COMPUCOLOR® SOF-DISK LIBRARY

The COMPUCOLOR II Sof-Disk Library offers a wide selection of programs that will provide entertainment, education, and simplification of household and financial tasks. The following catalog describes the contents of each Sof-Disk Album available from Compucolor Corporation. Start your collection now by ordering your family's favorites.

FORMATTED BLANK SOF-DISK   2/$9.95

These blank disks are specially formatted for use on the Compucolor II. Write your own programs and use the Sof-Disks to record them. These Sof-Disks are also ideal for use as companion data disks when extra storage is needed (as with Checkbook, Personal Data Base, etc.).

COLOR ACTION GAMES

1. SAMPLER (8K) $19.95

1. DEMONSTRATION PROGRAM - Offers sample displays and describes COMPUCOLOR II features.
2. CONCENTRATION - A game for two players derived from the game show.
3. ONE-ARMED BANDIT - The popular gambling game. Test your luck against the COMPUCOLOR II slot machine.
4. BIORHYTHMS - For true believers, or just for fun. Charts critical days and curves your emotional, physical, and mental ups and downs.
5. LOAN SCHEDULE - Knowing the following: principal, interest, number of payments; the program calculates the amount of payments and displays a payment schedule.
6. DIAGNOSTICS - Provides a complete user memory test for the COMPUCOLOR II.
7. ENGINEERING APPLICATIONS- English to metric conversions.
8. DUPLICATION PROGRAM- A RAM based progam for duplicating disketts on on a single or dual disk drive arrangement.

2. OTHELLO (8K) $19.95

1. OTHELLO - Outflank your opponent's position to end up with the majority of spaces on the board in your color. Play with another person, challenge the computer, or pick up playing tips by watching the COMPUCOLOR II play itself.
2. MATH DICE - Elementary addition game for pre-schoolers.
3. CONCENTRATION (LETTERS) - A game for two players derived from the TV game show.
4. CONCENTRATION (NUMBERS) - A fun way to help children learn to add; it even sharpens adults' skills.

3. CHESS (8K) $19.95

1. CHESS - A great way to learn the game or improve your tactics. Programs will allow you to make smart moves or inept moves, but not incorrect ones.
2. ACEY-DUECY - The COMPUCOLOR II plays the casino dealer and deals two cards; you bet on whether or not the next card will be between the first two.
3. LINE FIVE - A challenging game for one or two players. Be the first to have five squares in a row.
4. BIORHYTHMS - For true believers, or just for fun. Charts critical days and curves of your emotional, physical, and mental ups and downs.

4. STAR TRIP (8K) $19.95

1. STAR TRIP - A game played exclusively on computers, inspired by the TV series. It is up to you as Captain to rid the galaxy of the evil Klingons!
2. LUNAR LANDER - Land your module on the moon before your fuel supply is exhausted. Be careful, you might crash.
3. SHOOT - Artillery game for two players. Each selects amount of gun powder and firing angle. Shoot!
4. TIC-TAC-TOE - A three dimensional version of the familiar game.

5. BLACKJACK (8K) $19.95

1. BLACKJACK - Try out your game system on the computer before you head for the tables. Let COMPUCOLOR II deal the cards. It will keep track of all bets, wins, and losses. The program lets you split, double down, and make insurance bets.
2. ROULETTE - Just like Las Vegas! Bet on even, odd, red, columns, or pick your own lucky number. The COMPUCOLOR II will spin the wheel and record your winnings.
3. SLOT MACHINE - Set your wager, pull the handle and try to avoid the lemons.
4. HORSE RACE - It's post time! Place your bets and root for your favorite as they race across the screen.
5. DRAG RACE - Design your own dragster. You specify the horsepower, rear-end ratio, tire width and diameter. Race against a friend or the COMPUCOLOR II.

6. CUBIC TIC TAC TOE (16K) $19.95

1. CUBIC TIC-TAC-TOE - A three-dimensional version of the familiar game. You can select any of five levels of difficulty.
2. GREED - Combines skill, strategy and luck to best the Compucolor with the rolls of the dice.
3. GALAXY - A fantastic real time high speed spacewar simulation. Shoot down the enemy ships with your three phasor ports.
4. SPACE LANDER - Land your spaceship on the space platform.

7. SHARKS (8K) $19.95

1. SHARKS — Your midnight swim turns into a nightmare when you spot a shark's fin cutting through the waves. Frantically you swim for your life, but your splashing attracts even more sharks. The longer you evade the sharks in this interactive game the higher you score. There is no winning; just see how long you can survive.
2. TOWERS — Restacking the tower seems simple enough, but try it. It's a real challenge. Or watch Compucolor II play and "learn from a master."
3. KALAH — Planning ahead is what this ancient Indian game is all about. Originally played with stones and pits dug into the ground, you can play without getting your fingernails dirty! Play a friend or match wits with the Compucolor II.
4. MILL — A game of strategy for two players. If your motives are too obvious, you'll wind up losing. Outwit and capture your opponent by following one simple rule: **BE SNEAKY!**

8. AIRRAID (16K) $19.95

1. AIRRAID — This is no drill, you've got radar confirmation, enemy bombers carrying nuclear weapons are approaching with fighter escorts. Man the anti-aircraft gun; your country is depending on you to bring them down.
2. RACE — Drive as fast as you can, but don't smash into the walls! Up to four players can compete or race against the clock.
3. TILES — Fitting the pieces of this puzzle together is hard enough when our playing by yourself, but when you've got an opponent to play against, good luck.
4. ROVER ROBOT — Will Rover find a path to safety? He can provide limited information about the dangers that lie ahead, but it's up to you to decide his path and fate!

