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CoCo

Clipboard Magazine

THE NEWEST, MOST INDEPTH MAGAZINE FOR TANDY'S COLOR COMPUTER 2 & 3

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1st Anniversary Party!*

*Tyranny of Compatibility
Deluxe PowerGraph Pt. 99*

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J. Bennett '88



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FROM THE DESK OF...

Ted & Darlene Paul



As many of you know *CoCo Clipboard Magazine* is now a full time operation. As of July 22nd this magazine is no longer the part time job it has been for the last year. If you had asked me a year ago if we could have made our living from a Color Computer magazine after just one year of publication, I don't think I could have answered "Yes". But with your wonderful support in subscriptions, our advertisers support and the Lord's blessing it has happened. Our heartfelt thanks to you all.

Over the past year we've tried a number of page layouts and column sizes. We've tried several different approaches to type size, spacing and fonts. We'd love to be fully typeset, but that's a while off yet and while we're waiting I'd appreciate your comments on this issues column presentation. We've returned to a 10 pitch, but maintained the same column size as the last issue, however we've eliminated the extra spaces between paragraphs. After reviewing what 99% of what other magazines do from paragraph to paragraph we saw they rarely used extra spaces. So we took them out. In their place we went back to 6 lines per inch from the 8 per inch in the last issue. Your comments on these areas would be appreciated.

Tandy held their computer products press conference in Ft. Worth in late July. The press kit that arrived had no mention of anything for the CoCo. Several days later I did receive advanced copies of Tandy's three new computer catalogs. These catalogs are:

1. Regular Computer Products
2. Educational Software
3. Express Order Catalog

The computer catalog does list a number of new games for the CoCo. Some are ROM Paks, one is disk, and they range from CoCo 1, 2, and 3 compatible to CoCo 3 only. No new hardware was announced. We had hoped to see a new RS232 Pak, new Multi-Pak, new 3.5 drives and perhaps a new monochrome RGB monitor for the CoCo. But we didn't and so what I said last issue now goes double: WRITE! WRITE! WRITE! Please give Tandy your thoughts, let them know you'd like updates to software, new hardware, new productivity software, and just about anything else you can think of. We have noticed in *countless* phone calls and conversations that there is a growing ground swell of disappointment in Tandy's lack of serious support for the CoCo.

Oh sure, the support is better than what they're giving to Model 4 and 6000 users of late because those "business" machines are being overshadowed by the clone units. The CoCo remains as Tandy's only non-PC machine capable of real multitasking, multiuser productivity that doesn't require a small loan from the Federal Reserve to buy! It's a real shame that they have chosen to not support the non-PC market. I'm sure Apple and Atari and Commodore are breathing a LOT easier because Tandy has not taken the 68xxx CPU seriously. The CoCo is their only continuing 68xx entry and could be a real money maker for them in the A/A/C market area if it was only treated with more respect. Up the clock speed if possible, drop in a real RS232 and parallel ports, get OS9 Level II and MultiVue fixed or get rid of them, get a replacement for the MPI and a plug in hard drive system based on any of the several that are on the market today. Better yet, make them all available with the proper drivers, programs etc. and let the buyer decide, and let's get RAM up to 640K! I think that the folks in Ft. Worth are afraid that they will be drawing away business from their PC market. But in fact they are not gaining anything by maintaining this policy because there are thousands of people who can't stand MS-DOS, OS/2 or the 8086, 286 or 386 CPU's and will never set foot in a Radio Shack or Computer Center (with mega \$\$\$ in their pockets). And why? Because they can't find support from America's largest electronic retailer. Those dollars aren't competitive to the PC market, they are complimentary.

In fact it could have been a cool \$72 million complimentary dollars. That number by the way comes from a survey conducted by the editors of MacIntosh Business Review Magazine (copyright by VNU Publications September 1988 vol. 1 issue 2). They conducted a survey of the top 50 companies in the U.S.A. to see how many Mac's were being used by these companies. I totaled the numbers and came up with 72,000 units. If you figure a company will spend at least \$1000.00 per Mac installation, that's a lot of dollars not in the till. I'm not saying Tandy should start selling MacInstosh computers, or Atari ST's or Amiga's - they should be giving equal billing to their only low cost non PC machine - the CoCo. By giving the CoCo a little more credit and hype Radio Shack doesn't lose out on dollars that will NEVER go to a PC machine. The CoCo can provide, with a few improvements what the non PC customer really wants - the environment

Continued On 30

CoCo 'N Amateur Radio

Mike Dooley KE4PC

Editors Note: This installment of Mike's column tells you how to hook up your CoCo to a Ham Radio. If you have the least doubt as to whether or not you can safely perform this procedure, please get the help of a person experienced in electronics.

Well, it looks as if we've made our first anniversary! That's one whole year of the CoCo Clipboard and we've only just begun to scratch the surface of CoCo's and Amateur Radio.

Recently I came across an interesting Public Domain program for the CoCo. It's written by N6LQV. The program allows the transmission and reception of Radio Teletype using the cassette port of the CoCo.

There is an earlier version of this program by the same author that only allowed operation at 60 WPM (words per minute or 45 baud). This newer version has many enhancements. These include the ability to operate at 60, 67, 75 and 100 WPM. Direct disk access is allowed and there is a Transmit and Receive buffer.

The software comes as two programs. The first is called MAKERTTY.BAS. The purpose of this program is to generate the machine language program RTTY.BIN. After RTTY.BIN has been produced and saved to disk the second program, RTTY.BAS, is used to load and run it.

When the program finishes loading a menu comes up on the screen. This menu has seven selections and looks like this:

**** RTTY TERMINAL PROGRAM ****

```

                                BYTES
SAVE RECEIVE BUFFER           0
PRINT RECEIVE BUFFER
SHOW RECEIVE BUFFER
->RECEIVE/TRANSMIT
LOAD TRANSMIT BUFFER         0
CLEAR ALL BUFFERS
BAUD RATE: 45 WPM: 60
```

```

DURING TRANSMIT/RECEIVE:
BREAK: RETURN TO THIS MENU
CLEAR: TOGGLE RECEIVE/TRANSMIT
RIGHT ARROW: TRANSMIT BUFFER
```

There is an arrow to the left of RECEIVE/TRANSMIT. The arrow is moved using the up and down arrow keys on your COCO keyboard.

Once the arrow is pointing at the desired selection you simply press the ENTER key.

Before I discuss each selection let's look at the Buffers. There is a Transmit Buffer and a Receive Buffer. If you are in the RECEIVE/TRANSMIT mode anything you receive (see on the screen) is automatically put into the Receive Buffer. The Transmit Buffer is loaded from a disk with information such as your name, location, etc. and can be transmitted by pressing the RIGHT ARROW key on the keyboard.

Notice the column to the right of the menu with the word BYTES at the top? The '0's below the word BYTES tell how much information is stored in each buffer. With this background information let's proceed.

SAVE RECEIVE BUFFER - This selection allows you to save the information in the RECEIVE BUFFER to disk. When you make this selection the program prompts you for a filename, asks if you're sure, then saves the information.

PRINT RECEIVE BUFFER - This selection prints the RECEIVE BUFFER out the serial port of the COCO. I haven't tried this function and have no idea what baud rate the serial port may be operating at. I assume it is standard Radio Shack (600 baud).

SHOW RECEIVE BUFFER - This one displays the entire buffer on the screen. This allows you to go back over received text in case you forgot a name, call sign or whatever.

RECEIVE/TRANSMIT - Pressing ENTER on this selection allows you to receive and transmit RTTY signals via the cassette port. There is a split screen with the bottom two lines being for transmit (you can type while receiving) and the 13 lines above for receive. The top line is where the tuning indicator is located. The indicator looks like this:

MARK--><--SPACE

When a RTTY signal is received a cursor will bounce back and forth between the words MARK and SPACE (The receiver must be in lower sideband or have a BFO for this to work).

LOAD TRANSMIT BUFFER - This one allows you to load a pre-written piece of text into a buffer. At the appropriate time it can be transmitted using the RIGHT ARROW key.

CLEAR ALL BUFFERS - Just like it says, clear all (receive and transmit) buffers.

Continued On 8

BAUD RATE: 45WPM: 60 - Pressing the ENTER key on this selection allows you to pick the desired baud rate. The software always starts at 60 baud (45 WPM), but other selections include 67 baud (50 WPM), 75 baud (57 WPM) and 100 baud (74 WPM).

Now most of your RTTY signals will be operating at 60 baud, at least in the ham bands. The news services use RTTY to send news and weather information from around the world and they frequently use the higher baud rates. There are publications available that list all known RTTY frequencies and what can be expected there. Once the program is running you'll need to get that old Cassette cable you thought you wouldn't need anymore. Plug it into the cassette Port on the rear of the computer. Connect the Black plug to the receive audio coming from your radio. Turn on the radio and tune in a RTTY signal. Remember, your radio must be capable of receiving lower sideband or have a BFO (Beat Frequency Oscillator) to receive RTTY signals.

To transmit RTTY connect the larger Grey plug to the microphone input of the transmitter (you must be a licensed Amateur Radio Operator). The smaller Grey plug is used to key the transmitter. Be careful here. If you're using an older rig you might want to rig some type of relay between the smaller grey connector and the radio. Some of the older transmitters had a fairly high DC potential on the keying line.

A good starting place is in the Twenty Meter Ham Band. Look around 14.080 to 14.1 Mhz. The ARRL (Amateur Radio Relay League) also has regularly scheduled transmissions. I've included a table showing the times and frequencies for their RTTY bulletins.

Last, but not least, where can you get these programs? Well, there are at least three ways:

1 - Type in the programs from the listings included here.

2 - Subscribe to the CoCo Clipboard disk service.

3 - Download the programs from Compuserve. They're in the HAMNET Forum in Library 0.

Until next time! 73's de Mike Dooley
KE4PC

ARRL W1AW Schedule

UTC	Daily: 0100, 0400, 2200;	MTWThF: 1500
EDT	Daily: 6 PM, 9 PM, 12 PM;	MTWThF: 11 AM
CDT	Daily: 5 PM, 8 PM, 11 PM;	MTWThF: 10 AM
MDT	Daily: 4 PM, 7 PM, 10 PM;	MTWThF: 9 AM
PDT	Daily: 3 PM, 6 PM, 9 PM;	MTWThF: 8 AM

5 REM THIS PROGRAM IS PUBLIC DOMAIN, BY N6LQV

10 CLEAR 200,&H4000:C=3

20 D=(PEEK(&HC000)=68):REM TAPE:

D=0, DISK: D=-1

30 IF D THEN LOADM"RTTY" ELSE CL

OADM"RTTY"

```

40 DEFUSR0=&HE00:DEFUSR1=&HE03
50 DEFUSR2=&HE06:DEFUSR3=&HE09
60 DEFUSR4=&HE0C:DEFUSR5=&HE0F
100 A=USR0(0):R=0:T=0
110 CLS:AUDIO ON:MOTOR OFF
120 PRINT"**** RTTY TERMINAL PROGRAM ****"
130 PRINT"
      BYTES"
140 PRINT" SAVE RECEIVE BUFFER
      ";R
150 PRINT" PRINT ' ' ' ' ' '
160 PRINT" SHOW ' ' ' ' ' '
170 PRINT" RECEIVE/TRANSMIT"
180 PRINT" LOAD TRANSMIT BUFFER
      ";T
190 PRINT" CLEAR ALL BUFFERS"
200 PRINT" BAUD RATE: ";
210 ON B+1 GOTO 220,230,240,250
220 PRINT"45 WPM: 60":GOTO 260
230 PRINT"50 WPM: 67":GOTO 260
240 PRINT"57 WPM: 75":GOTO 260
250 PRINT"74 WPM: 100":GOTO 260
260 PRINT
270 PRINT"DURING RECEIVE/TRANSMIT:"
280 PRINT" BREAK: RETURN TO THIS MENU"
290 PRINT" CLEAR: TOGGLE RECEIVE/TRANSMIT"
300 PRINT" RIGHT ARROW: TRANSMIT BUFFER";
310 A=C*32:PRINT@A+32," ";:PRINT@A+64,"->";:PRINT@A+96," ";

```

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If you are ready to own your own business and are tired of weeding through the clutter, give us a call. Uncle Charlies offer products that people want at prices that are far below traditional establishments. Our lines of coffees, teas, breakfast drinks and meal replacement products sell because they are of superior quality and yet sell at prices far below the national brands. We are looking for key distributors throughout the country to begin operations immediately. We offer complete company training and support. You will require approximately 20K in capital to begin. If you qualify, phone:

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Tyranny of Compatibility

Rush Caley

It was a phone conversation that finally pushed me over the brink of my long standing position of disinterest toward discussions involving hardware comparisons. I had been speaking with another long time CoCo enthusiast about various topics. He spent a great deal of time telling me of the limitations of the CoCo and praising the power and wonder of his sleek new PC and a new relational database program. He had outgrown his CoCo - no way could it compete. The balance of the his conversation revolved around the importance of "compatibility" in today's business world. When I hung up the phone, I was frustrated and even a bit angry. I still feel that way; so naturally I was pleased when CoCo Clipboard provided the opportunity to vent some steam.

But this will not be a typical "I-love-my-CoCo" type of article. I will not go on and on about how the CoCo serves my needs and its ease of use or less expensive software. Face it, in many cases, we don't even have the pricing "leg" to stand on any more. I will not be discussing Intel and Motorola microchip architecture; nor will I go over the tired old comparisons between IBM and CoCo, or MS-DOS versus OS-9. These have been summarized many times by technicians much more knowledgeable than I.

What this is about is the subject known to all of us as "IBM Compatibility." I cannot count the number of times that I have heard prospective computer purchasers admit that they do not know exactly what they want-or even need. But one thing about which they are positive, is that it must be IBM compatible. In many cases, they may not even know what the term means! Well, as you know, all this amounts to is that the machine must operate under MS-DOS and run all of the popular pieces of DOS software that have become standards in the business community. But this is not a problem! The fact that this DOS and these programs are so popular does not bother me at all. Competition in the marketplace is what makes America tick.

What does irk me is the implication that I cannot enjoy any real measure of success if I do not utilize the "standard". Now I am not talking about the "you can't get the girl if you don't drive a" type of advertising gimmick. There is much more than a Cadillac/Chevy type of snobbery lurking here. If that were the case, anyone with any sense of

individuality would ignore it. I could. You could. Do we all use Dial soap? No. Do we all drink Coca-Cola? No. And so on.

But there is an ideological tyranny being set up here - skulking in the background and forming a perimeter around our freedom of choice! The technique is called BANDWAGON. And it is a particularly insidious form of propaganda. When properly used, it can even be unknowingly self-inflicted. ("Well, I'm not sure, Mr. Salesperson, but it has to be IBM compatible.") But I must repeat- I am NOT against the IBM PC or the company itself. What I AM against is this slavery to the concept of compatibility- of ANY kind! First it is "nice" to be compatible; then it becomes "fashionable"; next we "ought" to be compatible; and finally, we "must" be compatible.

Let me just throw out some realities. I don't care how many businesses out there use computers. For every one that does, there are at least twenty that do not. Of the ones that do, many do it badly or inefficiently. We have come a way in the last five years or so; but we're not where some might think. Computers are not every day toaster-like appliances in the office or in the home. There is a long way to go. The market has only been scratched on the surface in terms of numbers; and barely even that when it comes to the relation between capability and actual use. The "paperless" society is a forever away, and maybe even then, still someone's pipedream. This is the encouraging news! There's still time to avoid mass conformity!

I have used electronic mail since 1983 and never felt the need to be compatible. I ran a large Parish and School for 3 years on a CoCo and three programs. Not once did I need to be compatible. I have written every piece of personal correspondence and magazine article since 1981 on a CoCo ...sans compatibility. I keep all my business and personal records on my CoCo. Never once has anyone ever convinced me I need to be compatible. I don't care what computer you use or like. If your TI still works, fine. If your Sinclair continues to hum, all the better. If your Epson QX 10 and Valdocs interface suits you, perfect! Even if your dream is a spanking new IBM/ OS-2/ 386 monster, I have no quarrel.

It is simple. When the push for compatibility reaches the fever pitch it has

today, then it is no longer compatibility, it is CONFORMITY. Let's take a look at it from the eyes of my electronic thesaurus. I punched in the letters C-O-N-F-O-R-M. Following are the synonyms regurgitated at the touch of a button:

REGULATE, SUBMIT, COMPLY, OBEY, FOLLOW, STANDARDIZE, MIND. SHAPE, FIT IN, COALESCE.

Face it! even a dumb machine knows all the negative connotations of the "C-Word". How much more aware should we be? We, who not only know the mere "book meanings", but also the living realities in the past and present that we can attach to words such as those?

If you are still reading this and have not written me off as another paranoid-schizo-survivalist from the northwest, I end my tirade on this note. In the 40's and 50's people feared computers and the spectre of Orwell's 1984. The reason that picture has been held at bay is due to the invention and proliferation of the PERSONAL COMPUTER! There are many countries less fortunate than ours where personal computers are less prevalent than guns, and both are illegal possessions. My hope is that no matter what computer we choose to purchase in our free, competitive market, that we all maintain the desire, and the right to keep personal computers exactly that: personal! The CoCo is one of the most personal of all computers while still very powerful. C'mon forget the "C-word" and have some fun!

NEW ** NEW ** NEW ** NEW ** NEW ** NEW

Basic09 Subroutine Package

A must package for anyone writing programs in Basic09. This collection includes routines to convert strings between upper and lower case, nifty routines to display menus and disk directories (CoCo3 only), "midstring" replace, SOUND routines, Extended Color Basic DRAW emulator, LINEINPUT with visual editing, file handlers for file size, modification dates, setting file size, etc. PLUS much more! 24 routines in all, all written in super-fast machine language. Complete documentation makes it easy to interface to your programs.

OS9 Level 1/2 \$24.95

Ultra Label Maker 09

The original Ultra Label Maker received rave reviews! Now it's available for OS-9 users. This Cadillac of label making utilities will turn your printer into a label factory. Labels are created on the terminal screen with complete previewing--you'll see how the label will look before you print a single one, even underlining and italics are shown on screen. Formatting is a snap with auto-centering, justification, etc. Automatic numbering option. You've got to see this to believe it.

