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CoCo Clipboard Magazine

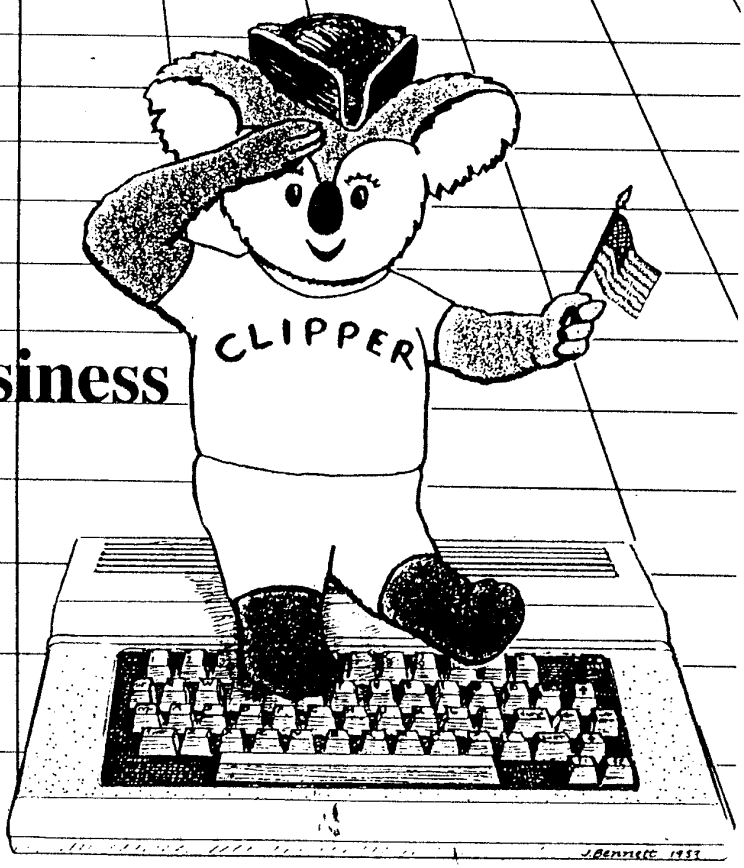
THE NEWEST, MOST INDEPTH MAGAZINE FOR TANDY'S COLOR COMPUTER 2 & 3

The Wegert Report

The Machine Shoppe

Deluxe Power Graph
part 1

"SEEC" For "C"

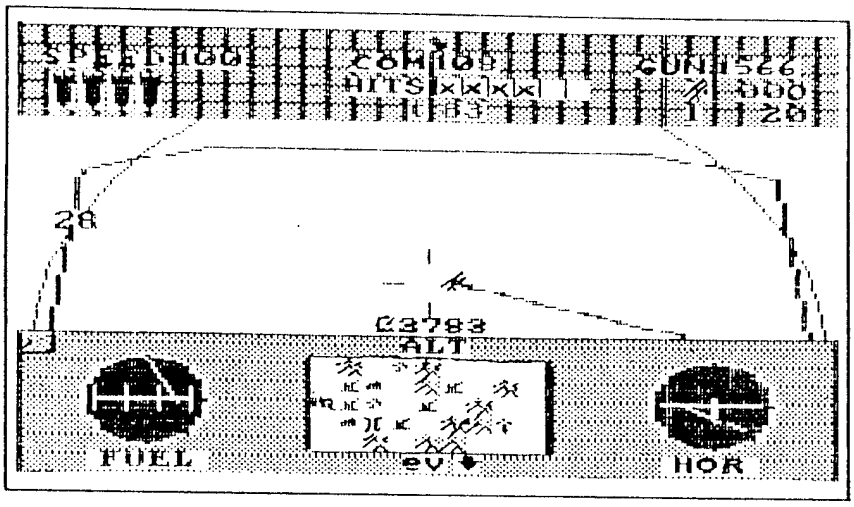


CoCo and Small Business

New Boots

Master Basic09

MORE FROM ARK ROYAL!



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.

WAR AT SEA: Wooden Ships simulate ship to ship battles during the 18th Century. Player controls a number of sailing ships from different nations and must pit his seamanship against the computer or another player.

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**
RED ALERT: Star Ship Warfare (CC64K D HR MLS J) **$27**
WAR AT SEA: Wooden Ships (CC64K D HR MLS J) **$25**

Pro Football: Strategy Gridiron game (CC3 128K HR B) **$20**
Okinawa: The Big Invasion (Screen Dump inc) (CC64K D HR ML) **$27**
Blitzkrieg West: A Bigger Bulge (CC64K D HR ML) **$27**
Bataan: Historial & Hypothetical games in one (CC64K D HR ML) **$29**
Desert Fox: Rommel (CC64K D HR MLS) **$27**
Task Force: Modern Naval War in the Med (CC64K D HR MLS J) **$27**
D DAY: The 6th of June (CC64K HR ML) **$25**
Battle Hymn: Battle of Gettysburg (CC64K D HR ML) **$25**
Company Commander: Squad Level Wargame (CC32K SG MLS) **$25**
(House to House Module included in Company Commander)
Additional Modules for Company Company 3.0
River Crossing **$17**
Gemini **$17**
Cauldron **$17**
Beach Head **$17**
Fire One! Submarine Simulation (CC3 D HR B) **$25**
Fire & Steel: Waterloo Campaign (CC64K D HR MLS) **$22**

Luftflotte: Battle of Britain (CC32K SG MLS) **$25**
Stalingrad: The turning point. (CC64K HR ML) **$25**
Final Frontier: War in Space (CC32K D HR MLS) **$25**
Barbarossa: The War in Russia (CC64K HR ML) **$22**
RedStar: Nato vs Warsaw Pact (CC32K D HR ML) **$22**
DarkHorse: Redstar Sequel (CC64K D HR ML) **$22**
Midway: The Turning Point in the Pacific (CC32K HR MLS) **$20**
Escape From Denna: Dungeons! (CC32K SG MLS) **$15**
Tunis: War in the Desert (CC32K SG B) **$15**
Battle of the Bulge 1 or 2 player (CC32K SG B) **$15**
Phalanx: Alexander the Great (CC32K HR ML) **$15**
Rubicon II: Invasion game (CC32K SG B) **$10**
Guadalcanal: America Strikes Back (CC32K SG MLS) **$10**
Waterloo: Napoleon (CC32K SG MLS) **$10**
Bomber Command: Strategic Bombing Mission (CC32K SG MLS) **$10**
Kamikaze: Naval War in the Pacific (CC32K HR B) **$10**
Starblazer: Strategy Star Trek (CC32K SG MLS) **$10**
Mission Empire: Build an Empire in Space (CC32K SG B) **$10**
Galactic Taipan: Economics in Space (CC32K SG B) **$10**

Keyboard General: Bi-monthly newsletter yearly sub **$15**

Barbarossa, Luftflotte, Battle Hymn (256K) available Tandy 1000

New for the Tandy 1000
Gray Storm Rising: War in the North Atlantic **$25**

Codes: CC — Color Computer, all versions CC3 — CoCo 3 only
D — Disk only (no D means program available tape or disk)
HR — High Resolution SG — Semigraphics ML — Machine Language
MLS — Machine Language Subroutines B — Basic J — Joystick

Write for free catalog!

Prices include shipping to USA and Canada. Others add $3.00. COD's available in USA only, add $3.50. Personal Checks accepted with no delays in USA. Others must send M.O. or Bank Draft in U.S. funds. Programs shipped within 24 hours except on weekends. Sorry, no bankcards. Color Computer and Tandy 1000, TM Tandy Corp.

Florida residents add 6% sales tax.

Canadians may order direct from: **M & M Software,** Post Office Box 1945, Slave Lake, Alberta T06 2A0. Write M & M Software for information.

ARK ROYAL GAMES
P.O. Box 14806
Jacksonville, FL 32238
(904) 786-8603

ARK ROYAL GAMES

July / Aug. 1988 Issue 6

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Your comments and suggestions are welcome. We reserve the right to edit and publish all letters received unless requested not to by the writer.

PLEASE NOTE: Subscription orders received AFTER the first week of a publication date will begin with the NEXT ISSUE. We cannot start subscriptions with back issues.

CoCo Clipboard Magazine

Vol. 1 Issue 6 July/August 1988

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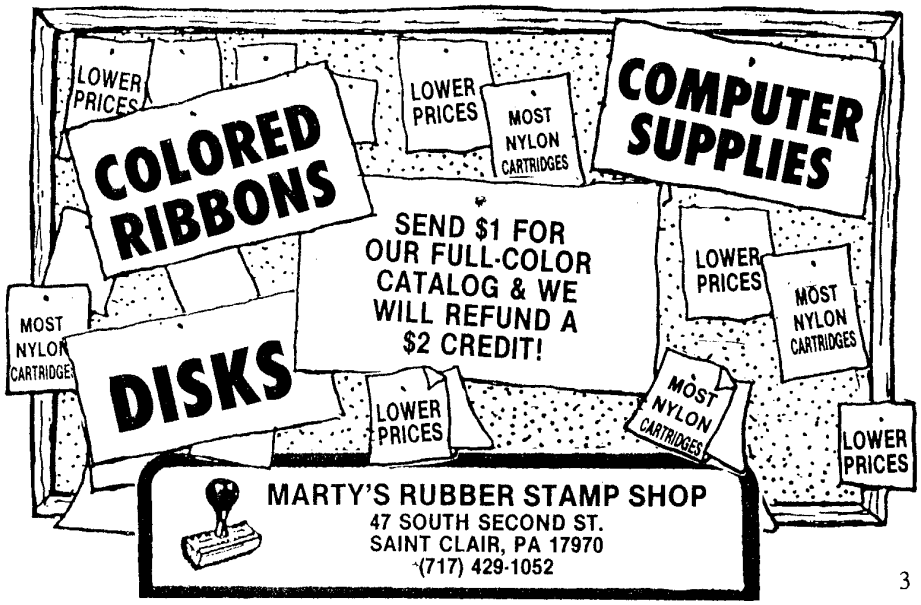
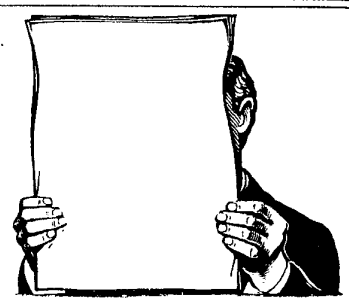


Reader Mail



Dear People:

I am a new subscriber (aren't we all?). I've received one copy of your magazine. Found the ad in Computer Shopper (also the first issue I ever purchased).

I've had my 64K CoCo II for several years. I use a single disk drive which I purchased in December of 1987. I would like to be able to use a monochrome monitor so as to display spreadsheet and other software in 80 column format. Is there any reasonably simple way to accomplish this? I also would like to run Bible Software. I've thought much of updating either to a PC or Apple clone but I like the CoCo; am used to it; have a lot of data in file and therefore dismay somewhat at the prospect of change.

You people and your clientele are obviously CoCo fans and are quite likely to be able to answer my questions. I have often, especially when looking for public domain software, felt like an orphan. Otherwise, I have no complaints against my CoCo.

I use it most of all as a word processor and currently use Elite Word with which I am well pleased.

Russel H. Guilford
Wauseon, OH

Dear Russel:

Your software must support the 80 columns in one of two ways: Either through about 6k of memory given up to a software generate character set, or be able to use some type of an 80 column driver such as Word Pak RS. As far as driving a monochrome monitor there are several choices you could make. Howard Medical in Chicago sells several and you can pick up the video driver needed to run this monitor from them as well. Moreton Bay Software has also sold an excellent monitor driver, but I'm not sure if they still support the CoCo.

As far as Bible related software is concerned you may want to check with our friend Terry Simons at Computer Villa in Des Moines, Iowa. For those interested in Bible software Terry should have some leads for you. There is a need for this type of software for the CoCo, especially now that inexpensive hard drives are available.

Dear Sir:

OK! you have convinced me. Please renew my subscription to CoCo Clipboard Magazine for 2 years.

Thank you.

Leroy Danner
Kenosha, WI

Consider it done, and thanks!

Dear Darlene:

Thank you for the letter acknowledging that you received my subscription order. I'm very sorry that you cannot send me the back issues as part of my subscription, I will keep the information about them in my files in case I wish to order one or all of them in the future.

You asked for my input. I gave some input to Rainbow magazine, but they failed to act on it. I'm sure that you will not do the same. I am not a programmer. But by looking at other programmers work and by making modifications, I can sometimes get a program with an application I could use to work for me. I'm not finding this easy to do with Basic09 or "C". These are the two languages I would like to learn how to program. I find very little help in this area in the Rainbow magazine and hope to see your magazine fulfill this void. Maybe comparisons of the same program written in Basic, Basic09, and "C".

Also, I hope you publish the material that you put up on CompuServe. I cannot afford CompuServe right now but would like to be able to have what is offered there. When reading the Delphi Bureau colum in the Rainbow, I see many things of interest that I'm unable to get because they are never published.

Another suggestion I would make is to three-hole punch the magazine. I'd like to bind them in Accopress covers.

Because I have not seen a copy of CoCo Clipboard I will reserve any other thoughts for the future. I wish you much success with your endeavor.

Sincerely,

Robert M. Hall
Philadelphia, PA

Dear Robert:

Well I think you'll find this issue of Clipboard to your liking. We now have 3 columns on Basic09 programming, one on "C", two on machine language, and an article with a Basic programming challenge. We are attempting to get more programs in Basic for the CoCo in our pages. However we won't publish do nothing programs, just because they're in Basic. They will have to do or show something of value.

We have improved our coverage of CompuServe in the Wegert Report, however we can't publish anything that's on CompuServe because that material belongs to them! It runs pretty much the same over at Delphi. The programs, letters, editorials and transcripts of conferences belong to that service and are not available without their permisson. But we'll check into to it as far as cost is concerned - we would more than likely just publish the edited transcripts of the conferences however. Thanks for your input and be sure to write us back!

Dear Sir:

Upon viewing your advertisment in Dynamic Color News, I am yet undecided about subscribing to your magazine. Would you please send me a sample copy for evaluation? Also, do you currently have a policy about group subscriptions? I am presently creating a Color Computer Users Group, and any assistance in this area would be greatly appreciated. If there are any users groups that you know of for the CoCO (either I, II or III) please forward this letter to them, as I am interested in the procedure for each club.

Thank you for your consideration in this effort.

Sincerely,

Ian J. Gardner
DeKalb Junction, NY

Dear Ian:

Thanks for taking the time to write to us. At present we have no bulk rate policy for a group subscription. If we do develope anything along those lines, we'll publish it here in the magazine.

Dear Sir:

Well I guess the first thing to say is Keep Up the Great Work. I'm sending you my check for a two year renewel to you magazine.

Yours truly,

Terry Laraway,
Bremerton, WA

Dear Terry:

Thanks for your support and your renewel. This will be the last issue where folks can take advantage of the $12.00 and $23.00 rates. After the first of August things will go to $15.00 for one year and $28.00 for two. So reader be smart like Terry and mail your order in today!

Gentlemen:

On behalf of the Vancouver Color Computer Club I have enclosed a mony order for a subscription to the CoCo Clipboard Magazine.

Your pubication continues to be of interest for computer users of all qualifications. Keep up the good work.

Also enclosed in my checque fo $12.00 to renew my subscription per the label enclosed.

Yours Truly

Bryan Wilkins
Vancouver, BC

Dear Bryan:

Thanks for the new subscription and your renewel. Our support for Canada continues to be very strong and we thank all our friends up north!

Dear Ted:

Congratulations on the vast improvements in CoCo Clipboard Magazine. You people are filling a great void. Due to the fact that I have just received the May/June issue it appears that my subscription must be about to expire. I am, therefore, enclosing a check so that my subscription can be renewed for two more years.

If you decide to add a club section to the magazine some time in the future it would be greatly appreciated if you would list the Color America Users Group, 3811 N. Foster Ave, Baldwin Park, CA 91706.

Jack W. Eizenga,
Disk Librarian & Treasurer

Dear Jack:

Thank you for all the nice words! We have had one issue with our CoCo Club Corner in it and will do another very soon. I'll be glad to send you the appropriate form. Our local club has purchased many of the Color America disks and they are excellent. You can write to Jack at the above address for more information.

Dear Ted:

Thanks for the CoCo Clipboard Magazine. I just received the May/June issue. Best of luck with you endeavor to fill a serious void in the Coco publishing world. This is the type of magazine I have been looking for since Spectrogram folded.

Sincerely,

Leslie E. Welch
Belleville, IL

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FROM THE DESK OF...

Ted & Darlene Paul

It's about 83 outside and it's only 11:30 in the morning! Now that might not be a big deal to a lot of you in the southern part of the country or for those of you who are still waiting for rain, but considering our office is only two miles from Lake Erie and it's cooling breezes, it is very unusual indeed.

Speaking of unusual things in the CoCo market place the summer is supposed to be a slow time for computer sales. Funny thing though (maybe it's heat stroke) our business is up, and several new products have been launched in the CoCo market place over the last few weeks. Bill Vergona at Cer-Comp has announced a new RS-DOS based Window Master program. For those of you who want nothing to do with OS9 this just may be the program for you. SD Enterprises has released the CoCo III version of VIP Database. Burke & Burke in Illinois continues to expand, RainyDay Software in Oregon has released it's first program and announced a digitizing service for your personal pictures or VCR tapes, and there other new programs for word processing and sound generation. So if this is a "slow business time" what can we expect during the normal retail season this coming fall! Even Radio Shack is in the midst of it's annual tent sale with in stock software going for 40% off. That's a nice break on products like Deskmate 3, Flight Simulator, Sub Simulator and many other of the games and utilities they stock. (Just as I was about to wrap this article up and fire up the printer I have received a notice from Tandy that they will be having a press preview of the new computer products in Ft. Worth at the end of July. I checked with the folks in Ft. Worth and could not get any type of statement regarding the CoCo. However they will be sending a press kit out and we will pull out ALL the stops to bring any CoCo news to our readers FIRST!)

What has prompted this piece has been a growing campaign of complaints about the lack of software and / or reasonably priced software for the CoCo. Something came flashing across my screen a while back while on CompuServe from someone wishing there was a CoCo III version of Word Perfect and Lotus 1,2,3 and D-Base III. Yes we probably have enough memory in a CoCo III under some fancy machine language programming or OS9 to handle versions for these programs. But would you spent several hundreds of dollars for these programs - and another several hundreds for an RGB or Burke & Burke HD just so you could have these name brands? I doubt it. The VIP Writer III and Database III will run on the RGB HD just peachy and there are several excellent OS9 based programs ready to go on the Burke & Burke system. And now with the Window Master system coming on line ya just gotta ask "why do you want all that other high priced stuff?"

What has made these CoCo programs available, and will make more available is that the CoCo market is finally waking up to the fact that <u>good</u> programs and equipment cost time and money. When programmers and suppliers feel they can make an honest return they'll be there with the goods. We have to do our part however in a couple of areas and I am issuing this challenge to all of our readers right now....

Suppliers of programs and equipment need two things in order to stay in business and supply us with the items they need, and they are:

1. Sales - It's pretty tough to pirate a hard drive but not so hard to steal the software that runs on it. When you give it away to your "friends" you're not just cutting the throat of the original vendor, you're cutting your own. Good software costs good money (Word Perfect, DBase III and Lotus 1,2,3 ain't cheap) and CoCo users have benefited for years from high powered software at relatively low prices. Support your suppliers by buying from the vendor and not your neighbor.

2. Write - We have got to let people know what we want and they won't know that unless we follow step 1 and follow up with step 2. For example there are several excellent patches and fixes for Multi-Vue on the OS9 Forum on CompuServe. These have been developed by independent programmers and solve many of the glitches in this package. You would think that our friends at Tandy would be happy to issue a new version of Multi-Vue incorporating these updates and fixes, but it has not happened. We'd love to see some updates and additions to Tandy Home Publisher, but we haven't heard or seen anything. Does Ft. Worth know about these fixes and desires - sure they do - but they must not feel there is enough of a market demand to make them available as updates, or new releases. And I think they feel that way because they don't know just how much we want them. I don't think they have any market people who specialize in ESP. Therefore we've got to write and let them know. The only thing I ask is that you keep your letters civil. Nothing will turn folks off faster than a poorly written letter filled with four letter

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The Wegert Report

Steve Wegert

I'm Just back from the 15th annual 'Fest in Chicago, and had the pleasure of sitting in on one of Dale Puckett's seminars. It was to be a "Beginner's Overview of OS9" but somehow we managed to get side tracked into a bit of show and tell!

