May, 1990

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Commodore Users Group
of Saskatchewan

Vol 4. No. 9
November, 1989

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Codes: I=IBM board        A=Apple board        C=Commodore board        P=Amiga board
G=Games                  D=Temp. down         *=7,E,1 settings        M=MNP

**ALL BULLETIN BOARDS** run at 8,N,1 modem settings unless otherwise stated.
Obligatory Stuff

CUGS MAILING ADDRESS:

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143 Birchwood Cres.
Regina, Sask.
545 553

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Vice President Richard Maze  586 3291
Treasurer  Real Charon  545 7681
Editor    Jarrett Currie  757 2391
Asst Editor  Shaun Hase  584 3371
Librarian  Keith Kashra  359 1748
Asst Librarian  Steve Bogues  949 1370
Members at Large
Ken Danylickzuk  545 8644
Harry Chong  789 2942
Earl Brown  543 2868
Gord Williams  543 8373
Joe Gomes  789 8174

If you have any questions about CUGS please feel free to contact any of the above executive members.

The Monitor is published monthly by the COMMODORE USERS' GROUP OF SASKATCHEWAN (CUGS), Regina, Sask., Canada. CUGS meetings are held at 7 pm the FIRST WEDNESDAY of every month (unless otherwise noted) in the North-West Leisure Centre, corner of Rochdale Boulevard and Amnason Street. Next CUGS meeting:

Wednesday, June 6

Anyone interested in computing, especially on the C64, R8 or 64C, is welcome to attend any meeting. Out of town members are also welcome, but may be charged a small ($5.00) mailing fee for newsletters. Members are encouraged to submit public domain software for inclusion in the CUGS DISK LIBRARY. These programs are made available to members. Any member is entitled to purchase DISKS from our public domain library for a nominal fee. Programs are 'freeware', from computer magazines, or the public domain. Individual members are responsible for deleting any program that he/she is not entitled to by law (you must be the owner of the magazine in which a particular program was printed). To the best of our knowledge, all such programs are identified in their listings. Please let us know if you find otherwise. Contact our club Librarian, Keith Kashra.

CUGS is a non-profit organization comprised of C64, 64C, C128, and R80 users interested in sharing ideas, programs, knowledge, problems and solutions with each other. The more members participate, the better the variety of benefits. Membership dues are pro-rated, based on a January to December year.

Although there are many types of computer users, and many have tried to typecast them, I want to put them into three broad categories for sake of discussion.

There are those practical enough that they purchase a computer as if it were a kitchen appliance. These hopelessly planned and organized souls have read all the articles and heard all the salesmen and developed a plan to purchase their computer. Financial resources and software purchasing out of the way before the machine's acquisition, these unfortunates are doomed to life with a bored and starving computer.

The second, though less systematic than the first, have marvelled at the growing electronic toys and while he couldn't exactly explain why, has decided that he too must have one. Easily swayed by the bright lights and surrealistic sounds, he purchases the first one with a name he has heard before. Although Barenum had described this type of computer purchaser more eloquently than I ever could, it is not above me to observe that while he is doubtlessly pleased with his machine, he has still allot of following to do. He purchases software and hardware as quickly as his friends do and lacks any sense of adventure in being the first on his block to own a title.

The last type is the true computer zealot. He is fully aware of the fact that while his computer may never earn its keep financially, it is a great way to spend the night. His hardware and software spending is erratic at best and longs to own a diskfull of programs all looking in the same direction. The computer for him is an adventure: sometimes into the pits of frustration, sometimes to the hills of elation, and always to the plains of pleasure. He seeks out, actively, the best in software, and has gone so far as to write it when it could not be found. The country's borders are no barrier, for he seeks sustenance for his computer internationally, if necessary. And, most of all, he shares his expertise with all those who will listen.

As you sit and read this article, place yourself in one of these broad categories and attempt to realize what the Commodore community is missing if you don't place yourself in the third category. Owning a computer can be as exciting as owning a blender if all you do is punch in numbers.

May, 1998  Commodore Users Group of Saskatchewan
But, there is more. Lots more. But you will never appreciate what your computer can do for you if you don’t actively participate in acquiring that knowledge.

What better place to start exercising your new skills than with our club? If you have always wanted to try telecommunicating, but were a little shy on the other boards, try the club’s! If you have ever wanted to program but there seemed to be too many hurdles, then by all means give one of our experts a call. And, if you are thinking about buying a new software package, just mention its name at a club meeting, and see what response you get.