9. STAR TRADER (16K) $19.95

1. STAR TRADER — Learn the principles of stellar economics in this inter-galactic buying and selling game.
2. COLOR HUNT — Muster all your logic to deduce the color code generated by the COMPUCOLOR II. The computer analyzes all your guesses and summarizes the results.
3. DECISION-MAKER — Enter information about the decision to be made and the factors involved. This program will make the choice for you.
4. PERSONAL CALENDAR — Schedule your events a week, month, or year at a time. This system lets you keep up with your appointments and helps you remember important dates and commitments.
5. CONCENTRATION — A game for two players derived from the popular television game show.

10. SWARMS (16K) $19.95

1. SWARMS - Your assignment is to rid the land of killer bees with the
   arsenal provided for you by the Compucolor II.
2. HUMAN REACTION TIME - Test your ability for high speed instant
   recall.
3. REVERSE THE NUMBER - Put your logic to the test with this number
   sequence game. You'll have to be able to visualize all possible
   combinations as you put the digits into their proper order.
4. ROULETTE - Just like Las Vegas! Bet on even, odd, red, columns, or
   pick your own lucky number. The Compucolor II will spin the wheel
   and record your winnings.
5. CAPTURE THE ALIEN - Try to isolate the invader without coming too
   close. Actual contact could be deadly!

11. BOUNCE (16K) $19.95

1. BOUNCE - Here's a real game of skill. You and an opponent take turns
   bouncing a ball. The object is to score points by hitting the red
   numbered squares in the playing court. You control the height, hor-
   izontal velocity and bounce coefficient of the ball.
2. BATTLESHIP - A computer version of the popular pen and pencil game.
   You can play against a friend or try to beat the Compucolor.
3. SLITHER - Try to out-maneuver your opponent and score the most points
   by slithering into the yellow boxes. Don't hit the walls, your tail
   or your opponent. You will lose points.

12. SOUNDWARE (16K) $49.95

This includes both software and hardware necessary to create sounds on
the Compucolor II. It doesn't talk, but it allows you to make music and
interesting sounds on your Compucolor. Some of these sounds can be heard
on the demonstration disk. It is programmable so that songs with a range of
two or three octaves can be written and enjoyed to the delight of the
musically inclined.

13. SHOOT (16K) $19.95

1. SHOOT - Artillery game for two players. Each selects the amount of
   gun powder and firing angle. Shoot!
2. 15 PUZZLE - This is a modern version of a 100 year old game. The
   object is to move the 15 numbers and arrange them in numerical
   order.
3. HYPER - You'd better act fast in this real-time space game because
   the enemy has already engaged you. Try different degrees of
   difficulty by changing the number and type of enemy.
4. SEAWAR - Dive, Dive, Dive! Enemy ships have been spotted. Use
   your arsenal of torpedos to destroy the enemy fleet. Be careful!
   Some of the ships are on your side.

14. LUNAR LANDER (16K) $19.95

1. LUNAR - It's been three days since you left earth and it is time for
   your descent to the moon's surface. Unlike other lunar landing
   programs, this is a real-time version. You don't have time to think,
   you must act now before your fuel is depleted. There's just one
   more obstacle; you need to land with enough fuel to take off again
   or you will be stranded forever on the moon.
2. COALITION - You are on your way to colonize a new planet and wish
   to set up a stable government as quickly as possible. Unfortunately
   the planetary council, of which you are a member, is split into two
   coalitions. Your decisions could affect the winning coalition.
3. LINKO - This intriguing game takes a little luck and a lot skill.
   Try to form a link from one side of the screen to the other side.

15. MAZE MASTER (16K) $19.95

1. MAZE - Can you make it through the maze without being caught by the
   Maze Monster. It shouldn't be too difficult; but there's one minor
   problem, you can't see the maze.
2. CROSSWORD PUZZLE - In conjunction with the CREATE CROSSWORD program,
   the user can create and solve up to 100 puzzles.
3. CREATE CROSSWORD -Provides editing capabilities on previous puzzles,
   the ability to delete a previous puzzle from the catalog file or to
   generate a listing of all puzzles on file.

16. SOLITAIRE (16K) $19.95

1. SOLITAIRE - This is the traditional version of Solitaire, which is
   popular with nearly everyone. The COMPUCOLOR shuffles and deals the
   cards for you and will even allow you to "peek" under the piles, but
   keeps you honest and prevents cheating!
2. EUCHRE - Euchre is a very challenging game of card strategy. The
   Compucolor is your opponent and the object is to win three out
   of five tricks to take the round.
3. PYRAMID - Pyramid is another form of Solitaire. In Pyramid you must
   try to clear a "pyramid" of cards by combining 2 cards to total 13.
   Some unusual rules apply.

GENERAL FINANCE

1. PERSONAL FINANCE - VOLUME I (8K) $19.95

Get the edge in your financial dealings. Figure out what you're really paying for that car or house. This program will calculate annuities, interest rates, and mortgage payments by several popular methods.

2. BONDS (16K) $19.95

This program is designed for the serious investor. It offers considerable flexibility by allowing you to change variables and see their effect on bond price and yield. Dates can be entered as real dates or as time to maturity. Callable bonds are handled by this powerful program with room for up to five (5) call dates. Hit a single key and the program will print the Bond Amortization Schedule.

3. EQUITY (16K) $19.95

If your business owns or is purchasing equipment, this program could be a real money-saver. The disk contains two complex programs; Depreciation and Capitalized Costs.