Kevin Darling [76703,4227] was assisting Dale in his explanation of the power of OS9 by showing off a few of his animated graphic files (WTRFAL.VEF, WPICS.AR found in LIB 10 of OS9 Forum), then teasing us with a few digitized sound snatches from various television shows and movies. Mark Griffith [760 70,41] was called up from the audience and couldn't have vamped better, answering questions on the enhanced version of Multi-View's gshell (GSHELL.AR found in LIB 10 of OS9 Forum).

With all this OS9 Forum talent at center stage, I suppose Dale couldn't help but ask his next question: "How many of you are on CompuServe, Delphi or one of the other services?"

The response he received out of a room packed with show-goers flat blew me away. Only 6 out of at least 100 CoCo enthusiasts in that room raised their hands. Playing strictly a numbers game, I suppose six percent isn't a bad figure, but looking at it realistically, it's disappointing. These 100 people are supposed to be the 'true' aficionados of our computer. If they only knew what they were missing!

Let's set aside the fact that I have a minor bias towards CompuServe and reduce this topic to the basic issue: Receiving the most up-to-date information possible on any topic imaginable. By it's very nature, the electronic information services are fast. Put into the context of a special interest groups (forums) the speed in which you receive answers to your questions or 'fixes' to less than efficient commercial coding approaches instantaneous. Add to that the plethora of files and programs available in their libraries and the ability to 'talk' in real time to other users of the service, you soon realize you have a very powerful tool at your fingertips.

The whole point of this tirade is: Get online! It doesn't have to be CompuServe (though we'd like for you to call us home). Pickup a modem (prices are at their all time low) fire up a terminal program, (need one? Drop us a note) and spend some time checking us out. You'll be glad you did!

ANSWERS TO LETTERS

In the May/June issue, John R. Hampton, of Keyport, NJ, wrote and mentioned he "gave up on CompuServe when they increased the 1200 baud rates." That had me wondering. I've been around the service for almost 8 years now and never recalled an increase in that area, but my memory...

So, practicing what I preach (see above) I posted his concern in the form of a question on one of the forums. Wayne Day, forums administrator for Tandynet picked up on it and replied in part:

Sb: #156547-#1200 baud rates
Fm: Wayne Day 76703,376
To: Steve Wegert 76703,4255 (X)

Looking at a price sheet that was effective March 1 1983:

Baud	Standard	Prime
Up to 300	5.00	22.50
1200 baud	17.50	35.00

We dropped the differentiation between Prime and Standard for the basic connect charges early last year, if I remember right, and the current $12.xx/hour was in effect then.

So, it must have been 84 or 85 or so when the rates were dropped from $17.50 to $12.50 per hour.

Wayne

Current rates shape up like this:

Baud	Standard	Prime
Up to 450	6.00	6.00
1200	12.50	12.50
2400	12.50	12.50

No sir, CompuServe hasn't raise their 1200 baud rates at all.

MESSAGE SELECTION, AN EASY OUT!

New forum software has been in place since mid-May. One of it's new features allows you to select for reading, a series of messages from a menu created by the system, with a little help from you. From the Forum main menu, choose MESSAGES. Change the age selection to the number of days you want included

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in your selection (3 in this case) and choose option 1 SELECT. Your screen should look similar to this:

```
*The CoCo Forum* Sections Menu

Section names (#subjs/# msgs)
 1 General Information  (9/24)
 2 Graphics  (2/3)
 5 Orchestra-90  (3/6)
 7 BBS Systems  (3/4)
 8 Application/Utility  (1/2)
10 Hardware/Technical  (2/2)
11 CoCo 3  (1/2)
13 Products / Reviews  (1/1)
14 Private Classifieds  (1/1)

Enter choice(s) or ALL !
```

This menu represent message traffic that occurred in the past 3 days by section. The numbers in parenthesis indicate the number of messages in how many different subjects. Let's take a closer look at the particularly busy section 1- General Information.

```
Subject (# msgs)

Section 1 - General Information
 1 CLIPBOARD  (1)
 2 SOFTWARE  (1)
 3 DC2/DC4 problems  (12)
 4 DOWNLOADING  (2)
 5 DOWNLOADING  (1)
 6 Printers  (1)
 7 SOFTWARE  (2)
 8 Clipboard Conference  (3)
 9 DESKMATE 3  (1)

Enter choice(s) !
```

At this point you can select one or more of the 9 different subjects being discussed in Section 1 - General Information to read in conversational (sometimes called 'thread') order. Handy!

The new forum software offers several enhancements. Feel free to experiment on CompuServe's nickel. Type GO PRACTICE for a free area to "bash it out". Connect charges are suspended although your surcharges still apply. Keep in mind, while the use of the new commands are recommended, many of the old commands have been 'grandfathered' and still function.

THE ENVELOPE PLEASE

Referred to as Darling's darlings (sorry Kev!), BESTOF.TXT found in DL10 of the OS9 Forum contains a list and short description of 'must have' programs, utilities, patches, etc. as recommended by Kevin Darling [76703,4227]. Whether you're a newcomer or an old hand at OS9, there's something for everybody in this file. Check it out!

TIP FOR THE DAY

Tired of bouncing through your favorite forums and having different parameters set for each one? Make a quick trip to GO TERMINAL and set your global setting. Totally new, this

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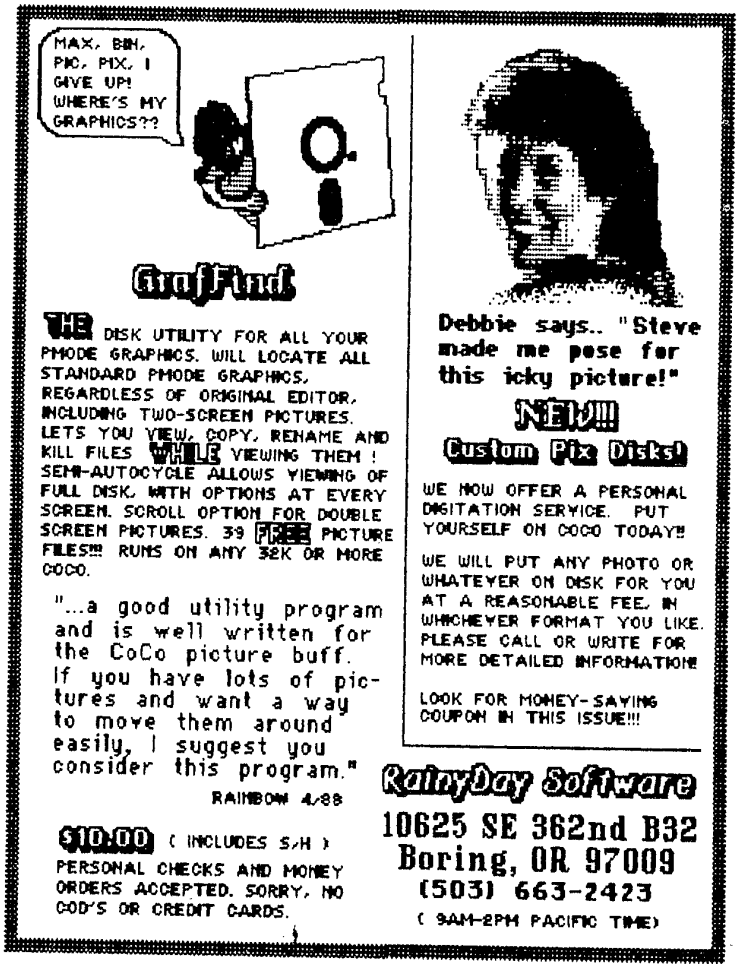
words. So get out the pen and paper, the word processor & spell checker - whatever and address those card and letters to:

Tandy Corporation
1700 One Tandy Center
Ft. Worth, Texas 76102
attn: Marketing Dept.

In other events, we had a real nice day with Larry Cadman and the gang at the Canfield Color Computer Club in Canfield Ohio. It was an easy 2 and a half hour drive from here in Fredonia and we really enjoyed the conversations, the food and the beautiful scenery in eastern Ohio. As I mentioned in the last issue, if your group is within 500 miles of Fredonia and your meetings are on a Saturday or Sunday let us know and we'll be glad to drop in and say hello. Please call us well in advance for this so we can arrange the days and times.

Needless to say we are introducing our mascot Clipper Koala. "C.K." as he likes to be known has a lot of interests, and you'll be seeing him in a variety of scenes, doing different jobs and you know what he's one smart cat!. Watch for his increasing appearances in our pages, and let us know what you think.



CoCo and Small Business

Terry Simons

I had to laugh; at a fellow telling me; "the CoCo didn't really do anything for my Cement Contracting business; I could do about as well without it".

In a way he is right. But then neither do I have to have a truck. I could walk the wood forms to the job site, and have people working that could help carry tools around town. I'd get the same job done, but.., well you get the idea.

I do have a small (under $100,000.00), but full fledged business. That is I have to make full account to the state and IRS quarterly as well as annually. I do withholdings, own and maintain equipment, carry insurance, etc. There are those who believe cement work is like "going out on a week end, and pickin' up a hundred bucs ya wouldn't have otherwise". Or just multiplied 5 times, as in week days. Sure.., like a house and a hotel are basically the same thing!

The beginning of any business selling is "advertising". What does my computer have to do with the local newspaper? Very little. The ad that gets a customer (or turns him away) is your appearance! How you present yourself. While I try to voice experience and reliability, I back it up with a very professional looking page of job references. While my competitor is using a stationary store pad with his rubber stamped name, mine is written on a custom printed form with a professional graphic heading. This does impress and does increase the number of successful bids.

Usually I prefer to figure the cost and give the bid while talking to the person, or at his home. Large jobs (over $3000) are more difficult, and involve different formulas than the average driveway replacement or smaller job. This I do at home with a computer program that will allow me to see actual cost verses amount charged on each individual item of the job. That allows me to bid closer, yet know I'm making a fair profit. While I do sell quality, not price. Neither do I expect to get rich on one person. One competitor told me he bid a particular job at $2.25 per foot. Actually his price was more like $1.90. There were four or more bids submitted. A bid of $1.10 wouldn't have surprised me. Mine was submitted in the form of a letter quality printout, clearly laying out the size and footage of each part of the job, along with other charges, totals figured and displayed in a very professional manner. My computer indicated, and I made a "very good profit" at $1.35 per foot. By the way we're talking about a $9000.00 job! Could I have gotten the job without the computer? You'll have to ask the other bidders.

Normally, I don't like to solicite business unless first called. However our city has a practice of marking sidewalks for replacement -all in a given area. I have prepared a special flyer for the occasion, and my wife and daughter just put'em in the doors where the walks are marked. One year this brought in over $3000.00 in added business. Ad investment, maybe $10.

Thankfully my CPA loves figures and working with them. For me, bookwork is the most dreaded part of my business. On the other hand, I have a facination for programming. A beautiful combination. I've developed some record keeping software, that allows the full information to be input faster then any spreadsheet, slick and quick. My challange is always, make the computer do it with the least effort on the part of the user. As Pastor Hulse, who employs this for his church books, says, "My book keeper loves it, you hardly have to type"! It has sorting ability for most any way you wish to display or print. I have developed a packaged version for market. "Home-Pac."

"Home-Pac"? The CoCo is basically a home computer right? And wanting things easy, most of my software will load from the main menu of each other so why not keep it in a "package". Basically this consists of a "Fast Check/Card", which even Rush Caley speaks of highly, and tied in are a simple "Mailer" & a nifty "Disk Jacket listing". Believing it to be the best, I offer it with a satisfaction guaranteed or money back. It all sells for $39.95 shipped.

In the non-commericial (my own) version, I have tied in two different business record programs. One handles a merchandise business more proficiently, the other my concrete business. Each can be accessed at the touch of a key from the main menu of the others.

All use something called "profiling" which I understand is more common on the quote "bigger computers". You are probably familiar with "configuring". Setting up the software with how many drives, size memory, etc. Profiling goes a good deal further. In this case, a seperate Editor allows you to add in your own sort categories, company names, notes, and more. Help lines are created at the same time to remind you what the one letter codes "you" have allocated stand for. After writing it, it

Continued on page 13

CoCo 'N Amateur Radio

Mike Dooley KE4PC

Some of you are probably wondering how difficult it is to become an Amateur Radio Operator. Actually, it's not very hard at all! There are several courses available that can help you learn the electronic theory and morse code necessary to get started. One such course is now being offered by Radio Shack. It's called the 'New Novice Voice Class FCC License Preparation'. It was put together by Fred Maia (W5YI) and Gordon West (WB6NOA). Both of these gentlemen have been involved in the Amateur Radio community for many years.

This course will help you get your Novice License. What does this entitle you to do? Well, up to this point you've probably been listening to Amateur Radio Operators talk to one another on your shortwave receiver. Once you receive you License you can join them! Now don't get all excited... The Novice license is entry level. You don't have all of the same privileges as all the Amateurs, but it's the place to start. Once you get your Novice License it's a simple matter to work your way up to the higher class Licenses.

Hmmmm. I'm getting ahead of myself here.

Table 1 shows the various license classes.

Table 2 shows what a Novices privileges are.

Table 3 shows the bands Amateurs are allowed to operate in. Each higher License class has more privileges and more frequencies in each band.

Table 1
Novice
Technician
General
Advanced
Extra

The only other limitations are 200 watts PEP maximum on 80 through 10 meters, 25 watts PEP maximum on 1.25 meters amd 5 watts maximum on 0.23 meters.

The course consists of a 108 page book and two cassette tapes. The book provides you with a brief history of Amateur Radio, information on the various classes of licenses available (and their ascending privileges) along with a description of what morse code is and why it is required.

Table 2

Band	Frequency	Privileges
80 meters	3500-4000 KHz	Morse Code only
40 meters	7100-7150 KHz	Morse Code only
15 meters	21100-21200 KHz	Morse Code only
10 meters	28100-28300 KHz	Morse Code and Digital Privileges
28300-28500 KHz		Sideband Voice(!) and Morse Code
1.25 meters	222.1-223.91 MHz	All modes and emissions allowed
0.23 meters	1270-1295 MHz	All modes and emissions allowed

There has been a great debate raging for many years on whether morse code should still be a requirement in order to get your operating privileges. We could fill several pages with the various arguments (probably more than that) for and against.This, however, is not the forum for those arguments. At this time the morse code is still required and it's not that difficult to learn.

Radio Shack helps you learn the code using a chapter from the book and two cassette tapes. The book tells you all about the morse code. The two tapes help you learn it. The tapes were put together by Gordon West and he's done a fine job. He mixes humor with the code lessons and sends groups of letters, words and sentences. This makes learning the code fairly painless.

One thing, though, not everything in this program is perfect. As you progress through the tapes you'll discover several errors. In one instance, a letter you haven't learned is sent. In another, you'll copy several words and then, when Gordon reads back what he's sent, he'll read more words than you actually heard! All in all, it's still one of the better code courses I've ever run across and I recommend it highly.

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Published Bi-Monthly

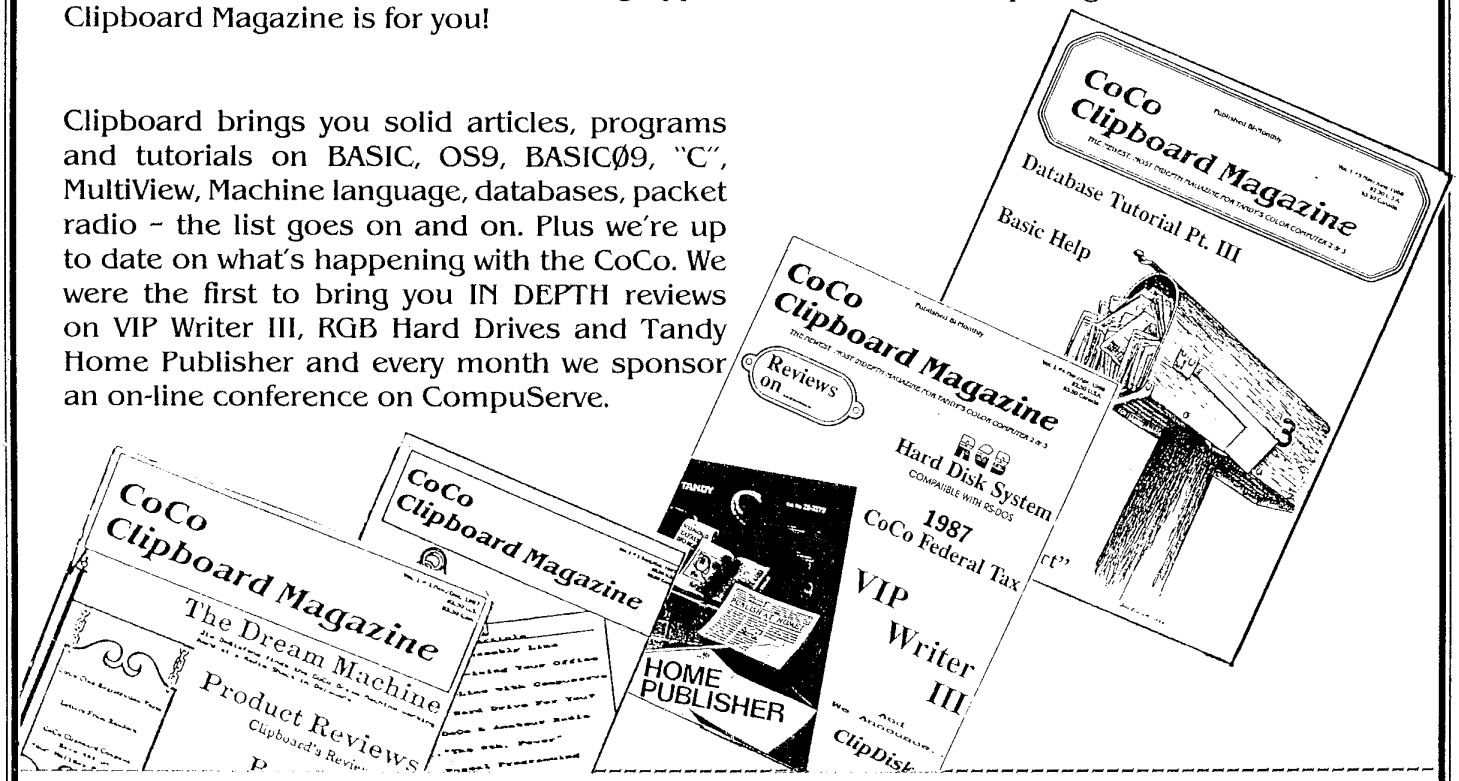
CoCo Clipboard Magazine

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

If you've been looking for a CoCo magazine that takes a No Nonsense approach to the Color Computer, then CoCo Clipboard Magazine is for you!

If you're getting tired of lo-res block graphics applications, reviews that still leave you guessing, and the same old boring approach to serious computing, then CoCo Clipboard Magazine is for you!

Clipboard brings you solid articles, programs and tutorials on BASIC, OS9, BASICØ9, "C", MultiView, Machine language, databases, packet radio - the list goes on and on. Plus we're up to date on what's happening with the CoCo. We were the first to bring you IN DEPTH reviews on VIP Writer III, RGB Hard Drives and Tandy Home Publisher and every month we sponsor an on-line conference on CompuServe.



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Master Basic09

Bill Brady

When I read tutorial writing, I always try to discern the "why" and "when" as well as the "how". Too often I end up knowing how to do something but not when. So here, in the column, I intend to give you then when and whys as best I can. I will do this by presenting examples, often of actual code from "Wiz", the OS9 Level 2 terminal program. (Got that out of the way nicely, didin't we!)

First, let's talk a minute about what SYSCALL does. Not too technical because for us it's just an interface to OS9. In the normal scheme of things BASIC09 will always do our talking to OS9 for us. If our main concern is to be able to transport our program to different levels of the operating system, then we should stick to "vanilla" BASIC statements. This is because although a BASIC OPEN statement is the same on level 2 as BASIC/68000, the OPEN system call is completely different. Why? Because systems call are down at the CPU registers level, and a 6809's registers are very different than a 68000's. But syscall, available on both the the 6809 and 68000 machines, lets us talk directly to the CPU registers. In fact, there is nothing that can't be done with syscall, as long as it's legal under the operating system.

To use syscall, you define a "set" or packet of variables that will be used to both send and receive the contents of the CPU registers - (remember the "both"). This is made easy for us by the Basic09 TYPE statement. Here is the "how":

```
TYPE regs=ccode,a,b,dp:BYTE;x,y,u:INTEGER
```

What we have done is to put together a group of variable NAMES, called regs. We will use ccode to represent the 6809 condition code register, (mainly to look at the "carry" bit) and the "a", "b", etc. registers. However, we have only given them a name: "regs", that is all. We must still DIM. Why does Basic09 do it this way? Why doesn't it just go ahead and let us do: regs.a=regs.b? It's because this is the same as saying a=b .. or as if we never built the statement in the first place. But suppose we have 20 sets of "regs" as in a database? But for syscall, we will only set aside one set:

```
DIM s:regs
```

But we could: DIM s(10):regs

In fact for really advanced uses of syscall, you might actually have more than one variable of the type "regs". By the way "types" are truly in name only, as they do take up no program space.

