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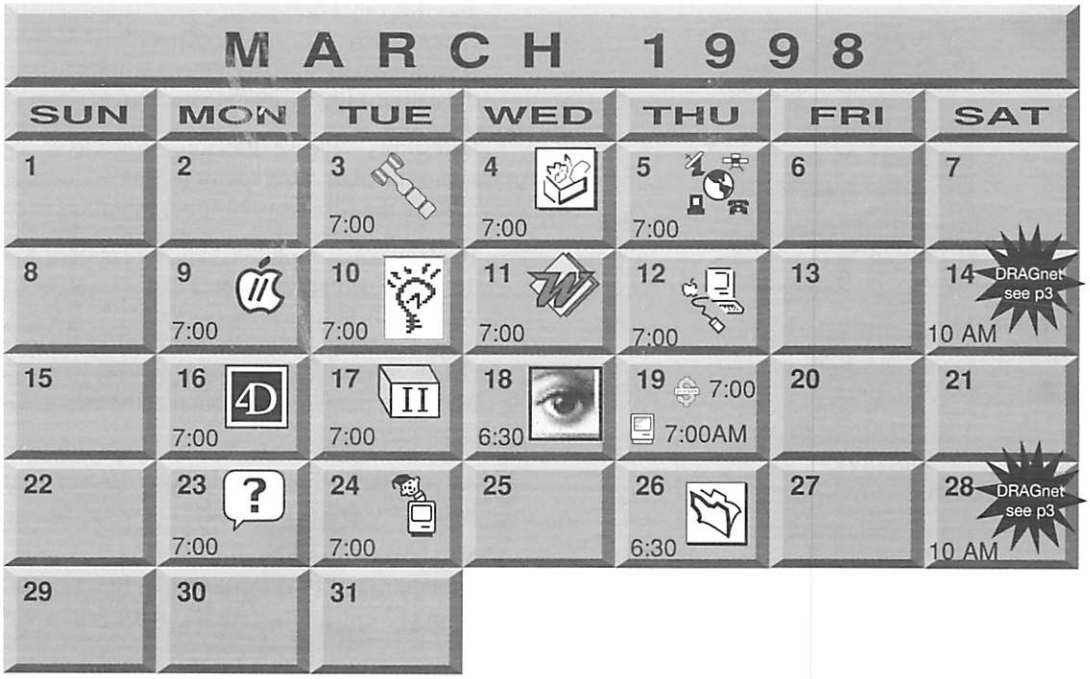
Volume 21, Issue 3

mini'app'les newsletter

the minnesota apple computer users' group, inc.



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** See page 6 for detailed directions to ClarisWorks SIG

mini'app'les

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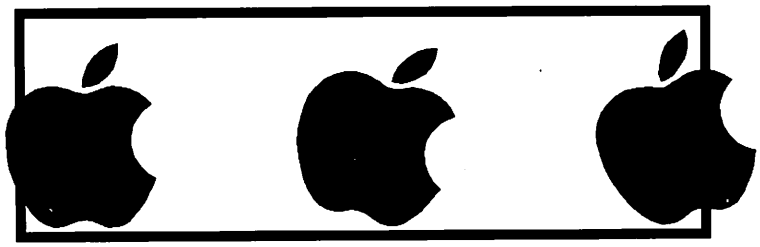

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Microsoft Word SIG Meeting

11 February 1998
Submitted by Tom Ostertag

The Word SIG meeting started off with a demonstration of the Freecell program that is included in the Windows 98 Beta version. Interesting game, but I havenÕt won a game yet... tried it twice. The only announcement was about Midwinter Madness.

With all that out of the way, we moved on to questions and answers. The first question dealt with Word Art and a short demonstration of its capabilities. As Curt Trout said ÒItÕs free and worth every penny of it.Ó Actually it is a useful utility and IÕve used it a number of times to do some weird signs.

We next handled a question about wrapping text around frames and objects. Word 97 does a nice job of it... even jagged edged images such as leaves etc.

Curt also fielded the next question about how to automate a letter salutation with construction of a template and an inclusion in the auto spell correct function. He also showed how auto spell correct could be used to include boilerplate in documents.

Another question had to do with inclusion of foreign language characters in documents. Several approaches were discussed including another function within Word that allowed the use of the extended character keys and a simple method of using control keys to modify the typed letter following the control key.

We did get involved in a serious discussion of the millennium 2000 bug. Interesting perspective on a increasingly politically loaded topic.

There was a quickly answered question about transferring Word documents from a Mac SE/30 to a 9500. The entire answer was copy the files from the SE to the 9500. Word will recognize the files without any problems.

The last question had to do with upgrade installations and the ability to have several versions of Word on the PC at one time. Apparently it can be done, but there are some quirks and is not recommended.

In March, Tom Moen will be at the meeting to do a demonstration of Office 98 on the Mac. He will spend about 45 minutes on Word and then 15 minutes or so on the Office integration aspects. Should be a worthwhile meeting...See you all there.

Macintosh Main Meeting

Submitted by Eric Jacobson

The following letter was sent to us by Alps Electric, a manufacturer of various perhipeals for the Macintosh. They will be our guest for the Main Mac Meeting on March 12th.

"Dear Meeting Coordinator:

We would like to visit your User's Group!

Alps Electric is the manufacturer of a line of color-printers for the Macintosh. You may have seen our advertisements or heard of our unique products. Our products are unique because our full-color printing uses inks that are fade-proof, waterproof and smear-proof. Additionally, our printers are capable of printing metallic inks for special occasions such as the Holidays or birthdays. One of our printers, the MD-4000, has a fully integrated 24-bit color scanner!

By way of introduction, Alps is a $4.5 billion company with worldwide distribution of its products. Alps is also active in the automotive and component businesses here in the United States. Our US headquarters are in San Jose California. You can find our more about our company and products by visiting our web page at *www.alpsusa.com.*

We have identified your membership as an important User's Group in the Macintosh environment. We would to visit one of your meetings and introduce our company and products to your members. As a "thank you", Alps will sponsor a drawing during which we will giveaway one of our printers or some of our Macintosh peripherals."

March Telecommunications Meeting

by Bert H. Persson

Just crusing

With the comming of spring we will once again fire up our modems at the March Telecommunications meeting and cruise down the Information Highway. Since there is no specific topic for this meeting please feel free to ask questions on anything concerning getting on the Net or hardware problems that you may have.

March 5th, 7PM

Epiphany Lutheran Church (7 P.M.), 1414 E 48th St South, Minneapolis.

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Unusual Location for the March 4 ClarisWorks SIG

The March 4 ClarisWorks SIG will be held at 7pm in the Community Room of Bethesda Lutheran Care Center River Heights Campus (formerly known as Divine Redeemer Hospital), 724 - 19th Avenue N (NE corner of Thompson and 19th Ave) in South St Paul.

Easy access from Hwy 52 (formerly known as Hwy 3), the Lafayette Freeway. Six blocks east on Thompson. Parking on the east side of the building. Please enter via the Main Entrance - the Receptionist will give directions to the Community Room.

DIRECTIONS

From I-494, take North Hwy 52. Exit at Wentworth - Thompson. Proceed across Wentworth to Thompson. Turn right, East, onto Thompson. Proceed east past 19th Avenue (a four-way stop), the facility will be on your left, parking on the east side of the building.

From South I-35E or I-94, take South Hwy 52 - Lafayette Bridge. Proceed to the Thompson - Wentworth exit. Turn left, East, onto Thompson. Proceed east past 19th Avenue (a four-way stop), the facility will be on your left., parking on the east side of the building.

Note: The exit from South I-35E is a left exit. Move into the left lane when south of Maryland. You have been warned.

Pam Works With ClarisWorks

by Pam Lienke

In the past I have described how to insert soft returns and sticky spaces. This month I'll describe soft (discretionary) hyphens—hyphens that show up only when you need them. When a document contains a long word at the end of a line and ClarisWorks wraps that word to the beginning of the next line, a big gap (lots of white space) is left at the end of the previous line; breaking the word into two parts with a well-placed hyphen improves the look of the document. ClarisWorks can be asked to hyphenate words automatically, but I normally do not turn on auto-hyphenation because it tends to insert too many hyphens and make the page harder to read. If a document contains a long word that, when moved to the next line, leaves too much space at the end of the previous line, I use one or more soft hyphens to improve the look. I place the inser-

tion point at each place in the word where a hyphen may be needed (between syllables) and press Command-hyphen. For example, with "hyphenation" I place soft hyphens between the "n" and the "a," and between the "a" and the "t"; I do not put a soft hyphen between the "y" and the "p" because the syllable is too short and a hyphen there does not improve readability. Now, as I continue to work on my text, a hyphen appears only if it is needed and where it is needed.

Errors Errors Everywhere, But What Does It Mean?

Submitted by Bert Persson

All of us have at one time or another had the experience that our computer crashes for no apparent reason. When this happens we usually get an error message displayed on our screen unless the machine has completely froze up and nothing works. Since most of us use our computers as a tool to perform our daily tasks we may not always be interested in the intricacies that make our machine do what it is supposed to do.

However, when there is an error message displayed one often wonders what it means. Therefore, the purpose of this article is not to go into detail about all the possible errors that can occur, but to give an overview of some errors that all of us has encountered at on time or another. This material is compiled from the Apple Technical Information Library (TIL), MacErrors v2.0 by Marty Wachter and other sources quoted within.

Error Codes 1-30

ID=01 Bus Error

This means the computer tried to access memory that doesn't exist. You can get this error on almost any Macintosh. If one of these computers tried to access one or more bytes beyond the total number of bytes in RAM, you see a bus error. You should never see this error on a Macintosh Plus or SE, because address references that are out of bounds "roll over". This means if one of these computers tries to access one byte beyond the total bytes in RAM, it actually accesses the first byte in memory. If you see this error on a Macintosh Plus or SE, it's reporting the wrong error or having hardware problems.

