

# C.C.O.G.

## COLOR COMPUTER OWNERS GROUP

NEWSLETTER AUGUST 1991

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**PRESIDENTS COMMENTS:**

My grandmother had a favorite saying: "You had better be careful about what you ask for, you just might get it!!!" Well we asked and we got it!! What did we ask for? Vendors to relpy to our offer to place their ad in our little newlsetter for free.

Well, thus far 11 vendors have responded (ads included in this volumn) and also most of them have opted to subscribe to our newsletter. I think this is great!! Many of them indicated that they liked reading our newsletter and had good things to say about the articles.

The september Rainbow has an article on "The Delmar 68000 based System IV". The headline is "A New Era". I hope that Frank Hogg and IMS will also send machines to the Rainbow for review. We have been two years waiting for these "NEW" machines to come to market. Many from the CoCo community have tired of waiting and gone on to other machines. Let's hope that those of us who have stuck it out will be rewarded

with machine capability that will surpass that of the current MS-DOS world.

This meeting it will be almost Labor Day. We only have three more meetings after this until we are into the holiday season. We have to give consideration to what we are going to do about a December meeting ( If, where, and when). We also need to have more discussion at meetings about future topics and demonstrations. We need to have more of our membership step up and show us the software you are currently using on your COCO. It doesn't matter how new or old the software is, if it works, if it gets the job done, if you have fun with it then it's not obsolete.

It's soon going to be time for you to be thinking about running for office in YOUR club. We will be having nominations in October and elections in November. Be prepared to help to make this the BEST club anyone could belong to. Bernie

# COLOR COMPUTER OWNERS GROUP

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COLOR COMPUTER OWNERS GROUP  
of Metropolitan Detroit.

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## C.C.O.G Meeting Minutes July 23, 1991

The meeting was called to order at 7:20 pm. Sixteen people were in attendance. The minutes from last month were accepted.

Old Business--Bernie went through past issues of COCO CLIPBOARD and RAINBOW to formulate a list of CoCo advertisers. He had a list of 57 advertisers. Next he composed a coverletter to send to each advertiser. The letter basically stated that our club, C.C.O.G., would accept advertising from them for inclusion in the club newsletter. There were several conditions but nothing overwhelming. C.C.O.G. would accept their copy of advertising for a time period of 3 months, and this is renewable if they continue to send an updated copy. Also for \$3 the advertisers would receive 3 months of our newsletter. \$6 would get them a one year's subscription to our newsletter. This fee is only to cover the cost of mailing the newsletter since we are a non profit organization. Bernie mailed the letters approximately 2 weeks ago. One letter came back "moved and no forwarding address". Three responses have already arrived, (see this month's newsletter for their advertising), Color System, MV Systems and Howard Medical. Howard Medical also sent a check for \$6. By next month there should be more responses.

Gus also asked if we were going to write a letter to the editor of RAINBOW stating what our club was doing. Bernie sited his closing statement in his coverletter to advertisers, "Accept this in the spirit it was intended." This idea of accepting advertising is not to usurp RAINBOW but it is an offer for those companies unable to pay the high advertising costs to get their product out to the public. Remember our newsletter goes out to other clubs, Radio Shack's and our members.

After all the mailings a postage bill totalling \$17.80 for advertising mailings, \$2.36 postage for last month, and probably another \$2.36 for this month. Bob was not at the meeting to give a treasurers report.

New Business--Robert Gault noticed that we have been dropped from RAINBOW'S Club List. He will be contacting RAINBOW to find out why.

Bob Humphrey resigned as the club librarian. Larry Schneider will be taking over. Thanks Bob for a job well done.

Demonstrations for the evening included Bob Gault working with random number generators and checkers to see how really random they are and Jim Snider showed off his latest hardware project. He used a mini tower AT case and put all his COCO toys in it.

RAINBOWS theme next month is graphics and normally it is games.

Both will be August's theme.

Next meeting Aug. 27, 1991.

OS-9 by Tom Napolitano

Robert Gault last month wrote a benchmark test program for comparison of the processing speed of the Coco3 running a basic looping routine under RSDos BASIC and under BASIC09. The results were interesting, and he suggested that I do the same for C. Actually I started the project then found there were quite a few different ways to express the same algorithm in the C language.