512K OS9 Level 2 \$19.95
RS-Dos 32K \$14.85

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Bob van der Poel Software
17435-57 Avenue
Edmonton, Alberta
Canada T6M 1E1

NEW ** NEW ** NEW ** NEW ** NEW ** NEW

Continued From 5

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350 FOR I=0 TO 30:NEXT
360 A$=INKEY$
370 IF C>0 AND (PEEK(341) AND 8)
=0 THEN C=C-1:GOTO 310
380 IF C<6 AND (PEEK(342) AND 8)
=0 THEN C=C+1:GOTO 310
390 IF A$<>CHR$(13) THEN 360
400 ON C+1 GOTO 800,500,550,600,
700,100,950
500 IF (PEEK(&HFF22)AND1) THEN 1
10
510 A=USR5(-2):PRINT " ":GOTO 1
10
550 CLS:A=USR5(0)
560 IF INKEY$="" THEN 560 ELSE 1
10
600 CLS:PRINT"RTTY RECEIVE M
ARK--><--SPACE":R=USR1(B):GOTO 1
10
700 S$="LOAD FILE":GOSUB 900
710 IF A$="" AND D THEN 110
720 CLS:PRINT@229,"LOADING ";A$
730 IF D THEN F=1 ELSE F=-1
740 OPEN"I",F,A$:A=USR2(0)
750 IF EOF(F) THEN 790
760 LINEINPUT #F,A$
770 A$=A$+CHR$(13):A=USR3(A$)
780 IF A THEN 750
790 CLOSE F:T=USR4(0):R=0:GOTO 1
10
800 IF R=0 THEN 110
810 S$="SAVE FILE":GOSUB 900:IF
A$="" THEN 110
830 CLS:PRINT@229,"SAVING ";A$
840 IF D THEN F=1 ELSE F=-1:GOTO
870
850 PRINT@293,"ARE YOU SURE (Y/N
)";:INPUT S$
860 IF S$<>"Y" THEN 110
870 PRINT@293,"":OPEN"O",F,A$
880 A=USR5(F):CLOSE F:GOTO 110
900 CLS:PRINTS$:PRINT
910 LINEINPUT"FILENAME?";A$
920 RETURN
950 B=B+1:IF B>3 THEN B=0
960 PRINT@269,"";:GOTO 210

```


Hard Disk Mania Sweeps America!

Experts Blame "Incredibly Sane" Low-Cost, High-Performance Interface

This year, 1988, may go down in CoCo history as "The Year of the Hard Disk". The Burke & Burke CoCo XT hard disk interface has made high-performance hard disk systems a reality for hundreds of satisfied Color Computer users!

Megabytes, not Megabucks.

The CoCo XT hard disk interface from **Burke & Burke** lets you connect up to 2 low cost, PC compatible 5-120 Megabyte capacity hard drives to your CoCo. You buy the drive, Western Digital WD1002-WX1 or WD1002-27X (RLL) controller, and a case from the PC dealer of your choice. Just plug them into the CoCo XT, plug the CoCo XT into your Multi-PAK, and you have a 20 Meg OS9 hard disk system for under \$450!

Great for multi-user systems! The CoCo XT interface uses advanced "NO HALT" hard disk controllers, which do not halt your CoCo and do not disable or use interrupts during hard disk access. You get full type-ahead, and the system clock does not lose time during hard disk access. Fully compatible with most RS-232 expansion ports!

CoCo XT (with anodized housing, 60 page user manual, hard disk back-up utility and new, Version 2.3 drivers for use with OS9 & HYPER-I/O) -- \$69.95. Or choose the **CoCo XT-RTC** (includes real-time clock/calendar with battery backup) -- \$99.95

XT-ROM: THE PROFESSIONAL TOUCH -- Automatically boots and reboots OS9 from hard disk. A great convenience; an excellent choice for BBS, home control, and imbedded OS9 applications. Installs in your hard disk controller's BIOS ROM socket -- \$19.95.

Now: Hard Disk for BASIC

"Dynamic Disk Interface" runs hard drives, big floppies, and more!

You or someone that you know may have the 35 Track Blues. It strikes hundreds of CoCo users every year. One day you wake up, and say to yourself, "These 35 track floppy disks are just too small."

There's only one cure. More storage. Get it. With HYPER-I/O, from Burke & Burke.

HYPERformance

HYPER-I/O modifies the RS-DOS Disk BASIC in your CoCo 1, 2, or 3 to provide a "Dynamic Disk Interface". Use your existing BASIC and RS-DOS software with hard disk interfaces (CoCo XT, DISTO, others), RAM Disks, and any mix of floppy drives from 160K to 720K each.

If you use a hard disk, HYPER-I/O divides it into a number of BASIC directories. Each directory can be as small as 80K or as large as 3 Megabytes. You can mix directories of various sizes, add new directories, or delete directories at will. HYPER-I/O and OS9 can share one or more hard disks; you can even add one or the other at any time without reformatting!

BASIC for the '90's

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July 11, 1988 14:37:30

Shell

OS9: xmode /w6 type=0
OS9: inlz /w6
OS9: reb c=>/w6 &
&007



RSB COPR. 1988 BURKE & BURKE
DISK EXTENDED COLOR BASIC 2.1
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OK
LOAD "DEMO"
OK
LIST
10 PMODE 4:SCREEN,1,1
20 X=RND(256)-1:Y=RND(192)-1
30 XS=RND(256-X)-1:YS=RND(192-Y)-1
40 LINE (X,Y)-(X+XS,Y+YS),PSET,BF



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Our R.S.B. software creates an OS9-compatible version of Disk Extended Color BASIC by reading your CoCo's ROM chips. We add new software for OS9-style graphics, sound, printer, and disk I/O. Of course, you can't use R.S.B. to run machine language programs, and some BASIC commands work slightly differently under R.S.B. Although R.S.B. loads and saves files using OS9's file format, we've also included utilities to transfer BASIC programs and data files between OS9 and BASIC disks.

Did you know that Level 2 OS9 always runs at double-speed? This makes R.S.B. very fast. You must have a CoCo 3 with at least 128K RAM, and a floppy controller with Disk Extended Color BASIC 1.0, 1.1, 2.0, or 2.1 ROM, or CoCo 3 CDOS ROM, to use R.S.B.

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Deluxe PowerGraph Pt. II

Randy Krippner

In this issue we conclude Deluxe Power Graph. It's been a lot of fun working on this program, and I'd like to thank everyone who helped with the development of the program, especially Bob van der Poel. His suggestions early in the development of DPG made it a much more interesting program.

If you find the prospect of typing the entire listing intimidating, you can get a copy of DPG on disk for \$9.95 from CCMDisk Service. Just write to them and order the Clip Disk for July/August. Please don't write to me requesting disk copies of the program. I'm sorry, but I just don't have the time or the resources.

Several people have asked about enhancing DPG. I have several enhancements in mind for the program. One enhancement, an "Undo" function, has already been developed. (People who get the ClipDisk will obtain the latest version of the program, including the Undo function. This enhancement was added too late to be able to get it in the magazine, but we were able to get it on the ClipDisk version.)

Adding other features to DPG is not easy. The program is just about "maxed out" as far as memory is concerned. The maximum size DPG can have is about 24K, and it is pretty close to that already.

Why, I hear someone asking, can the program only be 24K long when Basic09 gives us about 40K + to play with? You have to remember that part of that free memory is taken up by the GFX2, Inkey and Syscall modules. The rest of that free memory is eaten up by the graphics buffers used to save/load pictures and by the cut and paste buffer. But there are a few little tricks that can be used to get around this difficulty.

If you want to tinker with the program on your own, here's a little hint for you... Although DPG is maxed out, there is nothing to prevent you from setting up a utility program in another window. Remember, the Coco 3 is a multi-processing, mutli-user computer under OS9 L2. We could have another program chock full of DPG utilities running in another window, and switch back and forth just by pressing the CLEAR key to switch windows.

What makes this possible is not just the fact that OS9 L2 is a multi-processing operating system, but also that OS9 L2 graphics buffers are system wide. This means that, for example, once you "cut" a portion of a picture and place it in the cut/paste buffer with

DPG, that graphics buffer can be accessed by a different program running in a different window. So after doing a "cut", we could flip to a new window that is running a utility program, somehow modify the contents of the buffer with the utility, flip back to DPG and then paste the modified buffer back into our picture.

Bugs: Well, not exactly a bug. Let's call it a quirk. You can't PACK DPG. Well, you can, but it won't work right. Everything will work until you try to save or load a picture. It will go through the motions, but in actual fact nothing will be saved to disk.

So don't try to PACK the program. You'll have to execute it from within Basic09. If someone comes up with a quick fix for this, I'll pass it along.

The Unicorn: I've been mentioning the Unicorn BBS in the past. Due to circumstances beyond our control, the Unicorn is currently down. By the time you read this, it should be back on-line, but operating at a different phone number. As soon as I know what the new number is, I'll mention it in a future column.

Next time we'll take a look at Multi-Vue. It's an interesting piece of software, but Tandy and Microware failed to provide a way to make new Multi-Vue icons. So next time we'll present a Basic09 program that not only permits the creation of new icons, but which will also automatically generate AIFs (application information files).

As always, if you have any questions or comments, please write to met at: Randy Krippner, 1014 W. Hwy. 114, Lot 39, Hilbert, WI 54129.

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```

0109 ENDIF
010B UNTIL b2<>0
0116 RUN gfx2("owend")
0123 END
PROCEDURE TxFunc
0000 PARAM trans,bold,rev:INTEGER
000F DIM x,y,count:INTEGER; b1,b2:BYTE
0028 DIM s(3):INTEGER; t(3):STRING[13]
0044 s(1)=rev\s(2)=bold\s(3)=trans
0065 RUN gfx2("owset",1,11,6,18,7,2,0)
0087 RUN wset(3)
008F RUN gfx2("curxy",1,0)
00A2 RUN gfx2("revon")
00AF PRINT "TEXT OPTIONS ";
00C2 RUN gfx2("revoff");
00D0 FOR count=1 TO 3
00E0 READ t(count)
00E9 RUN gfx2("curxy",1,count+1)
0100 IF s(count)<>0 THEN
010F RUN gfx2("revon")
011C PRINT t(count);
0125 RUN gfx2("revoff")
0133 ELSE
0137 PRINT t(count);
0140 ENDIF
0142 NEXT count
014D REPEAT
014F RUN readmouse(x,y,b1,b2)
0168 IF b1<>0 THEN
0174 RUN convert(x,y)
0183 y=y-1
018E IF y>0 AND y<4 THEN
01A1 IF s(y)=0 THEN
01B0 s(y)=1
01B8 RUN gfx2("revon")
01CB RUN gfx2("curxy",1,y+1)
01DF PRINT t(y);
01E8 RUN gfx2("revoff")
01F6 ELSE
01FA s(y)=0
0205 RUN gfx2("curxy",1,y+1)
021C PRINT t(y);
0225 ENDIF
0227 ENDIF
0229 UNTIL b2<>0
0236 trans=s(3)\bold=s(2)\rev=s(1)
0254 RUN gfx2("owend")
0261 END
0263 DATA "Reverse Video","Bold Face","Transparent"
PROCEDURE DskFunc
0000 PARAM pal(16):BYTE
000C DIM x,y,count:INTEGER; b1,b2:BYTE
0025 DIM t:STRING[6]; file:STRING[30]
003C RUN gfx2("owset",1,18,1,10,7,2,0)
005E RUN wset(3)
0066 RUN gfx2("curxy",1,0)
0079 RUN gfx2("revon")
0086 PRINT "DISK"
0091 RUN gfx2("revoff")
009F FOR count=1 TO 3
00AF READ t
00B4 RUN gfx2("curxy",1,count+1)
00CB PRINT t;
00D1 NEXT count
00DC REPEAT

```

```

000E RUN readmouse(x,y,b1,b2)
00F7 UNTIL b1<>0 OR b2<>0
0109 RUN convert(x,y)
0118 RUN gfx2("owend")
0125 RUN gfx2("owend")
0132 IF b2<>0 OR y<2 OR y>4 THEN
014C END
0150 ENDIF
015E IF y=4 THEN
0167 t="Dir:"
0177 ELSE t="File:"
0188 ENDIF
0195 RUN getfile(t,file)
0197 IF LEN(file)<1 THEN
0199 END
0197 ENDIF
0199 IF y=2 THEN
01A5 RUN savepic(file,pal)
01B4 ELSE
01B8 IF y=3 THEN
01C4 RUN loadpic(file,pal)
01D3 ELSE
01D7 IF y=4 THEN
01E3 RUN dudir(file)
01ED ENDIF
01EF ENDIF
01F1 ENDIF
01F3 END
01F5 DATA "Save","Load","Dir"
PROCEDURE GetFile
0000 PARAM t:STRING[6]; file:STRING[30]
0017 RUN gfx2("owset",1,0,4,38,4,2,0)
0039 RUN wset(4)
0041 RUN gfx2("curon")
004E SHELL "mode echo"
005C RUN gfx2("curxy",1,1)
006F PRINT t;
0075 RUN gfx2("curxy",6,1)
0088 INPUT file
008D SHELL "mode -echo"
009C RUN gfx2("curoff")
00AA RUN gfx2("owend")
00B7 END
PROCEDURE DuDir
0000 PARAM file:STRING[30]
000C DIM x,y:INTEGER; b1,b2:BYTE
0021 DIM enum:INTEGER
0028 ON ERROR GOTO 100
002E RUN gfx2("owset",1,0,0,40,12,0,2)
0050 RUN wset(4)
0058 SHELL "dir",+file
0064 PRINT "<Click when ready>";
007B REPEAT
007D RUN readmouse(x,y,b1,b2)
0096 UNTIL b1<>0 OR b2<>0
00A8 END
00B8 enum=ERR
00BA RUN oops(enum)
00C3 GOTO 20
00CD END
PROCEDURE LoadPic
0000 PARAM file:STRING[30]; pal(16):BYTE
0017 DIM enum:INTEGER
001E ON ERROR GOTO 100
0024 RUN duwait

```

```

0028 TYPE registers=cc,a,b,dp:BYTE; x,y,u:INTEGER
004D DIM regs:registers; count,path:INTEGER
0060 OPEN #path,file:READ
006F GET #path,pal
0079 FOR count=1 TO 16
0089 RUN gfx2("palette",count-1,pal(count))
00A7 NEXT count
00B2 FOR count=0 TO 3
00C2 RUN gfx2("get",20,1,0,count*48,319,48)
00E4 regs.a=1 \regs.b=$84 \regs.x=$1401 \regs.y=1
0112 RUN syscall($8E,regs)
0120 regs.a=path
012C RUN syscall($89,regs)
013A RUN gfx2("put",20,1,0,count*48)
0155 regs.a=1 \regs.b=$84 \regs.x=$1401 \regs.y=0
0183 RUN syscall($8E,regs)
0191 RUN gfx2("killbuff",20,1)
01A7 NEXT count
01B2 RUN duarrow
01B6 CLOSE #path
01BC END
01C1 enum=ERR
01CA RUN oops(enum)
01D4 GOTO 20
PROCEDURE SavePic
0000 PARAM file:STRING[30]; pal(16):BYTE
0017 DIM pmt:STRING[13]; yes:BOOLEAN
0029 DIM enum:INTEGER
0030 ON ERROR GOTO 100
0036 RUN duwait
003A TYPE registers=cc,a,b,dp:BYTE; x,y,u:INTEGER
005F DIM regs:registers; count,path:INTEGER
0072 CREATE #path,file:WRITE
0081 PUT #path,pal
008B FOR count=0 TO 3
009B RUN gfx2("get",20,1,0,count*48,319,48)
00DB regs.a=1 \regs.b=$84 \regs.x=$1401 \regs.y=1
00EB RUN syscall($8E,regs)
00F9 regs.a=path
0105 RUN syscall($8A,regs)
0113 regs.a=1 \regs.b=$84 \regs.x=$1401 \regs.y=0
0141 RUN syscall($8E,regs)
014F RUN gfx2("killbuff",20,1)
0165 NEXT count
0170 CLOSE #path
0176 RUN duarrow
017A END
017F enum=ERR
0188 IF enum=218 THEN
0194 pmt="Re-Write?"
01A4 RUN yesno(pmt,yes)
01B3 IF yes THEN
01BC SHELL "del "+file
01C8 GOTO 10
01CC ELSE
01D0 GOTO 20
01D4 ENDIF
01D6 ENDIF
01D8 RUN oops(enum)
01E2 GOTO 20
PROCEDURE DuWait
0000 RUN gfx2("gcset",202,4) \ END
PROCEDURE Du11
0000 RUN gfx2("gcset",202,5)
0013 END
PROCEDURE ChgClr

```

```

0000 PARAM color,x:INTEGER
000B IF x<22 OR x>37 THEN
001E END
0020 ELSE
0024 color=x-22
002F ENDF
0031 END
PROCEDURE ChgPat
0000 PARAM x,pal:INTEGER
000B IF x<11 OR x>20 THEN
001E END
0020 ELSE
0024 x=x-12
002F pal=x
0037 IF pal<0 OR pal>8 THEN pal=0 \ ENDF
0052 ENDF
0054 END
PROCEDURE main
0000 DIM tool,color,pal,brush,x,y,bufx,bufy,bstat:INTEGER
0027 DIM pal(16):BYTE
0033 DIM trans,bold,rev,ctrl:INTEGER
0046 DIM needmenu,done,yes:BOOLEAN
0055 DIM b1,b2:BYTE
0060 DIM pmt:STRING[13]
006C tool=1 \color=2 \pat=0 \brush=100
0088 trans=0 \bold=0 \rev=0
009D bstat=0 \bufx=0 \bufy=0
00B2 needmenu=FALSE \yes=FALSE
00BE done=FALSE
00C4 RUN setmouse(pal)
00CE RUN gfx2("clear")
00DB RUN menu(color,pal,brush)
00EF REPEAT
00F1 IF needmenu THEN
00FA RUN menu(color,pal,brush)
010E needmenu=FALSE
0114 ENDF
0116 RUN readmouse(x,y,b1,b2)
012F IF b1<>0 THEN
013B RUN convert(x,y)
014A RUN ctrl(x,y,ctrl)
015E IF ctrl<>0 THEN
016A ON ctrl GOSUB 10,20,30,40,50,60,70,80,90
0195 ENDF
0199 ENDF
01A1 UNTIL done
01AE RUN toolmenu(tool)
01B4 needmenu=FALSE
01B6 RETURN
01C6 RUN switchmenu(pal,color,bold,rev,trans,brush)
01DC needmenu=FALSE
01E2 RUN curstats(color,pal,brush)
01F6 RETURN
01F8 RUN bufmenu(bufx,bufy,bstat)
020F needmenu=TRUE
0215 RETURN
0217 RUN dskfunc(pal)
0224 needmenu=TRUE
022A RETURN
022C RUN gfx2("owend")
023C RUN dufunc(tool,color,trans,bold,rev,pat,brush)
0264 needmenu=TRUE
026A pmt="Really Clear"
026C RUN yesno(pmt,yes)
0282

```

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```

0291 IF yes THEN
029A   RUN gfx2("owend")
02A7   RUN gfx2("clear")
02B4   needmenu=TRUE
02BE   ELSE
02C4   needmenu=FALSE
02C6   ENDIF
02C8   70
02DC   popt="Really End"
02EB   RUN yesno(popt,yes)
02F4   IF yes THEN
0301   RUN gfx2("owend")
0305   RUN defaults
0307   END
030B   ELSE
0311   needmenu=FALSE
0313   ENDIF
0315   80
0327   RUN chgpat(x,pat)
033B   RUN curstats(color,pat,brush)
0341   needmenu=FALSE
0343   RETURN
0343   90
0343   RUN chgclr(color,x)
0355   RUN curstats(color,pat,brush)
0369   RUN patbar(color)
0373   needmenu=FALSE
0379   RETURN
PROCEDURE YesNo
0000   PARAM popt:STRING[13]; yes:BOOLEAN
0012   DIM x,y:INTEGER; b1,b2:BYTE
0027   RUN gfx2("owset",1,1,4,15,7,2,0)
0049   RUN wset(4)
0051   RUN gfx2("box",15,31,23,39)
0058   RUN gfx2("box",63,31,71,39)
007F   RUN gfx2("curxy",1,1)
0092   PRINT popt;
0098   RUN gfx2("curxy",4,4)
00AB   PRINT "YES";
00B3   RUN gfx2("curxy",10,4)
00C6   REPEAT
00CD   REPEAT
00CF   RUN readmouse(x,y,b1,b2)
00D1   UNTIL b1<>0
00E5   RUN convert(x,y)
0104   IF x=2 AND y=4 THEN
0117   yes=TRUE
011D   RUN gfx2("fill",16,32)
012F   x=999
0137   ELSE
013B   IF x=8 AND y=4 THEN
014E   yes=FALSE
0154   RUN gfx2("fill",64,32)
0166   x=999
016E   ENDIF
0170   UNTIL x=999
0172   RUN gfx2("owend")
018B   END
PROCEDURE menu
0000   PARAM color,pat,brush:INTEGER
000F   DIM count,x:INTEGER
001A   DIM t:STRING[7]
0026   RUN gfx2("owset",1,0,0,40,5,2,0)
0048   RUN gfx2("box",0,12,319,39)
0060   RUN gfx2("bar",0,8,319,12)
0078   FOR count=1 TO 7
0088   READ t,x
0091   RUN gfx2("curxy",x,0)
00A6   PRINT t;
00AC   NEXT count;
00B7   RUN curstats(color,pat,brush)
00CB   RUN patbar(color)
00D5   x=175
00DC   RUN gfx2("box",174,14,304,32)
00F4   FOR count=0 TO 15
0104   RUN gfx2("color",count)
0116   RUN gfx2("bar",x,15,x+8,31)
0133   x=x+8
013E   NEXT count;
0149   RUN gfx2("color",2)
0159   RUN quarrow
015D   END
015F   DATA "TOOL",0,"SWITCH",5,"BUFFER",12
0185   DATA "DISK",19,"DRAW",24,"CLEAR",29,"EXIT",35
PROCEDURE PatBar
0000   PARAM color:INTEGER
0007   DIM count,x:INTEGER
0012   RUN gfx2("color",0)
0022   RUN gfx2("bar",87,15,167,31)
0039   RUN gfx2("color",2)
0049   RUN gfx2("box",86,14,168,32)
0060   RUN gfx2("color",color)
0072   RUN gfx2("bar",87,15,163,31)
0089   x=103
0090   FOR count=1 TO 8
00A0   RUN gfx2("pattern",205,count)
00B7   RUN gfx2("bar",x,15,x+8,31)
00D4   x=x+8
00DF   NEXT count;
00EA   RUN gfx2("color",2)
00FA   RUN gfx2("pattern",0,0)
010F   END
PROCEDURE CurStats
0000   PARAM color,pat,brush:INTEGER
000F   RUN gfx2("color",0)
001F   RUN gfx2("bar",7,15,79,31)
0036   RUN gfx2("color",color)
0048   RUN gfx2("bar",7,15,23,31)
005F   IF pat<>0 THEN
006B   RUN gfx2("pattern",205,pat)
0082   ENDIF
0084   RUN gfx2("bar",39,15,55,31)
009B   RUN gfx2("pattern",0,0)
00B0   RUN gfx2("put",1,brush,71,23)
00C9   RUN gfx2("color",2)
00D9   END
PROCEDURE control
0000   PARAM x,y,ctrl:INTEGER
000F   DIM count,xmin,ymin,xmax,ymax:INTEGER
0026   FOR count=1 TO 9
0036   READ xmin,ymin,xmax,ymax
0047   IF x>=xmin AND x<=xmax AND y>=ymin AND y<=ymax THEN
006C   ctrl=count
0074   count=10
007B   ENDIF
007D   NEXT count
0088   END
008A   DATA 0,0,3,0,5,0,10,0,12,0,17,0,19,0,22,0
00BE   DATA 24,0,27,0,24,0,33,0,35,0,38,0
00E6   DATA 11,2,20,3,22,2,37,3

```