ID=02 Address Error

The Motorola 68000 microprocessor can access memory in increments of one byte (8 bits), one word (16 bits), or one long word (32 bits). The microprocessor can access a byte of information at an odd or even memory address. But it must access a word or long word at an even memory address. So, when the microprocessor attempts to read or write a word or long word at an odd address, you see this error. Since that's a 50/50 proposition when running random code, this one shows up quite often.

ID=03 Illegal Instruction

The computer has a specific vocabulary of machine language instructions it can understand. If a computer tries to execute an instruction that isn't in its vocabulary, you see this error code. It's less likely than error 02, but still very common.

ID=04 Zero Divide Error

This error results if the microprocessor divides two numbers, and the divisor is zero. Sometimes a programmer puts these in as debugging aids, and then forgets to take them out.

ID=05 Range Check Error

Programmers can use an instruction in the Motorola 68000 to check if a number is within a certain range. This error indicates that the number tested isn't in the specified range.

ID=06 Overflow Error

Each number stored in a computer is given a certain amount of space. The larger the number, the more space is needed to represent the number. An overflow condition results if a generated number is too big for its allotted space. A Motorola 68000 instruction tests for an overflow condition, and displays this error if it detects an overflow.

ID=07 Privilege Violation

The Motorola 68000 runs in Supervisor or User mode. The Macintosh should always be in Supervisor mode, but sometimes is placed in User mode. Some of the instructions can only be executed in Supervisor mode. If the computer attempts one of these instructions while in User mode, a Privilege Violation error results.

ID=08 Trace Mode Error

A programmer can use a runtime debugger while in Trace mode. This allows tracing through a program one instruction at a time. You see this error if a debugger isn't installed and the 68000 is accidentally placed in Trace mode.

ID=09 and ID=10 Line 1010 & 1111 Trap

There are many routines in the Macintosh ROM that can be called by placing instructions in a program that aren't in the 68000's vocabulary. When the 68000 encounters such an instruction, it looks it up in the instruction table. This table gives the location of routines paired with each instruction. If it finds an entry in the table for the instruction, it branches to the routine. If there's no entry for the instruction, you see one of these errors.

ID=11 Miscellaneous Hardware Exception Error

Power Macintosh: Meaning of Error Type 11 (7/96)
Article Created: 8 August 1994
Article Reviewed/Updated: 02 July 1996
TOPIC

I get an error Type 11 on my

Power Macintosh computer when a program crashes. I never got this error on my 68k based Macintosh computers. Is this a new error for the Power Macintosh?

DISCUSSION

A Type 11 error is listed as a hardware exception error. However, As with all Macintosh Type xx errors, they usually do not identify a particular software or hardware component error. Type xx errors are more general in nature. You may see more Type 11 errors on a Power Macintosh computer because of problems with the software-based 68k emulator. The emulator allows the RISC processor to run older Macintosh software. If the emulator gets corrupted while loading into RAM, then some of the failures caused by this are reported as Type 11 or Hardware Exception errors. The emulator can get corrupted by either incompatible software or faulty hardware.

Troubleshooting Type 11 Errors

When troubleshooting Type 11 errors, always eliminate software problems first, then check the hardware. To troubleshoot the problem, follow these steps:

Step 1

Upgrade your hard disk drivers and system software to the latest versions available.

Step 2

Contact the software vendor for compatibility information if the problem only occurs in one application, and you can reproduce it consistently.

Step 3

Turn off all extensions and control panels if the error occurs in an application that is fully compatible with a Power Macintosh computer. Check the application again. If the problem goes away, then troubleshoot your extensions, control panels or fonts. Large numbers of fonts can cause similar errors, troubleshoot by moving them from the Fonts folder to another folder. If you still have problems, follow Step 4.

Step 4

Perform a clean installation of the system software, then test the system performance for a few days. If the problems continue, particularly in the Finder, there may be an issue with your Apple or non-Apple hardware.

Step 5

Disconnect any external or internal SCSI devices that have been may added (or exchanged for the original Apple hardware) and continue testing. Since SCSI device drivers load into memory when the Macintosh is turned on, they can generate conflicts similar to extension conflicts. If you are using a non-Apple formatting utility, contact the vendor of the utility for compatibility information. Removing internal SCSI devices is best performed by an Apple-authorized service provider.

Step 6

Remove any extra third-party RAM and test. This is best performed by an Apple-authorized service provider. Also verify that you are not using composite RAM.

Step 7

Remove Level 2 Cache RAM, if present, and test. If you continue to get Type 11 errors using a clean version of the system software without any third-party hardware attached (including internal or external SCSI devices, additional RAM, or Level 2 cache RAM), you need to have your computer serviced by an Apple-authorized service provider.

For additional information about the cause of Type 11 errors, see Tech Info article, "Power Macintosh: Type 11 & No FPU Errors Technote."
This article is one of many available through the Apple Fax center. For a complete list of available Fax documents, search the Tech Info Library for Apple Fax Document Index or call the Apple Fax line at 1-800-505-0171 and select document number 20000 (Apple Fax - Document Index - Product Support Literature). The Apple Fax center is available free of charge 24 hours a day, 7 days a week.
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Power Macintosh: Type 11 & No FPU Errors Technote (7/96)
Article Created: 10 November 1995
Article Reviewed/Updated: 02 July 1996
TOPIC

This Technote explains some of the causes of "Type 11" and "No FPU Installed" errors, along with debugging hints to help you find and fix them. It also focuses on what you as a programmer can do to prevent such errors.

DISCUSSION

Both Type 11 and No FPU Installed errors occur on Power Macintosh computers, depending on various factors. Both error messages are the result of programming errors. The No FPU Installed error usually means that your program is executing data rather than instructions. The Type 11 error is any error (such as a bus error) in native code. NOTE: In this Technote, I will occasionally mention third-party products by name. If a third-party product is mentioned by name, it's meant to be a possible solution for you to investigate, not a recommendation. DTS doesn't evaluate third-party tools, nor maintain complete lists of possible third-party solutions. You should consult catalogs of development tools such as:

- Macintosh Development Tools & Languages
- the Redgate Macintosh Registry
- the ubiquitous Internet
- the APDA catalog and
- reviews in technical magazines to find a product that fits your needs.

There are many Web sites on the Internet for example, Apple's Third-Party Development Products Database lists many Macintosh development tools. Perhaps you may find an appropriate tool to meet your development needs in this way.

About "No FPU Installed" Errors

On a Power Macintosh computer, the error message No FPU Installed usually means your code has jumped to a non-code area and is executing garbage. Somewhere in that data (which is being interpreted as instructions) is an instruction whose op code begins with the hex value F. No FPU Installed is equivalent to a Type 10 Error i.e., your program has attempted to execute an unknown instruction op code starting with the hex value F.

On a Power Macintosh, No FPU Installed means that some program has jumped to an area of data and has tried to execute any data word starting with the hex value F. The PowerPC chip has floating point support built in, but that floating-point support is different from the Motorola 680x0 family floating-point support. The Motorola 680x0 family uses an external floating-point unit. (There are also external memory management units (MMUs) and other specialized coprocessors.) Motorola 680x0 CPUs use instructions starting with hex value F as instructions for these coprocessors.

680x0 Microprocessor Instructions

All Motorola 680x0 microprocessors have instructions consisting of at least one word (the operation word); some instructions can have up to eleven words (see the Motorola MC68020 32-bit Microprocessor User's Manual, Third edition, page 3-1.) The operation word determines what kind of instruction is to be executed. For example, the instruction MOVE.B D1, D2 translates to the hexadecimal value 1401.

This instruction starts with the hex value 1. The instruction FMOVE.X FP3,-(A7) translates to F227 6980 This instruction starts with the hex value F.

F-line Instructions

The Motorola 680x0 architecture was originally designed to support a floating- point coprocessor chip. This chip, the Floating Point Unit (FPU), communicates with the CPU via a special set of instructions called F-line instructions. These instructions always start with an operation word beginning with the hex value F.

A program can be compiled to take advantage of the hardware assistance the FPU provides, and thus yield faster floating-point calculations than would be available with SANE (the Standard Apple Numerics Package). Such programs would have instructions in the program which start with the hex value F. A program only using SANE would never have an instruction starting with the hex value F.

NOTE: Some Macintosh models, such as the Macintosh SE/30, the Macintosh IIci, and the Macintosh IIfx, shipped with an FPU coprocessor installed. Other 680x0-based Macintosh computers, such as the Macintosh IIsi and the Macintosh Color Classic, had an optional FPU coprocessor. For these machines, it was possible to purchase an optional card with an FPU coprocessor.

68040 & 68040LC Microprocessors

With the introduction of the 68040 and 68040LC chips, things got a bit more complicated. The 68040 microprocessor has most of the 68882 FPU included on the chip. Not everything in the 68881/68882 FPU is in the 68040 chip, however just the routines that Motorola determined were most frequently used. The rest of the FPU routines are automatically emulated by software. Because the FPU is "built-in," as it were, the 68040 chip handles instructions that start with an operation word beginning with the hex value F by itself. There is no way to add a coprocessor to a 68040 chip; the instructions are never brought out of the chip itself. The 68040LC is a cost-reduced version of the 68040 chip. Savings came about by removing the FPU portion of the chip. Not only does a 68040LC chip have no FPU, there is no way to add one.

The Power Macintosh

Power Macintosh computers emulate a Motorola 68040LC, i.e., a machine without FPU support. When you get a bomb with the message No FPU installed, it means some instruction has been executed with an operation word starting with the hex value F, and that your program is running on a machine without a FPU. This machine could be one of the following:

- a Macintosh with a 68020 or 68030 microprocessor and no FPU coprocessor
- a Macintosh with a 68040LC microprocessor (which can never have a FPU)
- a Macintosh with a PowerPC chip running 68K code in emulation (since the 68K emulator emulates a 68040LC microprocessor).

Power Macintosh computers contain very fast floating-point support as part of the CPU. This floating-point support is different from the floating-point support provided by the Motorola 680x0 microprocessors. Inside Macintosh : PowerPC Numerics, describes Power Macintosh floating-point support.