The first version ran through an empty loop 10000 times. This is inconclusive of anything, since it took about 1 second using the internal clock. Since the granularity of the clock is only on second, all this says is that it takes a "very short time". So back to the drawing board.

Here is the program.

```
/* loop1.c */
/* Benchmark test of c compiler */
/* < 1 second @ 2mhz */

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

struct sgtbuf buff;
main()
{
int i;

    printime();

    for(i = 0; i < 10000; ++i)
        ;

    printime();
}
```

Notice that I declared the loop variable i as an integer. This should be much faster than RSDos BASIC using a float for all numbers. It is hard to tell, so I slowed the program down by stretching out the loop. By the way, printime() is a routine to print the current time on the os9 clock. I'll get into that at this time only to say that how it is written doesn't affect the results much.

```
/* loop2.c */
/* Benchmark test of c compiler */
/* 10 seconds @ 2 mhz */
main()
{
unsigned int i, j;

    for(i = 0; i < 10; ++i)
        for(j = 0; j < 65535; ++j)
            ;
}
```

In loop2 I extended the loop to 655350, in order to get a better measure of running times. From here on, I'll skip printing some of the "overhead" code, and just show the parts of the program that change. I had to unroll the loop with two variables. Why? Because an os9 C integer is only 16 bits of binary data. As you would expect, this loop takes ten times as long. But why use two loops? Why not use just one by declaring the loop variable as a long integer? Surprise, surprise. It takes six times as long!

```
/* loop3.c */
/* Benchmark test of c compiler */
/* 59 seconds @ 2 mhz */
main()
{
long i;

    for(i = 0; i < 655350; ++i)
        ;
}
```

The reason, when you think about it is that in order to compare two long ints, and to increment a long integer, it takes over twice as long. Just shows the inefficiency of C versus assembly. Now lets see if we can speed things up from the ten second time.

```
/* loop4.c */
/* Benchmark test of c compiler */
/* 6 seconds @ 2 mhz */
main()
{
unsigned int i, j;

    i = j = 0;
    while(++i <= 10)
        while(++j )
            ;
    printime();
}
```

Here I used a "while" loop instead of the "for" loop. It has the same effect, but runs faster. Sometime we should examine the resulting output from the c compiler to see how it handles the two constructs differently.

```
/* loop5.c */
/* Benchmark test of c compiler */
/* 10 seconds @ 2 mhz */
unsigned int i, j;
main()
{
    i = j = 0;
    while(++i <= 10)
        while(++j )
            ;
}
```

When you declare int i,j within a function, these are called "automatic" variables. Space is reserved on the temporary stack area of a function as the function is entered, and when the program leaves off executing the function, the automatic variables go away. Instead, in loop5 I declared i and j outside the function "main" as "global" variables. These keep their value as long as the program runs, irrespective of what function is being executed at any given time. It appears that accessing globals is slower than accessing data off the stack.

```
/* loop6.c */
/* Benchmark test of c compiler */
/* 7 seconds @ 2 mhz */
main()
{
double i;

    printime();
    i = 0;
    while(++i <= 10000)
        ;
}
```

As I mentioned, RSDos BASIC declares all numerical data as floating point numbers. So to test how this compares in C, I declared i as a double width floating point number. This slowed things down somewhat, but now I can go back in loop6 to only one loop variable, and a loop of 10000.

```
/* loop7.c */
/* Benchmark test of c compiler */
/* 6.5 seconds @ 2 mhz */
direct int i, j;
main()
{
    i = j = 0;
    while(++i <= 10)
        while(++j )
            ;
}
```

In loop7 we took advantage of a trick of the 6809 architecture, direct variables. What this means is that we are using special 6809 instructions that allow us to access direct data with one less byte of addressing. What this shows here is that it is faster access direct variables than regular globals, but still is faster to access off the stack. Another trick is to declare certain variables in C as residing in registers of the CPU. This only works for one variable on the 6809 processor, but we might as well take advantage of it. It shaves another half second from the previous best time.

```
/* loop8.c */
/* Benchmark test of c compiler */
/* 5.5 seconds @ 2 mhz */
```

```

main()
{
register unsigned int j;
unsigned int i;

    i = j = 0;
    while(++i <= 10)
        while(++j )
            ;
}

```

For those of you who are interested, here are two versions of printime(), with no comments from this person. See if you can decode the somewhat cryptic programming.