To do a system call you simply load up the "s." variables and run syscall:

```
s.x=10\run syscall ($0A,s)
```

What you have done is put the value 10 in the x register, then called OS9 and said "call type=$0A... parameter=10". $0A is a "sleep". The sleep system call takes a paramenter from the x register and causes the caller (us) to have its execution suspended for 10 ticks of the system clock. So we want to wait around for a while here. How else could we do the same thing? How about:

```
 Fori=1to somenumber\next i
Create.....      (notice s.b usually returns
On ERROR GOTO 100    the error code)
40 en=ERR
If en=...
ON ERROR GOTO 100
ENDIF
GOTO 50...

    100 en=ERR... other errors etc.
```

So, which would you rather? Column a is full of line numners, b has one. Column a is a bear to debug, b is a piece of cake.

So what does syscall do for you? Well it simplifies error handling tremendously for one thing, and much, much more. Look at syscall as your link to a bunch of very fast and efficient subroutines, the OS9 System Calls. They are free, just sitting there waiting for you to use. And another thing, once you turn on an operation over to the system, there is no faster way to get it done! Next time I'll show you how to load & write an 8k file in the blink of an eye lash.

Notice that I used a variable for the calls, open and create (you can't use those actual names, they are Basic09 key words). Get in the habit of doing this, you'll get tired of looking up the numbers anyway, but it helps to get around the "transportability" problem.

I promissed you some Wiz code:

```
paths.newdesc(caw.qut)=2\paths.newdesc(caw.ech
)=1
s.a=0\s.b=0\s.x=ADDR(paths.newdesc)
RUN s9scall(caw.ststat,s)
                    '
This is the same as: Shell "tmode quit=3 echo"
```


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Table 3

Band	Frequency
160 meters	1800-2000 KHz
80 meters	3500-4000 KHz
40 meters	7000-7300 KHz
30 meters	10100-10150 KHz
20 meters	14000-14350 KHz
15 meters	21000-21450 KHz
12 meters	24890-24990 KHz
10 meters	28000-29700 KHz
6 meters	50-54 MHz
2 meters	144-148 MHz
1.25 meters	220-225 MHz
0.75 meters	420-450 MHz
0.33 meters	902-928 MHz
0.23 meters	1215-1300 MHz
0.13 meters	2300-2310 MHz
0.13 meters	2390-2450 MHz
90 centimeters	3300-3500 MHz
53 centimeters	5650-5925 MHz

etc. etc. etc... for about seven more bands.

The theory needed to pass the Novice exam is also included in the book. The exam is 30 questions taken from a pool of 302. The book includes all of the questions and the answers. There's also a short description of why the answer is correct.

The last chapter of the book covers Taking the Novice Exam. It gives you informatiuon on where to find the exam, who may givethe exam and even information on filling out the necessary forms (provided).

Well! This looks like another good offering from Radio Shack and I'm sure glad to see them get back into the Amateur Radio business!

Continued from page 5

Dear Leslie:

Clipboard is alive and well and doing just fine. As of this writing we're over 500 paid subscriptions and have had a wonderful two weeks with new subscribers and renewels pouring in. Thanks for writing.

Dear Sir:

Inclosed is a check for $23.00 to take advantage of your two year subscription offer, to extend my subscription for two years.

I do enjoy reading each copy.

Sincerely,

H.W. Gear

Well that's it for this month. We've only printed a few of the letters we received over the last 60 days. We try to answer each one, either here in the magazine or personally. We'd love to hear from all of you!

We are interested in finding someone with a good working knowledge of spread sheets, especially in a business situation. We would like to begin a series which would not only show how to use a spread sheet but also compare three spread sheets, VIP Calc III, DeskMate III ledger and Dyna-Calc. Letter should be sent with some detail as to your experience to our offices.

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still facinates me, to see one program (the editor) create the guts, with which another more powerful program operates.

The result is: the check number(s), and the date will auto enter. Comming to the Company name input, you have fourteen of your most common companies, displayed in with help file. Entering "i" could auto-enter "Iowa Power & Light Co." for you! And that's just a sampling of what profiling can do for your CoCo.

My hobby is the enjoyment of creativity in putting things together. It took time, effort and expense to discover explore, and put to use, such software as, Telewriter-128, COCO MAX III, ADOS, Worksaver+, and others. The benefit is that your CoCo can most likely do as much for you in a small business", as a $3000+ system.

Once I've got the job.., well unfortunately much of preparing ground, pouring and finishing concrete remains a "manual function". Thankfully they have invented such things as bulldozers, bob-cats, even rider trowel finishing machines. Like in my home, wherever it's more efficient; I let a machine do it!

I've had a CoCo since they were $395.00 for a 16K ECB, or about 6 years. I am active in our local group, "Mid Iowa CoCo". To me the CoCo is another form of a "wood shop". You take the raw shapes (Basic statements) and using what tools you have available; Worksaver+, CoCo Max, Word processors, etc. Then fit them together in a an attractive form; that fills a purpose others feel beneficial.

Continued from page 12

Note the use of variable caw and paths? They are defined by TYPE statements also. Why? Because I pass them as parameters to all the WIZ Procedures, and it is a lot simpler to: RUN proc(paths,caw... then RUNproc(sp,dpa,wpa, spa,ppa,newdesc,oldesc..ststat,gtstat,reed,creat,wrt,wrtln... Note that by using syscall and the byte array, "newdesc", any part of the program knows and can access the current configuration of the standard input path. And you guess it, the last thing I do in the

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Telewriter-128™

the Color Computer 3 Word Processor

For over 5 years now, Telewriter has been the #1 Color Computer word processor, both in popularity and in performance. Telewriter's near perfect mix of sophisticated professional features and a very natural user interface, has earned it the highest praise in numerous magazines, and an intensely loyal following among tens of thousands of Color Computer users all over the world.

HISTORY

Throughout the history of the Color Computer, Telewriter has pioneered software breakthroughs that set the standards.

In 1981, it was Telewriter 1.0 that first took the Color Computer's inadequate 32X16 all-uppercase display, and replaced it with a graphics-based 51X24 upper and lowercase display.

A few years later, Telewriter-64 added high density 64X24 and 85X24 displays and access to the full 64K of the newer Color Computers.

THE NEW AGE

Today, Telewriter-64 is recognized as the standard Color Computer word processor. It runs on all Tandy Color Computers — from the original Color Computer 1, to the Color Computer 2, and 3.

But the Color Computer 3 brings a whole new level of power to low cost computing and, so, a new Telewriter is here to put that power to work for you. We call it Telewriter-128.

TELEWRITER-128

You don't mess with a good thing, so Telewriter-128 is still Telewriter-64 at heart. The commands, and the user interface are essentially the same. If you know Telewriter-64, then you already know Telewriter-128. And, if you don't know Telewriter-64, you'll still have an easy time learning and using Telewriter-128.

80 COLUMNS

But there are major differences as well. First, Telewriter-128 uses the Color Computer 3's new 80 column screen display.

This means, simply, that using Telewriter-128 on a low cost Color Computer 3 will look a lot like using a more expensive word processor on a much more expensive IBM PC, PS/2, or clone.

SPEED

Second, Telewriter-128 is lightning fast. Telewriter-64 was fast in its own right, but, by accessing the Color Computer 3's video hardware directly, and by running the machine in double speed mode, Telewriter-128 is able to provide extremely fast scrolling and instant paging -- functions whose speed is crucial to serious word processing.

In this department, Telewriter-128 doesn't simply keep up with IBM-based word processors -- it generally surpasses them!

EASE

Third, Telewriter-128 adds a host of new features big and small, that make it even easier to use.

Features like: Quick function key access to the editor or the menus -- an instant on-line help screen summarizing all Telewriter commands and special characters — an option file where you store your personal set of format and screen settings so you only have to set them once!

Then, there's a quick save feature which allows you to save all your current work without leaving the editor. There's a simple way to cursor through the disk directory and read in a file by just hitting ENTER. And there's more.

NEW POWER

Telewriter-64 always had the power to handle any kind of serious writing, from letters to textbooks. But, here too, Telewriter-128 adds major features.

Like Macros — which let you insert whole words or phrases (even sets of control codes or format commands) into your text, with a single keypress. And every time you power up Telewriter-128, the macro definitions are automatically loaded*, so they're always there.

Then there's a Print Preview feature that shows you, on-screen, the way your printed text will look — with margins, headers, centering, justification, page numbering, and page breaks. This guarantees letter perfect documents every time, and makes tasks like widow/orphan line elimination, a breeze.

TELEWRITER-64 OR TELEWRITER-128

We could go on listing features, but the point is this: If you own a Color Computer, you already have the hardware for the most powerful, low cost word processor in town. All you need now is to add the heart and soul:

Telewriter-64, for the Color Computer 1 and 2, costs $59.95 on disk, $49.95 on cassette.

Telewriter-128 for the Color Computer 3 costs $79.95 on disk, $69.95 on cassette.

To order by Mastercard or Visa call (619) 755-1258 anytime, or send check or money order plus $2 shipping (Californians add 6% sales tax) to:

COGNITEC
704 Nob Ave.
Del Mar, CA 92014

To upgrade from Telewriter-64 to Telewriter-128, return your original disk or cassette with $39.95. (Add $10 if you're also upgrading from cassette to disk. Deduct $10 with proof of Oct '87 - Feb '88, purchase of Telewriter-64.)

When I first got Telewriter-64 last year, I was in heaven. I couldn't believe the program's versatility and ease of use.
-The RAINBOW, Oct. 1985

TELEWRITER-64 FEATURES: Compatibility with any printer that works with the Color Computer; embedded control codes for underlining, boldface, sub/superscript, variable fonts; format commands for headers, centering, margin and spacing changes anywhere in the document; Format menu to set margins, spacing, page numbering, BAUD rate, lines per page, justification; Chain printing for one shot printing of multi-file documents. Fast, full-screen editor with wordwrap, block copy/move/delete, global search and replace, wild card search, fast 4-way auto-repeat cursor, fast scrolling, forward and backward paging, text alignment, tabs, error protection, word and line counter. Insert or delete text anywhere on the screen. Simple, easy to remember commands. Optional ASCII files for compatibility with spell checkers, terminal programs, and BASIC. Load, save, append, partial save files to disk or cassette. Kill, rename and list disk files. Cassette verify and auto-retry on error.

TELEWRITER-128 - ADDITIONAL FEATURES: Print preview from editor; multiple copy print; footers; hanging indents; cursor thru disk directory to load, append, rename and kill files; quick file save from editor; keyclick; key repeat; true block move, 24, 25, or 28 line screen; 40 or 80 column screen; dual speed cursor; on-line help; overstrike mode; word delete; wordwrap at margin; user definable macros; nested macros; instant status window for information on cursor position, word count, etc.; instant function key access to menus or editor; options menu for setting character and screen colors, key repeat and delay rates, definable foreign symbols.

RAINBOW CERTIFICATION SEAL

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New Boots

Bob van der Poel

I've avoided writing articles on creating new OS9 system disks and on modifying the various device drivers and descriptors up to now. The way I see it, much to much has already been written on this subject, and not enough on application programming. Today I'm going to come out of my shell (there will be lots more puns in this article, so be alert!). The reason? I received my copy of Multi-Vue and spent about an hour breaking my own rules trying to get a new boot disk. Had I ignored the instructions in the manual and gone my own way I'd have been up and running in minutes. Does this mean that the instuctions in the Multi-Vue manual are wrong? No, just that if you wish to use a customized system, they don't work properly. If you are content with a standard, out-of-the-box configuration then you should have no problem with the instuctions in the manual.

Making new boot disks is something OS9 users do quite often. Every time one thinks he has the ideal boot disk a new patch appears somewhere or a new piece of equipment is acquired - and every change means you'll have to create a new disk. The good folks at Microware have in cluded a program to assist you in creating these disks with Level II OS9. CONFIG is sup posed to make the whole process painless, but like so many things which try to make life easier it really creates more problems than it solves. There is an easier way -- perhaps a bit more work initially, but a great time saver in the long run.

Begin by formatting a new disk. (I called mine Guido in honor of the shoemaker down the street.) On this disk you should create two directories: CMDS and MODULES. Next dig out your Boot/Config/Basic 09 disk which came with your Level II OS9. Into the new CMDS directory copy OS9Gen, Format and Rename. Copy all the files in the MODULES directory to your new disk. The sub-directory HELP in MODULES can be ignored. Treat this new disk as a very important one -- it'll save you hours in creating new system disks!

Our next step is to create a list of modules we wish to include in the OS9Boot file which OS9Gen creates. Get our your favorite editor, create a file called "bootlist," (this is on your Guido disk) and type in the names of the modules you think you need. If you're not sure have a look at the standard boot file which comes with your system:

```
IDENT /d0/os9boot -s
```

Note that the names of the modules in OS9Boot and the names of the modules in the MODULES directory will not match. And that's the magic of the whole system. In your OS9Boot file you will have a module called "D0". This is a device descriptor for one of your disk drives. But what kind of a disk drive? Is it double sided? How many tracks does it have? However, if you look in the modules directory you'll see a whole bunch of "D0" files, all with unique extensions. One is for an double-sided 80 track drive, another for a single sided 35 track drive, etc.

Here's a list of my "bootlist" file:

```
os9P2
IOMan
Init
CC3Go
Clock.60hz
RBF.mn
CC3Disk.dr
D0_40D_6ms.DD
D1_40D_6ms.DD
DDD0_40D_6ms.DD
SCF.kd
CC3IO.dr
grfint.IO
vdgint.io
term_wind.dt
W.wd
W1.wd
W2.wd
W3.wd
W4.wd
W5.wd
W6.wd
PRINTER.dr
P.dd.9600
pipeMan.mn
Piper.dr
PIPE.DD
```

If you examine this list you'll find a number of modules which do not appear in your modules directory. These are various modules I have customized for my own system. For example, "P.dd.9600" is the standard printer device descriptor patched, with XMODE, for 9600 baud. Whenever you get a new module or patch an existing one put it in your MODULES directory with a unqiue name. Modules can be modified by utilities like Xmode, Modpatch and Debug or patched on the disk with various patching utilities. If you modify a module in memory then you must use a utility called "Save" to transfer the program from memory to the MODULES directory. Unfortunately, Tandy elected not to include Save with the Level II package. It was in the Level I package, it's in the Developer's Pack and it's merged with

Continued from page 15

the file Pmpts in the CMDS directory of the Multi-Vue disk. To get Save onto your own disk just install the Multi- Vue disk and type:

```
load /d0/cmds/pmpts <enter>
```

Now put your system disk back in drive 0 and type:

```
save /d0/cmds/save save <enter>
```

To save a modified module to your MODULES directory (in this case it's the printer descriptor) type:

```
save /d0/modules/p.yourversion p <enter>
```

Saving and patching modules can sometimes cause problems. Some utilities do not recalculate the module CRC values. If this happens and you include one of these modules in you new OS9Boot, the disk will not work. So avoid that "OS9 Boot Failed" message by using ident on you modules as you save them. If the module CRC is incorrect either use a different utility to do the patching or use Verify (again, this comes with Level I) to fix it.

Once you have a customized "bootlist" file, create another file on the Guido disk. I call mine "makedisk." This file is a procedure file which contains all the commands necessary to make a new disk. Here's a listing of mine:

```
!
chd /d0/modules
chx /d0/cmds
format /d1 <.1
os9gen /d1 </d0/bootlist
makdir /d1/CMDS
-t
```

This procedure will format a disk in drive 1, create a new boot file containing the modules listed in the file "bootlist" and create a CMDS directory. The only real problem is that the procedure doesn't stop to ask if it's okay to reformat the disk in drive one. Be careful!

Don't stop yet. In order for the new disk to boot you must have the program SHELL in the CMDS directory. Also, if you are using the module "term_vdg.dt" you must also have the file GRFDRV in the CMDS directory.

Now that you have this procedure down pat it's a simple matter to create a Multi-Vue boot disk. Simply copy the following modules from the Multi-Vue disk to your "Guido" disk:

```
windint.io
w8.dw
w9.dw
w10.dw
w11.dw
w12.dw
w13.dw
w14.dw
w15.dw
```

To make a bootable Multi-Vue disk all you need to do is modify your "bootlist" file by replacing "grfint.io" with "windint.io" and adding in "w8.dw" to "w15.dw". Into the CMDS directory copy the program "autoex" from the Multi-Vue disk. (Don't forget Shell and Grfdrv!) Also copy the entire SYS directory from the Multi-Vue disk to your system disk. If you are using double sided disk drives you should also be able to copy the various files Multi-Vue needs to operate onto your new disk (gshell, gcalc, etc.). Now copy the file "startup" from the Multi-Vue disk and you you're ready to boot Multi-Vue from your own custom disk.

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Continued from page 8

area can now be used to specify the online editor of choice, your Forum Presentation Mode (menus or command), a protocol preference and graphics recognition. Remember, CompuServe maintains separate parameters for each baud rate used. GO TERMINAL for each rate.

And that's another wrap! Drop us a note with your comments and criticisms. I can be reached in both OS9 and CoCo forums or via EasyPlex at [76703,4255]. Don't forget ... join us for the Clipboard Conferences every second Saturday of the month at 9 pm Eastern on the CoCo Forum. We're looking forward to new faces!

The Assembly Line

Kraig Brockschmidt

First of all, I have moved. My new address is:

Kraig Brockschmidt
14506 N.E. 37th Place, K-8
Bellevue, WA 98007-3486

My two main reasons for this move are my marriage in July and my internship at Microsoft. My work there has been keeping me quite busy, as well as making me a little confused. All day I program in C for OS/2 and Windows, then I come home and do 6809 assembly. It's not the languages as much as it is the key boards! Until I use either one for about half an hour, I sit and search for the right keys. At work my quotation marks, CTRL, ALT, backspace, etc. etc., are all in other places. Not to mention trying to remember all the keys for TW-80, EDTASM, and The Microsoft Editor (which is awful nice. I can compile while editing, have multiple windows, multiple files...) Sooner or later I need to get Multi-Vue, an OS/9 C compiler, the OS/9 Development Kit, and a decent editor for my CoCo.

One more announcement--in mid-June I will be back on Compuserve, but primarily on the Microsoft forum as the section leader for Operating Environments. Stop in, look around, or leave me a note. Just remember though, that I'm not paying for the connect time and I DO have to answer to about 15,000 other users...

On to the subject at hand:

MACHINE LANGUAGE KEYBOARD SCANNING

In this month's article I will focus on reading the CoCo's keyboard from assembly language. For most applications, it is sufficient to use BASIC's keyboard driver (JSR $A1CB or $A1C1) to get a key. But such a routine does not account for the CoCo III's function keys or CTRL and ALT keys. This month's sample application illustrates how to check the function keys and perform some action if they are pressed. The concepts shown here should provide you with some understanding of how BASIC's keyboard driver works.

However, before we can truly understand how the keyboard is actually read, we must examine the keyboard hardware. The 57 keys are physically laid out in a matrix of switches, as shown in Figure 1.

When a key is pressed, a connection is made at the appropriate row and column. Normally, each open connection is at a positive or high voltage level, or binary 1. When a connection is made, the voltage becomes low, or binary 0. For example, if I press the K key, a 0, appears at row 1, column 3 of this matrix. This low voltage registers on a pin of the PIA0 chip, through which the keyboard is read. In addition, if more than one key is down at once, a connection is made at each point in the matrix corresponding to the row and column of the key. As another example, consider holding down the CTRL and ALT keys while pressing reset on a CoCo III. The startup routine in ROM checks for both keys, and displays the digitized authors only if both are down.

As I just mentioned, the chip that provides the means to read the keyboard is PIA0. Figure 1 shows that the seven rows are connected to pins 2-8 of PIA0, and the 8 columns to pins 10-17. However, as far as the 6809 (and we) are concerned, these two sets of pin connections make up two I/O registers: $FF00 and $FF02. $FF00 is referred to as the row register, and $FF02 as the column strobe register. Our software must use these registers to access the keyboard.

Scanning these keyboard registers to get a keystroke is not as straightforward as one may think. It would be nice if, at any time, we can simply read the row and column and translate it into a real ASCII key code. However, the real method to read keys is as follows:

1) Perform a "column strobe" by storing a bit pattern in $FF02.

2) Retrieve the row data by reading $FF00.

3) Calculate the physical key (8*row + column).

4) Translate the physical key into a virtual key.

For example, if we strobed column 3 and read row data corresponding to row 1, the physical key would be 8*1+3=11. We would then use lookup tables of a formula to calculate the ASCII code. Note that the ASCII code is dependent on the state of the shift keys as well.