1. DEPRECIATION - Depreciate your equipment by any one of five popular methods: 1) straight line, 2) double-declining balance, 3) constant percentage, 4) sum of the digits, and 5) Sink-Fund method.
2. CAPITALIZED COST - This program will figure out the true cost of each asset. It will calculate the capitalized cost of periodic changes of up to three assets simultaneously to determine the best option. In addition, the COMPUCOLOR II will quickly solve for any variable in the capitalization equation.

4. PERSONAL INCOME TAX (16K) $29.95

Need some timely help with your return? Let the COMPUCOLOR II do it. It will perform the required calculations for the FORM 1040 and Schedule A. Its color-coded lines make entry quick and fool-proof. If you must use other forms, you can easily input their results. The program directs you to the proper tax table. All you do is enter the amount. For ease of use, the computer uses the same line numbers as the actual IRS forms. In addition, you can save or retrieve up to five files containing your tax data.

SYSTEM UTILITIES

1. ASSEMBLER (16K) $24.95

Converts source programs created on the COMPUCOLOR II Text Editor into 8080 object code, and checks syntactical errors. Because of the unique features of the COMPUCOLOR II's File Control System, the source and object program sizes are limited only by the available disk space and not by the available memory.

2. TEXT EDITOR (16K) $24.95

The Text Editor is a RAM program designed to facilitate the generation and correction of souce programs and other text files. File sizes are limited only by the disk space available and not by the buffer size.

3. BASIC UTILITIES (16K) $29.95

1. FRIENDLY EDITOR (FRED 16) (FRED 32) - A sophisticated editor for BASIC programs. Features include the ability to edit any line, move existing lines, delete a range of lines and to search for the occurance of any string, variable, or command within a program.
2. RENUMBER (RENUM) - Renumbers BASIC programs. The entire program or section of a program can be renumbered. Starting line numbers and increments are chosen by the user.
3. MERGE (MERGE) - This program will allow you to merge two separate BASIC programs and combine them into one final program.
4. COMPACT (COMPAC) - Allows you to conserve memory by deleting unnecessary spaces from your BASIC program.
5. REMPAC - A space saving program that deletes remarks from your file while maintaining proper spacing.
6. BASIC SOURCE - Converts a BASIC file to a SOURCE file to facilitate conversions.

4. MONITOR (16K) $19.95

The Monitor is used to display and alter the memory contents of the COMPUCOLOR II. Memory can be displayed in Hex or ASCII. Memory can be moved, filled with a constant, or substituted with new values. Call can be made to an address with breakpoints and register dump. Source code is included so that you can assemble it to the location you need.

5. SCREEN EDITOR (16K, 117 Kybd) $29.95

The Compucolor II Screen Editor is a powerful text editor designed for
editing and creating source files. Since the contents of a file are
displayed on the screen editing is very easy. The Screen Editor requires
a minimum of 16K memory and the 117 keyboard (part number #101000). This
allows the use of single key commands such as TOP OF PAGE, END OF PAGE,
SEARCH (both forwards and reverse), READ, WRITE, DELETE CHARACTER, and
DELETE LINE. In addition, a file can be cycled, which saves the file
currently in the buffer and allows you to continue editing from the
beginning by rewinding the file. Eight cursor commands allow easy editing
with a four color intelligent cursor.

6. COMPUCOLOR FORMATTER (8K) $24.95

This program allows the user to format blank mini-floppy diskettes for
use on the Compucolor II.

7. MACHINE LANGUAGE DEBUG PACKAGE (16K) $29.95

The Compucolor MLDP is designed to facilitate the coding and debugging
of machine language programs. It contains commands to set breakpoints (up
to eight at one time), manipulate machine registers, obtain a Hex dump of
memory, alter memory to a numeric or character value, disassemble memory to
mnemonics, enter mnemonics which are immediately assembled and stored in
memory, move a memory range, fill a memory range with a constant, execute a
machine language program, true interpret a program and single step a
program. MLDP is an extremely versatile tool where execution of a program
can be halted at any point. The status of the registers and memory noted
and/or altered. Breakpoints can even be set in ROM. Included in all
commands that accept numeric parameters is the ability to calculate the
value of any expression involving constants, registers, or memory locations
and arithmetic numeric, logical, and comparitive functions.

8. FORTRAN (32K) $75.00

Microsoft FORTRAN 4 for the Compucolor II. Disk includes compiler,
linker, and a Fortran library.

9. MACRO-ASSEMBLER (16K) $49.95

MACRO-80 is a relocatable macro assembler for the 8080 microcomputer
system. The package includes the MACRO-80 assembler, the LINK-80 linking
loader and the CREF cross reference facility. MACRO-80 resides in approx-
imately 14K of memory and has an assembly rate of over 1000 lines per
minute. The assembler supports a complete Intel standard macro facility,
including IRP, IRPC, REPEAT, local variables and EXITM.

10. INFO-LINK (8K) $29.95

Information Utility Link allows the Compucolor II and the 3600 series
to communicate with the MICRONET or SOURCE information utility. The unit
will act as a dumb terminal and respond only to teletype commands.

EDUCATIONAL SOFTWARE

1. BASIC LANGUAGE I (16K) $24.95

These two disks contain the first ten lessons of the COMPUCOLOR II **BASIC** tutorial series. Sof-Disk #1 (lessons 1-5) explains important fundamental concepts of programming. Sof-Disk #2 (lessons 6-10) presents new information and helps refine programming methods.

2. BASIC LANGUAGE II (16K) $19.95

These five lessons in the **BASIC** tutorial series emphasize the proper development of program algorithms. The more sophisticated commands and statements of **BASIC** are examined and explained.