Defining a Type 11 Error

A Type 11 error means an illegal interrupt vector on a 680x0 machine. On a Power Macintosh, a Type 11 error is any exception in native code not handled by one of the installed exception handlers. On a Power Macintosh, a Type 11 error can be almost any error that occurred in native code. Type 11 errors may include:

- an address error
- a bus error
- an illegal instruction error that occurred in native code.

The exception handlers installed for native code don't correctly han-

dle the particular condition which was raised, and the error is returned back to the System Error manager via the Mixed Mode manager. The System Error manager maps all such exceptions to the system error Type 11 Error. If you install Macsbug 6.5.2 or later, some Type 11 errors may be reported as a PowerPC unmapped memory exception. This is equivalent to a bus error, i.e., an error indicating your program is accessing memory that doesn't exist. The Modern Memory Manager was designed to be less forgiving than the classic (68K) Memory Manager. Disposing of something twice, disposing of memory that was never allocated, and other memory handling problems will often generate a Type 11 error, while on a 68K machine the problem may go unnoticed.

Programming Mistakes Causing Type 11 Errors

The following sections give you examples of programming mistakes that may cause Type 11 errors.

Example #1: Writing Past the End of an Array

Writing past the end of an array can be a subtle and difficult-to-find bug. Example #1 shows you why.

```
;Begin C Code
;
void IAmGoingToCrash(void)
{
Str27  bad Array;
BlockMoveData("\pThis string is too
long for this array",
bad Array, 39);
}
;
;End C Code
```

NOTE: I've made the bug very obvious; it may not be quite so obvious, however, in your code. In this example, I've put a string of 39 characters into an array defined to hold 27 characters. This overwrites the stack, which contains such useful things as your return address. On a 68K Mac, this causes a bus error. On a PowerPC Mac in 68K emulation, this causes a bus error. On a Power Macintosh in native code, this causes a Type 11 error.

Example #2: Using a Poorly Initialized Pointer or Handle

If your program tries to use an uninitialized or badly initialized pointer, it can generate a Type 11 error. Here is what happens in Example #2:

```
;Begin C Code
;
Ptr badPointer = (Ptr)-2;
*badPointer = 0;
;
;End C Code
```

NOTE: I've made the bug very obvious; it may not be quite so obvious, however, in your code. In this example, I've created a pointer to non-existent memory (-2 isn't a valid address) and then tried to access the memory to which the pointer refers. On a 68K Mac, this causes a bus error. On a PowerPC Mac in 68K emulation, this also causes a bus error. On a Power Macintosh in native code, this causes a Type 11 error.

Other Situations Causing Type 11 Errors

The following sections document some of the known bugs in various products that may cause Type 11 errors.

Color Picker vs. Third-Party SCSI Drivers

One reproducible problem stems from a known bug in several third-party SCSI hard disk drivers. The bug causes the Color Picker to crash when trying to resolve a boot volume alias it makes at startup time. This problem exists in any system when Color Picker 2.0 or 2.0.1 is installed and the boot volume is not a removable drive. The fundamental cause of the problem is that the SCSI driver incorrectly marks the boot drive as a removable drive during the boot process and changes it to be properly marked as a fixed device after startup. To find its code, the Color Picker resolves the boot volume alias it made during startup. Since the alias passed to the Alias Manager is for a removable drive, the Alias Manager can't resolve the alias (since the device is now marked as fixed.) The Color Picker design did not anticipate the boot volume not being found. This results in a Type 11 error. The fix is to upgrade your SCSI driver to a later version.

Calling a Routine That May Move Memory at Interrupt Time

The Apple Media Kit, release 1.2, had a problem that could cause random errors. During a VBL task, AMK was calling SetCCursor. SetCCursor can possibly move memory. Moving memory during interrupt time is a very bad idea. The Memory Manager may be in an unstable state, such as compacting memory, when an interrupt routine gets called. This can cause a Type 11 error in native code. A replacement cursor file has been provided in the Apple Media Tool/Programming Environment Runtime folder, and we do have a replacement Runtime Maker:Codes:Program file for Apple Media Tool. If you are currently developing titles, replacing these files and rebuilding your projects will remove the bug.

Not Enough Heap Space

There are some situations where having small amounts of memory available in the system heap may lead to a Type 11 error. As an example, if the shared library manager can't load a shared library, you may get a Type 11 error. This can happen when QuickTime tries to load a decompressor for certain kinds of images.

Writing Past the End of an Array

In OpenTransport 1.0.5 or earlier, there was a bug in the TCP/IP control panel code that could corrupt memory if there were more than 256 zones and a MacIP server was found in a zone past the 256th zone. Under these conditions, the control panel code wrote past the end of one of its buffers. This bug would manifest itself if the user opened the select zone dialog and the TCP/IP control panel was left open long enough for the NBP lookup calls for zones past

the 256th zone to complete. This is corrected in OpenTransport 1.0.6 and later, but is given here as an example of a Type 11 error.

Insufficient Stack Space

Heavy use of local variables or recursion may cause your program to run out of stack space. When this happens, you may have crashes that are difficult to track down. Increasing your program's stack is one solution. Whenever you are using a large number of local variables or recursive routines, you should increase your program's stack (using the procedure listed in Inside Macintosh: Memory on page 1-40).

As an extreme example, a faceless background application (documented in Technical Note PS 2) has only a 2K stack by default. A 68K application has 24K of stack on most modern machines (8K if no Color QuickDraw is installed, 32K if A/UX is installed.) You can use the low memory accessor function LMGetDfltStack to find your current stack size. Native QuickDraw has several changes in algorithms that have increased the size of some structures. PowerPC alignment issues may cause the size of data structures to increase. Check your compiler documentation for further details. To help detect collisions between the stack and the heap, a ñstack snifferî VBL task is installed that compares the current ends of the stack and heap and generates a system error 28 in case of a collision. Unfortunately, the Thread Manager is forced to disable the stack sniffer whenever it is installed. (This is because threads can have a stack in places where the stack sniffer doesn't expect them; if the stack sniffer is enabled, it would generate a system error 28.) This means you don't have the same level of protection as you did under older system software versions without the Thread Manager installed.

Too Much Recursion in QuickDraw

Native QuickDraw before version 2.4.1 used a recursive routine to handle regions. This recursive code could cause your stack to run into the heap when handling certain region shapes. Version 2.4.1 of QuickDraw changed to a non-recursive routine which eliminates this error. (You can detect the version of QuickDraw using the Gestalt selector ïqd ïwhich returns a version.) In general, recursion on PowerMacs is dangerous unless you have substantial stack space available; PowerPC stack frames are very large, and putting many of them on the stack may quickly exhaust available stack.

Interrupts Not Handled by Device Drivers

Some Type 11 errors may legitimately be illegal interrupt vector errors, rather than simply unhandled exceptions in native code. If a device driver for a NuBus or PCI card does not install an interrupt service routine, but the card raises an interrupt, you will receive a Type 11 error. This will happen whether you are running in 68K code or PowerPC code. The only solution for such a problem is to update the driver to correctly handle the interrupt issued by the card.

Other Programming Errors

Common programming errors may cause Type 11 or No FPU Installed errors. These include the same kinds of errors that usually result in address errors on 680x0-based Macintosh computers. For example:

- Indexing through an array incorrectly so that your program goes outside the memory allocated for that array (as demonstrated above).
- Disposing of memory twice
- Disposing of memory that was never allocated
- Calling DisposeHandle on a resource handle (use DisposeResource instead, to ensure that the Resource Manager doesn't lose handles behind its back.)

Some Techniques To Help Avoid Type 11 Errors

The following techniques may help resolve situations that might lead to Type 11 errors:

- Test your code carefully.
- Install the Debugging Modern Memory Manager, available on the Tool chest Developer CD. This version of the Modern Memory Manager has additional checks installed which allow you to track down and eliminate many memory management bugs.
- Use extensions such as EvenBetterBusError (found on the Tool chest Developer CD) in conjunction with Macsbug 6.5.2 or later, to detect use of uninitialized pointers or handles.
- Use third-party testing tools such as QC» by Onyx or MemoryMine» by Adianta.

IMPORTANT: It goes without saying that good testing before you release a product will prevent expensive customer support calls later on.

User-Level Recommendations

Here are some user-level suggestions recommended by Apple for unexplained Type 11 or No FPU installed errors:

1. Upgrade your hard disk driver(s) to the latest version available.

There are some known problems between SCSI Manager 4.3 and some SCSI disk drivers. Starting with System 7.5, the SCSI Manager 4.3 is installed on all Macintosh Quadras and Power Macintosh computers. There are some known programming problems in some older third-party disk drivers.

2. Upgrade to the latest System Software appropriate for your system. Several significant bug fixes in system updates should reduce the number of Type 11 and No FPU Installed errors you encounter.

3. Do a clean install of your System Software. Use the Extensions Manager control panel to determine if any additional control panels or extensions are conflicting with your system software.

4. Some Type 11 errors may result from corrupted PRAM. Unfortunately, most of extended

PRAM is undocumented. (See Inside Macintosh:Operating System Utilites, chapter 7, Parameter RAM Utilities, for what details are documented.) You can restore your default PRAM values by holding down Command-Option-P-R at system startup time, or by using a shareware utility such as TechTool.

5. Make sure you are not using composite RAM in a Power Macintosh. Memory specifications are in the developer hardware notes for each computer.

6. Some users claim that installing the shareware extension SoftwareFPU cuts down on No FPU Installed problems. This extension emulates the Motorola FPU (at a considerably slower speed), thus preventing bombs from software which incorrectly makes FPU calls. This may alleviate no FPU Installed errors, but it doesn't address the fundamental problem, namely that some software is executing unexpected data or making illegal calls to a non-existent FPU.

7. Upgrade any software you find that causes repeatable errors.

Summary

There are no easy solutions for handling Type 11 Error or No FPU Installed errors. Only careful debugging and testing can reduce the number and frequency of these errors. Most problems stem from common programming errors.