/\* Version 1 of printime; obscure \*/

```

int printime()
{
    getime(&buff);

    putchar(buff.t_minute>9?(putchar(buff.t_minute/10+'0'), \
(int)buff.t_minute%10+'0') : (int)buff.t_minute%10+'0');

    putchar(' ');

    putchar(buff.t_second> 9 ? (putchar(buff.t_second/10 + '0'), \
(int)buff.t_second%10+'0') : (int)buff.t_second%10+'0');

    putchar('\n');
}

```

/\* Version 2; neater \*/

```

int printime()
{
    getime(&buff);

    if(buff.t_minute > 9)
        putchar(buff.t_minute/10+'0');

    putchar((int)buff.t_minute%10+'0');

    putchar(' ');

    if(buff.t_second > 9)
        putchar(buff.t_second/10 + '0');

    putchar((int)buff.t_second%10+'0');

    putchar('\n');
}

```

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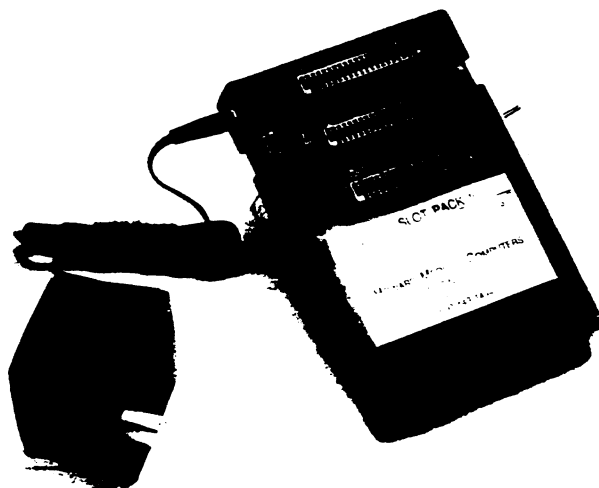
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## "Viewpoints" by Gus Korte"

Recently I contacted club member Jim Snider on the electronic bulletin board system (BBS) the CCOG club supports and arranged to install a FD502 disk drive and a FD500 disk drive into one unit. Not only did he do this with his usual efficiency but also replaced my disk controller ROM with a much more efficient ROM he has developed called an EPROM (electrically programmable read only memory). What a difference!! Now I have 3 disk drives compressed into one space-saving unit instead of 2 separate disk drive units as I had initially. In addition the EPROM does a lot of additional things the previous ROM did not do. When the disk drive is turned on, an 80 column screen appears automatically with white letters on a dark blue background instead of the 32 column green screen with black letters. When I type the command DIR to see the disk directory, instead of the contents scrolling by so fast that they are virtually unreadable, now the information pauses after the screen almost fills. This allows one to read the screen for a change at the reader's pace with a screenful of information each time. Previously I had to use club member Bob Gault's program (in the CCOG club library if you want to use it) to slow down the scrolling. Now each disk drive including a double-sided disk drive is available within one ROM. The step rate using the DSKINI command is now increased too. The VERIFY command is now constantly on which is very handy when copying other diskettes.

Before you can "kill" a file, you must confirm it first. There are many other items Jim has in the EPROM. It also was interesting to see Jim's electronic work space. He is well equipped to work on the COCO. Many thanks to Jim for his assistance in this situation and in others where he has given considerable assistance to us CCOG members. As has been mentioned previously, having a multiple disk drive system is a necessity to get full use of the BASIC09 software and related products.

It was interesting to view the VCR that was made at the 6/25/91 CCOG meeting. All of the comments were clear but for an unknown reason the video became unclear and could not be viewed. The sound portion was clear and any of you who missed or want to re-view the June meeting may want to run this VCR tape which Bernie Patton owns. Thanks to Bernie for producing VCR tapes like this of selected useful presentations at the CCOG meetings for us to view and hear especially where we missed the meeting or want to re-view them.

On page 11F of the Detroit News dated 7/22/91, appeared an article entitled "New software sparks a CD-ROM boom". It stated that "the home market for CD-ROM -- the computer version of the audio CD, or compact disc -- is in the early stages of a boom as personal computers move onto the shelves of mainstream retailers such as Sears." It also stated "Computer users can also play regular music CDs