Learning to succeed with your computer is not like learning to program your microwave, and it has a great deal more potential. With some enthusiasm on your part, you too can be a proud computer owner and a valuable member to our computer club.

Qlink
Finding BASIC Strings
by Bob k7 Kober

There is the POINTEr command in the C128’s BASIC 7.0, that can be used to locate any string’s descriptor, and from it, the location of the string in memory. The BASIC 2.8 in the C64, however, doesn’t have such a command, so finding the strings is a little more difficult. Herein, is an explanation of how and where strings are stored, and a program in BASIC and ML that will actually find them.

String Descriptors

In order for your program to find these strings, it uses a “descriptor” which is located in the variable storage area located immediately following the end of the BASIC program.

The start of this variable storage area is pointed to by the pointer in VARTAB, located at 45-46 ($20-$2E), and the end of this area by the pointer in ARVTAB, located at 47-48 ($2F-$30).

The string descriptor is 7 bytes long, and contains the variable name in the first two bytes, the string length in the third byte, and the location of the actual string data in the forth and fifth byte, in normal 1Byte/1Byte order. The last two bytes are unused, and contain zeros. (Note that the string length is contained in one byte, and this explains why a string can be no longer than 255 bytes.)

To identify the descriptor as a string, the second byte of the variable name has BIT 7 set. If the string variable is B$, then the first byte is 66 ($42) for the B, and the second is 128 ($80), a zero byte with BIT 7 set.

If the string variable were BK$, then the first byte would still be 66 ($42), but the second byte would be 75 ($4F), for the K, PLUS the 128 ($80), BIT 7 set, or 203 ($CB).

Setting the 7th BIT of these two bytes in different combinations, designates different kinds of variables. But, for his article, we are concerned only with strings.

Finding the Descriptors

Since these descriptors contain the address of the string data, all we have to do is find the descriptor. Here’s how we do that.

Let’s say for this example, we use BK$ as the string we want. (Well, I did write this article!). Search the variable storage area between the locations pointed to in VARTAB pointer, and the ARVTAB pointer, looking for BK$ which will be two consecutive bytes containing the value 66 ($42) and 203 ($CB).

Once we find these, the byte immediately following the 203 contains the string length, and the two after that, the string’s address in memory.

Just multiply the second of these by 256, and add it to the first, and we have the address. i.e: if these two bytes contained 33 and 191, the string would start at 191+256+33 or 48899, and go upward from there.

Here’s BASIC

Okay, now you know the theory behind finding the strings, here’s the actual BASIC program that will do it.
From the Desk of the PRESIDENT

As you all have probably heard, the club as a whole is putting on a library expansion blitz. We are purchasing several disks full of programs for our machines to eat. Almost every area will receive a few calories. As I mentioned last month, the club is presently opening up a new library GEOS section. We have ordered several disks and, as of yet, have had no heard or seen of them. I'll give them a couple of days more to cough up.

After perusing several other club's newsletters and getting to know some of these clubs better, C.U.G.S. is par to above par with any other club. With Commodore 8-bit computers, slowly but surely going to the way-side, user groups and the owners of these machines are surely going to get better acquainted.

Even though the manufacturer will eventually drop the computer, as they all will do at one time or another, the C-128 and especially the C-64 will be around for many years to come. With our increasing information ring slowly growing, you can be sure that the club is getting involved with other users nationwide. Any gossip or tidbit of information will be gleaned off of these groups along with our already established ring of articles in the Commodore magazines.

I have been a Commodore 128 user now for several years. I can stand and be proud of what our machines can do, will do and have done. At this point in history, there has been NO computer, bar NONE, that has lasted as long as the 64 has. It is now estimated that there are 9 million 64 and 128 computers out there with a very strong base of 64/128 software developed and still being developed for it. IBM would have loved to have that kind of base with the failed PC). At one point, there were more 64's than there were IBM compatibles.

The point here is that the machines were developed for the home user in mind and was and is very successful in using both the 64/128 and an IBM at work. I often wonder how IBM ever got its reputation in the home environment. I can see the advantages in business, but as a home computer?