```

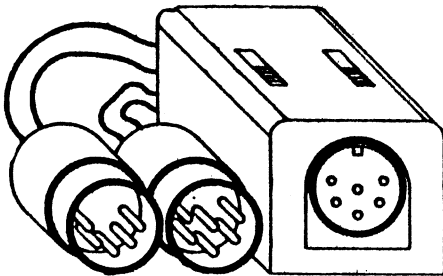
PROCEDURE toolmenu
0000  PARAM tool: INTEGER
0007  DIM x,y,count: INTEGER; b1,b2: BYTE
0020  DIM t: STRING[6]
002C  RUN gfx2("owset",1,0,0,11,12,2,0)
004E  RUN wnsset(3)
0056  RUN gfx2("curxy",1,0)
0069  RUN gfx2("revon")
0076  PRINT "TOOLS ";
0082  REPEAT
0084  RUN gfx2("revoff")
0092  RESTORE
0094  FOR count=1 TO 8
00A4  READ y,t
00AD  RUN gfx2("curxy",1,y)
00C2  IF count=tool THEN
00CF  RUN gfx2("revon")
00DC  PRINT t;
00E2  RUN gfx2("revoff")
00F0  ELSE
00FA  PRINT t;
00FF  ENDIF
0107  NEXT count
0109  REPEAT
0122  RUN readmouse(x,y,b1,b2)
0134  IF b1<>0 THEN
0140  RUN convert(x,y)
014F  IF y>1 AND y<10 THEN
0162  tool=y-1
016D  ENDIF
0171  UNTIL b2<>0
017C  RUN gfx2("owend")
0189  END
018B  DATA 2,"Point",3,"line",4,"Box",5,"Bar"
01B6  DATA 6,"Circle",7,"Ellipse",8,"Fill",9,"text"
PROCEDURE bufmenu
0000  PARAM bufx,bufy,bstat: INTEGER
000F  DIM x,y,count: INTEGER; b1,b2: BYTE
0028  DIM t: STRING[6]
0034  RUN gfx2("owset",1,11,1,12,8,2,0)
0056  RUN wnsset(3)
005E  RUN gfx2("curxy",1,0)
0071  RUN gfx2("revon")
007E  PRINT "BUFFER ";
008B  RUN gfx2("revoff")
0099  FOR count=1 TO 4
00A9  READ t
00AE  RUN gfx2("curxy",1,count+1)
00C5  PRINT t;
00CB  NEXT count
00D6  REPEAT
00D8  RUN readmouse(x,y,b1,b2)
00F1  UNTIL b1<>0 OR b2<>0
0103  RUN gfx2("owend")
0110  RUN gfx2("owend")
011D  RUN convert(x,y)
012C  IF b2<>0 OR y<2 OR y>5 THEN
0146  END
0148  ENDIF
014A  IF y=2 THEN
0156  RUN cut(bufx,bufy,bstat)
016A  ELSE
016E  IF y=3 THEN

```



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```

017A RUN paste(bufx,bufy,bstat)
018E ELSE
0192 IF y=4 THEN
019E RUN savebuf(bufx,bufy,bstat)
01B2 ELSE
01B6 IF y=5 THEN
01C2 RUN loadbuf(bufx,bufy,bstat)
01D6 ENDIF
01D8 ENDIF
01DA ENDIF
01DE ENDIF
01E0 DATA "Cut", "Paste", "Save", "Load"
PROCEDURE SaveBuf
0000 PARAM bufx,bufy,bstat:INTEGER
000F DIM enum:INTEGER
0016 DIM pmpt:STRING[13]; yes:BOOLEAN
0028 ON ERROR GOTO 100
002E TYPE registers=cc,a,b,dp:BYTE; x,y,u:INTEGER
0053 DIM regs:registers
005C DIM t:STRING[6]; file:STRING[30]
0073 DIM path:INTEGER
007A IF bstat=0 THEN END
0087 ENDF
0089 t="SvBuf"
0095 RUN getfile(t,file)
00A4 IF LEN(file)<2 THEN END
00B4 ENDF
00B8 RUN duwait
00C7 CREATE #path,file:WRITE
00D5 WRITE #path,bufx,bufy
00EC regs.a=1\regs.b=$84
0103 regs.x=$1301\regs.y=1
0111 RUN syscall($8E,regs)
011D regs.a=path
012B RUN syscall($8A,regs)
0142 regs.a=1\regs.b=$84
0159 regs.x=$1301\regs.y=0
0167 RUN syscall($8E,regs)
016D CLOSE #path
0171 RUN duarrow
0176 END
017E enum=ERR
018B IF enum=218 THEN
019B pmpt="Re-Write?"
01AA RUN yesno(pmpt,yes)
01BF IF yes THEN
01C3 SHELL,"del "+file
01C7 GOTO 10
01CB ELSE
01CD GOTO 20
01CF ENDF
01D9 RUN oops(enum)
PROCEDURE loadbuf
0000 PARAM bufx,bufy,bstat:INTEGER
000F DIM enum:INTEGER
0016 DIM file:STRING[30]; t:STRING[6]
002D TYPE registers=cc,a,b,dp:BYTE; x,y,u:INTEGER
0052 DIM regs:registers
005B DIM path,x1,y1:INTEGER
006A ON ERROR GOTO 100
0070 IF bstat<>0 THEN
007C RUN gfx2("killbuff",19,1)
0092 ENDF
0094 t="LBuf"
009F RUN getfile(t,file)
00AE IF LEN(file)<1 THEN END
00BC ENDF
00BE RUN duwait
00C2 OPEN #path,file:READ
00CE READ #path,bufx,bufy
00DC RUN gfx2("get",19,1,0,0,bufx,bufy)
00FD regs.a=1\regs.b=$84
0114 regs.x=$1301\regs.y=1
012B RUN syscall($8E,regs)
0139 regs.a=path
0145 RUN syscall($89,regs)
0153 CLOSE #path
0159 regs.a=1\regs.b=$84
0170 regs.x=$1301\regs.y=0
0187 RUN syscall($8E,regs)
0195 bstat=1
019C RUN duarrow
01A0 END
01A5 20
01AE 100
01B5 enum=ERR
01B5 bstat=0
01BF RUN oops(enum)
GOTO 20
PROCEDURE SwitchMenu
0000 PARAM pal(16):BYTE; color,bold,rev,trans,brush:INTEGER
0022 DIM x,y,count:INTEGER; b1,b2:BYTE
003B DIM t:STRING[8]
0047 RUN gfx2("owret",1,4,1,12,8,2,0)
0069 RUN wset(3)
0071 RUN gfx2("curxy",1,0)
0084 RUN gfx2("revon")
0091 PRINT SWITCH
009E RUN gfx2("revoff")
00AC FOR count=1 TO 4
00BC READ t,x
00C5 RUN gfx2("curxy",1,x)
00DA PRINT t
00E0 NEXT count
00EB REPEAT
00ED RUN readmouse(x,y,b1,b2)
0106 IF b1<>0 THEN
0112 RUN convert(x,y)
0121 IF y=2 THEN
012D RUN chgpal(pal,color)
013C ELSE
0140 IF y=3 THEN
014C RUN mon
0154 ELSE
0160 IF y=4 THEN
0178 RUN txtfunc(trans,bold,rev)
0184 ELSE
018E IF y=5 THEN
0190 RUN getbrush(brush)
0192 ENDF
0194 ENDF
0196 ENDF
0198 UNTIL b2<>0 OR b1<>0
01AA RUN gfx2("owend")
01B7 END
01B9 DATA "Palette",2,"Monitor",3,"Txt Opt",4,"Brushes",5
0000 PARAM bufx,bufy,bstat:INTEGER
000F DIM enum:INTEGER

```

```

0016 DIM sx,ox,nx,sy,oy,ny:INTEGER
0031 DIM b1,b2:BYTE
003C RUN duarrow
0040 RUN gfx2("color",2)
0050 DIM siz:INTEGER
0057 ON ERROR GOTO 100
005D DIM valid:BOOLEAN
0064 IF bstat<>0 THEN
0070 RUN gfx2("killbuff",19,1)
0086 bstat=0
008D ENDIF
008F REPEAT
0094 RUN readmouse(sx,sy,b1,b2)
00AD UNTIL b1<>0 OR b2<>0
00BF IF b2<>0 THEN END \ ENDIF
00CE RUN dupen
00D2 RUN gfx2("logic","xor")
00E5 ox=sx \oy=sy
00F5 RUN delay
00F9 REPEAT
00FB RUN qmouse(nx,ny,b1,b2)
0114 IF nx<>ox OR ny<>oy THEN
0129 RUN gfx2("box",sx,sy,ox,oy)
0148 RUN gfx2("box",sx,sy,nx,ny)
0167 ox=nx \oy=ny
0177 siz=(nx-sx)*(ny-sy)
018B IF siz<1 OR siz>15312 THEN
019F RUN duil
01A3 valid=FALSE
01A9 ELSE
01AD RUN dupen
01B1 valid=TRUE
01B7 ENDIF
01B9 ENDIF
01BB UNTIL b1<>0 OR b2<>0
01CD RUN gfx2("box",sx,sy,ox,oy)
01EC RUN gfx2("logic","off")
01FF IF b2<>0 THEN
020B END
020D ENDIF
020F IF NOT(valid) THEN
0219 RUN duarrow
021D RUN gfx2("bell")
0229 GOTO 10
022D ENDIF
022F bufx=nx-sx \bufy=ny-sy
0247 RUN gfx2("get",19,1,sx,sy,bufx,bufy)
026C bstat=1
0273 END
0275 enum=ERR
027E IF enum=194 THEN
028A RUN duarrow
028E GOTO 10
0292 ELSE
0296 RUN gfx2("logic","off")
02A9 RUN oops(enum)
02B3 END
02B5 ENDIF
PROCEDURE paste
0000 PARAM bufx,bufy,bstat:INTEGER
000F DIM enum:INTEGER
0016 ON ERROR GOTO 100
001C DIM nx,ny,ox,oy:INTEGER
002F DIM b1,b2:BYTE
003A RUN gfx2("color",2)

```

```

004A
0059
006C
007A
009F
00AF
00B1
00B3
00CF
00EB
00EF
00F3
00F5
00F9
010E
0133
0158
016B
017D
0189
01AE
01C1
01DC
01EF
0208
022D
023D
0241
0243
024E
0273
0286
0288
0291
02A4
02AE
PROCEDURE Oops
0000
0007
001C
003E
0046
0048
0057
0059
006E
0087
0094
PROCEDURE WnSet
0000
0007
002C

```

```

IF bstat=0 THEN END \ ENDIF
RUN gfx2("logic",xor)
nx=0 \ny=0
RUN gfx2("box",nx,ny,nx+bufx,ny+bufy)
ox=nx \oy=ny
REPEAT
RUN qmouse(nx,ny,b1,b2)
IF nx+bufx>319 OR ny+bufy>191 THEN
RUN duil
GOTO 10
ENDIF
RUN duarrow
IF nx<>ox OR ny<>oy THEN
RUN gfx2("box",ox,oy,ox+bufx,oy+bufy)
RUN gfx2("box",nx,ny,nx+bufx,ny+bufy)
ox=nx \oy=ny \
ENDIF
UNTIL b1<>0 OR b2<>0
IF b1<>0 THEN
RUN gfx2("box",ox,oy,ox+bufx,oy+bufy)
RUN gfx2("logic","off")
RUN gfx2("put",19,1,nx,ny)
RUN gfx2("logic",xor)
RUN qmouse(nx,ny,b1,b2)
ox=nx \oy=ny
RUN delay
ENDIF
UNTIL b2<>0
RUN gfx2("box",ox,oy,ox+bufx,oy+bufy)
RUN gfx2("logic","off")
enum=ERR
RUN gfx2("logic","off")
RUN oops(enum)
END
enum=ERR
RUN gfx2("logic","off")
PARAM enum:INTEGER
DIM x,y:INTEGER; b1,b2:BYTE
RUN gfx2("owset",1,5,8,30,6,0,2)
RUN wnsset(4)
PRINT
SHELL "error "+STR$(enum)
PRINT
PRINT "Click to continue"
RUN readmouse(x,y,b1,b2)
RUN gfx2("owend")
END
WnSet
PARAM wtype:INTEGER
TYPE registers=cc,a,b,dp:BYTE; x,y,u:INTEGER
DIM regs

```

CoCo Clipboard Magazine

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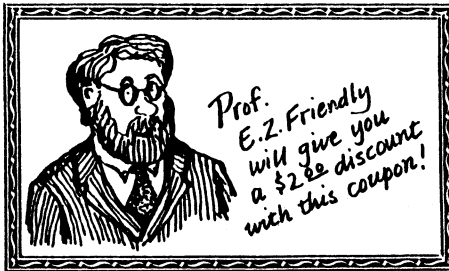
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Master Basic09

Bill Brady

Somehow a few things failed to appear in the printed copy of the column last issue. I do not know how this came to be, but I will repeat all of the missing parts here, and, hopefully, make the salient points clear.

Now what was that main point? Ah yes, SYSCALL, the why and when.

I tried to show you how error handling is greatly simplified by the use of syscall. I gave examples of creating a file, the first being the 'vanilla' Basic09 way, the other used syscall. Lets try again to get this example in a form that you can see. We are writing a program that uses a subroutine at 1000 as the 'catch all' error handler. At some point within the program, we are going to create a new file. If that file already exists, we will create a new file, using the same name, but append a ".1".

Here is method "A":

```
(* location 1000 is our generic
(* error handler

1 ON ERROR GOTO 1000

(*****

(* Here starts our subroutine
(* first we set up a new
(* error routine at loc 50
(* this is so we KNOW that
(* we got there from here
(* and not someplace else

40 ON ERROR GOTO 50

(* now we attempt to create
(* our file

CREATE #path,"filename":WRITE

(* OK we got past the CREATE
(* now we have to skip the
(* local error handler, and
(* restore the generic error
(* routine at 1000

ON ERROR GOTO 1000
GOTO 60

(* here is the local error handler
(* where we look to see if the file
(* already exists.. error 218
```

```
(* note that we could get here for
(* any of several reasons, so the
(* routine will enter the generic
(* handler if it gets anything other
(* than 218
```

```
50 en=ERR
IF en=218 THEN
    filename=filename+".1"
ELSE
    GOTO 1002
ENDIF
GOTO 40

60 (* continue with program

1000 en=ERR
1002 IF en=...
```

Here is method "B" (using syscall)

```
40 s.a=2\s.b=7\s.x=addr(filename)
RUN syscall($83,s)
IF s.b=218 THEN
    filename=filename+".1"
    GOTO 40
ELSE
    en=s.b
    GOTO 1002
ENDIF

($83 is the CREATE system call. Entry: a =
access mode, b = file
attributes, x = address of the pathlist.,
(filename). Exit:
a = path number, b = error code.)
```

A lot less work eh? Well, maybe, because you do have to define the "S" variable... we did that last time, remember the TYPE Statement? But you only have to set up the syscall register pak once in each program/procedure, and you can use it over and over. The differences between method A and method B include simplicity and speed. You also pick up some 'power'. Lets take a look in more detail.

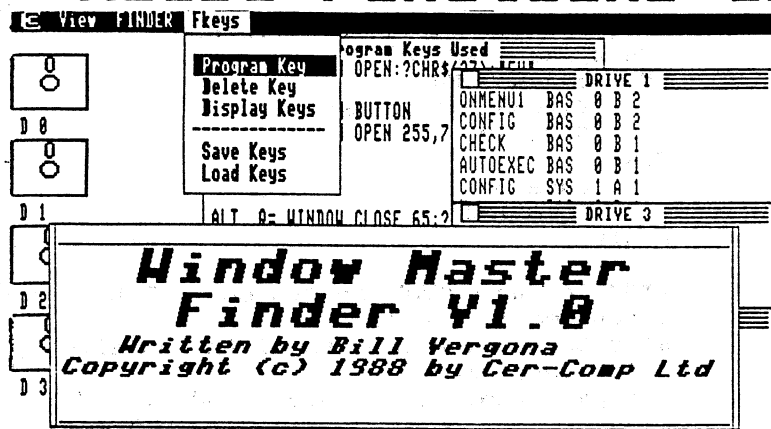
SIMPLICITY. Note the "IF s.b=218". The CREATE system call, like most system calls, returns error numbers in the B register. You grab and deal with the 'file already exists error' right there in the subroutine, no ON ERROR GOTO. You know precisely when and why the error 218 occurred. What could be simpler?

Continued On 24

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Window Master supports up to 54 different character sizes on the screen with 5 different character styles. You can have Bold, Italic, Underlined, Super-Script, Sub-script or Plain character styles or any combination of them in any character size. You can also change the text color and background at any time to get really colorful displays.

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Window Master is fully compatible with Enhanced Color Disk basic with over 50 Commands & functions added to fully support the Point & Click Window System. Window Master does not take any memory away from Basic, so you still have all the Basic Program memory available.

Hi-Resolution Displays

Window Master uses the full potential of the Color Computer 3 display by using the 225 vertical resolution display modes instead of the 192 or 200 resolution modes like most other programs. It uses either the 320/16 color mode or the 640/4 color display to give you the best display resolution possible, and can be switched to either mode at any time.

Window Master Features

Multiple Windows

Window Master supports multiple window displays with up to a maximum of 31 windows on the screen. Overlapping windows are supported, and any window can be made active or brought to the top of the screen. Windows can be picked up and moved anywhere on the screen with the mouse. There are 6 different Window styles to choose from and the window text, border and background color is selectable.

Pull Down Menus

Menus are completely programmable with up to 16 menus available. They can be added or deleted at any time in a program. Menu items can be enabled, disabled, checked or cleared easily under program control. Menu selection is automatically handled by Window Master & all you have to do is read a function variable to find out which menu was selected.