A "column strobe" is storing a particular bit pattern called the "strobe data" in $FF02. The strobe data should be 11111111, except for the bit corresponding to the column we wish to strobe. Again, in scanning for the K key, we would use a strobe data byte of 11110111. Bit

3 is 0, since we are strobing column 3. If we strobed column 7, we'd use 01111111, and so on. NOTE OF CAUTION: the normal convention of writing a byte is to have bit 7 on the left and bit 0 on the right. In figure 1, column 0 is on the left and column 7 on the right. So when you write out the strobe data, simply write a zero in the column to strobe and a 1 every where else. It is very easy to reverse the strobe data by accident.

Once the column strobe is complete, we then read the row data from $FF00.A simple LDA $FF00 instruction will do. This row data is a byte of all 1's except for the bits corresponding to the row (or rows) in which a key was down. Once again, if the K key is down, we store 11110111 in $FF02, and read the row data into the A register, A will contain 11111101, which means a key in row 1 is down. Also, you can use this byte to check if more than one key is down. Let's say we hold down both the ALT and K keys. Then we'll read row data of 10111101. If we hold down C, K, S, up arrow, 3, ;, and ALT, we would get row data of 100 00000.

In case you're wondering, bit 7 can be either on or off depending on the position of the joystick. There is no row 7 on the keyboard, so the joystick comparator input is wired to pin 9 of PIA0, which is bit 7 of $FF00. If the horizontal joystick value is >32, then bit 7 is 1, otherwise it's 0. Furthermore, bits 0-3 of the row data are affected by the joystick buttons. If you've ever scanned for the joystick buttons, you will know that you read the value in $FF00 and check for these bits.

OK, enough on the tangents... Using the method described above, we can now scan the keyboard and know what keys are down. BASIC's keyboard driver (found at $A1C1 or $A1CB) strobes all columns and checks all rows. Once it determines what key is down, it checks for the shift, CLEAR, and BREAK keys. If the shift key is down, it will convert a number key to the special character and convert lower - to upper - case. It also toggles lowercase if shift-0 is pressed. For all other keys, lookup tables and formulas are used to translate the row and column into ASCII. With a little time and effort, you should be able to understand most of what's going on from the code.

Now we are ready to write a small sample application. "KEYS", as shown in the listings, installs a patch to BASIC's keyboard driver to check for the F1 and F2 keys. If F1 is pressed, then it executes a WIDTH40 command. F2 executes a WIDTH80. The best way to use KEYS is to assemble the editor source code to disk. Whenever KEYS is loaded, the patch will automatically be installed and in effect. The BASIC program must be loaded and RUN.

One note: when either key is used, the screen width will change but you may not have a cursor. Pressing any key will show the cursor.

Since there is nothing too deep in KEYS, I will quickly explain a few points. The LEAY and PSHS Y instructions at lines 140-150 effectively push the address of BACK on the stack. The last instruction in the keyboard driver is PULS B,X,U,PC, and that PC better be where we want to return to.

Lines 200-210 are two instructions normally at $A1CB-$A1CF, but we overwrote them with the JMP $FA80 in lines 100-110. $A1D0 is the address of the next instruction normally following the LDU $FF00, so we jump there and execute the keyboard driver. A keystroke is returned in A as usual, and we store it in TEMP for the time being.

Lines 250-480 check for the F1 and F2 keys, by strobing columns 5 and 6, respectively, and checking for a 0 in bit 6 of the row data. Note that in both cases I complement the row data, so that the row containing a 0 now has a 1, which can be easily detected with an AND instruction. If column 5 is strobed and row 6 is set, then the F1 key is down, and the program calls the routine at $F65C. This routine puts the screen into 40 column mode. Similarly, if column 6 is strobed and row 6 is set, F2 is down and $F679 is called, changing the screen to 80 column mode. If neither is down, we restore the original keystroke into A from TEMP, and pass control back to whatever routine called the keyboard driver.

Finally, the A register is cleared after both WIDTH commands. A 0 in the A register means that no key was down, so whatever routine called the keyboard driver will not notice the F1 and F2 keys.

I certainly hope that I have made keyboard I/O a little clearer. Upcoming topic on The Assembly Line may include (no promises here), using DSKCON for disk I/O, ML sound, and CoCo

Continued on page 21

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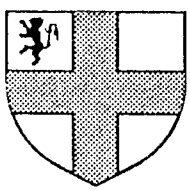

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Programming Challenge

Ted Paul

In issue #5 of Clipboard we concluded Rush Caley's 3 part article on databases. We had been approached by an individual who neded help in a real world situation in tracking downtime on his factory production line.

Now that same individual has approached us again, looking for help with a program he had written on his CoCo 2. We've agreed to present his program and his problem to our readers in the hope they can help him improve his program and make it easier for him to use and to modify. Just about any suggestion would be welcome from switching the program over to a CoCo 3, or transfering it to a spread sheet with a look up table, or perhaps just some simple peeks and pokes to make the existing program run more effectively. We'll publish the solutions and answers here in the magazine.

Our individual besides running his department at the food plant must also take a daily inventory of vinegar. Apparently vinegar is an important ingredient in the foods they produce and he must take a two tank measurements each evening after the days production. These measurements are taken in foot, inches and fractions. The input routine handles the foot measurement first, then asks for the inches, and then the fraction of an inch. He has developed a rountine that will analyse most any fraction from 1/99 to 99/99 and return a decimal equivilant. However he feels these routines could be shorter and therefore more efficient, but he doesn't know how to shorten them up.

He must then take some meter readings in one department to see how much they have used, and in another department count the number of batches of a number of products which all use differing amounts of vinegar. There is no meter available in the second department.

His problems are mostly with the seond department where the q.c. people keep changing the amounts used in each batch several times a year. The product names are stored in some data statments and a corresponding amount of vinegar in another set of statements. These values are read into single dimension arrays. During the running of the program the operator will type in the name of a product, i.e. BBQ Sauce and if it matches the product array the program will ask how many batches were made. He then types in the number made and the program pulls up the correct amount per batch, multiplies that by the batch count and stores the number as a numeric variable which is then added to as other items are typed in. When he has finished he types "quit" and the program will tell him how many total gallons are used in that department. Anytime a product is added to the line, or dropped from the line, or an amount is increased or decreased he must break into the program and modify the data line statements.

He is also in need of date stamping each entry and storing the results on disk for later print out. He hasn't been able to do this so far as his programming knowledge is limited.

The program has been documented and each section has been clearly marked. Names of some of the products have beem changed in order to protect certain formulas. The program is used each day with moderate success.

It does need improvement however, and we thought this would present a real worl opportunity for our Basic programmers to sink their teeth into something complex, yet very useful. Pehaps it will inspire you to create something for you to work on for your business or job.

If you have any questions about the program, it's operation or what is needed feel free to drop us a line here at Clipboard or via EZPlex mail on CompuServe 72240,21

```
1 REM VARIBALE INIT.
10 F1=0:F2=0:FF=0:G1=0:G2=0:GG=0
:OV=0:NV=0:TV=0:NS=0:NF=0:NT=0:S
S=0:SF=0:ST=0:CT=0
20 CLEAR1000
30 CLS
31 REM TANK INPUT ROUTINE
50 PRINTTAB(13)"PAGE 1"
60 PRINTTAB(7)"VINEGAR TANK INPU
T"
70 PRINT
80 PRINT"INPUT INFORMATION AS:"
90 PRINT"  FEET";:GOSUB1270:PRIN
T"  WHOLE INCHES";:GOSUB1270:PRI
NT"  FRACTION":GOSUB1270
100 PRINTTAB(4)"6"TAB(13)"4"TAB(
24)"9/16"
110 PRINT:PRINT"OLD TANK MEASURE
MENT:":PRINT
120 PRINT"  FEET  WHOLE INCHES
FRACTION":GOSUB1270
130 PRINT@322,"";:INPUTF1:GOSUB1
270
140 PRINT@331,"";:INPUTF2:GOSUB1
270
```


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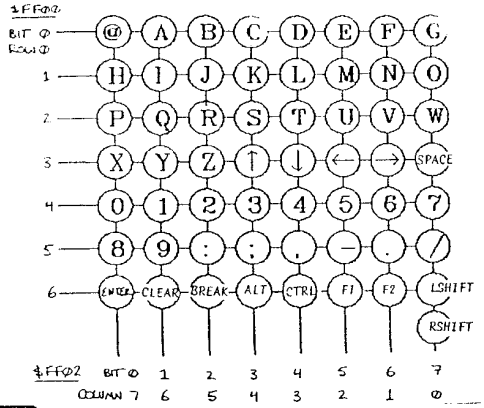
III memory management. If you have any suggestions, please let me know. Sooner or later I may run out of ideas!

```
00010 ************************
00020 *   Function Key Demo   *
00030 *   Copyright (c)1988   *
00040 * By Kraig Brockschmidt *
00050 * 14506 NE 37th Pl. F-8 *
00060 *Bellevue, WA 98007-3486*
00070 *  ALL RIGHTS RESERVED  *
00080 *For CoCo Clipboard Mag.*
00090 ************************
00100 ORG$A1CB*Location to patch keyboard input routine.
00110 JMPSTART*Jump to START=$FA80.
00120 ORG$FA50*Start patch code at $FA80.
00130 *Patch code scans keyboard, then checks for the F1 and F2 keys.
00140 STARTLEAYBACK,PCR*Load re-entry point.
00150 PSHSY**
00160 *Save re-entry point on stack.  When we jump to $A1D0, the last
00170 *instruction executed is a PULS B,X,U,PC.  We want to make sure that the
00180 *PC being pulled is the return address.  In this case, we are returning
00190 *to BACK.
00200 PSHSU,X,B*Instruction at $A1CB that we wrote over.
00210 LDU#$FF00*Instruction at $A1CD that was also detroyed.
00220 JMP$A1D0*Jump to keyboard driver. Returns keystroke in A.
00230 *Code is re-entered here after the keyboard driver is called.
00240 BACKSTATEMP*Store the keystroke temporarily.
00250 PSHSU,X*Save the registers that will be used.
00260 LDU#$FF00*Restore U to point to PIA0.
00270 LDA#$FF*Column strobe reset
00280 STA2,U*Save to $FF02
00290 *Check for the F1 key.
00300 LDA#$DF*Column strobe 5 data =11011111
00310 STA2,U*Strobe the column
00320 LDA,U*Read the rows
00330 COMA*Invert the bits.
00340 ANDA#$40*Check if row 6 is 1 meaning F1 key was pressed.
00350 BEQNOF1*Branch if not, i.e., F1 was not down.
00360 JSR$F65C*Execute WIDTH 40 command.
00370 CLRA*So BASIC thinks no key was down.
00380 PULSX,U,PC*Return to JSR calling the keyboard routine.
00390 *Check for the F2 key.
00400 NOF1LDA#$BF*Column strobe 6 data=11101111
00410 STA2,U*Strobe the column.
00420 LDA,U*Read the rows.
00430 COMA*Invert the bits.
00440 ANDA#$40*Check row 6 for F2 key.
00450 BEQNOF2*Branch if F2 was not pressed.
00460 JSR$F679*Execute WIDTH 80 command.
00470 CLRA*No key down.
00480 PULSX,U,PC*Return.
00490 *Neither F1 nor F2 was pressed.
00500 NOF2LDATEMP*Get keystroke from temporary storage.
00510 PULSX,U,PC*Pass real keystroke back to BASIC.
00520 TEMPNOP*Storage for keystroke.
00530 ENDSTART*End
```

FIGURE 1:




```
10 '************************
   *   FUNCTION KEY DEMO   *
   *   COPYRIGHT (C)1988   *
   * BY KRAIG BROCKSCHMIDT *
   * 14506 NE 37TH PL. F-8 *
   *BELLEVUE, WA 98007-3486*
   ************************
20 CLS:RESTORE
30 FORT=&HFA80 TO &HFAC1:READ A$
:POKE T,VAL("&H"+A$):NEXT
40 POKE&HA1CB,&H39:'TURN OFF KEY
BOARD
50 POKE&HA1CC,&HFA:POKE&HA1CD,&H
80:POKE&HA1CB,&H7E:'TURN ON KEYB
OARD
60 PRINT"PATCH INSTALLED":END
70 DATA 31,8D,00,0A,34,20,34,54,
CE,FF,00,7E,A1,D0,B7,FA,C1,34,50
,CE,FF,00,86,FF,A7
80 DATA 42,86,DF,A7,42,A6,C4,43,
84,40,27,06,BD,F6,5C,4F,35,D0,86
,BF,A7,42,A6,C4,43
90 DATA 84,40,27,06,BD,F6,79,4F,
35,D0,B6,FA,C1,35,D0,00
```

Continued from page 20

```
150 PRINT@342,"";:INPUTF3$:GOSUB
1270
160 PRINT@224,"new TANK MEASUREM
ENT:":PRINT
170 PRINT@322,"";:INPUTG1:GOSUB1
270
180 PRINT@331,"";:INPUTG2:GOSUB1
270
190 PRINT@342,"";:INPUTG3$:GOSUB
1270
200 POKE65495,0:REM COCO II HI S
PEED POKE
210 IFG3$="E"THENGG=0:GOTO280
220 IFLEN(G3$)=3THEN250
230 IFLEN(G3$)=4THEN260
240 IFLEN(G3$)=5THEN270
250 GG=VAL(LEFT$(G3$,1))/VAL(RIG
HT$(G3$,1)):GOTO280
260 GG=VAL(LEFT$(G3$,1))/VAL(RIG
HT$(G3$,2)):GOTO280
270 GG=VAL(LEFT$(G3$,2))/VAL(RIG
HT$(G3$,2)):GOTO280
280 NV=65*((G1*12)+G2+GG):REM TH
IS TANK IS 65 GAL/IN
290 IFF3$="E"THENFF=0:GOTO360
300 IFLEN(F3$)=3THEN330
310 IFLEN(F3$)=4THEN340
320 IFLEN(G3$)=5THEN350
330 FF=VAL(LEFT$(F3$,1))/VAL(RIG
HT$(F3$,1)):GOTO360
340 FF=VAL(LEFT$(F3$,1))/VAL(RIG
HT$(F3$,2)):GOTO360
350 FF=VAL(LEFT$(F3$,2))/VAL(RIG
HT$(F3$,2)):GOTO360
360 OV=50*((F1*12)+F2+FF):TV=OV
+NV:REM THIS TANK IS 50 GAL/IN
370 POKE65494,0:REM COCO II SLOW
 DOWN POKE
380 CLS:PRINTTAB(13)"PAGE 2"
390 PRINTTAB(7)"VINEGAR TANK TOT
ALS"
400 PRINT@160,"OLD TANK VOL="OV"
 GALS.":GOSUB1270:PRINT@192,"NEW
 TANK VOL="NV" GALS.":GOSUB1270:
PRINT@224,"TOTAL TANKS ="TV" GAL
S.":GOSUB1270
```

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Continued from page 21

```
410 GOSUB1410
420 CLS:PRINTTAB(13)"PAGE 3"
430 PRINTTAB(7)"VINEGAR USE CATS
UP"
440 GOSUB1280:PRINT@131,"NORTH M
ETER START ";:INPUTNS:GOSUB1280
450 PRINT@99,"NORTH METER FINISH
";:INPUTNF:GOSUB1280:NT=(NF-NS)
460 PRINT@163,"NORTH METER TOTAL
 ";:PRINT" ";NT:GOSUB1280
470 PRINT@355,"SOUTH METER START
 ";:INPUTSS:GOSUB1280
480 PRINT@323,"SOUTH METER FINIS
H";:INPUTSF:GOSUB1280:ST=(SF-SS)
490 PRINT@387,"SOUTH METER TOTAL
 ";:PRINTST:GOSUB1280
500 PRINT@230,"TOTAL CATSUP USEA
GE:";:GOSUB1280:CT=(NT+ST):PRINT
CT
510 GOSUB1410
511 REM DIMENSION VARIABLE FOR S
ALAD PRODUCTS NEXT
520 CLS:DIMB(23):DIMW$(23):DIMSV
(23):DIMV2(23):FORL=1TO23
530 READA$
540 W$(L)=A$
550 NEXTL
560 FORQ1=1TO23
570 READB
580 SV(Q1)=B
590 NEXT
600 CLS:PRINTTAB(13)"PAGE  4"
610 PRINTTAB(3)"VINEGAR USE SALA
D DRESSING"
620 PRINT@133,"IF NO USEAGE TYPE
 NONE":PRINT@170,"THEN ENTER":PR
INT@227,"IF USEAGE JUST PRESS EN
TER"
630 INPUTQ$:IFQ$="NONE"THEN 840
ELSE 640
640 CLS:PRINTTAB(13)"PAGE 5"
650 PRINTTAB(7)"SALAD USEAGE INP
UT"
660 PRINT@128,"TYPE IN THE NAME
OF THE FORMULA"
670 PRINT"DESIRED. WHEN YOU WISH
 TO QUIT"
680 PRINT"TYPE QUIT"
690 PRINT@294,"ENTER NAME OF FOR
MULA"
700 INPUTFM$
720 IFFM$="QUIT"THEN850
730 FORL=1TO23
740 IFFM$=W$(L)THENGOTO780:REM C
OMPARES TYPED INPUT TO NAMES IN
DATA ARRARY
760 NEXT
770 PRINT@393,"ITEM NOT FOUND":G
OSUB1270:GOTO820
780 GOSUB1270:PRINT"FORMULA FOR
";W$(L):PRINT"FOUND!":X=L
790 INPUT"HOW MANY BATCHES";BC
800 V1=BC*SV(X):V2=V2+V1
810 FORTT=0TO460:NEXT
820 FORSC=320TO400:PRINT@SC,STRI
NG$(32," "):NEXT
830 GOTO690
840 V2=0:GOTO850
850 GOSUB1270:PRINT@357,"TOTAL G
ALLONS USED";V2
860 PRINT:PRINT
870 GOSUB1410
880 CLS:PRINTTAB(13)"PAGE 6"
890 PRINTTAB(8)"TODAYS RECEIVERS
"
900 PRINT@132,"NUMBER OF RECEIVE
RS TODAY":GOSUB1280
910 INPUTVR:DIMNW(VR)
920 IFVR=0THENTR=0:GOTO950
930 FORLP=1TOVR:PRINT"NET WEIGHT
 OF RECEIVER # "LP:INPUTNW(LP):N
EXTLP
940 FORLP=1TOVR:TR=TR+NW(LP):NEX
T
950 TR=INT(TR/8.45):REM VINEGAR
WEIGHS 8.45 #/GAL.
960 PRINT"TOTAL GALLONS RECEIVED
 ";TR
970 GOSUB1410
980 CLS:PRINTTAB(13)"PAGE 7"
990 PRINTTAB(10)"MISC. USEAGE"
1000 PRINT@128,"ENTER IN GALLONS
 ANY USEGAE FOR"
1010 PRINT@161,"CLEANING,BATCH C
ORRECTION ETC."
1020 GOSUB1280:INPUTMU
1030 GOSUB1410
1040 CLS:PRINTTAB(13)"PAGE 8"
1050 PRINTTAB(8)"THE BOTTOM LINE
"
1060 PRINTTAB(3)"ENTER YESTERDAY
S TANK TOTAL":INPUTYT:MAN ENTERE
D FROM YEST. RESULTS
1070 GOSUB1280:PRINT@64,"
                         "
1080 POKE65495,0
1090 PRINT"YESTERDAYS TANK VOL="
;YT
1100 PRINT"TOTAL CATSUP USEAGE="
;CT
1110 PRINT"TOTAL MISC. USEAGE ="
;MU
1120 PRINT"TOTAL SALAD USEGAE ="
;V2
1130 TU=(CT+V2+MU)
1140 PRINT"TOTAL USEAGE TODAY ="
;TU
1150 TH=YT-TU
1160 PRINT"THEORETICAL ON HAND="
;TH
1170 PRINT"ACTUAL VOL ON HAND ="
;TV
1180 VA=(TV-TH)
1190 PRINT"RAW VARIANCE       ="
;VA
1200 PRINT"GALLONS RECEIVED   ="
;TR
1210 IFTR=0THENVT=VA:GOTO1230
1220 IF(TR>0)THENVT=VA+TR:GOTO12
30
1230 PRINT"TOTAL VARIANCE     ="
;VT
1240 GOSUB1410
1250 POKE65494,0:GOTO1320
1260 CLS:PRINT"ALL DONE":POKE654
94,0
1270 PLAY"L8;G":FORTT=0TO20:NEXT
:RETURN
1280 PLAY"O4:L8;E":FORTT=0TO20:N
EXT:RETURN
1290 DATA L-TYPE BBQ,K-HOT,K-HIC
K,K-REG,HICK SMK,REG BBQ,C.W. SA
UCE R,C.W. SAUCE S,WESTERN,1000S
,FRENCH,CUKE,CR. ITALIAN,ITALIAN
,REG. STARCH,TARTAR SAUCE,S.S. M
AYO,IMMIT. MAYO,EX. HEAVY SD,REG
. MAYO,K-MAYO,H-MAYO,IMMIT. STAR
CH
1300 DATA47.5,160,160,150,184,17
5,23,21.75,7.5,11.5,11,11,14.5,1
4.5,27,9.5,3.25,1.0,1.75,3.25,2.
75,2.75,9.0
1320 CLS:PRINTSTRING$(32,"#"):PR
INT"PRESS 'M' FOR MORE OR 'Q' FO
R QUIT"
1321 INPUTP$:IFP$="M"THEN10ELSEE
ND
1400 END
1410 PRINT@480,"";:INPUT"TO CONT
INUE PRESS <enter>";ZZ$:RETURN
```

Continued from page 13

program is a: s.a=0\s.b=0@Bs.x=ADDR(oldesc)\ RUN s9scall(ststat,s). Oh yes, in a later column I'll tell you why it's s9scall.. not syscall!