3. HANGMAN (8K) $19.95

1. HANGMAN - Classic word game. Improves vocabulary and spelling skills. If you miss, the COMPUCOLOR II will hang you right on the screen.
2. MATH TUTOR - Improve your mathematics and logic skills. Presents problems in addition, subtraction, multiplication, and division. Five levels of difficulty.
3. TWO TO TEN - COMPUCOLOR II deals the cards. Try to reach a sum total including a "mystery number" hinted at by the computer.

4. MATH TUTOR (8K) $19.95

1. MATH TUTOR - Improves your mathematical skills. Presents problems in addition, subtraction, multiplication, and division. Five levels of difficulty.
2. CHECKBOOK - Updates your checkbook balance and provides income tax data compilation by category for instant retrieval.
3. RECIPE PROGRAM - Stores and retrieves your favorite recipes by name. Provides instant portioning of ingredients for any number of guests.
4. MATH DICE - Elementary addition game for pre-schoolers.
5. BIORHYTHMS - For true believers, or just for fun. Charts critical days and curves of your emotional, physical, and mental ups and downs.

ENGINEERING SOFTWARE

1. STATISTICS I $24.95

1. FILES - A file management program that generates, maintains, and displays files for use by the other programs.
2. REGRES - This program performs a linear, logarithmic, exponential or reciprocal regression analysis, with confidence limits and a graph.
3. PLOT - Plots one to three graphs on a rectangular coordinate system from data in a disk file or from given equations.
4. STAT - Computes and displays several measures of central tendency, and other quantiles, dispersions, skews, kurtosis and movement about the mean from grouped or ungrouped data.
5. GRAPH - This program displays histograms and/or polygonial graphs for grouped or ungrouped data.

2. STATISTICS II (16K) - REGRESSION $29.95

1. FILES - A file manager program that generates, maintains and displays files for use with the other programs.
2. MLTRFG - Performs multiple linear regressions on up to six variables (including independent variable) with or without transforms.
3. POLREG - This program performs polynomial regression using a polynomial up to the fifth degree.
4. DISREG - Fits binomial, norm, or Poisson distributions to input data. A Chi-Square test for goodness of fit may then be performed.
5. VARINZ - This program uses data from a set of samples that vary in size to compute statistics for each sample, to analyze variance between samples and to provide estimates of the evaluation mean.

3. STATISTICS III (16K) - TIME SERIES $29.95

1. FILES - A file manager program that generates, maintains, and displays files for use with the other programs.
2. TIMSEF - Performs trend regression, deseasonalization, or other cyclic adjustments and smoothing of a time series.
3. INDEX - Computes eight types of index numbers for several sets of data. Any of the data sets may be used as data for the base period and the period may be individually compared to the base period.
4. CMPTIM - Computes variation within or between pairs of time series analysis for a set of time series input.
5. RANK - This program performs a rank analysis on pairs of data series using the Mann-Whitney test and also computes rank correlation.

BUSINESS SOFTWARE

1. COMPUWRITER (16K) $262.00

The Compuwriter was designed specifically for the Compucolor II and
the 3600 Series. This package includes the necessary keyboard conversions,
documentation, and software to turn your computer into a powerful text
editor. Compuwriter incorporates the best features of the leading word -
processing systems including single key command entry, full screen editing
and print formatting on the screen.

2. TREND-SPOTTER (32K) $695.00

The Trendspotter software package is a "state of the arts" management
information system which fully utilizes our products colorgraphic
capabilities. Data is entered and stored on files created by the user.
Trend-Spotter will automatically scale the data to fit within the graphic
display. The display can be labeled according to the users needs and the
various files can be shown in any of eight forground or background colors
for comparative analysis. Four graphic modes are available and data can be
manipulated to account for lag and lead times, trend forecasting,
exponential smoothing, simple linear regressions, moving averages, compound
growth calculations, inflation and deflation compensation, detrending of
data, and "trigger point" functions.

3. DATA BASE SYSTEMS (16K) $39.95

Complex programs like this used to be available only for large
computers, but we now have it for your COMPUCOLOR II. With it you can
easily create your own data management system. Create, save, and easily
access a mailing list, insurance inventory, etc. You can also selectively
search your data. For example, you can retreive a list of all your
customers who live in Georgia and have made a purchase in the past six
months. Easy to use, it comes with a detailed manual.

HELLO   BUENOS DIAS   GODDAG   BONJOUR   GUTEN TAG   A$="HELLO":PRINT A$

READERS--

     We are pleased to present the first issue of ColorCue, a newsletter
for and about you and your personal computer, the COMPUCOLOR II.   A
newsletter such as this can serve many purposes, and as it begins to take
form over the next few months, your contributions and criticisms will
determine its character.

     This publication provides a means of communication between us and
COMPUCOLOR II owners, and, as things progress, between the owners
themselves.   We plan to offer explanations of various programming
techniques that will help the new user become more adept. In addition, we
will discuss features and technical aspects of the COMPUCOLOR II which will
stimulate and inform even the most sophisticated owners/users.

     In order to serve your needs, it is necessary that you make those
needs known to us. We welcome any requests you may have for articles.   If
you're curious or perplexed about a certain aspect of programming or
machine use, chances are that another user is too, and sufficient reader
interest will generate a feature in ColorCue. Your suggestions and
encouragements are also welcome and we plan to share some of them with
other readers.

     This paper will keep you abreast of innovations at Compucolor
Corporation. We will be reporting on new options, peripherals, and
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Library Diskettes as they are made available.