Buttons, Icons & Edit Fields

Each Window can have up to 128 buttons, Icons or Edit fields active, if you can fit that many. Buttons, Icons and Edit field selection is handled automatically by Window Master when the mouse is clicked on one. All you have to do is read a Dialog function to find out which Button, Icon, or Edit field was selected, its very simple.

Mouse & Keyboard Functions


Window Master automatically handles the Mouse pointer movement, display and button clicks. It will tell you the current screen coordinate, the local window coordinate, window number the mouse is in, the number of times the button was pressed, which window number it was clicked in and more. The Keyboard is completely buffered, and supports up to 80 programmable Function keys that can contain any kind of information or command sequences you can imagine. You can load and save function key sets at any time. So, you can have special sets of function keys for different tasks. The "Ctrl" key is supported so that you have a full control code keyboard available.


OPTIONS

```

CLEAR SCREEN 16,1,00,1,0,3,2,0
DOTS
BOX
CIRCLE
LINE
QUIT
-----
LOAD
SAVE
30 WINDOW OPEN 1,44,16,1,00,1,0,
3,2,0,"WINDOW GRAPHICS DEMO"
40 MW=1:' MY WINDOW #=1
50 ON MENU GOSUB 540
70 MENU ON
80 PROTECT 3
90 ON DIALOG GOSUB 630: DIALOG 0
N
BREAK
OK
RUN
    
```

WINDOW GRAPHICS DEMO

FOREGROUND COLOR 



SAVE FILE

ENTER FILE TO SAVE

GFXTEST.PIC:2

Mixed Text & Graphics

Window Master fully supports both Text & Graphics displays and even has a Graphics Pen that can be used with HLINE, HCIRCLE, HSET and more. You can change the Pen width & depth and turn it on or off with simple commands. We also added Enhanced Graphics Attributes that allow graphics statements to use And, Or, Xor and Copy modes to display graphic information. With the Graphics enhancements added by Window Master, you could write a "COCOMAX" type program in Basic! In fact we provide a small graphics demo program written in Basic.

Event Processing

Window Master adds a powerful new programming feature to Basic that enables you to do "Real Time" Programming in Basic. It's called Event Trapping, and it allows a program to detect and respond to certain "events" as they occur. You can trap Dialog activity, Time passage, Menu Selections, Keyboard activity and Mouse Activity with simple On Gosub statements, and when the specified event occurs, program control is automatically routed to the event handling routine, just like a Basic Gosub. After servicing the event, the sub-routine executes a Return statement and the program resumes execution at the statement where the event occurred.

Enhanced Editing Features

Window Master adds an enhanced editor to Basic that allows you to see what you edit. It allows you to insert & delete by character or word, move left or right a word or character at a time, move to begin or end of line, toggle automatic insert on/off or just type over to replace characters. The editor can also recall the last line entered or edited with a single key stroke. You can even change the line number in line to copy it to a new location in the program.

Window Master Applications

Window Master pushes the Color Computer 3 far beyond its normal capabilities, into the world of a "User Friendly" operating environment. We are already planning several new programs for use with Window Master. So you don't have to worry about having to write all your own programs. And don't forget that many existing Basic and M.L. programs will run under Window Master with little or no changes. The Possibilities for Application programs are endless: Spread Sheets, Word Processing, Communications, Education, Games, Graphic Design, Desk Top Publishing and on and on.

Hardware Requirements

Window Master requires 512K of memory, at least 1 Disk Drive, a Hi-Res Joystick Interface and a Mouse or Joystick.

Technical Assistance

If you run into difficulty trying to use some of Window Master's features, we will be happy to assist you in any way possible. You can write to us at the address below or call us between 10am and 2pm Pacific Standard Time for a more timely response. Sorry, no collect calls will be accepted.

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FILES DATE

		CALENDER V 2.0					
		May 1988					
		MON	TUE	WED	THU	FRI	SAT
New							
Open							
Save							
Save As...							
Init							
Quit							
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				

The Chicago Rainbow Fest opens today, and we will be there with Window Master!

Note that you do not have all of the ON ERROR GOTO statements... they take time... each becomes several system calls.

POWER. Note the 's.b=7'. That's the access mode! You can't set that at all from the Basic09 CREATE statement. (I forget what the CREATE statement defaults to, but I know of no way to change it.)

I like method B for another reason. It is far easier to read the code, you can see what is happening.. it is simple, and what some folks call 'elegant'. But what may be the most important, the use of syscall in this way leads to 'bulletproof' code... you end up with programs that work.

Back to the Why and When. Here we used syscall because we wanted to simplify error handling. We used it when we wanted to create a file. Now lets look at an example of 'bulletproofness'.

I am working on a program called Wiz Pro. Wiz Pro is a multi-part program that uses overlays. So what's an overlay? Well, Pro always leaves a two page chunk... 16k, free in its process space. As it runs, Pro will 'overlay' procedures into this space, execute then kill them, keeping the 16k space free. This way, Pro can be expanded in an unlimited way, just so long as each, (basic09), expansion fits in 16k.

These 'overlays' can come into Pros process space either from disk, or some other area of memory. Naturally, often used procedures are best kept in memory, others may be kept on disk. In any case, the choice is up to the user because Pro executes a 'overlay' called WizLoads. WizLoads is nothing more than a list of procedures and programs that get loaded when Pro does. So, if a user wants so and so proc kept in memory, all he has to do is put its name in WizLoads. This is what the proc looks like:

```
PROCEDURE WizLoads
PARAM lode(8):STRING[16]
FOR i=1 TO 8
lode(i)=""
NEXT i
lode(1)="WizUtils"
lode(2)="WizConfig"
lode(3)="WizClipper"
lode(4)="WpXmod"
lode(5)="WizAuto"
END
```

And here is what happens to it: (in Wiz Pro)

```
proc="Wizloads" \RUN proc(lode) \ KILL proc
i=1
WHILE lode(i)<>"" DO
SHELL "load "+lode(i)
i=i+1
ENDWHILE
```

Notice that the files "WizUtils ...Auto" end up hanging around in memory beyond this point.

In a particular phase of the development of Pro, I wanted to 'clean up' memory when Wiz Pro exited. So I used a lines like:

```
REPEAT
SHELL "UNLINK ",lode(i)
i=i+1
UNTIL lode(i)=""
```

Now, if you had 8 lodes, then the unlink command would be called in from disk 8 times... so I made one of the lodes 'unlink'. (lode=load.. load is a keyword, you can't use it in a program).

Now came the day I was to send out Alpha test copies of Wiz Pro. Although the instructions said "copy all of the Wiz Pro files into your command directory", all of the testers copied them into a 'seperate' CMDS directory, containing... you guessed it... no unlink command. So I got phome calls.....

How could use of syscall have place some armor on this? Well if I had used:

```
WHILE lode(i)<>"" DO
s.a=$22 \s.x=ADDR(lode(i))
RUN s9syscall($1D,s)
i=i+1
ENDWHILE
```

there would have been no need for the use of unlink, no missing unlinks, and no phone calls. The program would have been 'bullet proof', or at least 'bullet resistant'?

(\$1D is the 'unlink a module by name system call'. Entry: a = module type, (\$22 is basic09 subroutine), x = address of module name.
Exit: b = error code.)

Note that I have not shown these procs looking at the ccode register. The carry bit is set to one in the ccode register when there is an error. You should actually look at this bit first, then the b register.

While reading these syscall examples, a question may have arisen in your mind. Suppose an error occurs? Like in the WHILE lode(i)<>"" DO above... suppose for some reason one of the 'lodes', (files), isn't there by the time you exit? What happens? Do you get vectored off to some other 'generic' error handler? The answer is no. In this case you just keep on trucking until you run out of files to unlink. (lode(i)=""). So, if a file isn't there to get unlinked.. it don't get unlinked.. got it?

If some other error occurs, well the worse that can happen is that something gets left behind in memory.

Now, the next step is to do away with the SHELL "load.. line in Wiz Pro also!

So another reason for using syscall is when you want to make your Basic09 program stand alone... self sufficient. By using syscall you can free your code from things like:

```
SHELL "dir"
SHELL "chd"
```



```
SHELL "tmode ..."  
SHELL "link ..."
```

Lets see, if I remember correctly, I promised another example of using syscall to read a file very quickly. Try this:

```
DIM BUF(8192):BYTE
```

```
OPEN #path,filename:READ  
10 s.a=path \ s.y=8192 \ s.x=ADDR(BUF)  
RUN syscall($89,s)  
IF s.b=211 THEN 20  
IF s.y<> 8192 THEN 10  
CLOSE #path
```

(\$89 is the READ OS-9 system call. Entry: a = path y = # of chars to read, x = address of buffer. Exit b=error code, y = number of bytes read.

Now you might be getting the idea that I don't like ON ERROR GOTO. I do like it, just not so much for error trapping. Why don't I like it for error trapping? Well, the main thing is that when you get to where your ON ERROR GOTO goes to, you don't know from where you got there! Some Basics have a func. or called ERRLN which tells you where the error occured. But not basic09. Why? Because ON ERROR GOTO isn't what it seems, and what it is makes it really useful in the application of Basic09 to the creation of truly powerful programs!

ON ERROR GOTO is really a signal intercept trap! This is why you pretty well must have at least one ON ERROR GOTO in every program. If you don't, any signal will cause an exit. OS-9 signals must be caught, else they are fatal. (yes, some are fatal anyway).

Ever read about OS-9 signals and wished you could use them from Basic09? Well, you can. In fact, they are easier to use from Basic09 than from C!. Next time I will tell you about the 'mouse paws'.

Join us for our monthly Clipboard conference on CompuServe. The 2nd Saturday at 9pm Eastern CoCo notables and CoCo users meet in an informal CO in the CoCo Forum on CompuServe. Our September CO will feature Chris Burke from Burke & Burke. Our October CO will feature Roger Krupski from RGB Computer Systems.

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Clearbrook Software Group

NEWSLETTER

This is issue 4 of the Clearbrook Software Group Newsletter. We will put the accounting project aside and develop an interactive program for creating new data bases.

It will let us -

- specify file name and size
- specify field names, types and sizes
- specify key names types and expressions
- create the data and index files

Program listing

```
MODULE Create
NOTE Create a new data base
NOTE a maximum of 40 fields and 5 keys are allowed
NOTE maximum field name length is 15

TEXT fn(30) OF 15
TEXT ft(30) OF 1
TEXT dt(30) OF 1
INTEGER fl(30)
TEXT fm(30) OF 15
TEXT kn(5) OF 15
TEXT kt(5) OF 1
INTEGER kl(5)
TEXT ke(5) OF 80
TEXT a$ OF 80
TEXT mask$ OF 80
TEXT file_name OF 15
TEXT ft$ OF 1
TEXT dt$ OF 1
INTEGER l,n,i,row,col
INTEGER name_good,good
INTEGER fields,keys,records

name_good=0,good=0,fields=0,keys=0,records=0

i=0:WHILE i<30 DO:i=i+1:ft(i)="" :ENDWHILE
i=0:WHILE i<5 DO:i=i+1:kt(i)="" :ENDWHILE

CLEAR SCREEN
UTD REVERSE:PRINT "CSG IMS data base creator";
UTD NORMAL

GOSUB file_name:GOSUB field_name:GOSUB edit
END

LABEL file_name
NOTE get the name for the file
REPEAT
LOCATE #ROWS-1,1:CLEAR LINE:PRINT "Data base name: ";
UTD REVERSE:INPUT a$:UTD NORMAL
a$=TRIM$(a$)
IF a$<>"" THEN
GOSUB check_name
IF good THEN
file_name=a$:name_good=1
LOCATE 1,35:PRINT "Name: ";:UTD REVERSE:PRINT
file_name;:UTD NORMAL
ELSE
CALL create_error("Not a valid data base name")
ENDIF
ENDIF
UNTIL name_good
NOTE get number of records
LOCATE #ROWS-1,1:CLEAR LINE:PRINT "Number of records:
";
UTD REVERSE:INPUT a$:UTD NORMAL
IF TRIM$(a$)<>"" THEN i=INTEGER(a$)
IF i>=0 THEN
records=i
LOCATE 1,62:PRINT "Records: ";:UTD REVERSE:PRINT
records;:UTD NORMAL
ENDIF
ENDIF
RETURN

LABEL field_name
NOTE get field and key info
```

```
REPEAT:GOSUB add_name:UNTIL NOT good
RETURN

LABEL add_name
NOTE add one field or key
good=0
LOCATE #ROWS-1,1:CLEAR LINE
PRINT "Type of field (Regular, Header or Key or
ESCAPE)? ";
REPEAT
ft$=CAP$(GETKEY)
UNTIL SUBSTR(ft$,"RHK"+CHR$(27))
IF ft$=CHR$(27) THEN RETURN:ENDIF
IF ft$="K" THEN
keys=1
WHILE keys<5 DO
IF kt(keys)="" THEN EXIT:ENDIF
keys=keys+1
ENDWHILE
IF keys>5 THEN
CALL create_error("Too many keys")
good=1:RETURN
ENDIF
row=17+keys:col=1:n=30+keys
ELSE
fields=1
WHILE fields<30 DO
IF ft(fields)="" THEN EXIT:ENDIF
fields=fields+1
ENDWHILE
IF fields>30 THEN
CALL create_error("Too many fields")
good=1:RETURN
ENDIF
row=(fields-1)*15+3:col=(fields/16)*40+1:n=fields
ENDIF
LOCATE row,col:PRINT n;:LOCATE row,col+3:PRINT ft$;
REPEAT
LOCATE #ROWS-1,1:CLEAR LINE:PRINT "Field name: ";
INPUT a$
GOSUB check_name
UNTIL good
LOCATE row,col+5:PRINT a$;
LOCATE #ROWS-1,1:CLEAR LINE
PRINT "Data type (Integer, Long, Date, Real or Text)?
";
REPEAT
dt$=CAP$(GETKEY)
UNTIL SUBSTR(dt$,"ILDRT")
LOCATE row,col+21:PRINT dt$;
IF dt$="T" THEN
REPEAT
LOCATE #ROWS-1,1:CLEAR LINE
PRINT "Text length: ";
INPUT l
UNTIL l0 and l d0
LOCATE row,col+22:PRINT l;
ENDIF
IF ft$="K" THEN
GOSUB getexp
kn(keys)=a$:kt(keys)=dt$:kl(keys)=1:ke(keys)=mask$
ELSE
LOCATE #ROWS-1,1:CLEAR LINE
PRINT "Field mask: ";
INPUT mask$
mask$=LEFT$(mask$,15)
fn(fields)=a$:ft(fields)=ft$:dt(fields)=dt$
fl(fields)=l:fm(fields)=mask$
ENDIF
LOCATE row,col+26:PRINT mask$;
RETURN

LABEL getexp
REPEAT
LOCATE #ROWS-1,1:CLEAR LINE
PRINT "Key expression: ";:INPUT mask$
mask$=TRIM$(mask$)
UNTIL mask$<>""
RETURN

LABEL check_name
good=1:a$=TRIM$(a$):l=LENGTH(a$)
IF l<1 OR l>15 OR CAP$(LEFT$(a$,1))<"A" OR
CAP$(LEFT$(a$,1))>"Z" THEN
```

```

good=0
ELSE
WHILE 1 DO
IF SUBSTR(MID$(a$,1,1),"!@#%^&*()-+~`~[]{}:;\
,./?") OR MID$(a$,1,1)="" THEN
good=0:EXIT
ENDIF
l=l-1
ENDWHILE
ENDIF
RETURN

LABEL edit
NOTE allow changes to any of the data
LOOP
LOCATE #ROWS-1,1
PRINT "Press N to change file name, F to change
field, C to create or Q to quit: ";
REPEAT
a$=CAP$(GETKEY)
UNTIL SUBSTR(a$,"NFCQ")
UTD REVERSE:PRINT a$;:UTD NORMAL
IF a$="N" THEN
GOSUB file_name
ELSE IF a$="F" THEN
GOSUB edit_field
ELSE IF a$="C" THEN GOTO create
ELSE RETURN
ENDIF
ENDIF
ENDIF
ENDLOOP

LABEL edit_field
LOOP
LOCATE #ROWS-1,1:CLEAR LINE
PRINT "Press D to delete a field, A to add or ESCape:
";
REPEAT
a$=CAP$(GETKEY)
UNTIL SUBSTR(a$,"DA"+CHR$(27))
IF a$="D" THEN
LOCATE #ROWS-1,1:CLEAR LINE
PRINT "Delete which line? ";
INPUT 1
IF 1>=1 AND 1<=35 THEN
IF 1>30 THEN
kt(1-30)=""
LOCATE 1-11,3:CLEAR LINE
ELSE
ft(1)=""
LOCATE ((1-1)*15+3,1/16*40+3):RINT "
";
ENDIF
ENDIF
ELSE
IF a$="A" THEN
GOSUB add_name
ELSE
RETURN
ENDIF
ENDIF
ENDLOOP

LABEL create
NOTE save info in a .ide file and create the .ida and
.in files
a$=file name+".ide"
SET TRAP TO create_trap
SET PRINT TO a$
SET TRAP TO abort_trap
SET SCREEN OFF
SET LEFT MARGIN TO 0
SET PRINT ON
PRINT "FILE ";file_name;" OF LENGTH ";records
PRINT
i=0
WHILE i<30 DO:i=i+1
IF ft(i)<>"" THEN
IF ft(i)="H" THEN PRINT "HEADER ";:ENDIF
dt$=dt(i):GOSUB printtype
PRINT fn(i);
IF dt(i)="T" THEN PRINT " OF LENGTH ";kl(i);:ENDIF
IF fm(i)<>"" THEN PRINT ' MASK ";fm(i);''':ELSE
PRINT:ENDIF
ENDIF
ENDWHILE
PRINT
i=0
WHILE i<5 DO:i=i+1
IF kt(i)<>"" THEN
PRINT "KEY ";:dt$=kt(i):GOSUB printtype:PRINT kn(i);

```

```

IF kt(i)="T" THEN PRINT " OF LENGTH ";kl(i);
ENDIF
PRINT " = ";ke(i)
ENDIF
ENDWHILE
PRINT
SET SCREEN ON:SET PRINT TO "":SET TRAP TO imsd_trap
SHELL "IMSD "+a$
SET TRAP OFF
RETURN

LABEL create_trap
SET TRAP OFF
IF ERROR=218 THEN NOTE file already exists
CALL create_error("File already exists")
GOSUB file_name
RESUME AT create
ENDIF

LABEL abort_trap
SET PRINT TO "":SET SCREEN ON
LOCATE #ROWS-1,1:CLEAR LINE
HELP ERROR
END

LABEL imsd_trap
SET TRAP OFF
LOCATE #ROWS-1,1:CLEAR LINE
PRINT
PRINT "Can't create the .ida and .lin files because
of errors found by IMSD."
PRINT "You can edit the .ide file to correct the
errors."
PRINT:PRINT
CALL create_error("Press any key to continue")
END

LABEL printtype
IF dt$="I" THEN PRINT "INTEGER ";
ELSE IF dt$="L" THEN PRINT "LONG ";
ELSE IF dt$="D" THEN PRINT "DATE ";
ELSE IF dt$="R" THEN PRINT "REAL ";
ELSE PRINT "TEXT ";
ENDIF
ENDIF
ENDIF
ENDIF
RETURN

MODULE create_error(message)

LOCATE #ROWS,1:CLEAR LINE
UTD REVERSE:PRINT message;CHR$(7);"-waiting";
WHILE GETKEY="" DO ENDWHILE
LOCATE #ROWS,1:CLEAR LINE
END

```

Using the program

This program can be executed in several ways. From the OS9 prompt, the IMS menu, in CSG IMS interactive mode or from another CSG IMS program..

When the program is invoked, it will prompt you for the name of the datafile you wish to create followed by the fields and keys. When entering the key expressions no error checking will be done. If you enter a bad expression, an error will be reported when the files are being created. If you do have an error you can either edit the .ide file or reenter all of the fields and keys and try again

When the file name, fields and keys are all defined, you can create the data base. Te program will call the IMSD program to perform this function. Any errors will be reported on the screen.