The club is doing rather well. There is always room for improvement, however. During a recent executive meeting, it appeared to me that the executive are a very dedicated group of users who enjoy learning and teaching others how to use their machine. They are a group with a vision. A vision with a future. They are dedicated in preserving a classic computer by increasing a library so YOU, the member, are able to have a source of programs and help for years to come.

You can help the club help you by lending a hand, giving a program to the library, helping others, telling others of C.U.G.S. writing an article for the newsletter, being there at the meeting, asking questions, and just using the club.
AGENDA

May, 1990

Disk and disk drive (A physical aspect)
by Barry Bircher

Desktop Publishing (Generic)
by Ken Danylickzuk

Draw -- 5 1/4 diskette cleaner kit
donated by Software Supermarket

HINTS AND TRICKS

by

Shaun Hase

This first hint is, I think, familiar to everyone. I have two 51/2" and most of the 80 software I have only uses one drive, so one drive gets more use. I suppose this is good, but I thought that it might be better to use my second drive once in a while. To change drive 8 to drive 9 and vice versa, I came up with the following program, that can be entered in immediate mode, to do so, without turning any drive off.

10 OPEN5,8,15,"UB">+CHR$(16):CLOSE15
20 OPEN5,9,15,"UB">+CHR$(8):CLOSE15
30 OPEN10,8,15,"UB">+CHR$(9):CLOSE15
40 NEW

The program first sets drive 8 to drive 10, sets drive 9 to drive 8 and then sets drive 10 to drive 9. In short, without any physical changes, the drives have had their device numbers switched. Now, for someone who has a 51/2 disk drive and would like to use it as drive 8, this little program is perfect. To clear this set-up, you could run the program again, turn the drives off, or reset the computer (not RUN/STOP - RESTORE).

The second hint deals with printing columns of text with Paperclip III. Paperclip III can not actually print columns, but with the use of two commands and a bit of forethought, printing columns is no problem. The format directive used to do this is $OP##, where $ is the checkmark, OP is the command to do alternative page printing and ## is whether you want all pages (0), odd pages (1) or even pages (2) printed. I'm not sure if older versions of Paperclip have this directive. Once you've got the margins all set up to print on half of the page, insert the alternative page printing directive somewhere above the printing of any text. Next, set it to print the odd pages of your document. Once it is done that, re-insert the paper the same way it was. One of two things can be done now. You can either adjust your margins, or use the $OF# directive to shift the output to the right without affecting the margin settings. Then, change the alternative page printing directive to print even pages and print the document again. You should have two columns of text on each page. I have found that using the elite pitch (12 cpi) works best (you get more characters per line). You could even use this technique to print out a simple newsletter.

GEO NEWS

from QLink

RUN Magazine is pleased to announce an agreement with Berkeley Softworks to market the long-awaited geoBasic program to GEOS users. Developed by the GEOS pros at Berkeley Softworks, geoBasic lets GEOS users program their own applications in BASIC and take advantage of the ease of use of GEOS. RUN, which obtained the North American distribution rights, plans to begin shipping this product in mid-June of this year.

According to RUN publisher Steve Robbins, RUN seized the opportunity to bring to market a product that many GEOS users have been clamoring for. "We know that thousands of GEOS users have been waiting a long time for this product, and we're pleased to be in a position to deliver geoBasic to the GEOS user community. We're certain that users will feel it's been worth the wait," said Robbins.

geoBasic supports all of the features - pull-down menus, information boxes, icons and mouse pointer for easy point-and-click operations - that make GEOS so easy to use. Also, with geoBasic users can create programs that use icons, menus, sprites and dialog boxes. RUN Editor-in-Chief Dennis Brissin noted that "GEOS users are accustomed to high-quality products to use with GEOS; geoBasic follows that tradition." He states that RUN has assigned some of the top GEOS programmers to generate sample applications to show you what can be done with geoBasic.

geoBasic is a 48-column program that runs in C-64 mode on the 64 or 128 (preliminary testing of the product, however, indicates that geoBasic will also work in 128 48-column mode.) geoBasic includes a text editor for entering and editing programs, menu editor, bitmap editor, icon editor and dialog box editor. It includes up to 184 new commands. It supports color and sound, text windows, drawing commands and mouse support, as well as structured loops, subroutines, mathematical functions and access to machine language.