     Many of you are eagerly awaiting the next Library Albums. Several new
ones, including BlackJack and Personal Finance, will soon be available. If
you have any suggestions for programs you would like to see, please let us
know.   Perhaps a favorite game or financial function would be a useful
addition to the COMPUCOLOR II Program Library.

     Many programmers, beginners and seasoned pros alike, have questions
about the features of the COMPUCOLOR II, such as its use as a terminal, its
particular form of BASIC, or its hardware specifications. Your questions
have answers in the COMPUCOLOR II Programming and Reference Manual. It is
a ready source of information for all who use the machine. It can be
purchased through your dealer or ordered directly from us at Compucolor
Corporation.

ADVANCED APPLICATION

How to Use The Scrolling Patch

Selective scrolling on the screen of the COMPUCOLOR II can be done quite easily by including a short BASIC routine in your own programs. This routine allows you to scroll a certain portion of the screen independently of the rest of the screen. It is used in several of the COMPUCOLOR programs in the Diskette Library, including STAR TREK. Because the routine is complicated, space prohibits our describing the details of how it works. Instead, we will show you how to use it.

First, initialize BASIC and key in the lines 0, 1, and 64000 through 65410 as listed below. If you plan to use the scrolling routine in a number of your programs, save the partially completed routine on disk so that you do not have to re-enter it each time that you want to use it. To save it, type SAVE"SCROLL" which saves the routine in a file called SCROLL.BAS on your diskette.

```
0 GOTO 65000
1 REM THERE MUST BE A LINE NUMBERED 1:STRING SPACE=25 BYTES
64000 GOSUB 65410
64010 Z=28672+128*Y+X+X:AD=TM+2: GOSUB 65400
64015 Z=128-W-W:AD=TM+25:GOSUB 65400
64020 POKE TM+5,H-1:POKE TM+7,W*(C+1):POKE TM+19,35*(1-C)
64030 RETURN

65000 GOSUB 65410:RESTORE 65030
65030 DATA 33,-1,-1,6,-1,14,-1,17,128,0,25,126
65040 DATA 17,128,255,25,119,35,-1,13,194,-1,-1
65050 DATA 17,-1,-1,25,5,194,-1,-1,201
65055 IF TM>65503 THEN TM=TM-32:GOTO 65080
65060 FOR I=1 TO 32:READ A
65065 IF A>=0 AND A<> PEEK (TM+1) THEN I = 32:TM=TM-32
65070 NEXT
65080 RESTORE 65030
65090 FOR I= 1 TO 32:READ A: POKE TM+I,A-(A<0):NEXT
65100 Z=TM+1: AD=33283:GOSUB 65400
65110 Z=TM:AD=ER:GOSUB 65400
65120 Z=TM+6:AD=TM+30:GOSUB 65400
65130 Z=TM+8:AD=TM+22:GOSUB 65400
65190 CLEAR 25: GOTO 1
65400 ZZ=INT (Z/256):POKE AD,Z-256*ZZ:POKE AD+1,ZZ:RETURN
65410 ER=32940:TM=256*PEEK(ER+1)+PEEK(ER):RETURN
```

To use the scrolling routine, you must specify a number of parameters that define the size and position of the area on the screen that will be scrolled. The 4 determinants are:

X - The x cursor position (0-63) of the upper left hand corner of the area to scroll

Y - The y cursor position (0-31) of the upper left hand corner of the area to scroll

H - The number of lines (>1) in the area to scroll

W - The number of characters (1-64) in each line in the scrolling area

A fifth parameter is necessary in order to specify whether or not the color status information is to scroll. It is defined as follows:

C - If C=0, then the color information does not scroll. If C=1, the color information is scrolled along with the character.

For example, if an 8 line by 16 character area is to be scrolled in the upper right hand corner of the screen, the parameters should be set as follows:

X=48: Y=0: H=8: W=16: C=1

By executing a GOSUB 64000, these parameters will be set into the assembly language scrolling routine. Thus, whenever a CALL(0) function is executed, the area will scroll up one line. The bottom line of the scrolled area is not spontaneously erased and must be erased by a PRINT statement. A completed scrolling routine should be similar in form and appearance to the one shown below. Lines 10 through 140 are a sample routine.

```
0    GOTO 65000
1    CLEAR 200: REM 200 BYTES OF STRINGS
10   REM SET SCROLLING AREA TO MIDDLE OF SCREEN
20   X=16: Y=8: H=16: W=32: C=1: GOSUB 64000
80   PLOT 27,24,6,32,12: REM SET PAGE MODE, COLOR, ERASE PAGE
90   PLOT 6,6
100  FOR LN= 1 TO 50
110  GOSUB 1000:PRINT "THIS IS LINE" LN
120  NEXT LN
140  END

1000 X=CALL(0)
1010 PLOT 3, X, Y+H-1: PRINT SPC(W)""
1020 PLOT 3,X,Y+H-1
1030 RETURN
```

The area will continue to scroll one line at a time each time line 1000 is executed. Several portions of the screen cannot be scrolled simultaneously, but they can be scrolled one after the other by executing GOSUB 64000 with the appropriate parameters before issuing each CALL(0) function.

KEEPING IT SIMPLE

Random Rectangles

The following program and its accompanying description are designed to make the new user/programmer feel more comfortable with the PLOT statement. This and other statements are fully described in our easy-to-understand Programming and Reference Manual, available through your dealer or direct from Compucolor Corporation. The Manual details the features of the machine and of the programming language BASIC. It starts out at an introductory level and progresses to sophisticated explanations of machine capabilities. It makes a handy reference, and when combined with study from one of the books recommended in the Instruction Manual, it will have the new user programming in no time at all.