Clearbrook Software Group

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Sumas, EA
U.S.A. 98295-8000
(604)853-9118

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Abbotsford, B.C.
CANADA V2S 6H1

Product Reviews

Clipboard's Review Crew

Coco Clipboard magazine is looking for Color Computer owners with good writing skills to assist us in evaluating new products. We can't pay you for your reviews, but you will have an opportunity to examine new products for the Coco, sometimes before the products become available to the public. You will also get a free copy of the issue in which your review appears, and you'll have the satisfaction of having helped other Color Computer owners with your evaluations.

If you are interested, write up a short sample review of any Coco product (please keep the length under 700 words) and send it to our review editor, Randy Krippner, at the address listed below. Material must be printed (dot matrix is fine). Make sure your name, address and phone number are printed on the first page of the review.

Include a description of your computer system; which model Coco you own, amount of RAM, number and types of disk drives, type of printer, what operating systems you have (OS9, RS-DOS, ADOS, etc.), and so on.

Mail it to: Randy Krippner, 1014 W. Hwy. 114, Lot 29, Hilbert, WI, 54129.

If you are selected to be one of Coco Clipboard's reviewers, we'll contact you with further details. Please include a stamped, self addressed envelope with your sample review.

Editor's Note: Because of the length of several of this issues article's we have limited our reviews to just two items. Our November / December edition will contain many, many more reviews - just in time for the holiday buying season. We did receive three programs for this edition which are of particular note. We will be presenting more in depth reviews on these programs in up-coming issues.

VIP Database III
S.D. Enterprises
P.O. Box 1233
Gresham, OR 97030

Pgm. Type: CoCo III Database
Requires : 128K CoCo III + Disk
Price : \$69.95

It's rather unfortunate that we don't

have more room in this edition for reviews as Paul Anderson and S.D. Enterprises have done a remarkable job in creating a nicely updated version of a tried and true CoCo database. Those of you with the original VIP database will be please to learn that 98% of all your original commands still work with Database III and that S.D. will upgrade your old version for \$42.95 including postage and handling.

Some of the enhancements for Database 3 include compatibility with RGB Computer Systems hard disk, 40 or 80 column display using the CoCo III's internal hardware, DOUBLE clock speed, a print spooler and a report generator with almost unlimited print format abilities and you can embed control codes for ALL types of printers. In addition you can easily set the foreground and background colors using the arrow keys to your personal taste. We tested Database III on a composite monitor and even at 80 columns, where a lot of data is displayed we had little if any trouble reading the screen - especially after experimenting with foreground and background colors. RGB monitor owners will be thrilled with these capability as well as they can really tailor their display's look.

The biggest difference with Database III is it's ability to sort. The original program used a disk sort system and often took many, many minutes to do even a limited range of sorts. Database III however uses in memory sorts and at double clock speed this program just roars! Paul provided some sample programs for us to test, based on the examples in the VIP Database III manual. These examples (you can type them in from the manual) show off the sort routines (speed and sort order) and the built in math package. This makes constructing an accounts receivable file very easy and you can have the program update your accounts with just a couple of key strokes and in ascending or decending order.

Plus you design the database records the way you want them, not the way the program writer thinks is best. (For detail on what a database is, and how you might put one together refer to issues 4, 5, 6 of Clipboard - available on back issue order). A database does not have to be just the Christmas card list - it can be any type or set of information that needs to be manipulated, stored and retrieved. VIP Database III certainly let's you do all of that and very quickly. There's another feature, mentioned

already, which makes this program particularly interesting. It works with the RGB Hard Drive system. Depending on the hard drive size, you could have from 120 to 250 drives on line using the RGB system. Since VIP Database III does not do disk sorts - your information flow becomes incredibly fast when using a hard drive. Your accounts receivable, payable and yes your Christmas card list can all be on their own "disk" on a hard drive just a few seconds away. The database also has mail merge capability for form letters with the personal touch. Coupled with VIP Writer III, Database III becomes a high powered productivity worker in your home of office.

HELLO.BASGOODGAMES TRIO

Roy Pierce Software
P.O. Box 1787
Main Post Office
Edmonton, Alberta
Canada
(403) 474-8435

Pgm. Type:Disk Utility+
Skill Games
Requires :CoCo 2 or 3
Price :\$19.95 each

A lot of good things have come out of Canada for the CoCo - especially out of Edmonton. A new source of clever utilities and games is Roy Pierce Software. Roy has sent his

first two releases, HELLO.BAS and GOODGAMES Trio.

HELLO.BAS is a disk menu selector program. Now disk menu selector programs are not really new but HELLO.BAS incorporates several programs that not only make program selection easy but contain a specialized DISKINIT/ auto boot initializer, a HELP/ file and a DOS BOOT/DAT file. What HELLO.BAS does best is go onto your blank disks before you load them with more programs. That's what DSKINIT/ does. Take a freshly formatted disk and then run the DSKINIT/ program. It creates a file that will automatically look for HELLO.BAS and HELLO.BAS will then let you load your programs.

A HELP/ file is included to walk you through the instructions for copying and extra drive set ups. The program is powerful in it's simplicity and provides a nice menu program for each disk you have. Considering it can be moved from each disk in your collection with ease the \$19.95 price is quite low.

Roy also sent along his GOODGAMES TRIO. These are games that Roy originally wrote for his own pleasure, but had so many requests he went public. These games are ADI, OTHELLO and CONNECT5. Well OTHELLO and CONNECT games have ben around for a while - but hardly this fast and certainly not as cleanly. These games are PMODE 4 games so they can go from CoCo 2's to CoCo 3. Roy has kept them simple in graphics, but fast in speed with nifty little sound effects to help you keep track of the action. OTHELLO is a subset of the larger version and if your familiar with Roman Checkers, a Tandy ROM Pak, then you know what OTHELLO is. Roy's version uses an 8 x 8 board as opposed to the larger 12 x 12 board. This keeps the action fast paced, especially when used by younger players who could tire from the larger version. More experienced players face a greater challenge with the smaller area, kind of like putting the Chicago Bears into an arena football field, or making Larry Bird play half court and telling them they have to play for the championship.

CONNECT5 is great for kids as it is so similar to other connect type games. Black and white discs drop from the top with a quick little sound and snappy animation. Connect 5 disks in a row and you win.

ADI is a game that you probably haven't heard of before. And it's not one that will come easily for many of us with a traditional western game mind set. This game comes to us from Africa. It was originally played in the desert sands using handy playing "chips" from a natural source. Now if you don't know what that means buy the game and read the instructions. The game is played on a board of 12 slots in two rows of six. The object of the game is to move your tokens around the board so that you cature the enemy but also defend your positions. It looks a lot like Backgammon, but plays without dice, or bets, or many of the rules of that game. Being born in the desert there wasn't a lot of time for rules in games, or dice cups. Things often had to be packed in a hurry. One thing you will find in this game is strategy. I never knew a caravan that didn't have some pretty tricky

HELLO/BAS

A DISK DIRECTORY UTILITY by Roy C. Pierce (c) 1988
WHAT WILL HELLO DO

<p>Display Alphabetically Sorted Directory of any Drive. (0-3)</p> <p>Print a Hardcopy of Sorted Directory w/Date and Disk Name.</p> <p>Run ANY BASIC Program with Ease. RUNS ON ANY COCO. (32K Disk Extended BASIC Required) Single Key Stroke Commands.</p>	<p>Easy to Read Display.</p> <p>ALL BASIC so it won't Mess up your System.</p> <p>SUPER FAST OPERATION.</p> <p>Reads Any Drive at Will.</p> <p>Low Disk Overhead - Only 1 Gran.</p> <p>Easy to Copy to All your Disks, Comes with Handy DISKINIT/ Utility for Autobooting HELLO/BAS.</p>
---	--

GOOD GAMES TRIO

Challenging Two Player Games by Roy C. Pierce (c) 1988

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they want, with the programs they want. Variety is the spice of life and the CoCo is really the only "spice" on the Radio Shack shelf. It's simple, low cost, friendly, well supported and CoCo owners are just plain GREAT people. I am getting into "Tandy bashing" with all of this? No, not at all. The Tandy PC Clones and the new OS/2 5000 MC are top flight PC machines. But they aren't the only kind of computers people want or need. All I'm trying to say is give the CoCo the respect a tried and tested veteran deserves. Give the customer the chance to determine the market and the machines they want. Stop hiding the CoCo over in the corner, next to the tube tester.

The best thing I saw coming out of Tandy is the Express Order catalog. Now you can do the ordering directly from Tandy, on an 800 number, and have the product sent right to your home. While this might take a customer out of the retail stores, it sure makes it easier to buy, and the store manager has one less thing to handle among the thousands of regularly stocked parts. Somebody was listening to people's needs in this area and we think Tandy made the right moves in this direction.

Speaking of listening, I wish you'd make note that our advertisers need your support. When you make a purchase from one the fine folks who help support us please mention *Clipboard* or use the coupon on the coupon page. These hard working people will really appreciate your purchases and we all benefit by getting more out of our computers!

dealers and players and this is the game that came from them. It looks simple, but you better put on another pot of "joe" before sitting down to a serious game of ADI!

There is a built in help file with ADI plus a (L)ook command that will let you peek ahead if you're really stuck.

At a little over \$6.50, which includes that postage, the GOODGAMES Trio is well worth the price.

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**STOCK MARKET PORTFOLIO
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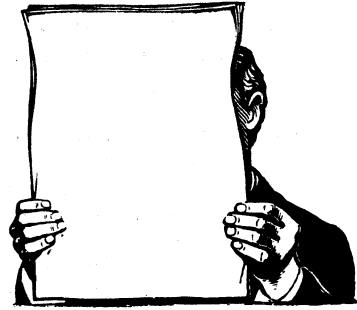
**Hard Disk Organizer
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- <6> HDO supports multiple terminal configurations

Sample Menu:
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4. Exit

The H.D.O. program is available from:
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Feasterville, PA 19047, (215) 322-5455
H.D.O. is just \$24.95 + \$3.00 shipping and packaging.

Reader Mail



Please renew my subscription for 1 year - enclosed is my check. Great magazine, Thank you!

Dave Kincaid
Greenville, SC

Gosh, Dave what could I add? Thanks!

Out of the blue I received Vol 1. #5 of your magazine in the mail yesterday. A quick scan was enough to persuade me to subscribe. Inclosed is my check for subscriptions and back issues Vol 1. #2, 3, and 4.

I was also pleased to read of your connection with CompuServe as I am a member (76672,03646) and I'm looking forward to the conference.

T. Eric Nelson
Santa Rosa, CA

Our monthly conferences co-sponsored by Clipboard and Dan Robins from Computer Shopper are gaining in popularity. In August we had Paul Anderson from S.D. Enterprises. September we tentatively have Chris Burke from Burke & Burke Hard Drives, and October's CO will feature Roger Krupski from RGB Computer Systems!

Inclosed is my check for issues 1, 2, 3 and 4. I and my grandchildren are operating 6 CoCo 64k's. The children range in age from 4 to 12.

I run OS9, Pascal, C and Basic09. I sent for Bill Bernico's disks and use them in creating Ed. programs for the kids. From what I see in Vol. 1 #5 you have the startings of an outstanding magazine. Keep up the good work.

When I get my retirement check next month I will extend my subscription two more years. Here's to many happy hours on the CoCo!

Donald M. Tidd
Vallejo, CA

We're impressed Don. Just goes to show that young and old love their CoCo's. Thanks for writing!

Congratulations on a great little magazine. I look forward to receiving many more issues. Enclosed is my check to extend my subscription for two more years.

James L. Gifford
Kingman, AZ

Jim it's folks like you who brighten our day!

Please find enclosed a money order for 9 subscriptions to your magazine. All these subscriptions are from members of the London CoCoNuts Computer Club, and we were made aware of your magazine through our contact with the Toronto Color Computer Club. We are definitely looking forward to the success of your magazine.

Wayne Morrison and eight others
London, Ontario

Wayne: Boy did Dar and I flip when we got your letter! Thanks for the great support and I hope you're enjoying your copies.

I was impressed with your Jan/Feb. issue. The future of the CoCo is OS9 and MultiVue. I recommend that you include routine articles and tutorials on OS9, Basic09, "C", and MultiVue programming. We need an article comparing the features of the various hard disk systems that are available. We need reporting of inside Tandy info and rumors. I think you have a bright future if you pattern your approach after PC Magazine. We need this type of periodical for the CoCo community. Keep up the good work.

James Neukam
Owensboro, KY

Well we've got the "C" column going for you Jim, and two columns dealing with Basic09 (actually 3 this month) and Randy Krippner is working on a MultiVue project for the next edition. I'd love to publish more about our friends at Tandy, but only when we can get - as Joe Friday would say - the "facts." We encourage all of our readers to write to Tandy and tell them how much you like the CoCo and want more hardware and software and support

Glad to see the CoCo working hard in such an important place as your halfway house.

Here is my check for renewal of my subscription for 2 year. Much of the contents are way over my head but I hope to have time to learn some of the intricacies - and PLEASE don't neglect the CoCo II owners who don't want to invest in OS9! I'm still producing a newsletter for my husbands WWII outfit and use 2 CoCo's, 3 printers, 2 SS drives.

Married A Bickers
Gulf Breeze, FL.

Per your request find our new series on modular programming in Basic by Bosiy Pitre, plus a Basic program by Mike Dooley. We're working on more "good" programs and articles for the CoCo 2.

Here's my money order for the timely reminder to renew. I enjoy the magazine very much and have recommended it to quite a few people here in Toronto.

Keep up the good work, I enjoy it all. The occasional hardware interface etc. would be of interest also.

Mike Fisher
Toronto, Ontario Canada

Mike thanks for the help in Toronto! Our readers should note that on the top of their mailing labels we are now publishing the start and ending dates of their subscription. The ending date is one month BEFORE your subscription expires. Questions on subscriptions are welcome at our Fredonia offices, Monday through Saturday from 9am to 6pm eastern.

I would like to renew my subscription to this wonderful magazine. My check is enclosed. Thank you and all your staff for a great magazine. Keep up the good work.

Ed Robinson
Fresno, CA
Thanks Ed!

I would also like to compliment you on your magazine, I think it was a much needed improvement in a lot of areas as far as the CoCo goes. I also like the fact that you are trying to put full programs into the magazine instead of trying to stretch them out over a period of months. Keep up the good work.

Dave Henderson

Dave, we really debated about running Randy Krippner's program over two issues. We dislike articles which seem to promise an entire

program in one issue only to find out that you've got to wait till next month, or pick up the disk service to get the balance of the article when you get to the end of the piece. We said up front, that the article would be split and we have part 2 of the article in this issue.

Enclosed is my check for a 2 year renewal. Keep up the good work. Your's is one of the few magazines that I read cover to cover - every article seems like it's written just for my level of knowledge. Keep up the "C" support. I know there's a wealth of knowledge available in this language and your articles are helping me tap this great source (that's a pun!). Try to get "C" running on MultiVue. I love hearing about others who use their CoCo's for business reasons. I hope to be able to do this soon. And where is Rush Caley?

As long as you treat the CoCo as more than game machine, I'll be subscribing!

Stephen A Houghy, MD
Milwaukee, WI

So you like reading about CoCo business success stories??? Check out our contents page and thanks for your support!

I have included a money order for one year of CoCo Clipboard Magazine and two of the back issues. I would like to have issue 4 March/April 1988 and issue 5 May/June 1988. I would like to have all of the back issues but I think that your price is a little high for photocopies.

Continued On 36

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SEEC: To Define

Nancy Ewart

The easiest part of starting a new language is understanding the language; the hardest part is putting the environment together and knowing step-by-step how to use it. In the beginning all I knew was I needed OS-9 and a C Compiler to learn to program in C. Because of this vast ignorance, I followed anything that had steps, or samples, that I could find. I quickly learned to do EXACTLY as they said, and not try to improve on anything. Therefore, it took me too long to start fiddling with the compiler, the libraries and such. I hope that the exercises, examples and explanations in this essay will make it easier for others to start such fiddling sooner and with more understanding.

One of the most important concepts to understand for those of us who are not experienced in assembly language is how the C Compiler works and what influence the C Compiler has on the use of the language. This time we will explore the PREPROCESSOR; with #include; #define; libraries; and the command line of the compiler itself.

Frequently #define is used for the constant to identify the number of elements in an array. This practise helps you remember what the source code was all about six months later.

```
#define BOX_SIDES 6
```

Then later you can set up an array thusly:

```
int caskets[BOX_SIDES]
```

When you use #define, the Preprocessor changes every instance of the defined symbol (string) into the definition; for example #define PI 3.14159 or #define HELLO "Hi, there! What's New?". It makes all these substitutions throughout the source code before the compiler even begins pass1. Consider the following source code:

```
/* Preprocessor exercise one*/
```

```
#define BEGIN main(){  
#define END }  
#define PRNT printf("
```

```
BEGIN  
  thirty();  
  PRNT Book Trader\n");  
  twenty();  
  PRNT Quality Preowned Paperback Books\n");  
  thirty();  
  PRNT Half-price");
```

```
END
```

```
  thirty()  
  {  
  printf("                ");  
  }  
}
```

```
twenty()  
{  
  printf("                ");  
}
```

You can send the source code through the preprocessor only; thus you stop the compiling and look at what is happening. Use this command:

```
c.prep -l btlogo.c >/d0/WORDPR/btprep  
where WORDPR is a directory on drive 0. Then,  
list btprep.
```

BTPREP (exerpt)

```
#6  
#define BEGIN main(){  
#6  
#define END }  
#6  
#define PRNT printf("  
#6  
  
#5  
4  
  
#6  
BEGIN  
main(){  
#6  
  thirty();  
  thirty();  
#6  
  PRNT Book Trader\n");  
  printf(" Book Trader\n");  
#6  
  twenty();  
  twenty();  
#6  
  PRNT Quality Preowned Paperback Books\n");  
  printf(" Quality Preowned Paperbac Books\n");
```

And so on..... You can see what is happening. Did you notice that the preprocessor dropped off the "k" in "Paperback"? The #define PRNT printf(" has a number of surprises for the unwary; the "k" was the character that wrapped around to the next line on the VDG screen. For this reason, change the line PRNT Quality (etc.) to the regular printf("Quality (etc.) and then compile it and

you will get the Book Trader signature the way it was meant to be. Another limitation is that there must be a space between "PRNT" and what you want to print or the compiler will treat it as one word and announce an undeclared variable. However, when #define PRNT works it saves a lot of shift key typing.

All this playing around with the #defines is not much of a time saver with programs as simple as these. Where #define comes in handy is for something that is used over and over again, either in one program or in many programs. In the latter case, expand the #defines to include all the helps and short-cuts that you need. Put them in an .h file such as lazy.h and #include them at the beginning of all your programs. Here are a few inclusions to start your thinking. By the way, the part of the #define directive in CAPS is called the "macro" and the definition is called the "replacement string."

```
lazy.h
#define BEGIN    main(){
#define END      }
#define PRNT     printf("
#define TIMES   *
#define IF       if (
#define THEN     )
#define ELSE     else
#define AND      &&
#define OR
#define EQUALS  ==
```

The following could be the start of something to amuse a five year old, joke.c.

```
#include "lazy.h"
#define KK Knock, knock\n"

BEGIN
  PRNT KK);
  PRNT Who's there?");
END
```

In addition to the ability to look at what the preprocessor does as described above, you can use the options available for the compiler command line to save yourself time, when debugging and, finally, space, when storing compiled programs. You can cut down on the time involved when working on debugging C source code by omitting the code optimizer phase of the compiling process. The command line is ccl -o joke.c. (REMEMBER, clear away the debris from an aborted compile, i.e. ctmp.3.m, etc., before starting a new one.)

On very simple, short programs the -o option doesn't seem to make much difference one way or another, but on longer programs if you skip c.opt, the compilation is faster. At the very end, when everything is A-OK, run the compiler one last time, leaving c.opt in. The optimizer will make the code more efficient and shorter. Make a trial run by giving the same source code two different names (program1.c and program2.c); compile program1.c with the -o option; compile program2.c straight. Then dump program1 and dump

program2. If optimizing were actually done, program1 will be shorter.