Further Reference

- Inside Macintosh, PowerPC System Software, Addison-Wesley
- Inside Macintosh:PowerPC Numerics, Addison-Wesley
- Macsbug Reference and Debugging Guide, Addison-Wesley
- Macsbug Release Notes, part of the distribution of Macsbug
- Motorola MC68020 32-bit Microprocessor User's Manual, Third edition (available from Motorola)
- PowerPC Microprocessor Family: The Programming Environment (available from IBM or Motorola)
- Inside Macintosh:Memory, Addison-Wesley

This article provides information about a non-Apple product. Apple Computer, Inc. is not responsible for its content. Please contact the vendor for additional information.
The Tech Info Library article titled "Locating Vendor Information" can help you search for a particular vendor's address and phone number.
This article is one of many available through the Apple Fax center. For a complete list of available fax documents, search the Tech Info Library for Apple Fax Document Index or call the Apple Fax line at 1-800-505-0171 and select document number 20000 (Apple Fax - Document Index - Product Support Literature). The Apple Fax center is available free of charge 24 hours a day, 7 days a week.
Article Change History:
02 Jul 1996 - Added Fax Doc word
09 Apr 1996 - Removed keyword.
08 Feb 1996 - Added keyword.
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This information is from the Apple Technical Information Library.
ArticleID: TECHINFO-0018912
19960724 15:55:27.00

ID=12 Unimplemented Core Routine

A programmer might set breakpoints in parts of a program to inspect for errors. This requires using a debugger. If a debugger isn't installed when a breakpoint occurs, you see this error code.

ID=13 Uninstalled Interrupt

The Macintosh uses an interrupt to identify when devices like keyboards and disk drives need service. Routines must be available in memory to tell the computer how to service the device. If those routines aren't available, you see this error.

ID=14

IO core error

ID=15 Segment Loader Error

Macintosh programs are broken up into segments, and each program will always have at least one segment. Multiple segments allow loading parts of the program into memory to provide more room for data in internal RAM. The segment loader is responsible for loading a needed segment into RAM. If the segment loader can't do this, you'll see this error.

ID=16

Floating point error

ID=17 through ID=24 Missing Packages 0-7

The Macintosh uses packages to do specific tasks. Some of the packages are International Utilities, Binary-Decimal Conversion, Standard File Utilities, and Disk Initialization. These packages are located in the System file. If you get these errors, you probably have a damaged System file. Error codes 15, 16, 26, 27, 30, and 31 also come up when the System file is damaged. Try replacing the System file.

ID=25 Memory Full Error

You've probably run out of RAM. But you can get this error when an earlier error causes the Macintosh to falsely detect an out-of-memory condition.

ID=26 Bad Program Launch

The Macintosh couldn't execute the application opened.

ID=27

File system map has been trashed

FOR SALE:

Performa 6214 CD with 16 Mb memory, 1 Gb Hard drive, 4X CD, and Apple Multiscan 14Ó display. We'll include the Performa startup CD (System 7.5 plus ClarisWorks, Quicken, American Heritage Dictionary, Power Pete, and several others). We bought a new model and no longer need this one. It's yours for $750. For an extra $100, we'll throw in an HP 550C inkjet printer with both black and color cartridges.

Ken Slingsby
507-263-3715, evenings

ID=28 Stack Ran into Heap

This is similar to the Memory Full error. It's a good idea to save your work frequently, and keep current backups of your hard disk data. When a system crash does occur, you'll lose less data if you've taken these precautions.

Mac OS 8.1 Delivers Under the Hood

by Geoff Duncan <geoff@tidbits.com>
Submitted by Bruce Thompson

Apple has released Mac OS 8.1, and the Macintosh community is buzzing with talk about the new components and trying to figure out the new (and optional) disk format, Macintosh Extended Format, also known as HFS Plus. We have an article about HFS Plus later in this issue, so here I'll talk about what else is new in 8.1 and how to install it.

What's New Besides HFS Plus?

Mac OS 8.1 offers faster launch times and speedier copying to and from network volumes. There's also a new control for Finder list views that reverses a window's sort direction (handy for listing items from oldest to newest, for example). Less visibly, the Finder eliminates several memory leaks when using Apple events, so scripting the Mac OS 8.1 Finder is more robust.

Mac OS 8.1 also ships with support for new types of storage media: UDF (Universal Disk Format) CD-ROMs and DVD-ROM disks. To use a UDF formatted CD-ROM, you need at least a double-speed CD-ROM drive. No Macs have yet shipped with DVD-ROM drives, but E4 has reportedly demonstrated a CoolDVD PCI card that enables Macs to use external third-party DVD-ROM drives.
<http://www.e4.com/>

Mac OS 8.1 brings together a large collection of new (and recently new) system components. Those who swap files with Windows users will welcome PC Exchange 2.2, which supports Windows 95's long file names and has greatly improved support for PC-based removable media and disk formats. A new SoundSource control strip module can quickly change a machine's audio input source. The choices vary with your Mac's hardware, but commonly include microphone and audio CD inputs, as well as "none," which can help prevent the Mac's automatic monitoring of sound input from interfering with some audio software. Under Mac OS 8.1, applications also have greater control over audio input and output.

There's also LaserWriter 8.5.1 (see "LaserWriter Edges Up to 8.5.1" in TidBITS-406_), Open Transport 1.3 (see "Open Transport 1.3" earlier in this issue), Apple CD-ROM 5.4.2, AppleShare 3.7.4 and updates to built-in Ethernet drivers, Text Encoding Converter 1.3 (see below for more info), Monitors and Sound 1.3.3, and Macintosh Runtime for Java (MRJ) 2.0. Not every item is the most recent; for instance, Mac OS 8.1 contains the Apple Remote Access 2.1.1 client, but ARA 3.0 client and personal server are available commercially.
<http://db.tidbits.com/getbits.acgi?tbart=04290>

In the retail version, Apple is shipping Location Manager 2.0.1. The original version, which came with Mac OS 7.6.1, enabled PowerBook users to switch network, printing, and other settings between predefined sets. The new version also works on many desktop computers. Although it's not in the Mac OS 8.1 Update, Location Manager 2.0.1 can be downloaded from Apple's servers. Similarly, QuickDraw 3D 1.5.3 improves support for high-end graphics cards and is in the retail release of Mac OS 8.1 and on Apple's servers, but is not included in the Mac OS 8.1 Update.
<http://support.info.apple.com/ftp/8.1us.html>
<ftp://ftp.info.apple.com/Apple_Support_Area/Apple_SW_Updates/US/Macintosh/System/QuickDraw_3D/>

Mac OS 8.1 also includes LocalTalkPCI, a PowerPC-native LocalTalk driver built for use under Open Transport. Although LocalTalkPCI eliminates lackluster LocalTalk performance on Apple's new G3 systems, it can cause LocalTalk printers to disappear from the Chooser. If that happens, disable the LocalTalkPCI extension: you'll lose the performance improvements, but be able to print.

Getting Mac OS 8.1

Mac OS 8.1 is available in two forms. The first is an online update for owners of Mac OS 8 that can be downloaded for free. Apple has posted the update in BinHex and MacBinary versions, both as a large (15 to 22 MB) single file and as thirteen smaller files.
<http://support.info.apple.com/ftp/8.1us.html>

The second form is a retail Mac OS 8.1 CD-ROM, which will be available beginning in February for $19.95 to owners of Mac OS 8, and at normal retail prices through other outlets (expect prices from $65 to $100). Also in February, new Apple CPUs should ship with Mac OS 8.1 pre-installed.
<http://www.apple.com/macos/8.1/upgrade/>

The Mac OS 8.1 update works _only_ on U.S. versions of Mac OS 8. Look for localized versions in April, though some versions may appear sooner.

System Requirements

Mac OS 8.1's system requirements are the same as Mac OS 8's: a 68040- or PowerPC-based machine with at least 12 MB of physical RAM. The disk space required by the update varies, depending on the Mac OS 8 components that are already installed. However, it's a good bet that you'll need at least 40 MB of space to update a disk with Mac OS 8 already installed; luckily, the update may need some of that space only

during installation.

If you use a clock-chip accelerator on a NuBus Power Mac, you may need to remove the accelerator to install or update to Mac OS 8.1. Alternatively, you can try software utilities that pose an accelerated Mac as a different model; my experience with them has been decidedly mixed. If you try to update a PowerPC-based Mac with 16 MB RAM or less, you may have to restart without extensions (press Shift during startup) to install the update.

Installing Mac OS 8.1 Update

Apple is distributing the Mac OS 8.1 Update as a self-mounting disk image, so there's no need to use a disk image program. (If you download the segmented version, you need not join the parts, but they must all be in the same folder.) Just double-click the disk image (or the first archive segment) to mount the image on your desktop. From there, it's theoretically just a question of running the installer.

As with any update to system software, _back_up_ your current system and data before updating. In addition, it's a good idea to make a bootable Disk Tools floppy disk with Mac OS 8.1 before you update. If you have a PowerPC-based machine, use the Disk Tools PPC disk image, available at the same location as the Mac OS 8.1 Update on Apple's FTP sites. (You need Disk Copy 6.1 or ShrinkWrap 3.0 to make a floppy disk from this image.) For a 68040-based Mac, you must use the Disk Tools 1 disk image, which is apparently available only from the Mac OS 8.1 retail CD-ROM.

After installing Mac OS 8.1, some third-party utilities may report that Open Transport 1.3 libraries (plus the AppleTalk and TCP/IP control panels) are "damaged" because they contain 11 extra bytes. Apple has acknowledged the problem, but the files should function normally. There's no need to use ResEdit or a utility program to fix the files.
<http://til.info.apple.com/techinfo.nsf/artnum/n22142/>

Incompatibilities

Although software compatibility with Mac OS 8.1 is generally good, I'm listing a few updates and known problems. Also, for a comprehensive list, check the long Mac OS 8.1 special report by MacInTouch, MacFixIt, and MRP.
<http://www.macintouch.com/m81.html>

• As reported in TidBITS-411_, Conflict Catcher 4.1 is required for use with Mac OS 8.1. The update from 4.0 is free.
<http://db.tidbits.com/getbits.acgi?tbart=04606>
<http://www.casadyg.aa.psiweb.com/downloads/updaters/>

• Although some components of Speed Doubler 8 appear to work with Mac OS 8.1, Connectix says Speed Doubler 8.1 is required and an update will be available soon.
<http://www.connectix.com/html/speeddoubler.html>

• StuffIt SpaceSaver 4.5 will prevent machines running Mac OS 8.1 from starting up. Users can disable the StuffIt SpaceSaver control panel; Aladdin says an update is forthcoming.