Another side note. In this case the syscall is more transportable than the "SHELL" call, tmode is different under OSK!

So when, when do you use syscall? The real question is " when NOT!" I only had one occasion, that being when I wrote BigT-ST, a terminal program for the Atari ST. Users who only have the Personel Pak of OS9/68k have Basic09, but no way to download binary files, assemble or convert S-records, and no syscall. I wrote a very short "type-in" sized basic program, (BT-BOO), which was only useful for downloading BigT-ST. No syscall meant that BigT-ST had to be "vanilla" basic. Basic09 is called MW Basic in the 68K arena.

Some of the "Whens":

When you want to simplify error handling

When you want to write Basic09 programs that out perform C or assembly

When you want to do something "they say" can't be done.

When you want to hear somebody say, "THAT'S written in BASIC!", and you say, "some assembly required".

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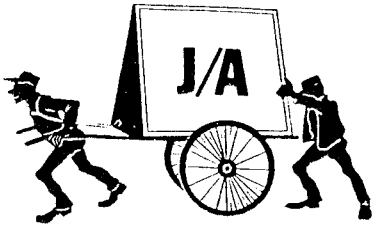

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Clearbrook Software Group
NEWSLETTER

Welcome to issue 3 of the Clearbrook Software Group Newsletter. In this issue, we will design the screens and generate the programs for maintaining the general ledger file.

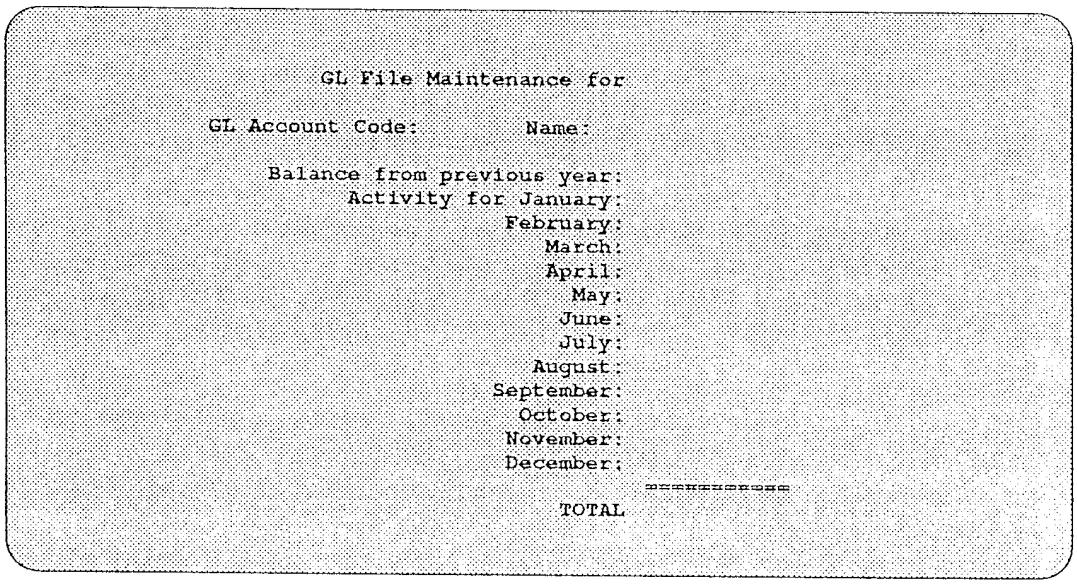
The General Ledger Screen

The general ledger screen is a simple screen for maintaining the GLaccount data file. To paint the screen, we use one of the following methods:

If you are using the IMS executive menu, you would select **3. Paint.** When asked for the data file(s), type; **GLaccount**

If you are at the OS9 prompt type the command; **IMSF GLaccount**

Of course, your current working directory must be the one containing your data files. A blank screen will be displayed with the cursor on the first line and a status line on the bottom. Move the cursor with the arrow keys and type text until you have an appoximation of this:



Now we must indicate where the information is to be entered on the screen. Move the cursor to the second space after the word **for** on the first line. Press **CTRL F** (hold down the control key and press **F**) and a list of options will be displayed on the bottom line. Press **A** to add a field to the screen. A list of available fields will be displayed. The cursor will be on the **company** field which is the one we want. Press the **ENTER** key to select it, the screen will be reprinted with a series of asterisks at the cursor. These indicate the type and length of the field.

Move the cursor ahead of the colon following **Code** and press **CTRL F** and **A**. Move the cursor to the **GLacc** field and press **ENTER**. Four # characters will appear at the cursor indicating decimal digits will be used for this field.

By now you have the idea. Place the **GLname** and **GLbal(1)** to **GLbal(13)** fields on the screen. **GLbal(13)** will be used for the balance from previous year and 1-12 will correspond to the months.

We want to print a total as well but there is no total field in the GL file. The solution is to use a memory variable. Move the cursor beside **TOTAL** and press **CTRL F** and **V** for variable. We must now enter a variable declaration (type, name, length if type is TEXT and an optional mask), so type:

```
REAL gltotal MASK "###^,###.##"
```

When you are happy with the screen layout, it is time to save the form and generate a program. Press the **ESC**ape key (you may have redefined it to **F1** on the CoCo 3). From the list of options, select **S** to save the form. Give it the name **GLacc** to produce a screen form file with the name of **GLacc.isc**. After the screen is saved, press **ESC**ape again and select **G** to generate a file maintenance program. Call it **GLacc**. You don't have to worry about using the same name as the screen because the screen adds **.isc** at the end of the file name.

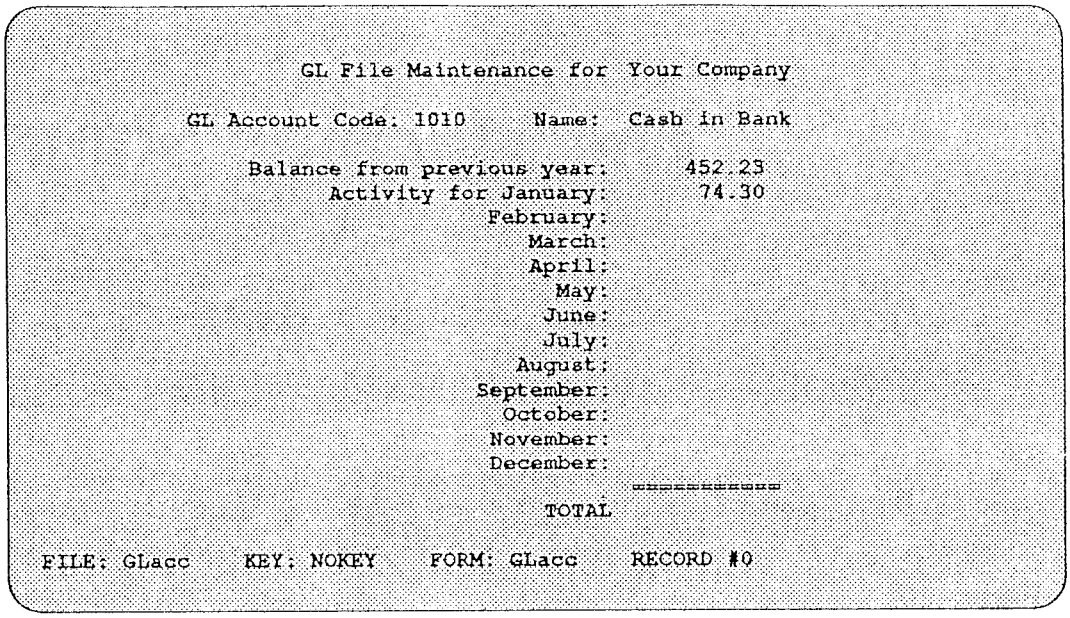
Press **ESC**ape and **Q** to quit. If you are using the menu, select **C** to compile the program. If you are running the IMS programs from the command line, type **IMSC GLacc** at the OS9 prompt.

To run the program, select **E** from the menu or type **IMSI GLACC** at the OS9 prompt, your screen will appear. The cursor will initially be after the word **for** on the first line. Type your company name here and press **ENTER**. The cursor will move to the account code location. Fill the screen as shown on the next page.

You will notice that the TOTAL does not get updated automatically. We will change the program later. When the screen is filled as shown, press **ESC**ape and the bottom line will give you some options. Press **I** to insert the information into the general

ledger file. This is the standard file maintenance procedure used by a generated program. You can of course change this by modifying the generated program.

Speaking of modifying the generated program, let's do just that right now. We will use the text editor (tx) to modify the GLacc program so it will automatically update the total at the bottom of the screen



From the IMS menu select **1. Text Editor** or from OS9 type **TX GLacc**. The first part of the program will appear on the screen. Use the cursor keys or find (**CTRL F**) to locate the statement; **DISPLAY gltotal**. Add the following statements above the DISPLAY gltotal statement:

```
  LABEL total
  gltotal=GLbal(1)+GLbal(2)+GLbal(3)+GLbal(4)+GLbal(5)+GLbal(6)+GLbal(7)+
GLbal(8)+GLbal(9)+GLbal(10)+GLbal(11)+GLbal(12)+GLbal(13)
```

After each ENTER GLbal(xx) statement add the following statement:

```
  GOSUB total
```

There are much more efficient ways of displaying the total, for example, the total only needs to be displayed if it has changed. I will leave it up to you to make any improvements.

After you have made the above changes to the GLacc program, you will have to compile it again. When you execute the program now, the total will be automatically updated on the screen.

MSF - MSDOS File Manager

Some users of MSF have reported problems using an MSDOS disk after using MSFormat to format a disk. This problem will be fixed in the next release. MSF version 2.1 will be available soon. It will support the following disk formats:

1 side	40 tracks	8 sectors	160k	5.25" disk
1 side	40 tracks	9 sectors	180k	5.25" disk
2 sides	40 tracks	8 sectors	320k	5.25" disk
2 sides	40 tracks	9 sectors	360k	5.25" disk
2 sides	80 tracks	8 sectors	640k	5.25 or 3.5" disk
2 sides	80 tracks	9 sectors	720k	5.25 or 3.5" disk

The MSDir command will be changed so it will also give you a directory of an OS9 disk. A version with the name DIR will also be provided to replace the standard OS9 DIR command. If you have any suggestions for enhancements to MSF or any of our other products please give us a call.

If you need more information on any of our products please call (ask for Paul) or write and we will send you brochures and a price list.

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The Machine Shoppe

Andrew Bartels

(Editors Note) We're pleased to welcome Andrew Bartels to our pages with a new column to answer your questions about machine language programming. Andrew is President of Digital In- novations and looks forward to hearing from you.

Dear Andrew,

I am making a machine language program, and I need to make CoCo show the sign-on message when the user exits. I've seen many commercial programs that do this, but I've never seen how it's done. Please help any way you can.

Harold Lobb
Bettsville, Ohio

Dear Harold,

It sounds like you want to do a reset from software. The address CoCo executes when you press reset is contained within address $FFFE-$FFFF. The address contained here is $A027 for the CoCo 1/2, and $8C1B for the CoCo 3. To cause a reset, use a JMP [$FFFE] instruction in your Assembly code. The sign-on message will NOT show if both of these con ditions are true:

1) Memory location $71 contains a value of $55.

2) Memory locations $72-$73 contain the address where a NOP op code is found ($12).

All you have to do is make one of the above false (by something like CLR $71) to cause the sign-on message to show when you JMP [$FFFE].

Dear Andrew,

I just bought a CoCo 3 and I love it. I see that it has potential to do things the CoCo 1/2 can never do. I'm trying to make a utility program in Assembly and I want to set up the 40 column screen mode for the menu. That's pretty easy in BASIC with the WIDTH command, but how do you do it in Assembly?

Jeffery Remakel
Spencer, New York

Dear Jeffery,

There are two ways to set up the high resolution text screens, through BASIC, or by actually setting the upper memory bits for the mode. For the sake of brevity, I'll just cover how you do it through BASIC.

The WIDTH ROM routine starts at $F636. If you bypass a few instructions, you can use this routine for your purposes. First load the B register with the width you wish to select (32, 40, or 80). Then JSR $F643. The corresponding mode will be set. If you load B with an invalid WIDTH and call this routine BASIC will return an error.

If you wish a more direct method of selecting modes, JSR $F652 for 32 columns, JSR $F65C for 40 columns, or JSR $F679 for 80 columns. If you are interested in the bits you set in upper memory to select these modes, you may want to disassemble the WIDTH routine with your memory map beside you and see what BASIC does.

Dear Andrew,

How can I make my program tell whether it's being run on a CoCo 2 or a CoCo 3?

Dale Curtiss
Martinsville, Indianna

Dear Dale,

There are many ways. You might try checking the contents of $E000-$E001. If the computer is a CoCo 3, these locations will contain decimal 230. Also you can check the locations $FFFE-$FFFF for a $8C1B. A $8C1B is there only on CoCo 3's (see the letter above regarding these locations). See the "BASIC Programming Contest" article in the January/February 1988 issue of the Clipboard for an example of a program that uses CoCo 3 commands only if the machine is a CoCo 3.

Send your questions on machine language programming to:

The Machine Shoppe
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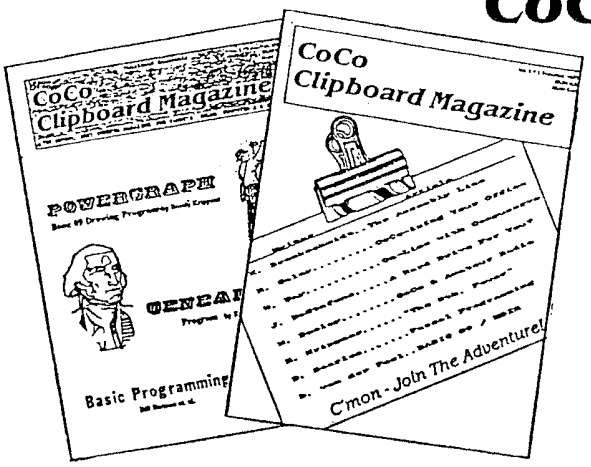

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Product Reviews

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Hard Disk Organizer
Robert Hengstebeck
408 Grandview Ave.
Feastervill, PA 19047

Pgm. Type: Disk organizer utility
Requires : OS9 Level 1 or 2
Price : $24.95

Reviewed by Randy Krippner

Most operating systems these days permit the creation of sub-directories in order to permit users to more easily organize how files are stored on today's high capacity floppies and hard drives. OS9 confuses things further because you are working with not one, but with two directories at the same time; the data directory and the execution directory.

If you use single sided drives, this isn't much of a problem: just leave things alone and and use the default directories. But if you use high capacity floppies or hard drives, you can end up with directories that contain literally hundreds of programs or data files. This can be a hopelessly confusing situation unless you organize your files into sub-directories. And even if you do organize your files in some fashion, you can wear your fingers to the bone typing the often lengthy pathlists necessary to reach a particular file or program, or forget where you are after typing several "chd" or "chx" commands to descend further and further into a complex nesting of sub-directories.

HDO can change all that. Instead of typing a lengthy series of path lists or directory changes, HDO permits you to build menus that let you change directories and even execute programs by simply selecting an option from a menu. And HDO does not lock you into some rigid disk organization scheme. You design the menus and determine what a menu selection will do by simply writing a few text files.

First you use BUILD or some other text editor to create a file called MENU_OPTIONS. In this file you place the list of menu selections you wish to have displayed when HDO is used.

Next you use your text editor to create procedure files (sometimes called batch files) that perform the tasks necessary to perform the menu functions, one for each menu item.

For example, if you decide you want a menu selection to switch execution and data directories to a sub-directory containing Basic09 and Basic09 programs, and automatically start Basic09, you could have a menu entry such as "Basic Programs".

You then create a procedure file called "Basic_option", with the following lines in it:

```
chd /h0/basic09_files
chx /h0/basic09_files/cmds
basic09
```

When you then use HDO later, it looks for the MENU_OPTION file in the directory, and displays all of the menu items you entered. When you select the Basic Program option, HDO will look for a procedure file that starts with the first word in the menu option, "basic09", and which has "_option" appended to it. If it finds this file, it causes OS9 to execute any commands in this file. When the program being executed ends, you are returned to HDO. You can even have a menu selection lead to other HDO menus.

While it's true that you could just directly execute these procedure files without using HDO, HDO lets you create an easy to understand and easy to use system of menus. All it takes is a single keystroke to invoke a series of complex manuverings through your directory structure.

HDO makes manuvering through a hard drive simple and fast, and it is even useful on high capacity floppy drives as well. HDO should prove to be a very useful utility for even experienced OS9 users.

The documentation is short but thorough. Novice OS9 users may have some difficulty understanding some of the terminology, but if you know what the "shell" is and have a fair understanding of how OS9's directory system works, you shouldn't have any trouble. I was busy setting up new HDO menus just a short time after reading the documentation.

HDO is available in a variety of configurations. The review copy I received has versions for OS9 Level 1 and Level 2 for the Coco 2/3 computers, and the author states it has also been tested on the 68000 based Mizar computer. It is also available for a variety of different terminal types.

I've seen a lot of utility programs for OS9 designed to make OS9's directory structure easier to deal with, but HDO is one of the best.

Home-Pak & Fast Check

Terry Simon's Computer Villa
1328 48th St.
Des Moines, Iowa 50311
(515) 279-2576

Requires CoCo 1 or 2 or special CoCo 3 version, one disk drive, RGB monitor recommended, TV or monitor also.

Price : Please call for latest price and updates

Reviewed by Pete Sheldon

Terry Simons has written a check and charge card program package called 'Home-Pac'. There is also a mailer and disk jacket program, to label those disk jackets for you. You will need to check the printer codes in 4 lines of basic, if needed for NLQ, double width etc. if the supplied codes don't work with your printer. Just load JACKET.BAS make the changes, then save back to disk with the changes you have made. A short demo comes with Home-Pac.

Hard Disk Organizer (H.D.O.)

<1> HDO can help you choose and execute your various application programs
<2> You manke Menus and Scripts - HDO will do the work
<3> If your system has the capacity,you can reach 2 million programs in just 8 keystrokes
<4> Individuals with no knowledge of OS9 are able to use your programs
<5> HDO has been successfully run on both the CoCo & 68K OS9 Systems
<6> HDO supports multiple terminal configurations

****
Sample Menu:
Hard Disk Organizer System
1. Development of Files
2. Busi. & Word Processing
3. Communications Programs
4. Exit

****

The H.D.O. program is available from:
Bob Hengstebeck, 408 Grandview Ave., Feasterville, PA 19047, (215) 322-5455

H.D.O. is just $21.95 + $3.00 shipping and packaging.

You need to take time in organizing your statements, and checks, for later labeling of your catagories, and defining your labels. This will make the transition from your home made legder to Home-Pac. You are given work sheets in the documentation for this purpose.

On page 4, you have blanks to fill in. First you place a 3 letter code for each catagory, then up to 20 characters for a description of that code. There must be 14 entries total. The program will not let you continue until 11 catagories plus the defaults have been entered. It would have been nice to have the option for more catagories. When entering this information, you can leave catagories 12, 13, 14 as DEP = Deposits, CCP - Credit Card Payments, and PER = Personal Expense as the defaults. On Sheet 5, there are more blanks to fill in. The first set of 14 lines are for the Payee Name and Memo. 23 characters for the company name, 1 character for the code, and room for a 4 character abbreviation for that company name. The last is for the memo, code and abbreviation. This will make your print-outs a bit more readable. The more detailed information that you can get to describe your catagories and checks, the better you can just "look at a glance" to see where the money has gone and to whom it went.