Donald Hicks of 355 St. Emanuel St., Mobile, AL 36603 was the first to write in with this suggestion for the C Compiler in a Level Two environment:

The LIB and DEFS files from the Development Pak should be added and, since there are some differences, "c.asm" should be replaced with a renamed copy of "rma" and "c.link" with a renamed "rlink" from the same source.

He also suggested this fix:

```
In "ccl" starting at offset $0EE6, change:
/d0 /lib/ctart to /DD /lib/cstart (or
whatever suits you)
In "c.prep" starting at offset $135D, change:
/d0 /defs/.r to /DD /defs/.r (or
whatever)
```

Donald suggests using a disk file editor to do this job. He emphasizes "Notice the space after the device name. It must remain undisturbed. It is actually a \$00 byte, as is the one before the device name."

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PCDIR	directory of PC disk	RSDIR	directory of RSDOS disk
PCDUMP	display PC disk sector	RSDUMP	display RSDOS disk sector
PCREAD	read PC file	RSREAD	read file from RSDOS disk
PCWRITE	write file to PC disk	RSWRITE	write file to RSDOS disk
PCRENAME	rename PC file	FLEXDIR	directory of FLEX disk
PCDELETE	delete PC file	FLEXDUMP	display FLEX disk sector
PCFORMAT	format PC disk	FLEXREAD	read FLEX file
		FLEXWRITE	write file to FLEX disk

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William A Lathan of 1023 Courtney Dr., Mesquite, TX 75150 sent this patch to change where the C Compiler looks for the C Library - a ram disk instead of drive one.

```
l ccl
c 0ee5 64 72
c 0ee6 31 30
v
l c.prep
c 135c 64 72
c 135d 31 30
v
```

I tried this and it works. For those of you who have never done anything like this here are the steps to follow:

- First: Be sure you have used tmode pause so that you get a screenfull at a time and no more.
- Second: Dump ccl then dump c.prep. Find the address and look at what you will be changing.
- Third: Make Bill Lathan's file (see above) using any editor or "build". Call it "rampatch".
- Fourth: load ccl and c.prep into memory.
- Fifth: Type the command
modpatch rampatch<enter>
- Sixth: Rename ccl and c.prep in your CMDS directory. This is to protect what you have in case of accident.
- Seventh: Save the modified ccl and c.prep from memory into your CMDS directory on your /d0 disk. Save /d0/cmds/ccl ccl "Save" is a CMD in Level I; it does not come in Level II unless you have Development System.

Now you need a Ramdisk called /r0. Format /r0. Transfer your C Library disk and your C Compiler CMDS directory to the ramdisk. You can do that using "dsave" or a command like "dup" supplied with the Spectrum Ramdisk, IF you first make a Library diskette with both the C Library files on it AND a CMDS directory that includes the C Compiler commands. (To do it this way you must have a double sided 40 track format.)

Bill Lathan has a different approach. He says:

(This) lists the procedure file I use when I play around with C. The library is the one I downloaded from CompuServe ... more capability than the one by Microware. Also, CompuServe has CC, an alternative to CCl.

```
t
*
* This is a file to start the C system with
* the libraries on ramdisk, /r0. The LIB
* and DEFS files, normally expected on /d1,
* are first moved to /r0. The new cc from
* CompuServe is loaded. Then, the modified
* command c.prep is loaded as are the nor-
* mal commands c.pass1, c.pass2, c.opt, rma
* and rlink.
*
```

```
echo Use rdisk 24 to set up Ram Disk
echo Copying C LIB files
mkdir /r0/LIB
chd /r0/LIB
Copy #20K /d1/LIB/clib.l clib.l
Copy #20K /d1/LIB/cstart.r cstart.r
echo Copying C DEFS files
mkdir /r0/DEFS
chd /r0/DEFS
Copy #20K /d1/DEFS/arg.h arg.h
Copy #20K /d1/DEFS/bool.h bool.h
Copy #20K /d1/DEFS/ctype.h ctype.h
Copy #20K /d1/DEFS/dir.h dir.h
Copy #20K /d1/DEFS/direct.h direct.h
Copy #20K /d1/DEFS/errno.h errno.h
Copy #20K /d1/DEFS/lowio.h lowio.h
Copy #20K /d1/DEFS/math.h math.h
Copy #20K /d1/DEFS/memory.h memory.h
Copy #20K /d1/DEFS/modes.h modes.h
Copy #20K /d1/DEFS/module.h module.h
Copy #20K /d1/DEFS/os9.h os9.h
Copy #20K /d1/DEFS/password.h password.h
Copy #20K /d1/DEFS/phone.h phone.h
Copy #20K /d1/DEFS/scfstat.h scfstat.h
Copy #20K /d1/DEFS/setjmp.h setjmp.h
Copy #20K /d1/DEFS/sets.h sets.h
Copy #20K /d1/DEFS/sgstat.h sgstat.h
Copy #20K /d1/DEFS/sgtty.h sgtty.h
Copy #20K /d1/DEFS/signal.h signal.h
Copy #20K /d1/DEFS/stdio.h stdio.h
Copy #20K /d1/DEFS/string.h string.h
Copy #20K /d1/DEFS/time.h time.h
Copy #20K /d1/DEFS/utime.h utime.h
echo Loading C CMDS into memory
load /d1/cmds/cc
load /d1/cmds_mod/c.prep
load /d1/cmds/c.pass1
load /d1/cmds/c.pass2
load /d1/cmds/c.opt
load /d1/cmds/rma
load /d1/cmds/rlink
link cc
link c.prep
link c.pass1
link c.pass2
link c.opt
link rma
link rlink
echo All C files and commands have been moved
echo Do "chd /r0" for C work
```

Thanks to Bill's listing, you not only know the format for such a transfer of material to a ram disk, but you also know what is contained in the C Library on CompuServe.

Another source of material to supplement the MicroWare C Compiler is the OS-9 Users Group Library. For those commands in the Library that are written in C, the UG Library includes the source code. In addition, there are two special C disks: #26 C Language Math Library and #09 C Programmer's Tool Kit.

The OS-9 Users Group sells its User Group Library disks for \$6 (after you become a member of the OS-9 User Group for \$25 a year.

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Next issue, among other things, I'll give a report on FoxWare's CCENV(R), a mouse and menu driver for OS9 compilers.

I thank every one who sent letters after the first column. I urge all of you, beginners and experts alike, to send in suggestions and SOURCE CODE.

Send to:

Nancy Ewart
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Continued From 32

Well the NFL Buffalo Bills have their training camp here in Fredonia and it's time I wrapped up this column, I've got to go over and give quarterback Jim Kelly a couple of pointers... yeah right! See you all in October!

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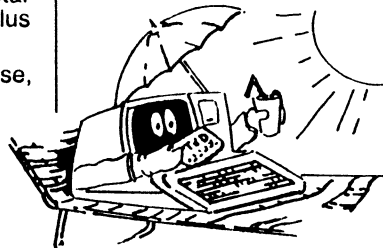
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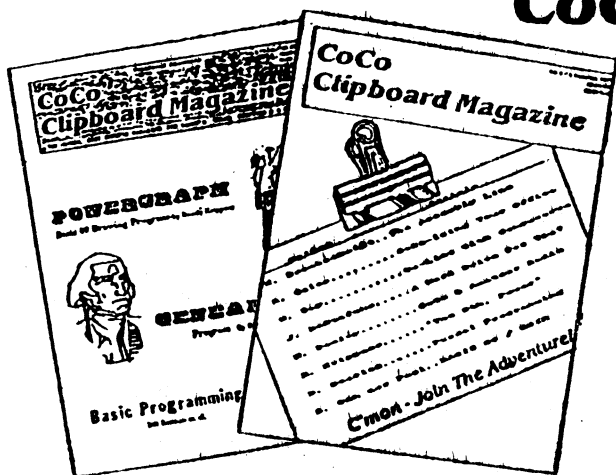
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The Machine Shoppe

Andrew Bartels

Q: What's the difference between JSR and BSR in Assembly language? They seem to do the same thing.

Gene Newkirk
Richmond, Virginia

A: Both JSR and BSR perform the same basic function. It is the way it is accomplished that makes them different. When you use JSR, the ML code for JSR is followed by an absolute address, a pointer to the appropriate address. But BSR works by means of offsets. The BSR code is followed by a one byte offset which is used to point to the correct address. The PC register always holds the address of the next instruction to execute. This one byte offset is added to PC to form the address to branch to. The offset is signed, so you can BSR to any routine within -128 to +127 bytes away from the instruction after the BSR. If the routine you want to BSR to is further away than that, use LBSR, or Long Branch to Subroutine. It is the same as BSR, except it uses a two byte offset for a range from -32768 to +32767, or anywhere in the 64K memory workspace.

Why are there two ways of calling a subroutine? Well, BSR and LBSR are used generally in ML code which may have to be placed in a different location from time to time. Suppose you move a ML program from \$E00 to \$7000. If the program has JSR's in it, the absolute address pointer will still point to the old subroutine address. But with BSR, everything is relative to the PC register, or in other words, the location of the program. The BSR and LBSR offsets will not be wrong, because the program's subroutines will still be the same distance from the BSR point.

But BSR and LBSR are not the only PC relative instructions. A truly position independent program must have ALL references to absolute addresses eliminated and replaced by offsets.

Thus, as you may have guessed, there are ways of using offsets when loading and storing to memory, etc. Please see Bill Barden's book entitled TRS-80 Color Computer Assembly Language Programming, pages 223-225 for a more thorough explanation about relative addressing.

Q: I am making a program that uses the PMODE4 graphics mode with artifact colors. I want to

make sure the colors come out right when the title screen is displayed. Sometimes the colors are reversed. Is there some kind of value I can store in an address to get the colors to come out right?

James Perry,
Louisville, KY

A: No. There isn't anything like that which can do the trick, unfortunately, but there is another way commonly used on Machine Language programs using the PMODE4 screens.

You've seen it, I'm sure. It's a color test. The PMODE4 screen pops up, with red or blue, and a message telling the user to press reset if it is not red. When the user gets the computer to reset with the screen red, he presses <ENTER>. The following listing is one such color test routine. It was written with Disk EDTASM. This program was copyrighted, but I am giving you (and all other CoCo Clipboard subscribers) permission to use it in your programs, provided you place a small note in them that John S. Rullo and I wrote the routine. Just add this code to your Assembly source (use your own ORG statement, and replace line 500 with a JMP or BRA to the start of your program). If you want, you can use it in a BASIC program by CLEAR 200,&H6FFF, loading it, and executing it. I hope this cures the trouble.

The Color Test Listing:

```
00100 *COLOR TEST ROUTINE
00110 *BY ANDREW B. BARTELS
00120 *AND JOHN S. RULLO
00130 *THANKS FOR HELPING, JOHN
00140 *COPYRIGHT (C) 1986
00150 POLCAT EQU $A000
00160 MODE EQU $FFC0
00170 VDGPIA EQU $FF22
00180 OFFSET EQU $FFC6
00190 STPGE1 EQU $0E00
00200 ENPGE4 EQU $2600
00210 ORG $7000
00220 START PULS X
00230 STX $200
00240 JSR RESET
00250 PMODE LDX #MODE
00260 STA ,X
00270 STA 3,X
```

00280	STA	5, X
00290	LDA	VDGPIA
00300	ORA	##F8
00310	STA	VDGPIA
00320	PAGE LDX	#OFFSET
00330	STA	1, X
00340	STA	3, X
00350	STA	5, X
00360	STA	6, X
00370	STA	8, X
00380	STA	10, X
00390	STA	12, X
00400	PCLS LDX	#STPGE1
00410	LDD	##5555
00420	CLEAR STD	, X++
00430	CM PX	#ENPGE4
00440	BNE	CLEAR
00450	KEY JSR	[POLCAT]
00460	BEQ	KEY
00470	FIXIT LDX	JUMP
00480	STX	\$168
00490	LDX	\$200
00500	TFR	X, PC
00510	JUMP FDB	\$0
00520	RESET LDX	\$168
00530	STX	JUMP
00540	LDX	#PMODE
00550	STX	\$168
00560	RTS	
00570	END	START

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BASIC listing for Color Test:

```

10 'COLOR TEST ROUTINE
20 'BY ANDREW B. BARTELS
30 'AND JOHN S. RULLO
40 'COPYRIGHT (C) 1986
50 PCLEAR4: CLEAR200, &H6FFF
60 FORX=&H7000 TO &H7056: READA$
70 POKEX, VAL(" &H"+A$): NEXT
80 EXEC&H7000'CALL RESET RTN
90 PRINT"COLOR TEST DONE..."
100 DATA 35,10,BF,2,0,BD,70,4A
110 DATA 8E,FF,C0,A7,84,A7,03
120 DATA A7,05,B6,FF,22,8A,F8
130 DATA B7,FF,22,8E,FF,C6,A7
140 DATA 1,A7,3,A7,5,A7,6,A7,8
150 DATA A7,A,A7,C,8E,E,0,CC,55
160 DATA 55,ED,81,8C,26,0,26,F9
170 DATA AD,9F,A0,0,27,FA,BE,70
180 DATA 48,BF,1,68,BE,2,0,1F
190 DATA 15,0,0,BE,1,68,BF,70
200 DATA 48,8E,70,8,BF,1,68,39

```

Modular Programming

Boisy Petre

Editors Note: We're very pleased to welcome Boisy to our pages. Boisy is a recent high school graduate who comes to us with high recommendations from his teachers and several academic awards.

"What in the world is a column on Disk BASIC doing in a serious-oriented magazine like CoCo Clipboard?" Some people have the misconception that Disk BASIC is just a mix-n-match of ROM code worth little value. They would rather stick with serious things like OS-9 and BASIC09. I must agree on the basis that OS-9 and BASIC09 are very serious, and bring a lot of power out of our CoCo. But let me ask, "How many people want to do serious things with their Color Computer, but not at the expense of learning OS-9 or BASIC09?"

This column is not another merry-go-round tutorial on PMODE graphics or CIRCLE statements. The standard we are enforcing is rigid program structure and good programming design. Once we establish and learn these principles, we can proceed to tap into the seriousness of Disk BASIC.

In this issue we will begin by introducing you to the concept of "modular design." Modular design is a method used by programmers not only in BASIC, but in other high-level languages. Modular design gives us a foundation where we can start to build our structure -- the program. Let's get a true blue definition on modular design in Pitre-speak:

MODULAR DESIGN - A structured programming concept where a program is divided into several parts (based on its overall content) in order for the programmer to more efficiently develop and test his/her work.

Planning plays a vital role in modular design. Writing a program isn't something I just sit down and do. I've been known to drive great ideas to the grave by being in such a hurry to "try it out" on my CoCo that I became "lost in the code" and, out of frustration, never attempted to try again. I am sure we've all been in this scenario: leaned over our CoCo at 2 in the morning with a huge question mark dangling over our head, trying to figure out what we did wrong because we didn't take out time to plan. Good ideas die quickly without organization.

Enough negative thought -- let's begin our venture! First we will examine the "whys" of modular design. I've listed just a few

below:

- IT GIVES THE PROGRAMMER A "STANDARD" TO GO BY. You can come back 5 months later to an old program and make a patch or kill a bug because of the organized structure you used throughout your work.

- IT ENDORSES "PROGRAMMER FREINDLINESS". Other programmers can modify portions of your program (that is if you want them to) easier and with less effort than searching through mounds of code scrolling on the screen.

- IT GIVES YOUR PROGRAM A NEAT APPEARANCE. Your listings will be easier to follow while you study them and less hard to search through while debugging.

- IT CUTS DOWN ON LOST-TIME. You are more likely to recover sneaky bugs (and with less time) if you use modular design.

Sounds like programmer's heaven, doesn't it? I tell you, using modular programming in your work REALLY makes a difference! I could go on, instance after instance, on how much time and effort I have saved by not hurriedly typing in something on my CoCo. It may take a little more effort than just sitting down and typing, but it is definitely worth the end results.

There are as many methods of modular design as there are Rolls-Royces, but we will study only one -- the TOP-DOWN design. This particular modular design structure will follow the rules outlined below:

- REMARK statements will be used liberally.

- Lines 0-99 will be the INITIALIZATION module.

- Lines 100-39999 will be the MAIN PROGRAM module.

- Lines 40000-49999 will be the ERROR TRAP module.

- Lines 50000-59999 will be the SUBROUTINE module.

- Lines 60000-63999 will be the DATA module.

For this issue, we will study the INITIALIZATION, MAIN PROGRAM, and DATA modules. We will cover the remaining modules in

The Wegert Report

Steve Wegert

With the continual crossover from the CoCo Forum into the world of OS9, forum members find themselves at a loss for a terminal program that allows for the proper handling of OS9 files. Right off the bat you have the problem of file format. Add to that the annoyances encountered with the inevitable XMODEM padding found at the end of most files transferred in that manner and improper handling of linefeeds and you're looking at quite a challenge when downloading files from CompuServe.

Certainly you can use your favorite <fill-in-the blank> term program to download an OS9 file, use some type of conversion utility to convert it into the proper format, use yet another utility to strip the padding and linefeed trash but c'mon folks, let's get real. After the second pass through this forest of endurance you're fast checking your pulse and wonder about the always-present-yet-never-in-sight "better way".

OS9 FORUM ANNOUNCES IntroDisk (r)

Much the same way Mikeyterm has become the 'standard' terminal program for the CoCo Forum, for a nominal charge to help defray media, printing and handling cost, the folks behind the OS9 forum now bring you "The OS9 Forum's IntroDisk (r)".

Along with utilities to assist with your OS9 file management and a few general help files on using the forum, on this disk is STERM ___ "A Simple Terminal Program" written by Mark Griffith [76070,41]. Full 'C' source is included.

STERM is a child of the popular SMOD series of terminal emulators for the OS9 Operating System originally developed by Carl Kreider and enhanced by Jim Jones. STERM includes the best features of it's parents while adding new features, such as CompuServe's new B-Plus protocol. The cost for the IntroDisk stuff (catchy name, eh?) is \$10 postpaid, cash, check, money order or Visa/Mastercard.

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NEW MENUS IN LIBRARIES

With the coming of the new forum software, a better, more intuitive menu structure appeared and navigating the forum's libraries is a snap!

Choosing item 3, LIBRARIES (Files) from the CoCo Forum main menu, you'll be presented with this panel:

The CoCo Forum Libraries Menu

Libraries Available:

- 1 Reference Library
- 2 Graphics
- 3 Games
- 4 Music
- 5 Orchestra-90
- 6 Telecommunications
- 7 CoCo BBS Systems
- 8 Application/Utility
- 9 OpSystems/Languages
- 10 Hardware/Technical
- 11 CoCo 3
- 12 The Soapbox
- 13 Products / Reviews
- 14 Private Classifieds
- 15 Clubs / Newsletters

The titles are self describing and should give you a good idea of what's contained behind doors 1 through 15.

Choosing door number 1, Reference Library, brings up another action panel to work with:

The CoCo Forum Library 1

Reference Library

- 1 BROWSE thru files
- 2 DIRECTORY of files
- 3 UPLOAD a new file
- 4 DOWNLOAD a File
- 5 LIBRARIES

For a quick look at what files are available in this 'room' of the library, asking for a DIRECTORY of files will list, in last-in-first-out order, the file name, upload date, file size and number of access for each submission:

Keywords: ASCII TEXT
TRANSCRIPT CO CONFERENCE DENNIS
SKALA PROGRAMMING
USING OS9

This is the edited transcript of the CoCo Forum's Conference on June 11, 1988, with guest Dennis Skala. The topic was "Programming and Using OS9".

Press <CR> for next or type CHOICES !

Notice that the same information presented in a DIRECTORY is duplicated during a browse but additional facts such as the keywords and file description are now included. This bit of extra data should give you a good idea of what the file is about. It's always a good idea to look at the file description as many times the submitter will include instructions for its use as well as instruction files if needed.