The program below will draw randomly-sized rectangles of random color on the screen. The program is quite simple and should be easy to follow with but a little concentration.

The first step is the defining of a function that allows us to specify a range and have random numbers generated in that range (line 20). After having set the background color to black and cleared the screen (line 110) a loop is created with a FOR statement that will cause the program to repeat the drawing of rectangles a random number of times from 6 to 12 (line 210). Note the use of the user-defined function to select the number between 6 and 12.

The next step of the program is the random selection of the rectangle color. The colors have PLOT numbers from 0 to 7, but since a black rectangle would not show up on the pre-set black background, our random number function is set to choose only numbers from 1 to 7.

After the screen is prepared and the color set, the points that define the rectangle itself must be determined. As you can see in Figure 1 below, the four required coordinates can be derived from only 2 points, (X1,Y1) and (X2,Y2). Since the COMPUCOLOR II has 128 plot positions (from 0 to 127), the random function is set at 128 to determine coordinates for the two key points (lines 260, 270, 280, 290).
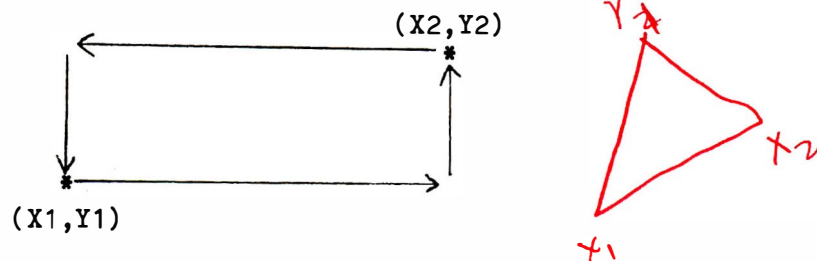

FIGURE 1

A subroutine is used to actually draw each rectangle on the screen. It is entered through line 300 with a GOSUB statement. The subroutine itself consists of entering the Point Plot mode by the PLOT 2 statement, and drawing the first point specified. The graphic Plot Submode 242, or Vector mode, is then used to draw the four sides of the rectangle. In this mode the computer draws a line from the last point plotted to the next specified point. Before using the mode, it is necessary to draw the first point in Point Plot mode (line 1000) to give the machine a starting point from which to draw the vector. After the initial point and the four

vectors are drawn, we escape from plot mode by the PLOT 255 command (line 1030) and control is then passed back to the main body of the program at line 400. This NEXT statement causes the program to go back and repeat the process in order to draw another of the 6 to 12 rectangles specified. When the program falls through the loop, that is, when all of the rectangles specified by the random number function in line 210 have been drawn, the program will be at line 500. This line has no actual computational function; it is inserted simply to cause a slight delay in the program before it reaches line 510 and repeats the entire process of screen clearing, choosing the number of rectangles, color, etc. Try entering the program into your COMPUCOLOR II and see if you get the results you expect.

```
10  REM DRAW RANDOM RECTANGLES
20  DEF FNR(X) = INT(X*RND(1))
100 REM SET COLOR AND ERASE PAGE
110 PLOT 6,0,12
200 REM DRAW 6 TO 12 RANDOM RECTANGLES
210 FOR I=1 TO 6+FNR(7)
220 REM SET VISIBLE FOREGROUND COLOR
230 PLOT 6,1+FNR(7)
250 REM COMPUTE RANDOM COORDINATES FOR RECTANGLE
260 X1 = FNR(128)
270 X2 = FNR(128)
280 Y1 = FNR(128)
290 Y2 = FNR(128)
300 GOSUB 1000:REM DRAW
400 NEXT I
500 FOR I=1 TO 1000: NEXT I
510 GOTO 100

1000 PLOT 2,X1,Y1
1010 PLOT 242,X2,Y1, X2,Y2, X1,Y2, X1,Y1
1020 PLOT 255
1030 RETURN
```

Notice that a little planning ahead has gone a long way here. The simple function created in line 20 is used a total of 6 times and saves a lot of steps. The program can be easily changed by specifying different ranges for color (line 230), number of rectangles (line 210), and size of rectangles (lines 260-290). You might try some variations. Remember that typing LINEFEED (↓) will halt program execution and return you to BASIC, and the program will still be in memory.