Now, onto the easy part. Once you have completed the set up, RUN the boot program. You are ready for the check and deposit data to be entered. You are asked for Todays date - 5 characters are required i.e.: 06/22. Then a menu asks for the task to perform. Press A for add and you are asked for the check Number. If you have checks lower then 1000 add leading zeros to the number. If you press enter, program defaults to #1000. The date will default to the last date of entries. On the top of the screen you are given a summary of your accounts, amount of checks, credit cards and present balance. If you have to edit any of the check or deposit entries the program will add or deduct any changes. Or you may use #7 to recalculate the whole file. Balance forwarding is continued from last data entered along with the date of last entered check or deposit.

The sort routine is a fast on a small amount of checks. But as always, more information to sort the longer it takes to sort. Three ways to sort

1 - sort by date
2 - by code name or memo and
3 - sorts by code....

keeping date as descender. Using 9 at main menu you have printing to printer as an option with screen display.

A sharp looking printout is produced by Home-Pak. Formated with all of the information of Check#, Payee, catagory, memo and balance of your account. A print-out on a monthly basis will give you the assurance that you have successfully balanced your checking account for another month.

With the Home-Pac you are not limited to just "home" use. A small business could use this package as long as you don't have a lot of businesses to keep track of. You may have

and then draw or redraw it in any of the four types. When you decide which you prefer you can easily save the graph to disk. One nice feature is the editing of graphs into a slide show type of presentation. You can set your show up in any order you like and even include pauses between graphs. Deletion of unwanted graphs is easy. The sequence of graphs can be saved to disk when you are finished and then later recalled when you wish to make your presentation. One possible application for this feature would be to set up the multiple graphic presentation and record it on your VCR. The tape could be complimented with visual lead in material using CoCo Max 3 or any other graphic software. A presentation such as this could add a lot of hype to any meeting.

This software takes full advantage of the 512K of memory by using windowing capability of the CoCo 3. Several graphs can be drawn on the screen at one time by using the size command. Simply draw your graph, load the data saved for a different graph, then draw this graph elsewhere on the same window after opening an overlay window using the size command. A graph drawn on your computer can be displayed on any other computer providing they have OS9 Level 2. This is done using the Object command and then merging the object file to a specific window on the system.

The software is made easy to use by the liberal use of pull down menus and icons. It is much easier to use than any other graphing program available to date for the Color Computer. The documentation is good, but I feel that they could have given more information on certain commands and the tutorial section could have been expanded to include several different graphing techniques.

A knowledge of the OS9 operating system is not required, but as with most new Tandy software, it is very helpful. I recommend this program to anyone that has a need for drawing graphs. For the price it cannot be beat.

Graffind from RainDay Software By Steve Rickets.

RainyDay Software
10625 SE 362nd Ave - Sp. B-32
Boring, OR 97009

Requires 32K, 1 drive, RSDOS 1.0, 1.1 or ADOS
Price : $10.00 includes shipping

Reviewed by Pete Sheldon

After skimming the documentation for GrafFind (who reads before running?) I found I could just type DOS then <enter>. The program started with the two title pages and I was off and running, looking at graphics pictures I had never seen before. With GrafFind using the "?" retrieves a help screen. GrafFind works with MCPAINT files with the BIN extention. It also works with COCOMAX files with the extention MAX and Graphicom II files. The '*' preceding a filename indicates that the files consists of two pages. You will use the up arrow and down arrow to view the second screen. You may also veiw Mcpaint graphiics.You may view those graphics files you have collected over the years from basic programs, or picture files you have downloaded from Bulletin Boards with this easy to program.

Have you ever encountered problems saving graphics pages from memory to your disk? How about loading those files back into memoryso you can see what you saved? Well, GrafFind will solve the problem of viewing those files you find messy to load and setup.

I liked the speed of the screen filling up with the picture and the simple way you can rename, or kill the file on the diskette you are viewing, or resave the file to another drive if you like. Graffind would be a good program to add to your graphics utilities. A nice touch by RainyDay Software shows up in their documentation. It's standard 8.5 x 11 inch papaer and it is 3 hole punched so it is easy to slip into a three ring binder or report cover for secure storage.

A little note for the MGE users. Graffind will not work with MGE files. It does work with any standard 6K or 12K graphics picture files.

Editors note: RainyDay has also announced a new and unique service for CoCo owners who would like to have the ultimate in family photo albums - the elctronic photo album! RainyDay will take your favorite pictures of Sparky the dog, Grandpa Joe or Aunt Millie and transfer them to dislk. The service is available in PMODE, MGE, CM3 or in 16 level format. Contact RainyDay for exact prices and the number of pictures per disk.

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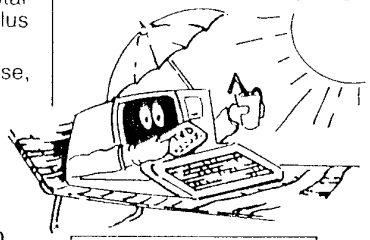

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one copy set up for home use and several others for different accounts. If you have the money to put into one! I did have some trouble at first with getting the first program to run on my CoCo III. It seems the COCO-3 program is set up for the of the use of an RGB color monitor in mind. I had no problem when using the CoCo 2 program on my CoCo II.

Home-Pac, unfortunatly will not subsidize your bank account if you do not enter the checks or spend your limit on your credit cards.

The neat and professional looking displays in this package of programs, permits easy viewing of your data and get a true evaluation of your finances. I think Home-Pac would make your monthly chore of balancing your banking account'(s) more efficient and reliable if you ENTER ALL CHECKS written out CORRECTLY into Home-Pac REGULARLY. Definitely the Printouts will give you a more complete over veiw of what each check was for. Home-Pac sells for $49.95 and I feel well worth the investment. Once you have purchaced this package and familiarized yourself with the operations, you will too.

Phantomgraph

Tandy Corporation
Avail. all Radio Shacks Stores

Requires CoCo III with 512K Disk Drive, color monitor or TV Mouse or Joystick

Price : $39.95

Reviewed by Herm Smith

Phantomgraph for the Color Computer 3 is yet another example of high quality software finally coming from Tandy. It is capable of drawing excellent graphs for many purposes. If you use Dyna-Calc to make spread sheets, there is a utility included that will allow you to use this data to draw a graph.

Simply enter the usual DOS command and follow the directions. A minimum system of 512K is required as is a disk drive and a mouse or joystick. The high resolution joystick interface is not supported. An RGB monitor is recommended but a color TV will do.

The one draw back to the program is the fact that it will not support any printer other than a Tandy DMP printer. I could not find any printer drivers on CompuServe for Phantomgraph, so I could not print out any of the graphs I was able to draw on screen. I am sure that there will be printer drivers appearing in time for this software because it has many uses and the demand will call for them. If Tandy expects to sell software like this to as many users as possible they will have to recognize the fact that not everybody owns strictly Tandy equipment.

Using Phantomgraph you can draw either a very simple graph for the local computer club or a very complex business graph. There are four types of graphs available and each of these can be drawn in different formats. You can type in the necessary data for your graph

TEXTFORM
R.A.D. Products
194 Hotchkiss St.
Jamestown, NY 14701
(716) 665-2124

Pgm. Type: Text formatting utility
Requires : 64K Coco/Coco 3, 1 drive, printer
Price : $34.95

Reviewed by Randy Krippner

TEXTFORM is a text formatter. It is not used to create or edit text files, but to format BASIC program listings stored in ASCII format or text files produced by a word processor.

TEXTFORM really only does one thing, but it does that one thing very well indeed. It will produce a two column printout of any standard text file.

That may not sound like much, but it can be very helpful to be able to produce a two column program listing or text printed in two columns. It permits more text to be printed on a page than would otherwise be possible, for one thing. The human eye has a great deal of difficulty in tracking long lines of text. Breaking a page up into multiple columns make it much easier to read. It's very handy for printing program listings because it reduces the length of the listing (and with the price of paper being what it is, that alone is important) and makes it easier to read and debug a program because the column width of the printout can be set to the same width as the computer's display.

TEXTFORM is a flashy, professional looking program, featuring pull down menus and pop-up windows. It is also extremely easy to use. The documentation is clear, with lots of examples, but anyone could figure out how to use the program just by looking at the nicely designed menus.

The program gives almost total control over how the final printout will look. You can set the margins, page length, column height and width, even the amount of space that seperates the columns. TEXTFORM will print a header line and page number for you through the use of "slash" commands that can be embedded in the text. All of the printing parameter commands can be saved on disk so once you have a format set up properly, you don't have to re-enter the various parameters. Printer baud rate is also adjustable from 600 to 9600 via one of the pull down menus.

The text file to be printed must have been previously created by a word processor, or if a BASIC program listing is to be printed, it must have been saved with the ",A" option so it is saved in ASCII rather than the tokenized format. When ready to print, select the FORMAT

ption from the menu and enter the name of the ile to be printed. TEXTFORM will do the rest.

TEXTFORM also has an option to direct the utput to a disk file, which is extremely useful. This file can then be loaded back into your word processor for further "tweaking" if you wish.

There are a few things I didn't care for. There seems to be no way to stop printing once TEXTFORM has begun processing a file. There is no option for single sheet feeding. If you choose to print page numbers, TEXTFORM always starts at page 1. There is no way to start printing at a different page number. While TEXTFORM does permit you to send control codes to the printer to use a special print mode, such as condensed, expanded, etc., once the print mode is selected, it remains in effect for the entire document. It does not support embedded printer control codes.

But these are minor complaints. TEXTFORM does what it is supposed to do, does it well, and does it very fast. This is a very useful utility for anyone who wants to produce attractive, easy to read BASIC program listings or print text files in a two column format. I've used it for just about all of my printing tasks, from listing programs to printing documentation for my own software, and it worked flawlessly.

softWAR

presents

IRONSIDES & CRIMSON SAILS

A two player naval game for the 512K Color Computer 3 running OS9 Level 2. This game of strategy and tactics is easy to learn yet difficult to master. Ironsides & Crimson Sails is fun for players of all ages and makes for hours of entertainment without growing stale or repetitive. It utilizes a 640 x 192 pixel high resolution, four color graphics screen which provides the most defined and entertaining graphics. Ironsides & Crimson Sails contains context-sensitive error windows in addition to help screens which are accessible at any time by pressing the <?> key.

Ironsides & Crimson Sails comes on a single diskette containing five separate naval scenarios which range from fictional settings to actual simulations of historical naval engagements. Therefore, Ironsides & Crimson Sails is five games in one. Five games with completely different map screens, completely different set ups and requiring completely different aspects of play. Ironsides & Crimson Sails also has a game-saving feature which allows games in progress to be saved to or loaded from disk.

Ironsides & Crimson Sails is being offered at a special introductory rate of only $8.95, so send away for yours today. Credit card, cash orders and C.O.D. cannot be accepted, however personal checks or money orders are welcome. Direct your orders to:

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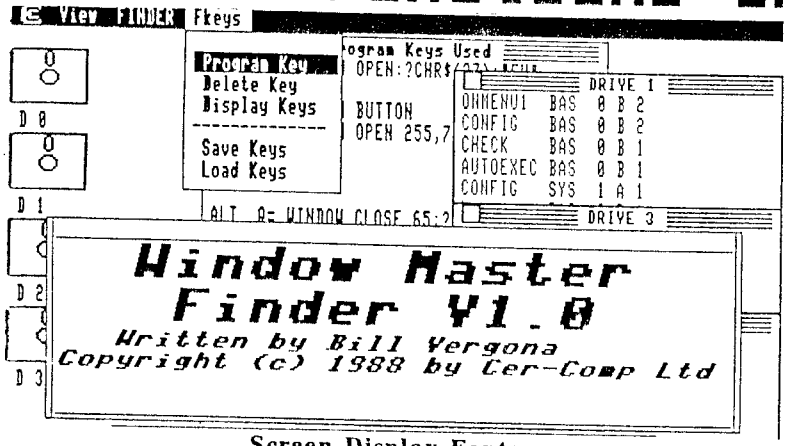


Screen Display Fonts

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.

Fully Basic Compatible

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

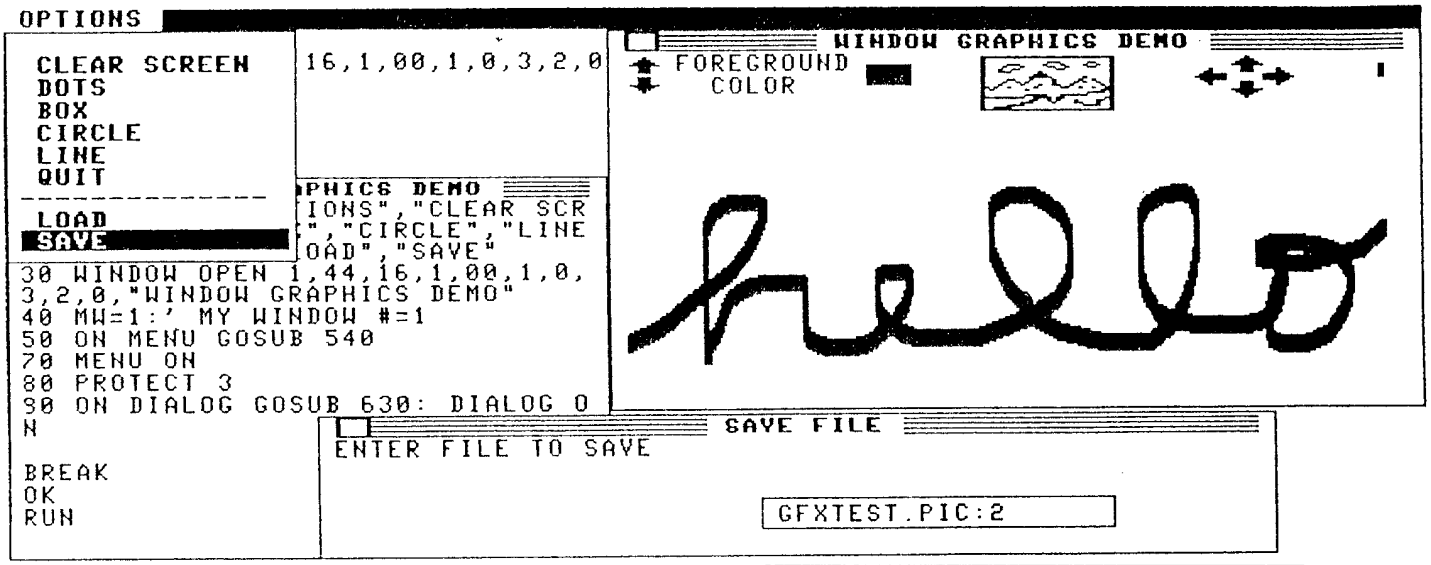
Menus are completely programmable with up to 16 menus available. They can be added or deleted at any time in a program. Menu items can be enabled, disabled, checked or cleared easily under program control. Menu selection is automatically handled by Window Master & all you have to do is read a function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



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 occured.

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 pushs the Color Computer 3 far beyond its normal capabilities, into the world of a "User Friendly" operating enviornment. 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.

Ordering Information

To order WINDOW MASTER by mail, send check or money order for $69.95, plus $3.00 for shipping & handling to the address below. To order by VISA, MASTERCARD or COD call us at (702)-452-0632
(Monday thru Saturday, 8am to 5pm PST)

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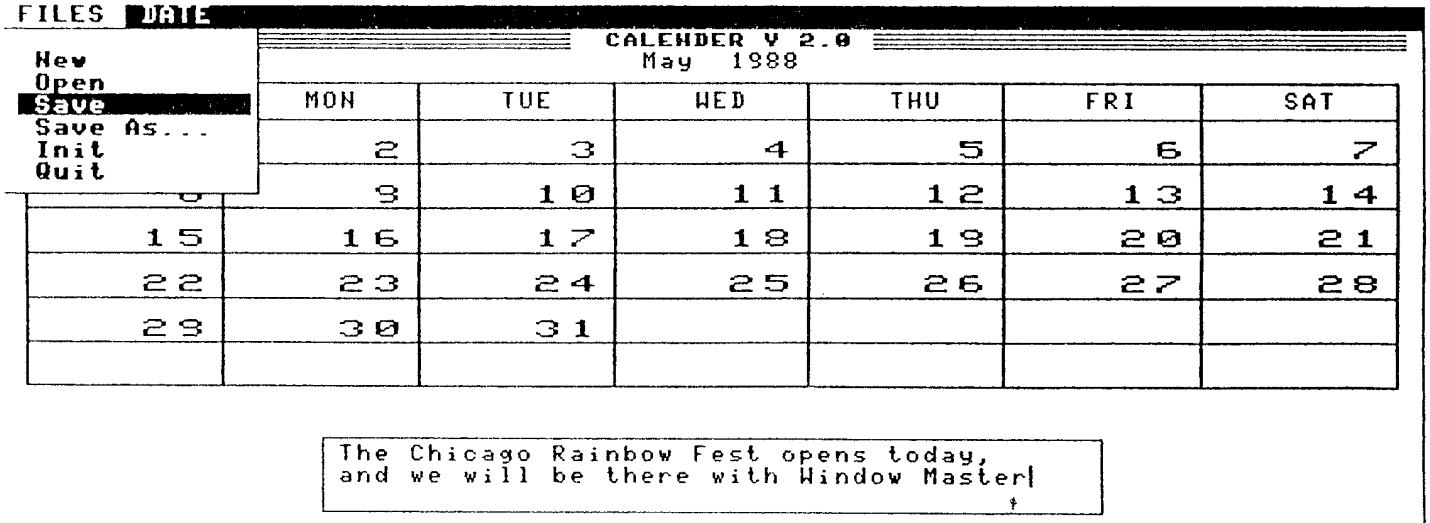


"SEEC" For "C"

Nancy Ewart

SEEC: To Begin Pronounced "Seek"

Why program in C on the CoCo? First of all, it is a mainstream language. There are good books and excellent resources out there that are every bit as usable by us as by IBMers. Programs written in C source code can be shared with others and run on their machines. It is a great feeling to be able to do on the CoCo what others are doing on those expensive machines.

Secondly, individuals respond differently to different languages; as the saying goes, "that's what makes horse races." Some people feel comfortable with Assembly Language; others with Pascal; still others with Basic09. Each language has its own passionate advocates. If you have never tried C, give it a go; see if it suits you.

Before going any farther, let us make a case for OS-9, without which there is no C programing on the CoCo. There are many people who are still saying, "I don't run OS-9." Experienced people, people who have been around the silicon chip industry for decades, have chosen to cut themselves off from an incredible enabling system. Maybe they don't need it, but for those of us who can't play the CoCo like a harp directly on its registers, OS-9 is a wonder. Maybe the last time they tried OS-9 was under Level I on a CoCo 2 and what they experienced was a lot of blood, sweat and tears for no appreciable result. Granted, the only reason for coping with Level I was to learn how to handle the system. Level II is different; easier because there is more room; more practical because of being able to switch from application to application at the touch of the <clear> button.

Because many people first tried OS-9 with only 64K there grew up a myth that OS-9 was hard. By their approach, people have made it hard. By their approach, other people can make it easy. What could be easier than DOS followed by WINNIE or ROGUE or CARMEN? My computer naive friends type DOS followed by TSWord and are off and running with one of the most user friendly word processors available and one that is appreciably faster than point and click mouse types.

If you have wanted to try programming in C but did not want the hassle of learning OS-9, check out the short OS-9 > C Steps. The power and complexity of the system will wait until you have a need for it. The section entitled "Setting Up the Compiler for Different Systems" at the end of this article describes some of the many ways you can put the parts together to use the C Compiler.

There are many good books on C; the one book that everyone mentions, that is lucid, useful and fun, is C PRIMER PLUS by the Waite Group; Mitchell Waite, Stephen Prata and Donald Martin. Computer Language Magazine, in bookstores, is an excellent source for more advanced programmers, as is The C User's Journal, a service of the C Users' Group and published by R&D Publications, Inc., PO Box 97, McPherson, KS 67460. The minus aspect of these two publications is that their advertisers are overwhelmingly MS-DOS. If you have a modem, there is C source code available from information services such as CompuServe as well as from many local bulletin boards.

The OS-9 Users' Group has a C Math Library and some C programming tools, public domain software which will be explored in future issues.

Windowing in general, and Multi-vue in particular, provides an environment where you can customize your own enhancements, with flair, to make them look, as well as act, in an integrated fashion. When Multi-vue can be set up with 40 tracks, double sided disks; with a screen editor, the C Compiler plus a ram disk, you have a programmers package not to be sneezed at.