Thumping the <Enter> key will bring up the next selection of your search, asking for

CHOICES presents the disposition panel:

The CoCo Forum Library Disposition

- 1 READ this file
- 2 DOWNLOAD this file
- 3 RETURN to library menu

Again, some very obvious choices. Option 1 allows for online reading of a text file. Option 3 gets you out of trouble. Number 2 is the choice we need:

Library Protocol Menu

Transfer protocols available -

- 1 XMODEM (MODEM7) protocol
- 2 CompuServe 'B' protocol
- 3 CompuServe 'A' protocol
- 4 DC4/DC2 CAPTURE protocol
- 5 Kermit protocol
- 6 CompuServe Quick 'B' protocol

0 Abort transfer request

CompuServe supports several transfer protocols. Most terminal programs will support one, if not several, of the ones listed above. It is recommended that a transfer protocol be used any time data integrity is an issue. If your terminal program supports it, B protocol is highly recommended for use on CompuServe. It's fast, transfers only what's in the file (no padding as found in XMODEM transfers) and fully supported by CompuServe.

Uploading is just as simple. Choose the appropriate menu item from the Library panel and the system will prompt you for all the needed information:

File name: TEST.TXT
Library Protocol Menu

Transfer protocols available -

- 1 XMODEM (MODEM7) protocol
- 2 CompuServe 'B' protocol
- 3 CompuServe 'A' protocol
- 4 DC4/DC2 CAPTURE protocol
- 5 Kermit protocol
- 6 CompuServe Quick 'B' protocol

0 Abort transfer request

Look familiar? It's very similar to the procedure to download files. Choose the protocol of your choice and the system takes over and issues prompts for the file name and file type. Specify accordingly.

File name for your computer: mvdev.txt

Transfer types available -

- 1 ASCII
- 2 Binary
- 3 Image
- 4 Graphic:RLE
- 5 Graphic:NAPLPS
- 6 Graphic:GIF

Enter choice !

At this point, refer to the instructions that came with your terminal program on initiating file transfers. Some require a manual start while others are automatic. As always, should you have some confusion, leave a note to the SYSOP in the forum you're visiting. Include information on your systems set up (disk, tape, terminal program) and exactly what you're having difficulty with. Someone will get back to you.

NEW SECTION LEADER ON COCO

Recently, Dave Jenkins [72756,2213] has join the staff of the CoCo Forum as BBS Section Leader. Dave holds a BS in Radio/TV and Journalism from Ball State University as well as an AS in Digital Electronics. Presently, he's employed with WNIN-TV/FM Channel 9 as an Engineer for the PBS employed in Evansville, IN.

Dave also is the sysop for a local BBS celebrating it's one year anniversary. The Disk Bank runs 24 hours at 300/1200 baud and can be reached at (812) 422-4821. Expect to see Library 7 cleaned up post haste and some straight answers to your COBBS questions.

CLIPBOARD CONFERENCES CONTINUE

On the second Saturday of each month, Dan Robins and Ted Paul host the monthly "Clipboard Conference". Guest speakers are invited to speak on a variety of topics. Theses conference have generally lasted an hour and are kept moving by a moderator. Join us! Transcripts are made available in Library 1 of the CoCo Forum for those that can't attend.

File Name	Guest	Topic
2-13CO.TXT	Robins/Paul	The CoCo and the Press
3-12CO.TXT	Caley/DeStefano/Paul	The CoCo,

Databases and Small Businesses

4-09CO.TXT Bob van der Poel
TeleWriter-128
0611CO.TXT Dennis Skala Programming
and Using OS9
0709CO.TXT David Wiens DMC
Controller, a Comparison

STATE OF THE LIBRARIES

Music and Graphics seem to be the heavy hitters on the CoCo Forum. Recently uploaded files include several digitized screens from Larry Miller [70721,3351]. CYCLPS.MGE, the cyclops from the movie Krull, KAHN.MGE, from the Star Trek character of the same name, NORRIS.MGE, that all around Martial arts fun-guy, and PRSEUS.MGE, the warrior Perseus can be found in the Graphics Library.

John Renfro Davis [74046,757] has been busy uploading a host of favorites to the ORCH-90 Library. BAGPIP.A85, is "Bagpipe Album" 13 bagpipe tunes, KODA.A85, "Kodachrome" by Paul Simon, MORGAN.A85, "Morning Morgantown" by Joni Mitchell, OLBNY.A85, "Only Living Boy In New York" by Paul Simon, JRTOLK.A85, "Songs from Middle Earth" by J.R.R. Tolkien and Donald Swann, DANGLE.A85, "The Dangling Conversation" by Paul Simon, KQUEEN.A85, "Killer Queen" by Freddy Mercury of Queen, and MOTHER.A85, "Mother and Child Reunion" by Paul Simon, are now resting comfortably in Library 5 along with the efforts of Robbie Booth [70721,531], who brings us INTIME.A85, "Somewhere In Time" by John Barry and OVERB.A85, "Somewhere Over the Rainbow"

In the Applications Library, Fred McDonald [72667,3506] offers a series of files making up a Search utility that locates GOTO's in BASIC code. Look for Applications, SEARCH.NO1, SEARCH.NO2, and SEARCH.NO3.

Dennis Tomlinson [76515,2605] posts SUPERC.BAS, a disk cataloger. Specific to the CoCo 3 and in Library 11 we find Robert Pierce [76257,143] uploading DSKEDT.BIN. This is an early version of a subroutine used in the "DISKBUSTER" Disk Utility. Kent Baumgardt [72207,2650] has uploaded three CoCoMax 3 graphics for our viewing pleasure. Those without CoCoMax3 can use the CM3VUE utility for a looksee. X-29.CM3, The Grumman Aerospace aircraft with Forward Swept Wings, HELLEFI.CM3, and acutaway diagram of the Hellfire laser-guided missile.

Bob van der Poel [76510,2203] helps make the switch from RSDOS with DUALDO.B09, a short BASIC09 routine to create a RS-DOS directory with 34 granules on an OS9 formatted disk. Kevin Darling [76703,4227] posts MAX9.AR. This graphics editor for L-II windows edits and creates VEF pictures. DEFEND.AR is the title screen from Amiga's Defender of the Crown game. Painstakingly edited to be viewed using the Wpix palette-switching program (or the latest Vefio program - hit spacebar).

And you heard it first at the Chicago Rainbowfest. PLAY.AR is a sound player quickie. It can play Mac, Amiga whatever sound files that are digitized data. Use with the following files:

DAVIDL.PLA/binary
[72300,1433]
CANTDO.SND/binary
[73135,1204]
BEATLE.PLA/binary
[72300,1433]
BRIDGE.PLA/binary
[76703,4255]
DSRUPT.PLA/binary
[76703,4255]
FIRE.PLA/binary
[76703,4255]
GENQTR.PLA/binary
[76703,4255]
KIRK.PLA/binary
[76703,4255]
MYGOD.PLA/binary
[76703,4255]
PHASER.PLA/binary
[76703,4255]
SCOTTY.PLA/binary
[76703,4255]
SPOCK.PLA/binary
[76703,4255]

Be sure to check out the Library Announcement found in each forum for the most current information on the libraries.

And here we are at the end of another column. Drop me a note on CompuServe and tell me what you'd like to see in future articles. I can be reached either on the CoCo Forum or OS9 and via EasyPlex at 76703,4255.

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DISK \$24.95

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For your important communications needs you've got to go beyond software that only lets you chat. You need a smart terminal so that you can send and receive programs and messages and print them! The VIP Terminal features 32, 51, 64 or 85 characters by 21 or 24 lines on the screen and has a 43K byte buffer to store information.
DISK \$29.95

VIP TERMINAL

Turn the page for more VIP software!

What's In A Date

Bob van der Poel

No doubt you've all seen programs which print out calendars. For many of us, that's the only date related function we've ever seen on a computer. But dates are much more complex than a calendar printing program lets on. Before continuing, see if you can answer these questions WITHOUT looking at a calendar:

1. How many days are there between August 3, 1988 and July 15, 1991?

1a. If I borrow \$100.00 from you on January 1, 1989 and pay it back to you on July 3, 1989 and I've agreed to pay you simple interest on the loan at 12%, how much do I owe you?

2. What date falls 120 days after June 3, 1988?

2a. If I borrow \$100.00 from you on June 3, 1988 and agree to pay you back in 120 days, when is the loan due?

Tough questions! Hopefully some BASIC09 subroutines will help with the answers. But before that, one more question: What date falls one month after March 31? Is it February 28? I don't know either, but perhaps a logical reader will help us out by defining exactly what a month is and what we mean by "after."

The key to the date subroutines presented this month is a concept known as the Julian day number. Simply defined, Julian day numbers are the number of days since a base date. According to one of my sources, true Julian dates as used by astronomers are based on noon January 1, 4713 B.C. as day 0.

The advantage of this scheme is that by converting two different dates to Julian day numbers we can now do simple arithmetic on them. And, of course, we can then convert the new day number back to a date.

Note: Julian day numbers have nothing to do with the Julian calendar. The Julian calendar was the predecessor to the Gregorian calendar we use today. This calendar was

adopted on September 14, 1752. Even though the routines will calculate dates prior to September 14, 1752 these dates must be treated as "imaginary" since the current Gregorian calendar was not in use prior to this date.

Presented at the end of this article are four conversion routines:

Date_Jul converts a date to a Julian day number,

Jul_Date converts a Julian day number to a date,

DayOfYear finds the day of year of a date,

ZelConv finds the day of week of a date.

When typing in these programs do not type in the hexadecimal numbers in the first column. These are not line numbers--they are the I-Code addresses of the program lines and are printed by BASIC09 when a listing is done. Also, be very careful that the correct number of parentheses are included. The math in the routines is very complex. Fortunately, we don't have to understand it to use it.

Now let's return to our first question. The following program will prompt you for two dates. *Elapsed* converts both dates to a Julian day number; by subtracting J1 from J2 it is a trivial matter to calculate the number of days between the two dates.

```
PROCEDURE Elapsed
```

```
DIM Date,Month,Year,J1,J2:REAL
```

```
INPUT "Enter 1st date (dd,mm,yyyy):",Date,Month,Year
```

```
RUN Date_Jul(Date,Month,Year,J1)
INPUT "Enter 2nd date
(dd,mm,yyyy):",Date,Month,Year
```

Continued On 46

When you write be sure to include your name, address, and phone number. We would like an idea that a CoCo 2 can utilize as well as a CoCo 3. We'll announce the idea and the program developed from it, in the next issue.

```

0 '***** INITIALIZATION *****'
1 '
2 '
3 '      MODULAR DESIGN
4 '      TUTOR PROGRAM
5 '      BY: BOISY PITRE
6 '      COCO CLIPBOARD
7 'SEPTEMBER/OCTOBER 1988 ISSUE
8 '
9 'NOTE:  THIS PROGRAM IS A
          SUPPLEMENT TO THE
          ARTICLE, NOT A
          REPLACEMENT.
10 ' ***  SET-UP  ***
20 PCLEAR 1
30 CLEAR 3000
100 '***** MAIN PROGRAM *****'
110 CLS
115 '*** SET UP TITLE ***'
120 PRINT@ 201,"MODULAR DESIGN
130 PRINT@ 234,"TUTOR PROGRAM
140 PRINT@ 297,"BY: BOISY PITRE
150 '* INTRODUCTORY SONG *'
160 PLAY "O3L7T4CDEEEEFEP5DDDDDED
P5CCCCDL3CL2D"
170 '*** MESSAGE SCREEN ***'
180 CLS
190 PRINT"      A MESSAGE TO Y
OU
200 PRINT:PRINT " 'MODULAR DESIGN
TUTOR' IS THE SUPPLEMENT TO A
N ARTICLE IN THE SEPTEMBER/OCTOB
ER 1988 ISSUE OF COCO CLIPBOARD.
WE SUGGEST YOU USE THIS PROGRA
M IN CONJUNCTION WITH THE ARTICL
E. FOR BACK ISSUE INFORMATI
ON, WRITE TO:":PRINT
210 FOR Y=1 TO 4:READ M$:PRINT T
AB((31-LEN(M$))/2)M$:NEXT
220 PLAY"L7T4O4DEFFFFGFP5EEEEEFEP
5DDDEL3DL2C
230 FOR K=1 TO 5000:NEXT
250 '*** TUTOR MENU ***'
260 CLS
270 PRINT TAB(43)"TUTOR MENU"
280 PRINT@136,"1-INITIALIZATION
290 PRINT@200,"2-MAIN PROGRAM"
300 PRINT@264,"3-ERROR TRAP"
310 PRINT@328,"4-SUBROUTINES"
320 PRINT@392,"5-DATA
330 PRINT@456,"6-END PROGRAM
350 '*** MENU INPUT ***'
360 A$=INKEY$:IFA$=""THEN360
370 ON VAL(A$) GOTO 1000,2000,30
00,4000,5000,6000
380 GOTO 360
1000 '*** CHOICE 1 ***'
1001 'INITIALIZATION'
1010 CLS
1020 PRINT "      PART ONE-INITIAL
IZATION
1030 PRINT "      LINE RANGE:0
-99

```

```

1040 PRINT:PRINT" THE INITIALIZ
ATION MODULE IS MAKES UP THE FI
RST 100 LINES OF YOUR PROGRAM.
IT IS THE SET-UP PART OF YOUR PR
OGRAM. COMMANDS SUCH AS pclear,
clear, AND dim SHOULD BE USED
HERE.":PRINT:PRINT" YOU MAY ALS
O DEFINE STRING ANDNUMERI
1999 PRINT@490,"PRESS A KEY:":;E
XEC34442:GOTO 250
2000 '*** CHOICE 2 ***'
2001 'MAIN PROGRAM'
2010 CLS
2020 PRINT"      PART TWO-MAIN PR
OGRAM
2030 PRINT"      LINE RANGE:100-3
9999
2040 PRINT
2050 PRINT" THE MAIN PROGRAM MO
DULE IS THELARGEST MODULE, COVER
ING 39990 LINES. THIS MODULE C
ONTAINS THE'MEAT' OF YOUR PROGRA
M. PLACE ALL MENUS, CALCULATIO
NS, AND SCREENS IN THIS MODUL
E.":PRINT
2060 PRINT" FOR BETTER ORGANIZA
TION, BREAKYOUR MAIN PROGRAM MOD
ULE DOWN INTO SUB-MODULES. US
E remark STATEMENTS LIBERALLY
AND COMMENTAS MUCH AS POSSIBLE.
2999 PRINT@490,"PRESS A KEY:":;E
XEC34442:GOTO 250
3000 CLS:PRINT"NOT AVAILABLE":PR
INT"PRESS A KEY:":;EXEC34442:GOT
O 250

```

Continued On 49

VIP Writer

RATED "BEST" IN SEPT '88 "RAINBOW"

VIP Writer has all the features of VIP Writer III described elsewhere in this magazine except the screen widths are 32, 51, 64 & 85. Screen colors are black, green and white, double clock speed is not supported, Spooler is unavailable. Hard disk is not supported. Even so, VIP Writer is the BEST word processor for the CoCo 1 & 2! VIP Writer includes VIP Speller AT NO ADDITIONAL COST. DISK \$69.95

VIP Database

"ONE OF THE BEST" JULY
1984 "RAINBOW"

VIP Database has all the features of VIP Database III described elsewhere in this magazine except the screen widths are 51, 64 & 85. Screen colors are black, green and white, double clock speed is not supported, Spooler is unavailable. Even so, VIP Database is the most complete database for the CoCo 1 & 2! DISK \$49.95

Turn the page for more VIP software!

```

00E2      m=Month
00EA
00EB      IF m>2 THEN
00F8          m=m-3
0104      ELSE
0108          m=m+9
0114          y=y-1
0120      ENDIF
0122
0123      c=INT(y/100)
0130      ya=INT(y-100*c)
0141
0142      JulianDate=INT(146097.*c/4)
          +INT(1461.*ya/4)+INT((153.*
          m+2)/5)+DayOfMonth+1721119.

0185

PROCEDURE Jul_Date
0000
0001      (* BASIC09 Subroutine to
          convert a julian day
          number to
0038      (* a standard date.
004B
004C      (* Based on an algorithm
          by R. G. Tantzen, CACM 199-
          pl-0

0084      (* usage: run jul_date (
0085          DayOfMonth, Month, Year,
          JulianDate)

00C2
00C3
00C4      PARAM DayOfMonth,Month,
          Year,JulianDate:REAL

00D7
00D8      DIM JD:REAL
00DF
00E0      JD=JulianDate-1721119.

```

```

00EF
00FO      Year=INT((4*JD-1)/146097.)
0108      JD=4*JD-1-146097.*Year
0123      DayOfMonth=INT(JD/4)
0130
0131      JD=INT((4*DayOfMonth+3)/
          1461)
0147      DayOfMonth=4*DayOfMonth+3-
          1461*JD
0160      DayOfMonth=INT((DayOfMonth+
          4)/4)
0171
0172      Month=INT((5*DayOfMonth-3)/
          153)
0187      DayOfMonth=5*DayOfMonth-3-
          153*Month
019F      DayOfMonth=INT((DayOfMonth+
          5)/5)

01B0
01B1      Year=100*Year+JD
01C1      IF Month<10 THEN
01CE          Month=Month+3
01DA      ELSE
01DE          Month=Month-9
01EA          Year=Year+1
01F6      ENDIF
01F8

```

```

PROCEDURE ZelConv
0000
0001      (* Calculate the day of
          week for a given date.

002F
0030      (* Based on a Fortran
          algorithm by J. Douglas
          Robertson
0067      (* Published in CACM, 398-
          pl-r1

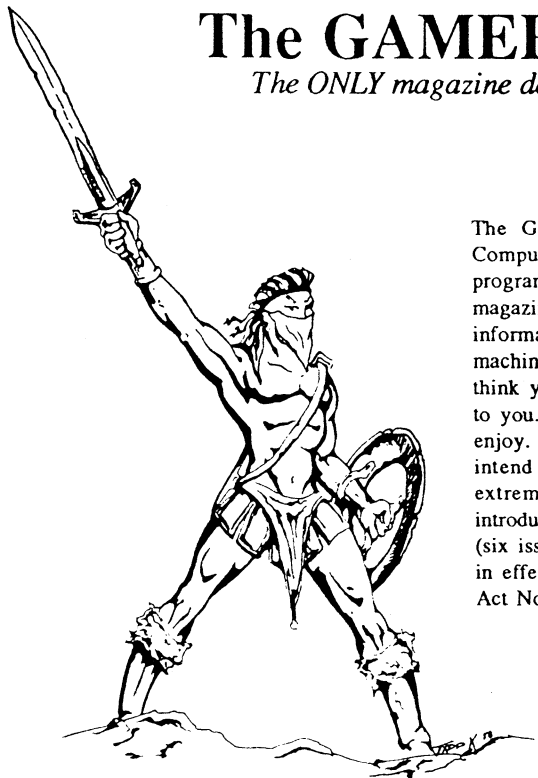
0086

```

Continued On 48

The GAMER'S CONNECTION!

The ONLY magazine devoted solely to the CoCo gaming world



The Gamer's Connection, a great new magazine devoted solely to the Color Computer world is finally here! Filled from cover to cover with high quality programs, articles, tutorials, advice, hits & tips, reviews and more reviews, this magazine is truly the best and most informative source of gaming AND non-gaming information anywhere! - Also found inside are columns on BASIC programming, machine language instruction, program design and so much more! The aspect we think you will like most about us is the enjoyable way we present the information to you. While not in a childish or playful way mind you, but in one that you will enjoy. The ideal behind games is that they are to be fun and relaxing, and we intend to keep The Gamer's Connection fun and very enjoyable to read, and extremely informative as well. Right now you can take advantage of our introductory special & save on our subscription rates --> You can receive a full year (six issues) of The Gamer's Connection for only \$15.00!! This very limited offer is in effect only for the first 1000 people who take advantage of this special offer, so Act Now and start your subscription to The Gamer's Connection, today!

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the next issue. Right now, type in Listing 1. As you type, compare it's structure to the guidelines above. Think about ideas you can use in implementing these guidelines in your work.

After typing Listing 1, save it as MODTUTOR.BAS on a good, dependable disk. Although part of the listing is missing, it will still run. The rest of the listing will appear in the next issue for the simple fact that their modules are not covered here. Let's go over the INITIALIZATION, MAIN PROGRAM, and DATA modules now.