The disk, which comes with a complete operations manual, will sell for $39.95. See ad in May issue of RUN for ordering information. It is important to note that any questions regarding geoBasic should be directed to RUN, not Berkeley Softworks.
EXECUTIVE MEETING

Minutes

April 9, 1990

1) A letter and newsletter from the "WEST BANK" users group was received by the club.

2) Duplication of users group newsletter for the executive was approved. Ken to be responsible.

3) Monitor to be mailed after contact made by a users group. Honorary membership to users group corresponding with CUGS. APPROVED -- Barry to provide the names and addresses to Real.

4) Barry purchased GeoWorld disks #1-5 and #23.

5) CUGS to start a GEOS library. Earl to look after it. Disks to be GEOS-ready.

6) It was decided that the club should be able to publish the Monitor using club-owned hardware and software. To this end, a committee was struck. The members of the committee are: Jarrett, Shaun and Keith. They are to look into the hardware and software needed, availability, and cost. They will report back to the executive at the next meeting.

7) The inventory list of all CUGS assets (hardware and software) is to be updated for the next meeting. The information is to be given to Real for compilation. Phone him the information or leave a message on the board.

8) The future of CUGS BBS was discussed. To be reviewed at a later date.

9) CUGS mail demonstration discussed. Maybe in September or December.

10) Hall rental for the fall. Request submitted. Will not know until after June 25.

11) Executive individual photo requested by Barry. They will be digitized for the Monitor.

12) Next executive meeting May 7, 1990 at Barry's, time 7:00pm.

EXPERTS LIST

The people below have agreed to let their names be listed as "experts" in some aspect of C64/128 computing. If you've a question, these brave volunteers can likely answer it, or help you find an answer that works. If you have a skill at some computing process, consider listing yourself with our other volunteers.

Wordprocessing

Paperclip III
Shaun Hase 584 3371

Paperclip (to version E)
Richard Maze 586 3291

Paperclip (to version E)
Jarrett Currie 757 2391

Paperclip (any version)
Ken Danylickzuk 545 8644

Pocket Writer 2 & 3
Yves Desjardins 949 8526

Spreadsheets

Microsoft
Richard Maze 586 3291

Pocket Planner
Barry Birchler 359 1925

Better Working SS
Ken Danylickzuk 545 8644

Databases

Pocket Filer
Barry Birchler 359 1925

Oracle (Consultant)
Ken Danylickzuk 545 8644

Communication

Pro28Term
Barry Birchler 359 1925

Pro28Term
Jarrett Currie 757 2391

Library files
Barry Birchler 359 1925

Music/Sound

(Most)
Ken Danylickzuk 545 8644

Languages

Fort
Ken Danylickzuk 545 8644

Pascal
Ken Danylickzuk 545 8644

ML (machine language)
Ken Danylickzuk 545 8644

ML (machine language)
Barry Birchler 359 1925

BASIC (general)
Richard Maze 586 3291

BASIC 7.0 (graphics)
Shaun Hase 584 3371

BASIC (2.8-7.0, files)
Ken Danylickzuk 545 8644

Graphics

Print Shop/Marker
Ken Danylickzuk 545 8644

Koala Painter/Printer
Ken Danylickzuk 545 8644

Hardware

Disk Drive Maintenance
Ken Danylickzuk 545 8644

GEOS

GEOS 64
Jarrett Currie 757 2391

GEOS 128
Barry Birchler 359 1925

General

Super Snapshot (3, 4, 5)
Yves Desjardins 949 8526
Floating Point Numbers

By Bob (k7) Kober

A Floating Point (FP) number is the product of a mantissa multiplied by a power of two. In Commodore BASIC, FP numbers occupy 5 bytes, with the power of two contained in the "exponent" (1st) byte, and the mantissa in the last four bytes.

Briefly, a mantissa is a sum of NEGATIVE powers of 2, just as a binary number is the sum of POSITIVE powers of two. This will be explained further later.

The exponent byte actually contains the true exponent value with a 129 ($81) offset added, so that it can represent both positive and negative numbers. Therefore if the exponent byte contains a $84, then the true exponent is $34-$81 or $83. Two is raised to the power of 3, and thus the mantissa is multiplied by 8. Note that a zero in the exponent byte indicates a FP number of zero, regardless of what the mantissa holds. This makes it easy to zero any FP number.