• Asante NetDoubler reports a disk error when performing a drag & drop file transfer. Asante has posted an interim release that disables acceleration in this particular case; look for an update to NetDoubler in February.
<http://www.asante.com/net_doubler/MACOS81.html>

• St. Clair Software's Default Folder, a popular shareware replacement for Super Boomerang under Mac OS 8, has been updated to version 2.8 to provide Mac OS 8.1 compatibility.
<http://www.stclairsw.com/>

In the End

Some people are disappointed by the lack of overt new features, such as a more configurable Finder appearance. However, third-party utilities are filling the gap, including Quadratic Software's CoolViews (which allows serious customization of Mac OS 8 Finder windows), and the popular desktop makeover utility Kaleidoscope.
<http://www.quadratic.com/Cool/>
<http://www.kaleidoscope.net/>

If you have large disks with large numbers of files, the new Macintosh Extended Format might be welcome, but I don't currently recommend switching to Macintosh Extended Format unless you are comfortable with the issues surrounding it (see next article). Otherwise, if you already use Mac OS 8, I think the update is worthwhile, particularly if you don't use software that needs to be updated for it. Apple isn't charging for the update, and the bug fixes and additional components will likely be worth the trouble of installing the new version.

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All About Macintosh Extended Format (HFS Plus)

by Geoff Duncan <geoff@tidbits.com>
Submitted by Bruce Thompson

The most talked-about but least understood feature of Mac OS 8.1 is an **optional** new file system known as Macintosh Extended Format (formerly known as HFS Plus). Macintosh Extended Format replaces Apple's increasingly creaky HFS file system (now called Macintosh Standard Format) with a robust, modern file system that can grow with the Macintosh and Rhapsody for the next several years.

Again, Macintosh Extended Format is **optional**: it's not required to use Mac OS 8.1, and installing Mac OS 8.1 does not reformat your

disks as Extended Format volumes. You can use Mac OS 8.1 without giving any more thought to Extended Format. Extended Format volumes also co-exist with HFS disks happily, both on the same computer and over a network.

Allocation Blocks

So, what's the big deal about Macintosh Extended Format, and what's wrong with the current HFS system? Time for a history lesson. The Macintosh Standard Format - HFS - was released in 1986 when a _big_ disk was 20 MB, replacing Apple's original Macintosh File System (MFS). MFS worked for 400K floppies, but couldn't handle large numbers of files. Heck, MFS didn't even handle folders.

In contrast to MFS, HFS could handle what was then an unimaginably large 2 GB volume size and more than 65,000 allocation blocks. It used balanced "binary trees" (b-trees) to store and retrieve information quickly, featured a volume bitmap to track a drive's allocation blocks, and wasn't burdened by klutzy file paths (like those used under DOS).

These days, disks in the 4 to 8 GB range are commonplace, and capacities will continue to increase. Although HFS has features many other file systems lack, and Apple has extended its capabilities over the years - it can now handle volumes up to two terabytes, for instance - at its core, HFS wastes a lot of space on today's disks and has other limitations which, though endearing, pose stumbling blocks in the years ahead.

HFS wastes space? You bet. At a basic level, disks are divided into logical blocks, which are almost always 512 bytes. However, computer file systems - both on the Mac and other platforms - dole out space in terms of allocation blocks, which are contiguous groupings of those 512-byte logical blocks. HFS has to give at least one allocation block to any fork of a file that's not empty - and remember, Mac files can have two forks, a data fork and a resource fork.

Now here's the rub: HFS uses 16-bit fields to identify every allocation block on a volume uniquely, so there must be fewer than 65,536 (2^16) blocks on any HFS volume (and, hence, fewer than 65,536 files).

The larger your disk, the larger those 65,000-plus allocation blocks must be. On a 256 MB volume, allocation blocks are 4K each. But on a 4 GB volume, allocation blocks are a whopping 64K each! As a result, if you create a file containing just the letter "a" and save it on a 4 GB HFS disk, that file will contain less than 1 K of information; however, the file consumes 64K of disk space! If you create that same file in SimpleText, guess what? It will consume 128K because SimpleText files have both a data fork and a resource fork! If you add more data to the file, that new information will be added to the allocation block (until there's so much data that another allocation block is needed), but, otherwise the extra space is just wasted.

The "wasted space" problem is more pronounced if you have a large number of small files - each with a partially filled allocation block - than if you have a small number of large files, where almost every allocation block will be completely filled. Most people store a mix of small and large files on their disks, resulting in a noticeable (but not world-shattering) amount of wasted space. However, the larger the disk, the more space that's lost. And some drives - particularly those used by programmers, Web authors, and server applications - can have thousands of tiny files.

Macintosh Extended Format addresses the wasted space problem by increasing the number of allocation blocks from 65,536 to over 4.2 billion. This means Extended Format volumes can store far more files than Standard Format volumes, and (in theory) an Extended Format volume can have 512-byte allocation blocks (i.e., a one-to- one relationship with logical blocks) on volumes up to 2 terabytes in size.

Smaller May Not Be Better

However, all is not bliss in the world of 512-byte allocation blocks. Remember that most people have a mix of files, many of which are used differently. Email files tend to grow and have data removed from the middle, word processing documents grow and shrink almost randomly, log files have new data appended to them, and Web browsers create and destroy more files before 9 A.M. than most people do all day. All this creating, appending, and deleting leads to disk fragmentation. With 512-byte allocation blocks, the result is likely to be many tiny file fragments rather than a smaller number of larger chunks. Over time, a large-capacity volume with 512-byte allocation blocks will generally have worse fragmentation - and hence worse performance - than the same volume with larger allocation blocks. That's why Apple's default allocation block size for Extended Format volumes over 1 GB is 4K: it's a compromise between the need for small block sizes and concerns about fragmentation. Similarly, a disk must be at least 32 MB to use the Extended Format; for anything smaller Extended Format doesn't make much sense over Standard Format.

Even More Features

But wait, there's more! Macintosh Extended Format also fixes other shortcomings with HFS. Mac users bragged for years that file names can be 31 characters long and contain spaces and other special characters (except a colon), but these days, 31 character file names don't seem as spiffy. In addition, HFS has always had a Roman-language bias when it comes to sorting and storing files, a fact plainly evident to anyone using, say, a Japanese version of the Mac OS.

Macintosh Extended Format supports file names of up to 255 Unicode characters, which means file names can be longer and behave in a manner appropriate to the language (script) the computer is using. (Unicode has more than 38,000

characters and 25 script systems, including Arabic, Cyrillic, Katakana, and Thai.) Under Mac OS 8.1, Extended Format volumes require the Text Encoding Converter extension to display file names and other information. However, the Mac OS 8.1 Finder still supports only 31 character filenames; we'll have to wait for future versions of the Finder to be able to enter long file names on Extended Format volumes.
<http://www.unicode.org/>

Macintosh Extended Format also makes it easier to create startup drives for non-Mac OS operating systems (think Rhapsody), and has facilities for storing metadata about a file (such as comments, access permissions, and other information that isn't inherently part of a file's content).

Extending Your Volumes

Now that you know about the Macintosh Extended Format - how do you work with it? There are two ways you'll deal with Extended Format volumes: you'll either encounter someone else's or create your own.

If someone makes an Extended Format volume accessible on a network via File Sharing or AppleShare, it will behave just like any other Mac disk. However, if you connect an Extended Format disk to your computer (or, more likely, use a Extended Format removable cartridge), you must run Mac OS 8.1 or higher in order to access the Extended Format volume. Otherwise, you'll see a single text file explaining that you're trying to access an Extended Format volume but don't have the appropriate software. (This little trick is accomplished via an HFS wrapper, which essentially embeds an Extended Format volume in an old-style HFS volume.)

Initializing your own Extended Format volumes is easy. You can either use the Erase Disk command on the Mac OS 8.1 Finder's Special menu or use Drive Setup 1.4 or later (which comes with Mac OS 8.1). In either case, back up your disk, initialize it, and then restore your data.

To make an Extended Format startup disk, you must make a separate bootable Mac OS 8.1 disk (Apple recommends using the Mac OS 8.1 retail CD), then back up your startup volume, initialize it using either the Erase Disk command or Drive Setup 1.4, and then restore your startup volume data. Please note that 68040-based Macs can't start up from (or store Virtual Memory swap files on) an Extended Format startup volume, although they can access other Extended Format partitions and volumes just fine. Also, don't use the PowerBook Password Security control panel on an Extended Format startup disk; it won't work due to changes in Extended Format boot blocks.

Utilities from Alsoft

If creating Extended Format volumes using the Erase Disk command isn't simple enough - or is too time-consuming because of the necessary backup and restore operations - consider PlusMaker, a $30 utility from Alsoft that converts existing HFS disks as small as 8 MB to Extended Format volumes with 512-byte allocation blocks. PlusMaker's conversion leaves your data intact - it converts directory structures (while correcting minor directory problems) and then optimizes the data in order to reduce disk fragmentation. Alsoft claims that using 512-byte allocation blocks isn't significantly slower than using 4K allocation blocks; of course, your results will depend on how you use your disk and what you put on it.
<http://www.alsoftinc.com/plusmaker.html>

Alsoft also markets PlusMaximizer, which lets you create Extended Format partitions using 512-byte allocation blocks (instead of the default 4K for a 1 GB or larger drive) via the Erase Disk command. Alsoft sells the programs together for $40. Although users report good results with Alsoft's utilities, I still strongly recommend backing up before converting to Extended Format.
<http://www.alsoftinc.com/plusmaximizer.html>

Compatibility Issues

Before using Macintosh Extended Format with a non-Apple disk, check with the company that develops the disk driver software to make sure it's fully compatible with Mac OS 8.1 and Extended Format volumes. Hard Disk ToolKit 2.5 and Silverlining 5.8.2 both claim to be compatible with Mac OS 8.1 and Extended Format volumes; Silverlining supports Extended Format volumes directly.
<http://www.fwb.com/ts/hdt/hdt25bulletin.html>
<http://www.lacie.com/updates.html>

In addition, software that interacts with the file system at a low-level - such as automatic compression utilities or disk optimization and repair programs - may need to be updated. Check with the developer of your particular package for details; some additional information is listed below.