OS-9 with the C Language STEP 1.0
OR OS-9 > C 1.0

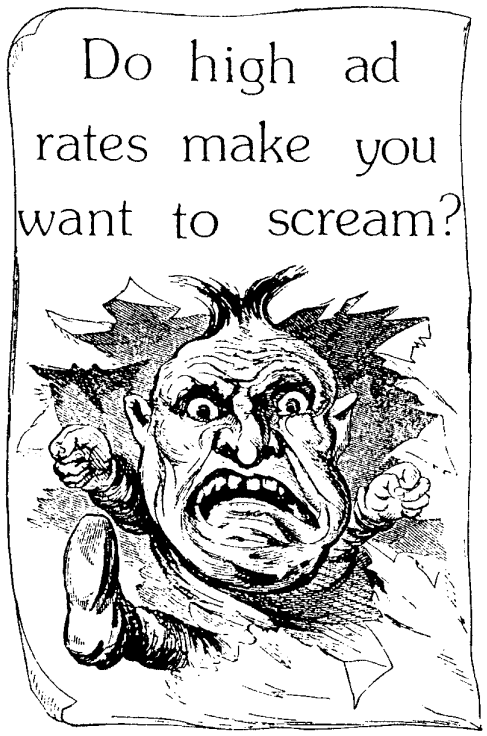
OS-9 would not be difficult to learn if you approached the system with what does a person need to know in order to do a specific operation rather than trying to learn the whole system at once. With that in mind, let's see (or rather let's C...) what you would need to program in C.

Generic OS-9 commands are found in the commands directory with the OS-9 system disk in drive 0, from this time forth referred to as /d0/cmds. Out of all the available commands in the system, the ones needed to install and use the C Compiler to program in C are:

DIR as in DIR /D1/SOURCES will get the directory listing for where the C source code is to be stored. Plain DIR prints the listing of the data directory the system is in; DIR >/P sends that directory to the printer. DIR X gives a listing of the actual execution directory.

CHD as in CHD /D1/SOURCES changes the data directory to the one you want.

ADS!



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CHX as in CHX /DO/CMDS changes the execution direcory. It absolutely, positively must be done if you switch disks in /DO.

FORMAT as in FORMAT /D1 R "any.name" will format a disk in drive 1.

BACKUP as in BACKUP will duplicate any disk in /DO to the disk in /D1 by default. After BACKUP is <entered> there is a prompt that lets you substitute the disk you want to copy for the system disk in /DO. BACKUP the Library disk.

COPY as in COPY /D1/CMDS/CC1 /DO/CMDS/cc1 to copy the first part of the C Compiler from the Tandy original to your system disk. Then follow with transferring c.prep, c.pass1, c.pass2, c.opt, c.asm, c.link the same way. You now have the C compiler located in your system commands directory.

DEL as in DEL /DO/SYS/ERRMSG or DEL /DO/CMDS /CMP will sacrifice part of the system to get a little more room on the disk for the C Compiler.

CC1 as in CC1 HELLO.C will compile the code hello.c . After the code is compiled succesfully you will see the program "hello" in the commands directory. Just type HELLO to run

STOCK MARKET PORTFOLIO FOR THE COLOR COMPUTER

RAINBOW CERTIFICATION SEAL

If You Are Serious About Stocks. . .
This Program Is A Must!

Stock Market portfolio for the color computer will keep track of all your current stock listings and keep a listing of stocks you have sold by the year, they were sold with all totals, profit and loss, and percentages. More than one person can use this program as long as the first three letters on both first and last name are not the same. The program is menu driven and will give you the option for either screen print or information to be printed on printer.

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it.

Eight simple commands, most with direct counterparts in RSDOS basic, are almost enough to get started. You do, however, have to type the source code and save it to /D1/SOURCES.

OS-9 > C 2.0

If you want a lot of frustration and are short of bucks, you can use the BUILD and EDIT commands that come with the OS-9 system.

BUILD is fine until you make a typo and have to correct it with EDIT.

EDIT is a line editor that can do a lot of neat things but you still only can work a line at a time. (No easy jumping around the screen using the arrow keys.) Look them up in the system docs. Using EDIT is an advanced course all by itself and can not be compressed into two paragraphs.

If possible, get an OS-9 screen editor/word processor to substitute for EDIT. Check your documentation carefully to install. Type your source code with your chosen editor; then save the program. Either save it straight into the SOURCES directory or COPY it there.

OS-9 > C 3.0

Here are a few more commands that will make your life a little easier in the beginning.

You need to know how much space you have?

Use:
FREE as in FREE /D1 and MFREE
MDIR tells you what modules are in memory.

You need to be independent of your drives to copy, etc?

Use:
LOAD, LINK, UNLINK as in LOAD TSEdit which puts the editor in memory.

You want to know where you are?

Use:
PWD will print your working (data) directory pathname and PXD will print your execution (CMDS) directory pathname.

You need a new directory, or vice versa?

Use:
MAKDIR as in CHD /D0;MAKDIR CNOTES This is a short process.

DELDIR as in CHD /D0;DELDIR CNOTES This is a long involved process because it has to delete everything in the directory first.

When something does not work:

(1) Check the error number (You can waste a lot of time trying to correct the wrong error.)

(2) If you get a lot of #216 PATHNAME NOT FOUND errors, load PWD and PXD into memory. Use these commands to help establish where you are at any given error.

CHX as in CHX /D0/CMDS changes the execution direcory. It absolutely, positively must be done if you switch disks in /D0.

FORMAT as in FORMAT /D1 R "any.name" will format a disk in drive 1.

BACKUP as in BACKUP will duplicate any disk in /D0 to the disk in /D1 by default. After BACKUP is <entered> there is a prompt that lets you substitute the disk you want to copy for the system disk in /D0. BACKUP the Library disk.

COPY as in COPY /D1/CMDS/CC1 /D0/CMDS/cc1 to copy the first part of the C Compiler from the Tandy original to your system disk. Then follow with transferring c.prep, c.pass1, c.pass2, c.opt, c.asm, c.link the same way. You now have the C compiler located in your system commands directory.

DEL as in DEL /D0/SYS/ERRMSG or DEL /D0/CMDS /CMP will sacrifice part of the system to get a little more room on the disk for the C Compiler.

CC1 as in CC1 HELLO.C will compile the code hello.c . After the code is compiled succesfully you will see the program "hello" in the commands directory. Just type HELLO to run

(3) If you get well and truly lost, put the system disk in drive 0 and CHD /d0;CHX /d0/CMDS. ANYTIME YOU CHANGE DISKS YOU MUST CHANGE DIRECTORIES. (As with any rule, there are a few exceptions; do not worry about them now. Make it a practice to tell the [stupid] thing when you slip a new disk in.)

* > and < are OS-9, C and UNIX redirectional operators.

SETTING UP THE COMPILER FOR DIFFERENT SYSTEMS

Those of you that use OS-9 can recognize that the simple introduction leaves many options out. Now let's get a bit more sophisticated. An efficient way to write and compile C programs with 64k, Level I and using 35 track, single sided drives is to put the Library disk in /D1; CHD /D1/SOURCES; then switch between a disk with the screen editor on it and a disk with the C Compiler on it as needed. Always remembering, naturally, of course, <grin>, to CHX /D0/CMDS each time.

When the disk shuffle palls, get SDisk; use OS9GEN and DSAVE (by this time you are at least at OS-9 > C STEP 15.0) to make a 40 track double sided system disk; and put TSEdit and the C Compiler on the same disk as the complete OS-9 system. Great, but..... Into TSEdit; write the source code; out of the editor and into the compiler; an error in compiling; out of the compiler and back into TSEdit; correct the error (hopefully). How many times this is repeated depends on how quickly you find the error(s). At the same time, each time the compiler is run it takes up to five minutes compile time, depending where in the sequence the error is located.

Next came CoCo 3, Level II and windows. Fantastic;..... Run TSEdit in the VDG startup window; and the C Compiler in window 3, using window 1 for the data directory and window 2 for either FREE or MFREE, whichever is critical at the time.Now, write the code in TSEdit and save it; hit <clear> to window 3; run the compiler; on errors, hit <clear> back to TSEdit. Ah, the code is still sitting there, staring you in the face. Make your corrections; save it. Hit <clear>. Run the compiler, etc. But it still takes a long time to run the compiler. Oh well, go play ROGUE in window 7.

The ultimate (up to now) arrived with a ram disk (software, that is). First install the ram disk modules in the bootfile and commands directory. Initiate a ram disk with roughly 1000+ sectors. Copy the Library from /D1 to /R0 with BACKUP (or DUP which can be bought at the same time as the ramdisk.) Use a library disk that also has a CMDS directory with the C Compiler in it. Leaving the Library disk in Drive 1 and the system disk in Drive 0, CHD /R0/SOURCES; CHX /R0/CMDS. Then run the compiler; CC1 HELLO.C. It compiles in about 45 seconds! The compiler accesses /D1 during c.prep if there is a #include in the program and during c.link, but otherwise it does it all in memory. (I have experimented trying to get rid of those two accesses, but haven't succeeded. This works beautifully on my 512K system; but it may not work on all. Putting just the C Compiler commands in the ramdisk cuts down on compile time also but not as drastically.)

C SOURCE CODE

Please send your C source code to

Nancy Ewart
Book Trader (SEEC)
1789 Hooper Ave.
Toms River, NJ 08753

Also, if you find anything useful for C programming or public domain software or shareware that we could refer people to, send the info along to the same address.

Since C source code is easy to find, there are many prototypes to emulate. At the beginning there are two criteria for sending in code to this column (besides the obvious one that it is yours, all yours and only yours). IS IT SHORT? IS IT USEFUL? It could be a function or a module designed with your blessing to be included in other people's programs. More and more there is pressure in the C world to write modular programs in short bursts of code. Even though there is much code that can be ported directly to our C Compiler that is available to CoCo users, we still lack the enriched environment of additional libraries and programing shortcuts dependant on the operating system. With your cooperation we can begin to remedy that.

Included are two pieces of code, both relatively short, one that accomplishes a task in the "real world" and the other that accomplishes a task in the OS-9 windowing environment.

Shop_tasks.c is very simple, featuring only one library function, printf(), and a collection of self defined functions. It is like a spread sheet for words. Minor changes in the data could cause a great deal of retyping if a person was using a word processor; for example, if one person quit and someone else was hired. Using this programming approach, the data would be changed once in the function definition rather than the five times the specific name appears on the chart. Background information for the data on the chart: this is a place of business that needs one person to get there a little early to "open"; another to stay a little late to "close"; Anthony's job (among other things) is to answer the phone and monitor the main cash register, therefore he is never down for lunch duty; other people are spelling him for lunch. A family could use this concept to sort out the tasks that need to be done on a daily, weekly or monthly basis. It is a management tool.

RECOMMENDATION FOR USE:

Compile shop_tasks.c as is; next send the output to a printer with at least 120 characters per line. Look at the format it produces; then go back in and make the changes you need to print out the data you want.

/* shop_tasks.c */ /* Send to printer with at least 120 characters per line. */ /* This rotation is for every four weeks. Illustrated, however, is a month with 5 weeks. */

Program listings and article continues on page 40

Continued from page 4

```
main()
   printf("                                                ASSIGNMENTS FOR THE
MONTH OF AUGUST\n");
          /* Change month name. */
   skip(); skip(); /* Change task names to suit your purpose, as well
as week starting dates.*/
   printf("TASK              WEEK OF                 WEEK OF
WEEK OF                 WEEK OF                 WEEK OF\n");
   printf("                    01                      08
15                      22                      29  \n");
   dotline();
   printf("Open       "); an(); cn(); dn(); bn(); an(); skip();
   dotline();
   printf("Mail       "); dn(); bn(); en(); an(); dn(); skip();
   dotline();
   printf("Lunch duty"); cn(); dn(); bn(); en(); cn(); skip();
   dotline();
   printf("Tidy       "); bn(); en(); an(); cn(); bn(); skip();
   dotline();
   printf("Close      "); en(); an(); cn(); dn(); en(); skip();
   dotline();          /* End of program */

/* Define the functions skip, an, etc. */ skip()
   printf("\n");  dotline()

printf("------------------------------------------------------------------------------------
-------------------------------\n");
 an()
   printf(" Anthony 555-1234 Tu  ");  bn()
   printf(" Doris B 555-6271 W   ");  cn()
   printf(" Evelyn  555-0921 M   ");  dn()
   printf(" Douglas 555-4728 S   ");  en()
   printf(" Nancy E 255-4960 Th  ");
```

The following is a printout of shop_tasks after being compiled so you can see what it looks like with a 15 pitch daisy wheel.

ASSIGNMENTS FOR THE MONTH OF AUGUST

TASK	WEEK OF 01	WEEK OF 08	WEEK OF 15	WEEK OF 22	WEEK OF 29
Open	Anthony 555-1234 Tu	Evelyn 555-0921 M	Douglas 555-4728 S	Doris B 555-6271 W	Anthony 555-1234 Tu
Mail	Douglas 555-4728 S	Doris B 555-6271 W	Nancy E 255-4960 Th	Anthony 555-1234 Tu	Douglas 555-4728 S
Lunch duty	Evelyn 555-0921 M	Douglas 555-4728 S	Doris B 555-6271 W	Nancy E 255-4960 Th	Evelyn 555-0921 M

Time1.c is designed to run in its own little 2 line window with shell. As it is written, it will update itself every minute. If you don't have a "no Halt" controller, you might want to fiddle with the 360 sleep time to make it run at little faster to average out disk access times.

RECOMMENDATION FOR USE:

Construct a two line, 15 character window with OS-9 prompt. Construct another large window with OS-9 prompt on the same screen. After compiling time1.c, hit the clear button until the cursor arrives in your two line window. Type: time1<enter> (that's a one, not an el). Then move the cursor to the large window on the same screen. If you are using the windows that Tandy supplied with Level II, run time1 in the smallest activated window. You must have a shell in the window because the program is con- tinuous and ties up the cursor.

```
/* time1.c */ /* by John Ruschmeyer, Neptune
City, New Jersey */

#include <stdio.h> #include <time.h>

main()
    struct sgtbuf buf;

    while (1)
        getime (&buf);
        printf ("%02d/%02d/%02d %02d:%02d\n", buf.t_month, buf.t_day,
buf.t_year, buf.t_hour, buf.t_minute);
        sleep (360);
```

Deluxe Power Graph

Randy Krippner

Editors Note: I have always disliked the policy of some magazines which tell you an important program is in a months issue (implying the entire program is going to be there) only to find that just a very small portion of the listing has been actually printed. In order to get "all" the program you have to buy their disk service.

We couldn't print all of Deluxe PowerGraph in this issue. The draft print out at 60 lines per page ran over 23 pages in length! We decided to use a smaller line spacing and a 12 pitch print out to get as much as possible into this issue. However we didn't get it all. The balance of Randy's program will be printed in our anniversary issue in September.

The entire program is available on ClipDisk and is available to download from the BBS listed at the end of Randy's article.

This month's program is Deluxe PowerGraph. DPG isn't just a simple enhancement of the PowerGraph program presented a few months ago. It is a whole new program, fully mouse-driven, which makes use of almost all of the Coco 3's amazing graphics capabilities, and is chock full of little goodies like pull-down menus and a "point & click" user interface.

Requirements

DPG requires a Coco 3 with 512K, at least one disk drive and Multi-Vue. Thanks to MV, there is no longer any problem with displaying the on-screen pointer outside of the current active window, so using the keyboard mouse is no longer difficult. However, the hi-res joystick interface and the two-button mouse are highly recommended. (DPG requires the two button mouse. You can use the single button mouse/joystick for positioning the pointer, but any time it is necessary to click B2, you'll have to toggle on the keyboard mouse and press F2.)

Housekeeping

Before you begin typing in the DPG listing, some housekeeping is necessary.

DPG requires the StdPats_16 file located in the SYS directory of your Multi-Vue boot disk. Although StdPats_16 should be in the SYS directory, MV does not merge it as part of the initial boot-up procedure.

The easiest way to do this is to modify the Startup file on your MV boot disk. Use the EDIT text editor from your OS9 system disk and add this line to Startup:

```
merge /d0/sys/stdpats_16
```

As long as you're tinkering with the Start up file, you might as well add this line as well:

```
load shell montype
```

As an alternative, you can also type these two lines at the OS9: prompt, or even from within Basic09 by preceding the merge and load commands with a "$".

Your MV boot disk probably does NOT have Montype in the CMDS directory, so copy it from your OS9 system disk into the CMDS directory of your MV boot disk.

Now turn to the MV system disk, the one you normally leave in /d0 when you are using Multi-Vue.

If you have a single sided drives, there is not enough room on this disk to hold the files required for DPG. You have to delete the calculator, calendar and clock programs from your MV system disk's CMDS directory.

Copy Error from the CMDS directory of your OS9 system disk into the CMDS dirctory of your MV system disk. Copy Errmsg from the SYS directory on the OS9 system disk into the SYS file of your MV disk. (These are required for DPG's error trapping system.)

Now put a backup copy of your Basic09/Config disk in drive 0 and type:

```
chd /d0/cmds
```

Now type:

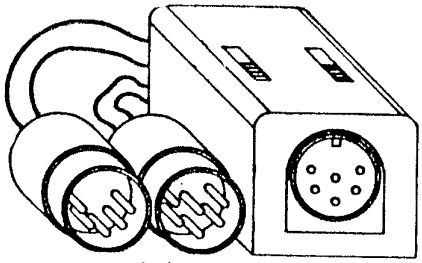
```
merge basic09 inkey gfx2 syscall > /newbasic
```

(You may have to LOAD Merge from your OS9 system disk first.)

CocoTech

NEW!

UltiMax



You can use **UltiMax** as a normal HI-REZ joystick interface or switch it to be used with a popular Max III graphics program. The other feature of **UltiMax** is the option to have a large or small stick area so you can be more accurate with your drawings!

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What this does is combine Basic09, Inkey, Gfx2 and SysCall into a single file called Newbasic.

Copy Newbasic into the CMDS directory of your MV system disk. Use RENAME to change the name back to Basic09.

Now type:

```
attr /d0/cmds/Basic09 e pe<ENTER>
```

This sets the execution attribute of the file so OS9 knows this is an executable program.

When you do a DIR of the CMDS directory, all you'll see is Basic09. But Basic09, Inkey, Gfx2 and SysCall are all there. When you now load Basic09, OS9 will automatically seperate the file into its seperate components.

There is just one last thing you need to do; create an AIF file so you can start Basic09 from the Multi-Vue screen.

MV boots up in the 4 color graphics mode. DPG requires the 16 color mode. We need the AIF file to tell MV what type of window we need for the program and how much memory to reserve for it.

Get out EDIT again (or use BUILD) and create a file on your MV system disk called "aif.bas". Then enter the following:

```
Basic09
icons/icon.demo
90
8
40
24
0
2
```

The next time you do a directory of this disk by clicking on the disk icon under MV, the Demo program icon will appear, with the word "Basic09" under it. To start Basic09, just click twice on the icon.. MV will start up a 320 X 192, 16 color window, and load and start Basic09, reserving 90 "pages" (each page is 256 bytes) of RAM for it.

Now, finally, we're ready. Boot up Multi-Vue with the customized boot disk we just made. When prompted, insert the customized MV system disk. When you click on the /d0 icon, you'll see the Demo icon with the word Basic09 under it. Click B1 twice on the icon and MV will load and start Basic09 for you.

Typing It In

DPG is a large, complex program, and you're not going to type it in all in one sitting. As I mentioned when discussing the old PowerGraph, when you want to save it, type:

```
save* dpg<ENTER>
```

This will save all of the program's procedures into a single file called "dpg" (or

whatever you want to call it).

To run DPG, start Basic09 as described above. Type "load dpg <ENTER>". After the program has loaded, type "run main <ENTER>". The screen will clear and in a few seconds the main menu will appear on your screen.

The main menu consists of four areas; a menu bar showing the available functions, a status area showing the current color, pattern and brush, a pattern bar to let you select which drawing pattern to use for Fill, Bar and Point, and the color bar showing the 16 colors.

The menu bar, pattern bar and color bar are "live". To select a pattern or color, put the pointer on the desired pattern or color and click B1. To turn the patterns off, click on the large, solid box at the start of the pattern bar.

The menu bar features four pull down menus; Tool, Switch, Disk and Buffer, and three functions; Draw, Clear and Exit.

To select a menu or function, put the pointer on the option desired and click B1.

Clear: Clears the drawing screen.
Exit: Ends the program.
Draw: Collapses the main menu and puts you on the drawing screen where you can draw using the Tool selected.

Tool: Pulls down the tool menu. Select the tool you wish to use by putting the pointer on the name of the tool and clicking B1. The selected tool will be highlighted. Click B2 to exit here.

Tool menu.

The tools are:
Point: Uses the current brush for free-hand drawing or putting a single point on screen using the current color and pattern. After selecting Point and then clicking on Draw, the brush will appear on the screen. Click B1 to place a single point on the screen, or hold down B1 while moving the mouse slowly to draw free-hand. Click B2 to exit.

Line: Draws a line on screen using the current color. After going to the drawing screen, put the pointer at the position where you wish the line to start. Click B1. Move the mouse to position the line. Click B1 again to draw the line. Click B2 to exit.

