor. Today with **GME98** and its many features such as search, browse and bookmark, the many articles and gallery images you come across are just a mouse click away. All of the information you find, whether it be a map, an image or an article, is accessible by clicking on the tabs at the top of the presentation screen. The Interactive Timeline and the Knowledge Tree are excellent tools for finding information about a period in time or a particular topic. Another feature I liked was Facts. The best way to describe Facts is to liken it to a baseball card. In the front you have the topic and on the back are all the facts.

An Atlas puts the world at your fingertips with maps, weather, population, rain fall, languages and more. If you come across a word you don't know you can look it up in the included American Heritage College Dictionary 3rd Edition.

The Online Knowledge Explorer makes additional resources available to you via the Internet. Some of these resources are The New Book of Knowledge, Encyclopedia Americana, Grolier Internet Index and Article Updates. Article Updates keeps your research and reporting current. While I did not get the chance to access the Internet for this review, I can tell you from experience with another Grolier product, it is a great feature.

In order to offer a larger and more complete multimedia product, **GME98** Deluxe comes on two CDs. That means disc swapping. However, the material is so well organized that swapping is kept to a minimum. Except for this minor quibble,

Grolier Multimedia Encyclopedia 98 is a great product. You can find the 2-CD edition for under \$60, the single CD version for twenty dollars less. ■

Letter

Last month I received a letter from one of my New York State elected representatives regarding STAR—a newly-enacted piece of legislation enabling property owners past the age of 65 to apply for school tax relief. There was a local phone number to call for more information. Of course, it was impossible to get through, and so I called the representative's office in Albany. An administrative assistant provided some of the information I wanted and said that I could find out more about STAR on the State Office of Real Property Services' Web page (www.orps.state.ny.us/).

On the page I found a FAQ which thoroughly explained the program and who was eligible for benefits. What pleased me most was that I could download an application form to fill out and mail back to my local assessment office. The download took about a minute, and printing it only a little longer. I was delighted to see that the form was in .PDF format that could be read by the free Adobe Acrobat Reader I have on my computer. The graphics, fonts and formatting printed exactly as they were in their original design. I was fascinated to see that this New York State office and, I imagine, many others are using Acrobat software to distribute complex forms, newsletters and other printed material to the public. *Dick Blumenthal*

[Ed: The Adobe Acrobat Reader, free from <http://www.adobe.com>, is becoming the standard way to distribute documents with all their formatting intact—fonts, graphics, color, everything. Acrobat documents are comparatively small and are therefore ideal for electronic transmission.]

ORIGINAL COMPUTER BUG

by Ed Resina



Anyone who has ever used a computer has most certainly experienced a bug. As a software developer, I see more bugs every day than I care to think about. Until now, however, I have not encountered any as entertaining as **The Original Computer Bug** by Computer Friendly Stuff.

This \$14.95 product consists of a molded polyurethane Computer Bug which can be attached to the side of your computer monitor to give the appearance of the creature bursting out of the monitor. In case you are averse to sticky things

on your computer equipment, the company claims that the special adhesive will not leave a residue and that the bug can be easily removed and repositioned. The Windows 95 CD-ROM accompanying the Computer Bug contains a variety of animated screen savers, bitmap wallpapers and animations which portray the antics of the Computer Bug living inside your monitor. In addition to holiday-related screen savers for Halloween, Christmas and Valentines Day, there are others showing the Bug cleaning the glass inside your monitor, playing racquetball, swinging on electric wires and eating computer chips. One of the animations is a stand-up comedy performance during which the Computer Bug tells bad computer jokes.

And, as if all this weren't enough, the Computer Bug comes packaged in an attractive plastic container made to resemble a lab beaker (which also doubles as a coin bank). The software requires a Windows 95 or NT Pentium-based computer. Disk requirements will vary depending on how many of the screen savers or wallpapers you wish to install. In order to fully appreciate the visual and audio aspects of the screen savers and animations, a sound card is needed as well as a video adapter supporting 16-bit color (256 colors will also work as a minimum). Overall, it is a very entertaining multimedia product which would make a nice holiday present. Orders can be placed online at <http://www.computerbug.com>. ■

President *(continued from page 2)*

(Vinny always planned and prepared for his presentations, arriving with discussion notes and presentation materials.) Vinny has also contributed product reviews to **ComputerConnection** to educate and inform us. Additionally, Vinny was a frequent OS/2 SIG attendee, where he conducted many demonstrations and presentations.

A longtime member, Irene Kleiner has volunteered for and participated in multiple capacities. She has conducted searches for new meeting locations, participated in general meeting presentations, and produced an issue of **ComputerConnection** when our editor was hospitalized. (Her meeting presentation on desktop publishing was well received; members benefitted from her experiences and her discussions.) Irene has been a regular participant in our Desktop Publishing and New Users SIGs.

Thea Zendell recently spent time identifying possible meeting sites when it became necessary for us to find (on short

notice) a new meeting location when the Church of Religious Science building was sold. Thea is also a SIG participant.

Thanks Vinny, Irene, and Thea for jobs well done and the spirit of volunteerism that you all represent.

Meeting Notes

At our November meeting IBM demonstrated ViaVoice Gold, a brand-new speech recognition product. This new application uses continuous speech technology and does not require pauses between words when dictating, as prior PC-based dictation products did. The suggested list price is \$149, so ViaVoice is affordable by most. If your system meets the hardware requirements, consider adding this capability to your daily computing.

Microsoft will bring their popular Holiday Road Show to RPCUG at our December meeting. We are expecting whirlwind product explorations and demonstrations. Perhaps you might find the appropriate holiday gift for one of your computing buddies—or for yourself. Join us for an informative and entertaining meeting.

On a personal note, I want to thank all members for supporting RPCUG in 1997. We have accomplished much, and we will continue our forward progress in 1998.

Please have a relaxing, enjoyable, and safe holiday season.

See you on Tuesday, December 9 at 7:30 P.M. at the Rockland Conservatory of Music, 7 Perlman Drive, Spring Valley, NY. ■

AND KEEP IN MIND

December

- 2 New Users Group; 7:15–8:45 P.M., New City Library
- 9 General Meeting; Microsoft; 7:30 P.M.
- 11 Investment SIG; 7 P.M.; UCS, 1st Floor., 25 Smith St., Nanuet
- 16 Windows 95 SIG; 7–9 P.M.; Pearl River Library
- 17 OS/2 SIG; 7:30 P.M.; 634-6618 for directions

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