* Norton Utilities: Symantec has released Norton Utilities 3.5.2 for use with Mac OS 8.1. This release recognizes Extended Format volumes, but will not diagnose, optimize, or repair them. (Previous versions would try to run on Extended Format volumes, possibly causing serious damage.) Symantec has not publicly stated when they plan to update Norton Utilities, but Symantec's lukewarm stance toward Extended Format volumes was noted at Macworld San Francisco - don't expect a new release for several months.
<http://www.symantec.com/nu/fs_num.html>

* Alsoft DiskExpress Pro can't optimize Standard or Extended Format volumes under Mac OS 8.1. Alsoft has promised an update.
<http://www.alsoftinc.com/DXPinfo.html>

* FWB's CD-ROM ToolKit 3.0.x's disk cache capabilities have trouble with Extended Format volumes. FWB promises an update; in the

meantime, users can disable CD-ROM ToolKit's disk caches under Mac OS 8.1.
<http://www.fwb.com/>

* Network Associates PGPDisk 1.0 has been updated to 1.0.1 to be compatible with Extended Format volumes. Registered users should call NAI Customer Care at 408/988-3832 for upgrade information.
<http://www.pgp.com/products/PGPdisk.cgi>

If It Ain't Broke

Should you use Extended Format volumes? The answer, of course, is "it depends." From what I've seen and heard, Extended Format volumes don't offer better performance than Standard Format volumes; furthermore, the lack of high-quality diagnostic utilities for Extended Format volumes makes them less appealing for critical data storage, as do potential incompatibilities with popular software.

However for some, the space savings of Extended Format volumes will prove persuasive - especially if those people already make regular, reliable backups. As was the case with HFS back in 1986, it takes time for a new disk format to be fully supported. Macintosh Extended Format will take a while to catch on, but its importance will grow as drive sizes increase and Rhapsody edges closer to reality.

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Apple:

The Inside Story of Intrigue, Egomania, and Business Blunders

by Jim Carlton. Publisher: Time Books, Oct.'97, 352 pgs., $27.50.

A Book Review by Doug Regester
Submitted by John Hunkins Sr.

Being a relative newcomer to the Macintosh/Apple Computer world, I found the book fascinating to read. The word "Intrigue" in the book's title is no hollow boast. Truly there is intrigue of every type in this story of Apple Computer. If you are interested in Apple's history, you must read this book.

Carlton weaves a twisted web of events in the Apple world. Its easy for the reader to get confused and overwhelmed. It would be useful for Carlton to give us a time line of events, products, and decisions. A heavier hand from the editors may have helped readers follow the action more clearly.

No reconstruction of history can be 100% accurate, but talking to people who were actually there does cut down on the variety of "translations" that can be applied to a given event. Carlton conducted interviews with over 160 people close to Apple, including many current and former employees. To Carlton's credit, when there is significant difference of opinion on what happened, or was said, he serves up that point of view as well. In all, Carlton's account of events is quite credible. Apple's official Mac Evangelist, Guy Kawasaki, adds more credibility by writing the book's forward.

Carlton's purpose is not clear and you get the impression that Carlton is hoping the book will become a "How Not to Do It" text for the next generation of Business School MBA's. Is Carlton just another journalist jumping on the Apple-bashing bandwagon? Does he want to help Apple mend its ways by obviating its errors? Or, does he want to make money off an interesting story? Mostly, Carlton wants the money, but he's done Mac fans a service by bringing the company's problems out in the open.

Carlton's point of view is certainly influenced by his professional purpose. He is the Technology reporter for the Wall St. Journal. The book is focused on the business blunders of Apple Computer. It is in any case a thorough text, with index, bibliography and copious footnotes. It takes you from Wozniak soldering up the first Apple computer in the garage, to the return of Steve Jobs in 1997, and speculation on Apple's future in the Epilogue. The final pages were written as recently as August 1997.

Throughout the book the reader learns a lot about Apple's management failures. Several things stand out. A consensus management style does not work. Apple has suffered from a lack of selfless CEO's willing to step out and push the company firmly in a focused direction. Also, Apple's casual corporate culture has not served it well. It certainly did inspire early innovation, but the juvenile underpinnings and lack of discipline of this casual corporate culture have haunted Apple.

Carlton suggests that Apple's best chance is to give ups its struggle for independence and merge with a strong parent, who has the tough love necessary to impose some discipline on the troubled Apple child. In his final paragraphs Carlton paints a bleak picture of Apple's future. He overlooks the OpenStep development environment's quick and easy portability of code to either Mac or Windows platforms that may turnaround the erosion of software application development, one of the biggest arguments against Mac OS. He ignores the promise of Rhapsody, but does allow that Apple may somehow pull a rabbit out of its hat again.

Although Carlton's journalistic objectivity won't allow it, the reader can only conclude that Apple's survival to this point can only be due to its superior technology, not its good management.

You may also be interested to the read the reviews posted by other readers on the Amazon internet book store site *(www.amazon.com)*. There is a range of ratings on the book, from great to lousy.

What was happening in the Mini'app'les Newsletter

compiled by Ken Slingsby

This series is presented to provide a link to our past. The snapshots of articles and advertisements appearing in the Mini'app'les newsletters of yesterday are meant to entertain and enlighten rather than to poke fun at our past. Enjoy.

5 Years ago...

March 1993. This issue was quite a change from the usual. The publications director position was vacant and the issue came out a little late. The annual meeting was on the sixth. In addition, I could not find a Feb 1993 issue in my vast collection. It's possible there wasn't as much notice made as one would have liked. The issue had no covers and was collated backwards or the wrong corner was stapled. The first few pages were hand numbered. An interesting ad on one of the covers was for a DEC Laser printer including Postscript software, 4 page per minute Canon engine, 2-Mbyte memory, and connects to both Mac & PC, all for $1099. The annual meeting was an exciting event where lots of problems were discussed. One of the outcomes of the meeting was a second newsletter for the month, a four page discussion of the outcomes.

10 Years ago...

March 1988. The 16 page issue was packed with information. There was a two column editorial, followed by several sig notices. In the announcements, I was surprised to find that Claris had seven titles, about half of which were version 2 or greater. The AppleWorks Advisor announced the recent release of AppleWorks 2, explanation of memory chips for the Apple II, and reviewed TimoOut SideSpread, a program to print spreadsheets sideways in an era when printers were generally incapable of rotating the output to landscape. A review of a recent Mac User Meeting described the newest Apple laser printers, a new MIDI interface box, and miscellaneous software updates. Wrapping up the issue was a presentation of the recent Revisions to the Bylaws.

15 Years ago...

March 1983. This issue was 38 pages in length. Mini'app'les was progressing. The dot matrix printer had been replaced by an Apple LQP printer using an Elite 12 pitch daisy wheel. The Apple II software was Pie Writer, which allowed incremental mode (characters are not all at the same fixed width), and variable line feed increments. A television crew from channel 11 had been at a recent meeting where the Apple IIe was introduced. The investment SIG reviewed a set of programs called Portware, for analyzing and tracking investments. DOM 22 was described in detail. Several magazines were indexed in this issue, covering titles including: Apple Orchard, Byte, In Cider, Personal Computing, Popular Computing, Softalk, and Twin Cities Computer User. Operating hints for a relatively new database program, Data Reporter, was detailed. As typical for the day, the program and data files were on separate disks so the user had to be careful in swapping disks, so the user wouldnÕt write data on the program disk and loose it all. There was a page and a half article on copyright law. One of our members had found a fantastic deal on four part, lined paper at the Ax Man Surplus store. March must be the month for Bylaws. They were printed in this issue, also. Rounding out the issue was a home construction project, this time making the keys repeat on the Apple II and Apple II+ keyboards.

WebRamp

by Steve P. Wilmes

In my quest to buy all things with cords attached to them I recently bought a WebRamp. In my home office I have 6 or so computers at a time. We have 3 phone lines and there are often 4 of us working or playing.

In an effort to be more efficient and gain some speed I bought the WebRamp M3. This is the cheaper one but here is what it will do.

It is a router and a hub. You can connect 1-3 modems to it. Right now I have two modems and have it hooked into my other hubs so anyone on the network can get to it.

It is a DHCP server so anyone can now hit the internet from any computer. If you open say Netscape, it will see if one of the modems is up, if not it will open it. If you have it set up to use more than one modem, it can dynamically pop open as many modems as it has, to keep the speed up. When it gets a new request for something out on the internet, it looks for the least busy path to the net and sends that connection out on it. So now even alone, I can browse while pulling a big download, without a slowdown.

I looked at the Vicom Internet gateway, which is just a software router. It will use a single modem for everyone. a 5 user version costs $399. This costs $299.

This is set up simply by opening netscape and typing in the preset IP of the device. It will support up to 253 users, although 20 is more realistic. It will take any combination and flavor of modems(ISDN, 56k, 33.6, etc.). It is XPlatform. Unlike the Vicom it doesn't slow down a machine nor rely on one not crashing.

For the clients all that you need to do is go in the TCPIP control panel and set one setting, optain IP from a DHCP server, done.

Very cool product, very well done interface.

Good deals #51

by Ken Slingsby

This is another installment in a series of articles which list press releases. All articles included here were posted on either AppleÕ web site or via the User Group Connection. These are roughly the same sources as prior articles in this series.