The four-byte mantissa (32 bits) can hold any number between 1.0 and 1,999,999,999, and is arranged with the most significant byte, (MSB) first. BIT #7, of the MSB, is also the most significant BIT, and must have a value of 2-8, or 1. BIT #0 is the least significant BIT, and has a value of 2-31, or 0.00000001.

BASIC "normalizes" its numbers so that the value in the mantissa is always equal to, or greater than 1. This is to prevent leading zeros, which would reduce the accuracy by pushing the least significant bits out of the mantissa. It does this by multiplying the mantissa by 2, until all the leading zeros are gone. Then the exponent is reduced by 1 for every "times 2" that was required.

Now, since the normalized number is always 1 or greater, BIT #7 of the mantissa's MSB will ALWAYS be set. This allows it to be used as the sign bit. When signed math is required, this BIT is checked, and if found set, the number is considered negative. If signed math is NOT required, this BIT is always assumed to be set.

Here is the procedure used to convert a decimal number to its Floating Point equivalent.

Let's convert PI (3.141592654) to FP.

1) Change the number so that it is in the range of 1 to 1,999,999,999, by multiplying or dividing by two, keeping track of the number of times required. Since the number is now too high, we will divide by two.

\[
3.141592654 / 2 = 1.578796327, \text{ so it only took 1 operation. Therefore we will ADD 1 to the exponent byte. 129 + 1 = 130. Now we have the first digit of our FP number, } \$82 (128).
\]

2) Divide this scaled down number by two, so the mantissa's MSB has a value of 2 to the power of -1, rather than a 2 to the power of 8. This is the intermediate mantissa, .7853981635. This sort of "un-normalizes" it so it can be further evaluated.

3) Now, we multiply this new number, .7853981635, by 256, giving us 2018619299808. The 1st mantissa digit, is the integer of this number, 281 or $C9. However, since our number is positive, we clear BIT #7, and get $49. This then becomes the second digit in our FP number.

4) We now take the fractional part of the above number, .8619299808, multiply it by 256, giving us 158.854854400. The integer of this $8F (15) is the third digit in our FP number.

5) Repeating step 4 using the fractional part .854854400, we get an integer of 218, and a fraction of .637926408. We now have the fourth digit in our FP number, $DA (218).

6) Once more we multiply the fraction left over by 256, giving us 163.3691584. Since this is the last digit, we round up if the fraction is greater than .5. Since .3 is less than .5, we'll keep 163, the last digit in our FP number $A3 (163). Note that this rounding of the last digit is the cause of the minute errors found in some math calculations performed in BASIC.

Finally, the Floating Point equivalent of the decimal 3.141592654 is this string of bytes:

\[
\$82 \$49 \$8F \$DA \$A3.
\]

Here is the procedure in reverse - converting to decimal from Floating Point.

Starting with $82 $49 $8F $DA $A3

1) Starting with the exponent byte, we get the true power by subtracting the offset, $81 (129). $82-$81=$81. Therefore, the mantissa will be multiplied by 2 to the power of 1, or 2.

2) BIT #7 of the next byte is NOT set, so the number is positive. Now that we know that, we have to SET BIT #7 to do the remaining calculations. Therefore $49 is
Now $\$9$, and our mantissa is $\$C\$ 8F 6A 83.

3) Starting with the LSB, we divide this byte, ($\$A3$) 163 by 256, and get .63.678175.

4) Now, add this to the next byte, and get 218.63678175. Divide this by 256, and get .854904968.

5) Continuing, adding the next byte $\$8F$ (15) gives us 15.654904968. Dividing this by 256 returns .861929881.

6) Once more, adding the remaining byte $\$C9$ (201), = 281.861929881. Dividing this by 256 gives .7833981635.

7) Now, we have our intermediate mantissa. .7833981635. To get the true mantissa, (remember we have to “normalize” it) we multiply this by 2 to raise the mantissa’s MSB to the value of 2 to the power of 8, or 1. Now our true normalized mantissa is .1578916327

8) Finally, to get the decimal number, we multiply the true mantissa by the exponent value 2, as calculated in step 1 above, and get 3.141592654.

So, now we have gone from Floating Point designation, back to a decimal number.

NOTE: In the above, we use 5 bytes to store the FP number. This is the format used when the number is in a variable. When it is in the Floating Point Accumulator, it is stored in 6 bytes, and BIT #7 of this sixth byte is now the sign BIT, rather than BIT #7 of the MSB.