SOFTWARE EXPLAINED

Star Trek Strategy

     The game Star Trek has become very popular, and the version created
for the COMPUCOLOR II is among the most exciting ever played. The colors
and graphics make it come alive for you, the user, Captain of the
Enterprise. The game is easy to play and has a simple strategy, but
because it is quite unlike any board games you might have played, it does
take some getting used to. The first information you are asked to supply
is the Star Date, and as you play several games you will see that the
degree of dificulty of the game you get is a result of the Star Date you
select. So, if you play a game and get destroyed, but you think you have
a new strategy, just enter the star date of that game, and the same number
of Klingons, Star Bases, and stars will be allotted at the start of the
game. Some players have favorite games that they play over and over. If
you really like a challenge--try Star Date 5!
     The Galaxy is divided into an 8 by 8 quadrant grid which is in turn
divided into an 8 by 8 sector grid. The position of the Enterprise is
graphically shown on the short-range sensors, and its coordinates appear in
large yellow characters in the screen's upper left corner.
     The long-range sensors display the position of the Enterprise in a
blinking number. The other numbers on the sensors give information about
stars, (the number of which in any quadrant is displayed in yellow)
Klingons, (displayed in red) and star bases (number of stars displayed in
green). The contents of all adjacent quadrants are also visible, and as
the Enterprise moves throughout the galaxy, the quadrants that come into
range are displayed on the sensor scan. Eventually, this gives a clear
picture of the galaxy, and you know the exact location of all Klingons,
stars, and Star Bases.
     It is important, as you have no doubt discovered during play, to learn
the location of any starbases as soon as possible in the game. When the
Enterprise comes within 1 sector of a Star Base, the shields are dropped,
the Condition is "Docked", and all energy is fully restored. For this
reason, many players prefer to avoid Klingons completely until a Starbase
is located and they have a ready source of energy.
     You will notice that when the game first starts, the status
(appearing at the right of the screen), is CONDITION RED. This danger
signal is given because there is no energy in the shields, and any Klingon
attack would destroy the Enterprise. The first move of every game should
be to put some units of energy in the shields. You will discover by trial
and error the amount of energy needed to withstand the usual Klingon
attack. Putting too much energy in the shields will severely limit your
mobility, while putting in too little will leave you vulnerable to Klingon
attack. Once the shields are prepped, you are ready to travel the universe
in search of Klingons. Your ultimate goal, of course, is to rid the Galaxy
of the evil Klingons, and control the area for the Federation.
     The commands listed in the lower right of the screen are all that are
needed to play the game. They are:

0-Warp Engine Control

Course is in a circular numerical vector arrangement as shown in Figure 2. Integer and real values may be used. Therefore, course 1.5 is halfway between 1 and 2. A vector of 9 is automatically changed to 1. After choosing course, warp speed is selected. A warp factor of 1 is the size of one quadrant. Therefore, to get from quadrant 6,5 to 5,5 you would use course 3, warp factor 1.

1-Shield Control

Defines the number of energy units to be assigned to the shields. The energy is taken from the total ship's energy.

2-Phaser Control

Allows you to destroy the Klingons by hitting them with suitably large numbers of energy units to deplete their power. The phasers are wide-range weapons, and require no target calculations.

3-Photon Torpedo Control

Torpedos must be precisely aimed using the same course selection described in command 0. Note the fate of Klingons after a direct hit!

The movement in the Star Trek game must be carefully planned because it is confusing at first. You use the ship's computer to lay in your course, and even though the distance and direction are mathematically calculated, you must determine the course yourself, and unless you stay ahead of the computer you're liable to end up lost in space! The course is computed as shown below:
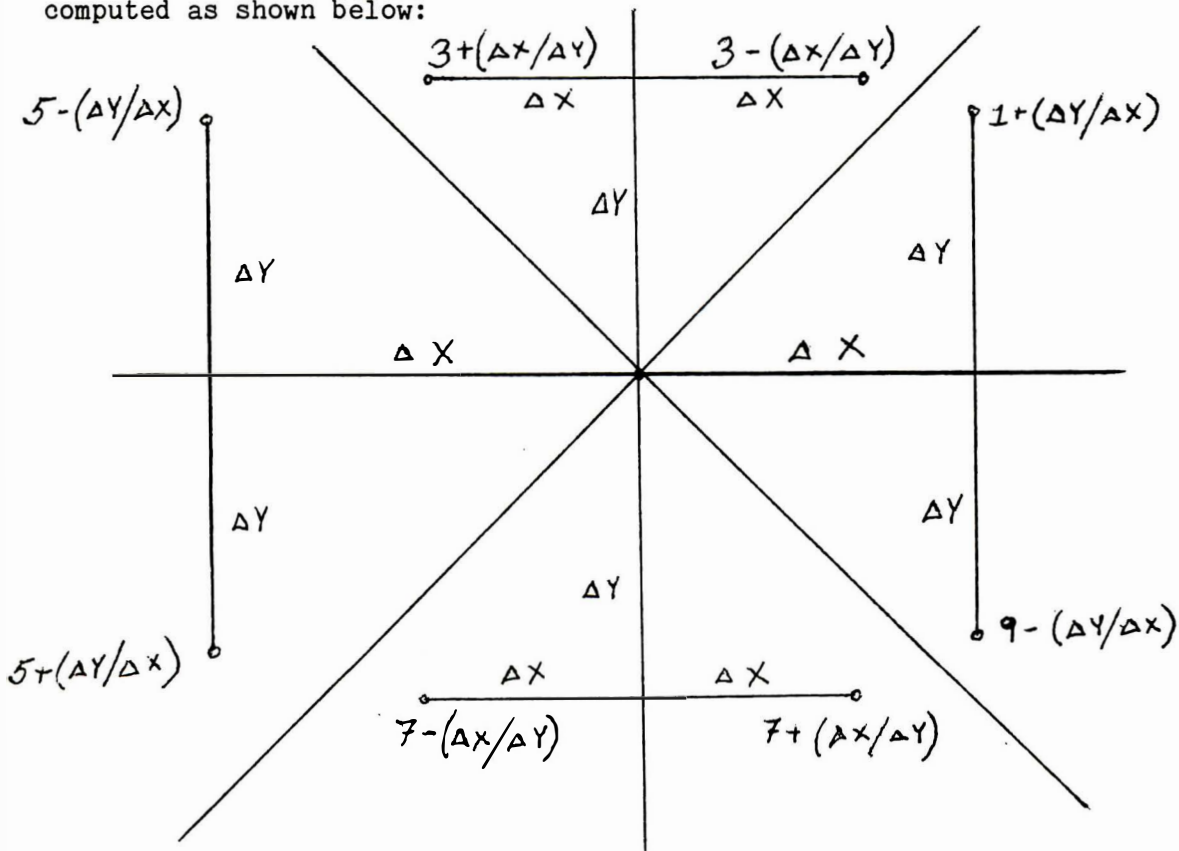

FIGURE 2

There are a few details about which you should know in order to become an effective starship Captain. The first is that the status of devices, as shown in the lower right of the screen, can greatly affect your odds in any particular game. If the sensors go down, the displays will not be updated, and Klingons can move into your quadrant unannounced. It is important to be very careful to navigate AROUND stars. Attempting to go through a star that is visible on your short-range sensor screen will stop the ship at the point where it encounters the star. If a Warp Engine shut down appears on the Device Status record, your speed will be severely curtailed. It will take the elapse of several plays for Scotty to fix the engines, but eventually they will again be operable.