The PRESS RELEASES are to make you aware of the new products. You may have to hunt to find a dealer that supports the product. The GOOD DEALS are special offers that may be in limited supply. Many are limited time offers.

Mini'app'les makes no claim as to the usefulness or quality of the products offered herein. The User Group does not endorse the products and is not supporting the products. The following is not paid advertisement. There may be other products mentioned on our BBS or other services not appearing here. If so, that is an omission, not a refusal of the product. As in all purchases, buyer beware!

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PRESS RELEASES

Claris to Reorganize as FileMaker, Inc.

CUPERTINO, California—Jan. 27, 1998—Apple Computer, Inc. today announced that its Claris subsidiary will restructure to focus exclusively on its award-winning FileMaker Pro line of database software. This restructuring will include changing the Company name to FileMaker, Inc., divesting of products other than the FileMaker Pro line, and laying-off approximately 300 Claris employees.

FileMaker Pro is the most popular database software for the Macintosh and is the second most popular standalone database software for Windows, with about 3 million units sold and 2,500 developers. Sales of the FileMaker Pro line were $73 million in FY97, and $24 million in the most recent quarter which ended Dec. 26, 1997. Sales of the Windows versions more than tripled during the past two years (from $9 million to $28 million) and grew 77 percent during the most recent quarter over the same quarter a year ago.

Beginning February 1, Apple will distribute all Apple-branded software, including Mac OS 8 in the U.S. In addition, Apple will develop, distribute and support the award-winning ClarisWorks integrated productivity software. ClarisWorks is the leading productivity software in the K-12 education market, a key market focus for Apple.

Apple Reports First Fiscal Quarter Results

CUPERTINO, California—Jan. 14, 1998—Apple Computer, Inc. today announced financial results for its fiscal 1998 first quarter which ended Dec. 26, 1997. For the quarter, the Company generated revenues of $1.6 billion and unit sales of 635,000. The Company recorded a quarterly net profit of $47 million, resulting in basic and diluted earnings per share of $.37 and $.33, respectively. Apple recorded a net loss of $161 million, or $(1.26) per share, in the September quarter, and recorded a net loss of $120 million, or $(.96) per share, in the year-ago quarter.

The Company achieved gross margins of 22 percent during the quarter, compared to 20 percent in the September quarter and 19 percent in the year-ago quarter. International sales accounted for 50 percent of the Company's quarterly revenues.

GOOD DEALS

User Group Store Email Update 1/16/98

Apple Performa 6400/180 - Factory-Refurbished

- 180MHZ 603e PowerPC Processor
- 16MB RAM /(DIMMs) upgradable to 136MB
- 1.6GB hard drive
- 8X CD ROM
- Optional cache
- 1MB VRAM
- 2 PCI SLots
- Keyboard and mouse
- Mac system 7.5 and Claris Works
- 90-day Apple warranty

Price $899 * 2600 points * item #05959. Add a Hitachi 15" monitor for only $329 * 900 points * #72050. Add a 2-year On-Site Warranty for only $119.95 * 350 points * item 01914

Price of system with monitor and warranty suggested would be $1,297.95, (with $50 rebate applied) and would earn your User Group 3,850 points.

Apple Performa 6200/75 - Factory-Refurbished

- 75MHZ 603e PowerPC Processor
- 8MB RAM/(SIMMs) upgradeable to 64MB

- 1GB hard drive
- 4X CD ROM
- 256k L2 cache
- 1 COM slot
- 1 LC PDS slot
- Built-in DRAM
- Keyboard and mouse
- Mac system 7.5 and Claris Works
- 90-day Apple warranty

Price $549 * 1600 points * item #05265. Add a Hitachi 15" monitor for only $329 * 900 points * item 72050. Add a 2-year On-Site Warranty for only $79.95 * 235 points * item 01913

Price of system with monitor and warranty suggested would be $927.95, (with $30 rebate applied) and would earn your User Group 2,735 points.

2. Items Remaining from the Holidays

Qty	Item	Price
Mag Innovision DX15T 15" monitor		
2	97000	$329
ArtMedia TX-1664 15" monitor		
1	11263	$329
Applevision 1710 17" monitor		
1	05841	$699
PressView 17SR 17" monitor		
1	24118	$999
Stylus ProXL 11x17 color printer		
1	83001	$999

Free 200 sheet package of Epson letter-size Premium Coated Paper with the purchase of any Epson printer. Ask for item #84434 with the purchase of an Epson 600/800/1520/3000 color printer.

Attention Epson Stylus Pro and Stylus Pro XL owners! At year-end inventory, we found several boxes of Epson letter size Premium Coated paper for 720dpi output on your Stylus Pro or Pro XL printer. While supplies last, get a 200 sheet package for just $10 including UPS shipping. Ask for item #84434.

Factory-Refurbished Items

Qty	Item	Price
Apple 5260		
1	05258	$499
UMAX SuperMac C500/140/16MB/1.2GB HD/ 8X CD		
1	30573	$599
UMAX SuperMac C500e/200 ENET/16MB/2GB HD/8X CD		
1	30589	$849
UMAX SuperMac C600e/200 ENET/32MB/2GB HD/8X CD/ZIP		
4	30591	$999
Apple PowerMac 7200/90/8MB/500 CD		
7	05045	$649

The User Group Store - Where members shop!

Web Page: *http://www.ugstore.com*
Email: *ugsales@ugstore.com*
Phone: 800-350-4842

Double Points Extended Until March 31, 1998

Special System offers

The User Group Store has decided to extend our Double Points program through March. The members really embraced our on-line purchasing service and we want to thank you by extending our double points program through March. That means your group receives double points on all purchases you make on-line. And our on-line shopping is secure and easy. Just go to our website, pull out a shopping cart, and purchase products. And keep in mind that no matter the size of your group, each purchase qualifies

Now those hot Specials!

UMAX C500LT/180 Refurb 603e/180MHz/16MB/1GB HD/ 1MB VRAM/ 8X CD/ Kb&m., $769 2300 Points, Item # 30575

Add a Hitachi Pro 500 15" monitor. $329 900 Points Item #72050/06932

UMAX C600/200 Refurb 603e/200MHz/16MB/2.1GB HD/ 1MB VRAM/ 8X CD/ 33.6 modem/Kb&m., $999 2900 Points Item # 30577

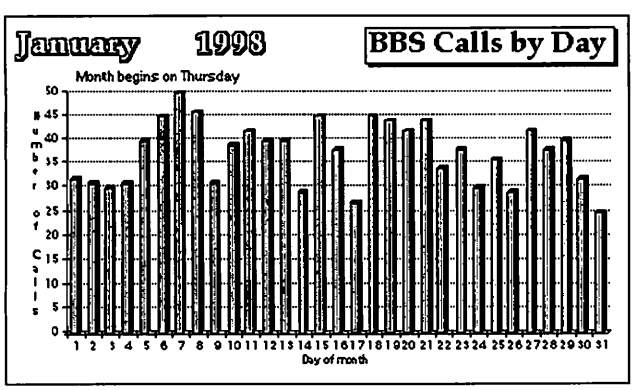
Add the Apple 15AV refurb 15" monitor. $349 1000 Points Item #05961

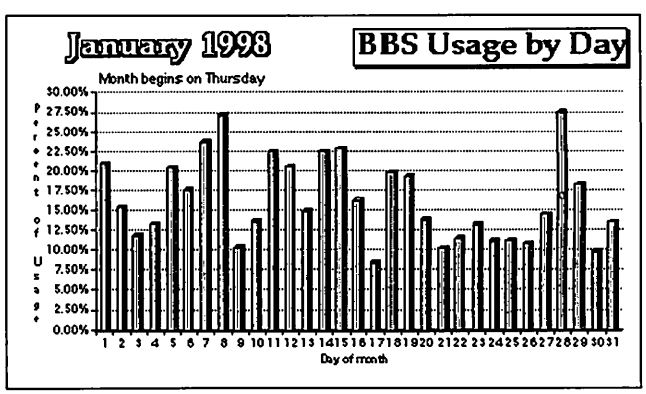
UMAX C600LT/240 Refurb 603e/240MHz/24MB/2GB HD/ 1MB VRAM/ 12X CD/33.6 modem/ Kb&m. $1139 3400 Points Item #30588

Add a RasterOps Hitachi 17Ó monitor. $499 1400 Points Item # 72009

Refurbished products include a 90-day warranty.

Add a Service Net 2-year warranty for only $119.95





Bylaws of Minnesota Apple Computer Users' Group, Inc. (Proposed)

A. NAME OF ORGANIZATION

The name of the organization is Minnesota Apple Computer Users' Group, Inc. hereafter called "mini'app'les."

B. PURPOSE

The purpose of the organization is to promote the dissemination of information concerning the use of Apple Computers and products related thereto, and to share the knowledge of members at large concerning their talents and information pertaining to computers in general.

C. MEMBERSHIP

1. Members of mini'app'les are required to pay annual dues, which will be due on the anniversary of the month they joined.
2. The actual amount of dues will be set by the board. A application fee may be charged at the discretion of the board.
3. Annual dues must be received by anniversary date or membership shall be terminated.
4. Membership rights will be extended to the immediate household upon receipt of dues from the household.
5. Each membership shall have the right to cast one vote.
6. Membership will not be denied because of race, creed, color, sex, or national origin.
7. Members are expected to abide by these bylaws.
8. Benefits of membership shall include:

A subscription to the mini'app'les newsletter.

Eligibility to purchase mini'app'les software.

Eligibility to participate in mini'app'les sanctioned activities.