USING REMARKS

If you like me, you are more a conservative type. If anyone hates to use REMARKS in their program, it is I. Yet, it is important to practice liberal usage of REMARK placement throughout your programs. It will help you in the long run and will save you much hectic searching.

THE INITIALIZATION MODULE -- LINES 0-99

The INITIALIZATION module is used to "set-up" or initialize your CoCo. This varies from program to program, but such commands as CLEAR, PCLEAR, DIM, and other initialization associated keywords are used here. Also, string and numeric variable assignments can be put here. The main thing to remember is this: 1) PCLEAR must ALWAYS come first, followed by 2) the CLEAR statement, then 3) the DIM-ensioning of arrays. Variable assignments may then follow, along with any other set up routines you may use. I usually place important POKES in this area. Also, CoCo 3 owners should use the ON BRK GOTO and ON ERR GOTO statements here.

THE MAIN PROGRAM MODULE -- LINES 100-39999

The MAIN PROGRAM module will almost always be the largest module of your program. It contains all the "meat" of the program: menus, inputs, calculations, etc. If you really want to be organized, the MAIN PROGRAM module can be divided even further into "sub-modules" for input/output, menu handling, and other things. We won't be using sub-modules for the sake of keeping program structure non-complicated.

It is at this point where most "on-the-spur" programmers begin to type -- and I might add, fail to finish. It's like jumping in the middle of a calculus class without knowing the prerequisites. I'd rather have a right start than a head start.

THE DATA MODULE -- LINES 60000-63999

The DATA module, by rule, is the last module of the program. It contains information in the form of DATA statements. Notice that line 63999 is the highest line you can type a BASIC statement on. However, the 4000 lines you have is more than adequate for DATA statement storage.

You probably noticed in MODTUTOR that the first line of each module has the module name surrounded by asterisks. It is a good idea to highlight the module's name for easy locating while it is scrolling up the screen. Otherwise, just type LIST and the line range for the module and you'll hit it every time. Also, get in the habit of documenting your program first thing in the INITIALIZATION module. I usually type the name of the program, my name, the date it was created, and the version (when a version is applicable).

Well folks, that is it for this month. I suggest sitting down and studying the top-down method of modular design. Practice implementing it in your future programming projects. And don't feel restricted by the line numbers. If you need more room then use it, just make a mental note, or better yet, buy a legal pad and keep it next to your CoCo. When you get to an important line or command, jot down the line number. Keep track of RENUMs and DELs. If you follow the guidelines, I can assure you that your programs will be much more efficient.

Finally, starting the issue after next, we will do a programming project based on the principles of modular design. We would like to have some input from you, our readers, on an idea for a SERIOUS program. We don't want an idea too big, or one too small. Give it some thought and drop a line to me c/o CoCo Clipboard Magazine, 3742 U.S. 20, Box 3, Fredonia, NY 14063

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FEBRUARY 1985 "RAINBOW"

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Turn the page for more VIP software!

```
RUN Date_Jul(Date,Month,Year,J2)
```

```
PRINT "There are "; FIX(J2-J1); "days between  
these 2 dates."
```

And as to the money I owe, it's just a matter of putting the number of days into the formula:

```
Int=days/365 * rate * amount.
```

Our next question involves calculating a date X days from a given date. The program *InXdays* prompts for a date and the number of days. Again, *Date_Jul* is called to convert the date to a Julian day number; next the number of days are added; and the result is converted back to a date via *Jul_Date*.

```
PROCEDURE InXdays
```

```
DIM Date,Month,Year,Offset,J1:REAL
```

```
INPUT "Enter the 'current' date (dd,mm,yyyy):  
",Date,Month,Year
```

```
INPUT "Enter the number of days: ",Offset
```

```
RUN Date_Jul(Date,Month,Year,J1)
```

```
RUN Jul_Date(Date,Month,Year,J1+Offset)
```

```
PRINT USING "'The new date is  
,i3,',',i3,',',i5"; Date,Month,Year
```

The next tool in our package of date algorithms is *ZelCong* (Zeller's Congruence). This routine will be most helpful for people wanting to write calendar programs, but it is also useful in data processing programs which need to know which day a particular date falls upon. For example, if you are setting up a loan you may not want the due date to fall on a Sunday. By way of an example the following little program displays the first date of the first Sunday in a given year.

```
PROCEDURE Sunday
```

```
DIM Date,Month,Year,DayOfWeek:REAL
```

```
INPUT "Enter the year: ",Year Month=1
```

```
FOR Date=1 TO 31
```

```
RUN ZelCong(Date,Month,Year,DayOfWeek)
```

```
EXITIF DayOfWeek=0 THEN
```

```
PRINT "January "; FIX(Date); " is the 1st
```

```
Sunday in "; Year
```

```
ENDEXIT
```

```
NEXT Date
```

The numbers of the days returned by *ZelCong* are 0 to 6, where 0 is Sunday, 1 is Monday, etc.

The last routine is *DayOfYear*. This calculates the day number of any date in a year with January 1 being day 1 and December 31 being day 365 (or in a leap year, 366).

```
PROCEDURE DofYtest
```

```
DIM Date,Month,Year,Day:REAL
```

```
INPUT "Enter date (dd,mm,yyyy):  
",Date,Month,Year
```

```
RUN DayOfYear(Date,Month,Year,Day)
```

```
PRINT "This is the "; FIX(Day); " day of the  
year."
```

I've tested all of the above routines with many different dates and found them to be very reliable. All of them properly compensate for leap years. Those of you interested in pursuing this concept further may be interested in the following references:

1. Collected Algorithms from CACM. In particular see 199 and 398.
2. King, Gordon. "Julian Dates for Microcomputers." Dr. Dobb's Journal, Number 80, June 1983.
3. "Julian and Gregorian Calendars; Leap Year." The World Almanac & Book of Facts, Newspaper Enterprise Association, Inc.

```
PROCEDURE Date_Jul
```

```
0000
```

```
0001
```

```
(* Basic09 subroutine to  
convert a date to a julian  
day number.
```

```
0040
```

```
0041
```

```
(* Based on algorithm by  
R. G. Tantzen, CACM 199-p1-  
0
```

```
0076
```

```
0077
```

```
(* usage: run date_jul  
(dayofmonth,month,year,  
julianvalue)
```

```
00B1
```

```
00B2
```

```
00B3
```

```
PARAM DayOfMonth,Month,  
Year,JulianDate:REAL
```

```
00C6
```

```
00C7
```

```
00DA
```

```
DIM y,m,c,ja:REAL  
y=Year
```



```

0087      (* usage: run ZelConv
          (Date, Month, Year,
          DayOfWeek)
00BB
00BC      (* DayOfWeek returned 0..6
          (Sunday=0)
00E1
00E2      PARAM Date,Month,Year,
          DayOfWeek:REAL
00F5
00F6      DIM i,j,k:INTEGER
0105
0106      i=Year
010F      j=Month
0118      k=Date
0121
0122
0123      t=(13*(j+10-(j+10)/13*12)-
          1)/5+k+77+5*(i+(j-14)/12-
          (i+(j-14)/12)/100*100)/4+
          (i+(j-14)/12)/400-(i+(j-14)
          /12)/100*2
019A
019B      DayOfWeek=MOD(t,7)
01A7
01A8
PROCEDURE DayOfYear
0000
0001      (* Calculate the day of
          the year given the year,
          month, date.
003E
003F      (* Based on a Fortran
          algorithm by J. Douglas
          Robertson
0076      (* Published in CACM, 398-
          p1-r1
0095
0096      (* usage: run DayOfYear
          (Date, Month, Year,
          DayNumber)
00CC
00CD      PARAM Date,Month,Year,
          DayNumber:REAL
00E0
00E1      DIM I,J,K:INTEGER
00F0
00F1      I=Year
00FA      J=Month
0103      K=Date
010C
010D      DayNumber=3055*(J+2)/100-
          (J+10)/13*2-91+(1-(I-I/4*4+
          3)/4+(I-I/100*100+99)/100-
          (I-I/400*400+399)/400)*(J+
          10)/13+K
0181

```

```

ES YOU MORETHAN ADEQUATE ROOM TO
PLACE YOURDATA STATEMENTS, YET
DOESN'T IMPOSE ON THE LENGTH
OF OTHER MODULES. IN SOME INS
TANCES, THIS MODULE CAN BE IG
NORED SINCE A NUMBER OF PRO
GRAMS DON'T";
5070 PRINT"REQUIRE DATA STATEMEN
TS.
5999 PRINT@490,"PRESS A KEY:";:E
XEC34442:GOTO250
6000 '*** CHOICE 6 ***'
6001 'END PROGRAM'
6010 CLS
6015 ' VERIFICATION '
6020 PRINT @ 264,"ARE YOU SURE?
(Y/N)
6030 'CHECK FOR ANSWER'
6040 A$=INKEY$
6050 IF A$="y" OR A$="Y" THEN 61
00 ELSE IF A$="n" OR A$="N" THEN
250 ELSE 6040
6100 CLS:NEW
60000 '***** DATA *****'
60010 DATA COCO CLIPBOARD MAGAZI
NE,3742 U.S. 20 BOX 3,"FREDONIA,
NY 14063",(716) 679-0126

```

Continued From 45

```

4000 CLS:PRINT"NOT AVAILABLE":PR
INT"PRESS A KEY:";:EXEC34442:GOT
O 250
5000 '*** CHOICE 5 ***'
5001 'DATA'
5010 CLS
5020 PRINT"          PART FIVE-DA
TA
5030 PRINT"          LINE RANGE:60000
-63999
5040 PRINT
5050 PRINT" THE DATA MODULE IS
THE LAST  MODULE, COVERING A LI
NE RANGE  OF 4000 LINES.  PLAC
E ALL OF  YOUR DATA STATEMENTS
HERE. "
5060 PRINT" THIS LINE RANGE GIV

```

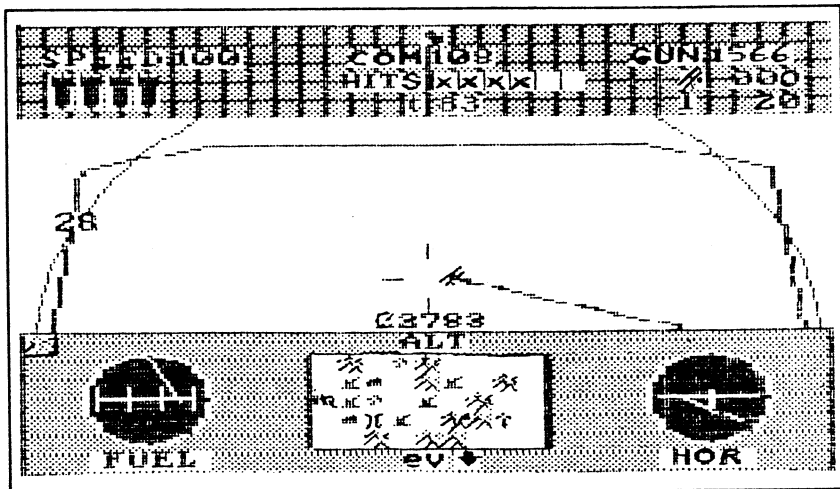


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A C E S is a high resolution, completely machine language game of aerial warfare in WWI. Player flies on many missions to bomb enemy targets including airfields, enemy headquarters, anti-aircraft batteries, bridges and factories, but not player's own air base. He must dodge mountains and dogfight with the enemy's best, including, if unlucky, members of the dreaded Flying Circus. After he shoots down five planes he becomes an ACE and receives special consideration; but the game is far from finished. **A C E S** averages about 82 targets and over 100 enemy aircraft per game.

A C E S plays in real time and displays flight simulated dash and controls. Operates from the keyboard. Included in the display is a high resolution mini-screen featuring terrain, targets, and player's relative ground position. There are 8 zones in each map which changes as player flies over it. Game Save. (It could take days to win!) In addition, **NEWMAP** is included to allow for the creation of a zillion new maps. **A C E S** was created in part with AGS, developed by Ken Schunk. For all CoCo's.

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RED ALERT: a starship combat simulator. Object of the game is to defeat the computer controlled enemy vessel by using your ship's capacities, strategic maneuvers, and your own smarts.

NEW

A C E S: WWI Aerial Warfare (CC64K D HR ML)	\$29
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"In the beginning there was VIP Writer and users saw that it was good. It was still the best thing around for the CoCo, But it's not the best anymore. There's a new word processor to claim the crown... VIP Writer III. Setting the Standard for CoCo 3 Word Processing."
 -The RAINBOW SEPTEMBER 1988

VIP WRITER III VS THE COMPETITION

VIP Writer has ALWAYS led the pack with features and now VIP Writer III still leads the way! The chart below illustrates this fact. Telewriter 128 only gives you 48K for text. Why is it called Telewriter 128? Word power 3 gives only 72K! VIP Writer III makes use of over 106K! VIP Writer III is the ONLY CoCo 3 word processor worthy of it's name!

WORD PROCESSOR COMPARISON CHART

CoCo3 with 128K	VIP Writer III	Telewriter 128	Word Power 3
Text Storage	OVER 49,000	48,000	72,000
Print Spooler	YES 57,000	NONE	NONE
Total Storage	106,000	48,000	72,000
Spelling Checker	VIP Speller	NONE	FREE WARE
Screen Display	32/40/64/80	40/80	80

SCREEN DISPLAY OPTIONS

As the chart above shows - VIP Writer III offers more screen width options - all with 24 lines and actual lower case letters. It uses the CoCo 3's hardware display and double clock speed and is VERY VERY FAST! You can choose fore and background colors from up to 64 different hues. Color can be turned ON or OFF for the best possible display using a color or monochrome monitor or TV set. VIP Writer III has a built in on-line context sensitive help facility which displays command usage in easy to read colored windows.

CUSTOMIZER & PRINTER INSTALLER

VIP Writer III comes with a configuration / printer installation program which lets you customize VIP Writer III to suit your own liking. You can set screen width and colors as well as margins and more. You can also install your own printer and set interface type (serial, parallel or J&M), baud rate, line feeds, etc. Once done, you never have to enter these parameters again! VIP Writer III will load n' go with your custom configuration every time!

TEXT FILE STORAGE

VIP Writer III creates ASCII text files which are compatible with all other VIP Programs as well as other programs which use ASCII file format. You can use VIP Writer III to even create BASIC programs! There is a 49K text buffer and disk or cassette file linking allowing virtually unlimited text space. VIP Writer III works with up to four disk drives and lets you display disk directories and free space as well as rename or kill disk files. In addition VIP Writer III is 100% compatible with the RGB Computer Systems HARD DISK.

EDITING FEATURES

VIP Writer III has a full featured screen editor which can be used to edit text with lines up to 240 characters long with or without automatic word wrap around. You can select type-over mode or insert mode. There is even an OOPS command to recall a cleared text buffer. Other editing features include: Type-ahead • typamatic key repeat and key beep

for flawless text entry • end of line bell • full four way cursor control with scrolling • top of textfile • bottom of textfile • page up • page down • top of screen • bottom of screen • beginning of line • end of line • left one word • right one word • DELETE character, to beginning or end of line, word to the left or right, or entire line • INSERT character or line • LOCATE and/or CHANGE or DELETE single or multiple occurrence using wildcards • BLOCK copy, move or delete with up to TEN simultaneous block manipulations • TAB key and programmable tab stops • word count • line restore • three PROGRAMMABLE FUNCTIONS to perform tasks such as auto column creation and multiple copy printing.

TEXT FORMATTING

VIP Writer III automatically formats your text for you or allows you to format your text in any way you wish. You can change the top, bottom, left or right margin and page length. You can set your text flush left, center or flush right. You can turn right hand justification on or off. You can have headers, footers, page numbers and TWO auxiliary lines which can appear on odd, even or all pages. You can also select the line on which they appear! You can even change the line spacing! Parameters can be altered ANYWHERE within your text file!

PREVIEW PRINT WINDOW

VIP Writer III features an exclusive format window which allows you to preview your document BEFORE PRINTING IT! You are able to move up, down, left and right to see centered and justified text, margins, page breaks, orphan lines etc.

PRINTING

VIP Writer III prints TWICE as fast as any other CoCo word processor! It supports most serial or parallel printers using J&M JFD-CP or Rainbow interface and gives you the ability to select baud rates from 110 to 19,200. You can imbed printer control codes anywhere in your text file EVEN WITHIN JUSTIFIED TEXT! VIP Writer III also has TWENTY programmable printer macros which allow you to easily control all of your printers capabilities such as bold, underline, italics and superscript using simple key strokes. Other features include: multiple copy printing • single sheet pause • line feeds.

PRINT SPOOLING

Save up to \$150 on a print spooler because VIP Writer III has a built in print spooler with a 57,000 character buffer which allows you to print one document WHILE you are editing another. You don't have to wait until your printer is done before starting another job!

SPELLING CHECKER

VIP Writer III includes VIP Speller AT NO ADDITIONAL COST! VIP Speller checks text for misspelled words and has a 50,000 word dictionary that can be added to or edited.

DOCUMENTATION

VIP Writer III is supplied with a 125 page instruction manual which is well written and includes many examples. The manual has a tutorial and glossary of terms for the beginner as well as a complete index! VIP Writer III includes VIP Speller. DISK \$79.95

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VIP Database III

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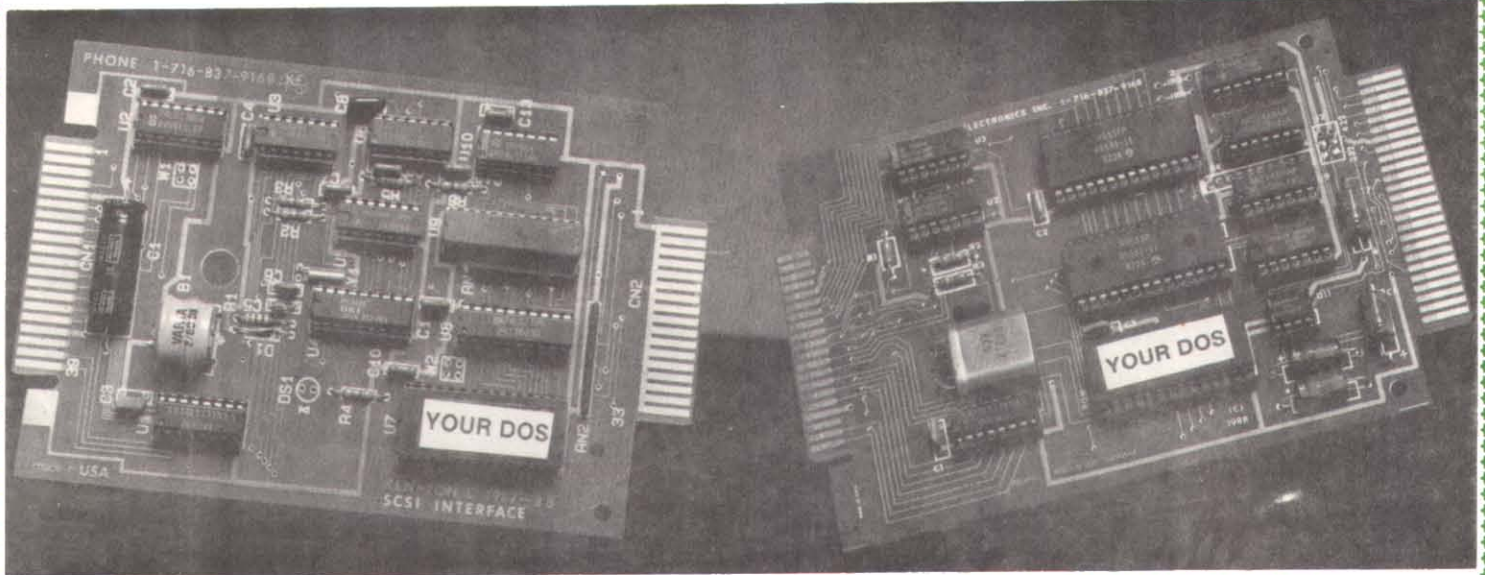
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