Scratch ‘n’ Save
by
Earl Brown

Last month (April), was my birthday. And my dear wife gave me a CD player for a gift. About four years ago, we bought a stereo color TV and about three years ago a stereo VHS recorder. As far as the TV and video recorder are concerned, there was really no big surprises to me as how far computerization has evolved in these two mediums. Perhaps because there was a lot written and advertised on TVs and video recorders and I examined them on a continuous basis in retail stores. How to store your scanning channels, how to set a sleep time, and how to program the clock and recording times, were things I was expecting in these entertainment devices. But for a CD player, I was totally caught off guard. I hadn’t looked into the where-for-thou of CD players. I was expecting something that just played CD disks in the same manner as a record player played 7” and 12” records. I did assume there would be a PLAY button and a STOP button and a method of selecting a 3” or a 5” Compact Disk. But never in my wildest dreams did I realize that you could:

1) Randomly play the selections.
2) Play one selection at a time.
3) Fast forward or reverse full selections.
4) Fast forward or reverse through partial selections.
5) Program in any order all or part of the CD selections.
6) Fade in or out of any portion.
7) See the playing time, or balance of time of a selection or CD.
8) Pause a selection for any period of time.
9) Program time length to fit standard sizes of audio cassettes.

And perhaps as I go along, I may even find more things that I could do with this CD player. Granted, if you don’t record audio cassettes, all these features will mean diddley to the average listener. But if you do, then you welcome with open arms all of these features, and are wishing for a few more. The CD player is certainly sophisticatedly computerized (a mouthful). And there is no question about hearing the flawless reproduction of a completely digitized musical selection (CD). A little departure from my regular column.

CUUGS has just received ten new sides of GEDS programs that will be added to our library as early as next month. Barry Birch is the one who ordered them and he assures me that there are some dandy GEDS programs amongst them. If you are a GEDS owner, put a few bucks aside, as these disks will be well worth the money.

I have prepared two disks for this month’s meeting. First, as always, the May 1998 issue of Gazette programs (listing appears elsewhere in the Monitor) and the third Graphic disk for the 128 Library (IRGC). Among other programs this disk contains the RUMPAINT program along with the Japanese ES1 mouse fix for this particular program (originally published in Run) for those of you who own this magazine. This program also appears on a graphic disk in our 64 Library. It works in either mode. Pick the disk with the programs you would like the most. See you next month.

Next Month

June Agenda

Spreadsheets
by: Barry Birch

Garage sale and rap session

Draw – $30 gift certificate

donated by THE DUNCANS

May, 1998

Commodore Users Group of Saskatchewan
Registration Form

C.U.G.S. is a non-profit organization comprised of C64, 64C, C128 and C128D users that exists solely for its membership. If you would like to renew your membership, or start a new one, please take a moment the complete the following registration. The charge for a 1-year membership is only $10.00, plus $5.00 if you want the newsletter mailed to you.

Name: ______________________________

Street: ___________________________ City: ____________________ Prov: ____

Postal Code: _______________ Phone Number: ______________

Would you like the Monitor, the club newsletter, mailed to you? (There is a $5.00 mailing charge per year.)  Yes _____ No _____

Participation Contest

I would like to remind C.U.G.S. members that the Monitor is still running the Participation Contest.

For each article you get published in the Monitor, you will receive another chance to win the prize to be awarded in December.

And for the first article, you will receive 1 free public domain disk, of your choosing, from our club library.

Here’s how it stands so far:

Name  # of Entries
Shaun Hase 4
Richard Maze 4
Barry Bircher 3
Earl Brown 1
Ken Danylochuk 1
Yves Desjardins 1

NEW CLUB DISKS

CBUGS GAZETTE MAY 890 128 GRAPHICS 3 ARC

screen store  animator/128
screen store/128 runpaint boot
color editor/128
alpha lock spriteshell/128
dvorak keyboard color demo
numeric keypad raveler demo
interrupt proq vdc graphics/128
udc monitor+ rel/128 clock demo.udc
udc monitor+/128 paint thin.udc
custom cursor warm demo.udc
minimap colorplot/128
minimap demo gr demo/128
race ace surfaces/3-d/128
isolation r.p. mouse bug
megaskees zed screen/syz/128
sheerluck fracscape/128
cellular seq read/128/28