Box/Bar: Draws a box or box filled with the current color/pattern on the screen. After going to the drawing screen, click B1 where you wish to locate one corner of the box. Move the mouse until the box is positioned correctly. Click B1 again to draw the box/bar. Click B2 to exit.

Circle: Draws a circle. Click B1 at the center point of the circle. Move the mouse to position the circle. Click B1 again to draw the circle. Click B2 to exit.

Ellipse: Draws an ellipse. Click B1 at center point of ellipse. Move mouse until ellipse is positioned correctly. Click B1 to draw. Click B2 to exit.

Fill: Fills an enclosed area with selected color and/or pattern. Position the pointer in the area to be filled and click B1. Click B2 to exit.

** NOTE ** Fill is dangerous. If there are any gaps in the object being filled the color will "leak". Using patterns is even more dangerous. Filling an object that is too large or too complexly shaped with a pattern will cause the program to crash with a Stack Overflow error.

Text: Lets you put text in a picture. Position the pointer where you wish the text to appear and click B1. Type in the text. Press ENTER when done to exit the function.

Note: Clicking B2 will back you out of any of the drawing functions (except TEXT), even if the "rubber band" object which permits accurate positioning has appeared on the screen.

SWITCH: Pulls down a menu that lets you change several program settings. To select the "switch" you wish to change, put the pointer on the desired Switch menu option and click B1. The "switches" are:

Palette: Lets you change the current color to any of the 64 colors the Coco 3 can generate. A "slide bar" will pop up on screen. Put the pointer on the bar. Hold down B1 and move the pointer slowly over the bar to change the color. When the color is set correctly, release B1 and click B2 to exit.

Monitor: Lets you change the monitor type. A menu showing the three monitor types supported will pop up. Put the pointer on the desired monitor type and click B1.

Txt Opt: Lets you select how text will be displayed. You can select reverse video, bold face or transparent characters. These are "toggle switches". Click on the desired option to turn it on/off. If on, it will be displayed in reverse video. More than one can be turned on at the same time.

Brushes: Lets you select which brush to use with Point. The available brushes will appear. Put the pointer on the desired brush and click B1.

DISK: This pull down menu lets you save or load pictures and do directories of a disk.

Save: Saves the current picture to disk. When the prompt "File:" appears, enter a name for the picture to be saved under. If you want the picture saved to a directory other than the default directory, enter the complete pathlist. I.e. to save a picture under the name "mypic" to drive 1, you would enter: /d1/mypic.

DPG saves pictures as a single file, and includes the palette information so if you have modified the colors in the palette the correct colors will be restored when you load the picture later.

If a file by the same name already exists on the disk, you'll be asked "Re-Write?". Click on the YES box if it's alright to re-write the file.

Load: Loads a picture from disk along with the palette colors of the picture. Enter the name of the file to be loaded when prompted.

Dir: Lets you see the directory of a disk or sub-directory. Enter the pathlist of the directory you wish to view. I.e. if you wish to see the directory of drive 1, enter "/d1".

BUFFER: Lets you access DPG's Cut and Paste functions.

Cut: Lets you save part of your picture in the paste buffer. Position the pointer at the upper left corner of the area you wish to save and click B1. Pull the mouse out until the box includes the area you wish to save. Click B1 again to store the area in the paste buffer. Clicking B2 will abort the operation.

If the area you try to cut is too large for the paste buffer, the illegal indicator (the slashed circle) will appear on screen. Simply reduce the size of the box until the pen pointer appears again.

Paste: Lets you "paste" the contents of the paste buffer on your drawing screen.

A box the size of the area previously cut or loaded will appear on screen. Position the box at the area you wish to paste the buffer and click B1. Click B2 to exit the paste function.

If the illegal indicator appears and the box does not move with the mouse, it means you are trying to position the box outside of the legal screen area. Move the pointer up or to the left until the illegal indicator is replaced by the pen and the box moves.

Save: Saves the contents of the paste buffer to disk. Enter the file name when prompted.

Load: loads a previously saved buffer from disk into the paste buffer. Enter the file name when prompted.

Note: if you try to use Paste or Save without having previously loaded a buffer from disk or used Cut, nothing will happen and the main menu will reappear. Selecting Cut or Load deletes the current contents of the paste buffer.

Questions or comments can be sent to me at: 1014 W. Hwy. 114, Lot 29, Hilbert, WI 54129. Please include an SASE if you wish a reply. You can also contact me via The Unicorn BBS at (414) 989-2536 or (414) 734-5911 (24hr, 300/1200/2400 baud). DPG is available for downloading from The Unicorn's OS9 section, or can be obtained on disk from Coco Clipboard by ordering this month's Clipdisk.

```
PROCEDURE SetMouse
    PARAM pal(16):BYTE
    RUN duwait
    TYPE registers=cc,a,b,dp:BYTE; x,y,u:INTEGER
    DIM count:INTEGER
    DIM regs:registers
    regs.a=0 \regs.b=$94 \regs.x=$0101
    regs.y=$FFFF
    RUN syscall($8E,regs)
    regs.a=0 \regs.b=$89 \regs.x=$0301
    RUN syscall($8E,regs)
    SHELL "tmode -echo","off")
    RUN gfx2("scalesw","off")
    RUN gfx2("curoff")
    FOR count=1 TO 16
        READ pal(count)
        RUN gfx2("palette",count-1,pal(count))
    NEXT count
    DATA 63,1,0,5,9,17,30,12,15,41,60,58,10,11,12,29
    RUN dubrush
    RUN duarrow
    END
PROCEDURE Defaults
    ON ERROR GOTO 10
    SHELL "tmode echo"
10  RUN gfx2("gcset",0,0)
    RUN gfx2("curon")
    RUN gfx2("defcol")
    RUN gfx2("logic","off")
    RUN gfx2("color",2,0)
    RUN gfx2("scalesw","on")
    RUN gfx2("killbuff",19,1)
    END
PROCEDURE DuPen
    RUN gfx2("gcset",202,2)
    END
PROCEDURE DuArrow
    RUN gfx2("gcset",202,1)
    END
PROCEDURE Convert
    PARAM x,y:INTEGER
    x=INT(x/8)
    y=INT(y/8)
    END
PROCEDURE delay
    DIM x:REAL
    FOR x=1 TO 70
    NEXT x
    END
PROCEDURE DuBrush
    DIM count:INTEGER
    RUN gfx2("clear")
    FOR count=1 TO 16
        RUN gfx2("color",count)
        RUN gfx2("bar",0,0,7,7)
        RUN gfx2("get",count,100,1,1,1,1)
        RUN gfx2("get",count,101,0,0,4,1)
        RUN gfx2("get",count,102,0,0,7,1)
        RUN gfx2("get",count,103,0,0,2,2)
        RUN gfx2("get",count,104,0,0,4,4)
        RUN gfx2("get",count,105,0,0,1,3)
        RUN gfx2("get",count,106,0,0,1,3)
        RUN gfx2("get",count,107,0,0,1,4)
```

```
0145          RUN gfx2("get",count,108,0,0,1,7)
0164          RUN gfx2("get",count,109,0,0,6,6)
0183        NEXT count
018E        RUN gfx2("clear")
019B        END
PROCEDURE GetBrush
0000        PARAM brush:INTEGER
0007        DIM b1,b2:BYTE
0012        DIM x,y,count:INTEGER
0021        RUN gfx2("owset",1,0,0,5,13,2,0)
0043        RUN wnset(3)
004B        x=15 \y=7
0059        FOR count=100 TO 109
0069          RUN gfx2("put",1,count,x,y)
0086          y=y+8
0091        NEXT count
009C        REPEAT
009E          REPEAT
00A0            RUN readmouse(x,y,b1,b2)
00B9            RUN convert(x,y)
00C8          UNTIL b1<>0
00D3          IF y>10 THEN
00DF            RUN gfx2("bell")
00EB            brush=11
00F2          ELSE
00F6            brush=y
00FE          ENDIF
0100        UNTIL brush<11
010B        IF brush<1 THEN
0117          brush=1
011E        ENDIF
0120        RUN gfx2("owend")
012D        IF brush<>0 THEN
0139          brush=brush+99
0144        ENDIF
0146        END
PROCEDURE DuText
0000        PARAM trans,bold,rev,color:INTEGER
0013        DIM b1,b2:BYTE
001E        DIM x,y:INTEGER
0029        DIM key:STRING[1]
0035        RUN gfx2("color",color)
0047        REPEAT
0049          RUN readmouse(x,y,b1,b2)
0062          IF b2<>0 THEN END
006F          ENDIF
0071        UNTIL b1<>0
007C        IF bold<>0 THEN
0088          RUN gfx2("boldsw","on")
009B        ENDIF
009D        IF rev<>0 THEN
00A9          RUN gfx2("revon")
00B6        ENDIF
00B8        IF trans<>0 THEN
00C4          SHELL "display 1b 3c 01"
00D8        ENDIF
00DA        key=""
00E1        RUN convert(x,y)
00F0        WHILE key<>CHR$(13) DO
00FD          RUN inkey(key)
0107          IF key<>"" THEN
0113            IF key<>CHR$(13) THEN
0120              RUN gfx2("curxy",x,y)
0137              PRINT key;
013D              x=x+1
0148              IF x>39 THEN
0154                x=0
015B                y=y+1
0166                IF y>23 THEN
0172                  y=0
0179                ENDIF
017B              ENDIF
017D            ENDIF
017F          ENDIF
0181          RUN gfx2("putgc",x*8,y*8)
019C        ENDWHILE
01A0        RUN gfx2("boldsw","off")
01B4        RUN gfx2("revoff")
01C2        SHELL "display 1b 3c 00"
01D6        END
PROCEDURE mon
0000        DIM x,y,cnt,mon:INTEGER
0013        DIM b1,b2:BYTE
001E        DIM t:STRING[5]
002A        RUN gfx2("owset",1,11,4,13,8,2,0)
004C        RUN wnset(3)
0054        RUN gfx2("curxy",1,0)
0067        RUN gfx2("revon")
0074        PRINT " MONITOR ";
0082        RUN gfx2("curxy",1,1)
0095        PRINT "  TYPE  ";
00A3        RUN gfx2("revoff")
00B1        FOR cnt=1 TO 3
00C1          READ t,x,y
00CE          RUN gfx2("curxy",x,y)
00E5          PRINT t;
00EB        NEXT cnt
00F6        REPEAT
00F8          RUN readmouse(x,y,b1,b2)
0111        UNTIL b1<>0
011C        RUN convert(x,y)
012B        IF x<1 OR x>7 OR y<3 OR y>5 THEN
014C          RUN gfx2("owend")
0159          END
015B        ENDIF
015D        mon=y-2
0168        t=MID$("RMC",mon,1)
0178        SHELL "montype "+t
0188        RUN gfx2("owend")
0195        END
0197        DATA "RBG",2,3,"Mono",2,4,"Comp",2,5
PROCEDURE dupoint
0000        PARAM brush,color,pat:INTEGER
000F        DIM x,y:INTEGER; b1,b2:BYTE
0024        IF color=0 THEN
0030          RUN gfx2("gcset",2,brush)
0045          color=16
004C        ELSE
0050          RUN gfx2("gcset",color,brush)
0067        ENDIF
0069        IF pat<>0 THEN
0075          RUN gfx2("pattern",205,pat)
008C        ENDIF
008E        REPEAT
0090          RUN readmouse(x,y,b1,b2)
00A9          IF b1<>0 THEN
```

```
00B5            RUN gfx2("put",color,brush,x,y)
00D4          ENDIF
00D6        UNTIL b2<>0
00E1        RUN gfx2("pattern",0,0)
00F6        RUN duarrow
00FA        END
PROCEDURE DuCircle
0000        PARAM color:INTEGER
0007        DIM sx,sy,ox,oy,nx,ny:INTEGER
0022        DIM ba,bb:BYTE
002D        DIM done:BOOLEAN
0034        done=FALSE
003A        RUN gfx2("color",color)
004C        REPEAT
004E          REPEAT
0050            RUN readmouse(sx,sy,ba,bb)
0069            IF bb<>0 THEN
0075              END
0077            ENDIF
0079          UNTIL ba<>0
0084          RUN gfx2("logic","xor")
0097          RUN gfx2("setdptr",sx,sy)
00B0          ox=sx \oy=sy
00C0          RUN dupen
00C4          RUN delay
00C8          REPEAT
00CA            RUN qmouse(nx,ny,ba,bb)
00E3            IF nx<>ox OR ny<>oy THEN
00F8              RUN gfx2("circle",ABS(ox-sx))
010F              RUN gfx2("circle",ABS(nx-sx))
0126              ox=nx \oy=ny
0136            ENDIF
0138          UNTIL ba<>0 OR bb<>0
014A          IF bb<>0 THEN
0156            RUN gfx2("circle",ABS(ox-sx))
016D            RUN gfx2("logic","off")
0180            RUN duarrow
0184            END
0186          ENDIF
0188          RUN gfx2("logic","off")
019B          RUN gfx2("circle",ABS(nx-sx))
01B2          RUN duarrow
01B6          RUN delay
01BA        UNTIL done
01C2        END
PROCEDURE DuLips
0000        PARAM color:INTEGER
0007        RUN gfx2("color",color)
0019        DIM sx,sy,nx,ny,ox,oy:INTEGER
0034        DIM ba,bb:BYTE
00EB        NEXT cnt
00F6        REPEAT
00F8          RUN readmouse(x,y,b1,b2)
0111        UNTIL b1<>0
011C        RUN convert(x,y)
012B        IF x<1 OR x>7 OR y<3 OR y>5 THEN
014C          RUN gfx2("owend")
0159          END
015B        ENDIF
015D        mon=y-2
0168        t=MID$("RMC",mon,1)
0178        SHELL "montype "+t
0188        RUN gfx2("owend")
0195        END
0197        DATA "RBG",2,3,"Mono",2,4,"Comp",2,5
PROCEDURE dupoint
0000        PARAM brush,color,pat:INTEGER
000F        DIM x,y:INTEGER; b1,b2:BYTE
0024        IF color=0 THEN
0030          RUN gfx2("gcset",2,brush)
0045          color=16
004C        ELSE
0050          RUN gfx2("gcset",color,brush)
0067        ENDIF
0069        IF pat<>0 THEN
0075          RUN gfx2("pattern",205,pat)
008C        ENDIF
008E        REPEAT
0090          RUN readmouse(x,y,b1,b2)
00A9          IF b1<>0 THEN
003F        DIM done:BOOLEAN
0046        done=FALSE
004C        REPEAT
004E          REPEAT
0050            RUN readmouse(sx,sy,ba,bb)
0069            IF bb<>0 THEN
0075              END
0077            ENDIF
0079          UNTIL ba<>0
0084          RUN dupen
0088          RUN gfx2("setdptr",sx,sy)
00A1          RUN gfx2("logic","xor")
00B4          RUN delay
00B8          ox=sx \oy=sy
00C8          REPEAT
00CA            RUN qmouse(nx,ny,ba,bb)
00E3            IF nx<>ox OR ny<>oy THEN
00F8              RUN gfx2("ellipse",ABS(ox-sx),ABS(oy-sy))
0119              RUN gfx2("ellipse",ABS(nx-sx),ABS(ny-sy))
013A              ox=nx \oy=ny
014A            ENDIF
014C          UNTIL ba<>0 OR bb<>0
015E          IF bb<>0 THEN
016A            RUN gfx2("ellipse",ABS(ox-sx),ABS(oy-sy))
018B            RUN gfx2("logic","off")
019E            RUN duarrow
01A2            END
01A4          ENDIF
01A6          RUN gfx2("logic","off")
01B9          RUN gfx2("ellipse",ABS(nx-sx),ABS(ny-sy))
01DA          RUN duarrow
01DE          RUN delay
01E2        UNTIL done
01EA        END
```

End of listing

VIP Writer III

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
RGB HD Support	100%	NONE	NONE
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!

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 text, margins, page breaks, orphan lines etc. This makes hyphenation a snap!

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!

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
Cassette version does not include VIP Speller. TAPE $59.95

VIP Writer owners: Upgrade to the VIP Writer III Disk for $49.95 or Tape for $39.95. Send original disk or tape. Include $3 S/H.

It's Word Processor Trade In Time

For a limited time you can trade in your old software for the VIP Writer I or III and save up to $20! Send in your old disk or tape and manual. VIP Writer tape $34.95, disk $49.95. VIP Writer III tape $44.95, disk $59.95. Include $3.00 shipping. Offer expires 8/31/88

VIP Database III

The VIP Database III features selectable screen displays of 40, 64 or 80 characters by 24 lines with choice of 64 foreground and background colors for maximum utility. It uses the CoCo 3's hardware screen and double clock speed to be the FASTEST database available! VIP Database III will handle as many records as will fit on your disks and is structured in a simple and easy to understand menu system with full prompting for easy operation. Your data is stored in records of your own design. All files are fully indexed for speed and efficiency. Full sort of records is provided for easy listing of names, figures, addresses,etc., in ascending or descending alphabetical or numeric order. Records can be searched for specific entries using multiple search criteria. With Database III mail-merge you may also combine files, sort and print mailing lists, print form letters, address envelopes - the list is endless. The built-in MATH package even performs arithmetic operations and updates other fields. VIP Database III also has a print spooler and report generator with unlimited print format capabilities including embeddable control codes for use with ALL printers. DISK $69.95

VIP Database owners: Upgrade to the VIP Database III Disk for $39.95. Send original disk. Include $3 shipping.

VIP Integrated Library

The VIP Integrated Library combines all six popular VIP application programs - VIP Writer*, Speller, Calc, Database*, Terminal and Disk-ZAP - into one program on one disk! The program is called VIP Desktop. From the desktop you have instant access to word processing with a spelling checker always in attendance, data management with mail merge, spreadsheet financial analysis, telecommunications and disk maintenance. 64K required. Include $4.00 shipping for this product. DISK $149.95
*CoCo 3 owners: Purchase the VIP Integrated Library /WDE (Writer & Database Enhanced) which has the VIP Writer III and VIP Database III in place of the VIP Writer and VIP Database. Include $4.00 shipping for this product. DISK $169.95

Previous[illegible]brary ow[illegible]Call[illegible]for[illegible]de pricing.

VIP Writer

VIP Writer is also available for CoCo 1 and 2 owners and has all the features found in the VIP Writer III including VIP Speller except for the following: The screen display is 32, 51, 64 or 85 columns by 21 or 24 rows. Screen colors are green, black or white. Help is not presented in colored windows. Double clock speed is not supported. Parallel printer interface is not supported. Print spooler is not available. Hard disk is not supported. Even so, VIP Writer still out-features the rest! It's a CoCo 1 or 2 owners best choice in word processors. Includes VIP Speller. DISK $69.95
Cassette version does not include VIP Speller. TAPE $49.95

VIP Speller

VIP Speller works with ANY ASCII file created by most popular word processors. It automatically checks text files for words to be corrected, marked for special attention or even added to the dictionary. You can even view the misspelled word in context! VIP Speller comes with a specially edited 50,000 word dictionary, and words can be added to or deleted from the dictionary or you can create your own. DISK $34.95

VIP Database

VIP Database has all the features of VIP Database III except the screen widths are 51, 64 and 85. Screen colors are green, black and white, double speed is not supported, spooler is not available. Still VIP Database is the best database for the CoCo 1 & 2! DISK $49.95

VIP Calc

Now every CoCo owner has access to a calculating and planning tool better than VisiCalc™, containing all its features and commands and then some. VIP Calc displays 32, 51, 64 or 85 characters by 21 or 24 lines right on the screen. VIP Calc allows up to a 33K worksheet with up to 512 columns by 1024 rows! In addition, VIP Calc has multiple windows which allow you to compare and contrast results of changes. Other features include 16 DIGIT PRECISION • trig. functions • averaging • algebraic functions • column and row ascending and descending SORTS • locate formulas or titles in cells • block move and replicate • global or local column width • limitless programmable functions • works with ANY printer. Embed printer control codes for customized printing. Combine spreadsheet data with VIP Writer documents to create ledgers, projections, statistical and financial budgets and reports. Requires 64K. DISK $59.95

VIP Terminal

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 $39.95

VIP Disk-ZAP

VIP Disk-ZAP is the ultimate disk repair utility for simple and quick repair of most disk errors. Designed with the non-programmer in mind, the VIP Disk-ZAP will let you retrieve all types of bashed files, BASIC and Machine Language programs. It even works with 40 track drives! The 50 page tutorial makes the novice an expert. DISK $24.95

All disk products are unprotected and run under RSDOS.

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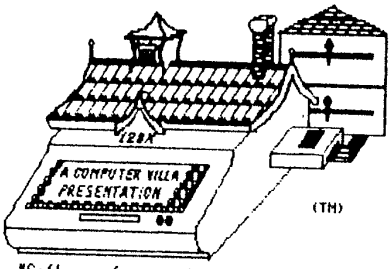

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