D. LEADERSHIP

1. The officers of mini'app'les, shall consist of the following positions:
   - President
   - Past President
   - Vice President
   - Secretary
   - Treasurer
   - Publications Director
   - Interest Group Directors (2)
   - Marketing Director

   These eight officers are the governing board of the mini'app'les and all mini'app'les business will be conducted by this board.
2. Except for the Past President, officers are elected for term of one year. The term runs from May 1 to April 30. The office of Past President will automatically be given to the retiring President. If a President is elected for sequential terms, the incumbent Past President will remain in office. If Past President resigns or relinquishes office, the President shall appoint a Director at Large to complete Past President term and duties.
3. If an officer resigns or relinquishes office, the President shall appoint a replacement in a timely manner subject to board approval.
4. If the President resigns or is unable to perform the duties of the office; the Vice President shall assume those duties.
5. In the absence of the President and Vice President the officers may appoint an acting President.
6. Board members may be removed from office by a two-thirds majority vote of the board. A recall election shall be held within 60 days of presentation of an impeachment petition bearing the verified signatures of at least five percent of the membership.
7. The President, Vice President, or Secretary may call a general membership meeting. Membership shall be notified of time, place, and purpose of meeting through the mini'app'les newsletter or a special mailing.
8. Election of Officers.
   a. Nominations will be made by a nominating committee.
   b. Further nominations from members will be accepted at a general membership meeting to be held in February.
   c. The subsequent list of nominees with such statements as they may wish to make pursuant to their candidacy shall appear in the April newsletter.
   d. The election will be by means of a written ballot as published in the April newsletter. Ballots will be accepted at mini'app'les meetings or by mail. All ballots must be received by April 28th. A simple majority of those voting is necessary for election. Results of this election shall be published in the newsletter not more than 60 days following the election.
9. Board members must be paid up members of the mini'app'les. If a board member's membership lapses, they have effectively resigned from the board of directors, and the board shall so notify them and make record in the minutes.
10. No member or membership may hold more than one board position or vote except as noted in bylaws.

E. LEADERSHIP RESPONSIBILITIES

1. General Duties. The duties of the elected officers are in general to:

   Promote the purpose and membership of mini'app'les.

   Administer the bylaws of the mini'app'les.

   Assure the financial well-being of the mini'app'les.

   Attend and report at each board meeting.

   Carry out decisions of the board in a timely manner.

Appoint staff and committees as necessary, subject to board approval.

Communicate to the board the needs of appointed staff and membership in general.

2.Duties of the President. The President will:

Provide leadership and direction to the general membership and to the board of directors.

Prepare an agenda for each board meeting.

Chair mini'app'les board and general membership meetings at which business is conducted.

Assign duties to board and staff members.

Establish goals to be reached during the term in office.

3.Duties of the Vice President. The Vice President will:

Assist the President with the duties of that office and in the absence of the president, assume the duties of that office.

Organize the program, facilities and equipment for general membership meetings including meetings for nominations or voting by membership.

Coordinate participation in events, such as trade shows and seminars.

4.Duties of the Treasurer. The Treasurer will:

Maintain the mini'app'les financial records and records of mini'app'les assets.

Prepare a written financial report to include income, disbursements, current account balances and assets, at each board meeting. This report will be included in the minutes.

Prepare an annual budget.

Be cognizant of and act upon requirements of the IRS and Minnesota State Department of Revenue in a timely and efficient manner.

Administer the collection of all monies due the mini'app'les.

Establish and maintain bank accounts in the name of the mini'app'les.

Deposit all monies in the mini'app'les bank account(s) in a timely and efficient manner.

Pay all bills and demands as authorized by the board.

5.Duties of the Secretary The Secretary will:

Record in a permanent form the minutes of all board and general membership meetings at which business is conducted.

Record the results of elections.

Archive and maintain all mini'app'les records other than those kept by the Treasurer.

Keep a mini'app'les calendar.

Assist the President and Vice President in correspondence as required.

6.Duties of the Past President. The Past President will:

Provide continuity in the leadership of the mini'app'les.

Assist the President with the duties of that office.

Provide historical references for decision making process.

7.Duties of the Publications Director. The Publications Director will:

Oversee publication of the newsletter.

Appoint with consent of the board:

Newsletter Editor and assistants

Advertising Coordinator

8.Marketing Director. The Membership Director will:

Oversee the maintenance and processing of membership records and materials

Promote membership

9.Duties of the Interest Group Directors. The Interest Group Directors will:

Oversee all matters related to the development and maintenance of Special Interest and Community Interest groups

Encourage and assist in the formation of new interest groups

Act as spokesperson to the board for group representatives

F. FINANCIAL

1.The mini'app'les will maintain an account(s) at a local financial institution. Such accounts shall bear interest as the law allows.

2.The Signatories on the account(s) shall be:

President

Vice President

Treasurer

3.One signature will be required to disburse funds from the account(s).

4.The authorization of expenditures will be accomplished by the board approving an annual budget that covers the mini'app'les budget year. The budget year shall run from August 1 to July 31. Those expenditures not budgeted items, or budgeted items which exceed the budgeted amount by more than $25.00 will require majority approval of the board.

5.Proper verification of expenditures will be required before the funds will be disbursed.

6.In the event of dissolution of the corporation, the entire net assets remaining after payment of any or all liabilities and obligations of the corporation shall be disbursed in a manner agreeable to a majority of the board members at a specially convened open board meeting and consistent with IRS and State regulations. Notice of this meeting shall be made known to all mini'app'les members through the newsletter or a special mailing 30 days in advance of the meeting.

7.A Surety Bond shall be obtained, naming the above signatories as principals.

G. BOARD MEETINGS

1.The business of the mini'app'les will be conducted at board meetings, except for general membership meetings or voting by the general membership.

2.The Board of Directors shall meet at least every other month at a

place and time designated by the mini'app'les president.

3. A quorum shall consist of 4 or more officers and no business shall be transacted if a quorum is not present.
4. Notice of board meetings shall be published 30 days in advance of all regularly scheduled board meetings.
5. In emergency situations, officers may agree to meet at any time, but all business transacted will be subject to reconsideration at the next regularly scheduled board meeting. Minutes of the emergency meetings shall be made publicly available in the next issue of the mini'app'les newsletter and/or at the request of any member.
6. The board of directors may designate three or more of its members to constitute an executive committee. To the extent determined by the board, the executive committee has the authority of the board in the management of the business of mini'app'les. The executive committee shall act only in the interval between board meetings and at all times shall be subject to the control and direction of the board. Any activity shall be reported to board at next meeting.
7. Minutes of the board meetings will be made available no later than 60 days following that meeting.
8. All meeting of the board will be open to the general membership of the mini'app'les.
9. All members are encouraged to bring issues to the board. This shall be done by submitting agenda items in writing to the president in advance of the board meeting.
10. Decisions will be made by a simple majority of the board members present, the President voting only in the case of a tie.
11. At least once per year, the board will examine these bylaws for needed changes following the procedure set forth in section H.

H. BYLAWS

1. Requests for changes in the bylaws will be made in the mini'app'les newsletter at least four months prior to the election of officers.
2. The board will act on this request and on other items pursuant to changes in the bylaws at a board meeting at least three months prior to the election of officers.
3. Changes to the bylaws suggested by the board will be published in the mini'app'les newsletter.
4. The ratification will be by means of a written ballot as published in the mini'app'les newsletter. Ballots will be accepted at mini'app'les meetings or by mail. All ballots must be received by the 28th of the month in which vote is taken. A two-thirds majority of those voting is necessary for ratification of the changes to bylaws.
5. Changes to these bylaws become effective the first day of month following publication of notice of ratification in the newsletter. Such notice shall appear not more than 60 days after the closing date for receiving ballots.

I. MISCELLANEOUS

1. mini'app'les will support the copyright laws.
2. In the event of meeting cancellation, the officers will make every effort to contact the local members through the media or other means as appropriate.
3. All Books and Records to be audited not less than once per year by a committee of members, not including officers, appointed by board.
4. All applicable Federal and Minnesota laws and statues apply and supersede where bylaws do not comply with said laws and statutes.

Not for the mathematically challenged:

Submitted by Tom Gates

Engineers and scientists will never make as much money as business executives. Now a rigorous mathematical Proof exists that explains why this is true:

Postulate 1: Knowledge is Power..

Postulate 2: Time is Money..

As every engineer knows,

Power = Work/Time
Since Knowledge = Power, and Time = Money, we have

Knowledge = Work/Money

Solving for Money, we get:

Money = Work/Knowledge

Thus, as Knowledge approaches zero, Money approaches infinity regardless of the Work done...

Conclusion:

The Less you Know, the more you Make.

Note: It has been speculated that the reason why Bill Gates dropped out of Harvard's math program was because he stumbled upon this proof as an undergraduate, and dedicated the rest of his career to the pursuit of ignorance.

Benefits of your mini'app'les membership include:

A one year subscription to our monthly Newsletter

A free account on the mini'app'les BBS (45 minutes/day)
Communicate with other mini'app'les members plus get up to date information on mini'app'les events and meetings. Get assistance from other members. Download freeware and shareware.

Eligibility for frequent drawings of free equipment, software, and books.
Just a few of the many items given away free in the last year included: Connectix QuickCam, Microsoft Encarta, Books from Peachpit Press and MacMillan, RamDoubler, SpeedDoubler, Lind PowerBook battery Conditioners and Rechargers, Microsoft Art Gallery, and Apple System 7.5 software.

Discounts on book orders
40% off Peachpit Press, 30% off MacMillan family of book companies (Hayden, Adobe Press, Que, Sams, Brady, NRP, and Alpha)

Periodic special User Group discount offers on equipment and software.
In the past year, Apple, Hayes, Brøderbund, and APC Power Protection (Business Security Products), among others, have offered mini'app'les members significant discounts.

Plus, you're supporting all of mini'app'les' special interest group (SIG) meetings that you can attend each month.

It's easy to recoup your cost of membership with the above benefits.
And a one year membership still costs only $25.

mini'app'les
Box 796
Hopkins, MN 55343

ADDRESS CORRECTION REQUESTED

Non-Profit Org.
U.S. Postage
PAID
St. Paul, MN
Permit 2537

mini'app'les membership card

EXPIRES: 99-12 ID# 160

DAN B BUCHLER
2601 WOODS TRL
BURNSVILLE MN 55337