Klingons do not have to remain in the quadrant where you first encounter them. Each time you issue a command, Klingons within a distance of 3 quadrants may converge on your quadrant up to a maximum of 9 Klingons. It will take some practice to become truly adept at this challenging game, but with a little cleverness and some patience you will soon be a skilled player.

USERS' SOFTWARE FILES

Software Exchange

ColorCue will provide the means through which readers may sell, trade, or contribute programs to Compucolor Corporation. The next issue will feature a complete explanation of buying policies and standards for acceptance.

```
*********************************************************************************
       COMING UP
                Othello: COMPUCOLOR II vs. all challengers
                User's Software Files: Software sales and acceptance policies
                RS232-C Interface: Plugging in to the Big Machines
                More PLOT's and some TIMEly Applications
*********************************************************************************
```

We hope you have found this first issue of ColorCue illuminating. In order that we meet your needs and interests, write to us with questions, comments and criticisms. Keep on experimenting and let us know what you come up with! Write to:

                          COMPUCOLOR CORPORATION
                          P.O. BOX 569
                          NORCROSS, GEORGIA 30071

                ATTN: Susan G. Sheridan

READERS--

Certainly by this time you have thoroughly perused all of the material presented in October's issue. We are pleased to say that response has been quite good, with readers being especially appreciative of the Star Trek instructions. As a result of the articles in the last issue, many new users have seen the coming and going of thousands of Random Rectangles, while the home programmers are coming up with some innovative uses for the Scrolling Patch. Our explanation of Star Trek Strategy has undoubtedly contributed to the demise of a number of Klingons. If you still have not tried the Star Trek game, you can use the order blank attached to this month's ColorCue to send to us for your Star Trek SofDisk Album. It includes the Lunar Lander and Shoot games, as well as Tic-Tac-Toe.

****

This Issue's MENU:

****

This issue presents not only the usual articles and information, but also a feature on the use of the RS-232C interface. We know that many of you have access to large computers, and using the COMPUCOLOR II as a terminal is an important feature for you. Although the procedure is described in the Programming and Reference Manual, we have chosen this issue of ColorCue to present it to all users.

November ColorCue also includes a description of the trade and acceptance policies for the Users' Group software. We hope that by defining the policies, more of you will be encouraged to send us those creations on which you have been working so hard. We are actively soliciting software, so don't assume that we're not interested in your project. Send it to us and let us have a look!

ADVANCED APPLICATION

The Real Time Clock

    The COMPUCOLOR II contains a Real Time Clock that gives the programmer an added dimension in creativity. It has many applications, and can be used for time testing in educational or game programs. The program below shows how get the Real Time Clock to display in the upper right hand corner of the screen. This is a very simple program, but because it gives the memory values necessary for the Real Time Clock, you will be able to elaborate on this program and create interesting effects.

    The first lines (100 - 150) set up the program and define variables. The program allows you to enter any starting time that you chose. This is put into the proper place in memory by the POKE statements in lines 180, 190, and 200. The time is then retrieved by the PEEK statements in lines 230, 240, and 250. Lines 270 - 290 align the digits for a more easily read display. This is done by adding 100 to each time value, and then printing out only the last two digits. This assures that any leading zeroes will be displayed. Note the use of the string function STR$ to change the numeric value into a string variable. The PLOT and PRINT statements in line 300 define the area of the screen to be used for display. This PLOT statement can be changed to display the time readout in any portion of the screen. Line 330 makes sure that the display is not updated unless the time has changed. If this line were not included, the program would still work, but the display might be jittery because of the constant needless update.

```
100 REM *** TIME ***
110 PLOT 6,34,12,14
120 REM *** SET TIME ***
130 INPUT "DO YOU WANT TO SET THE TIME (Y OR N)? ";I$
140 IF I$ = "N" THEN 210
150 INPUT "ENTER TIME (HR, MIN, SEC) ";H,M,S
170 REM *** PUT CORRECT TIME INTO MEMORY ***
180 POKE 33211,H
190 POKE 33210,M
200 POKE 33209,S
210 REM *** PRINT TIME; GET TIME ***
230 S=PEEK (33209)
240 M=PEEK (33210)
250 H=PEEK (33211)
260 REM ** PUT 0 IN FRONT OF SINGLE DIGIT NUMBERS **
270 S$=RIGHT$ (STR$ (S+ 100), 2)
280 M$=RIGHT$ (STR$ (M+ 100), 2)
290 H$=RIGHT$ (STR$ (H+ 100), 2)
300 PLOT 3,50,0:PRINT H$;":";M$;":";S$
320 REM ** WAIT UNTIL SECONDS HAVE CHANGED
330 IF PEEK (33209)=S THEN 330
340 GOTO 230
```

    The time is actually updated every 8/15 seconds, so that every few seconds, the time may seem to advance faster for one count. You may find that your COMPUCOLOR II gains or loses a few seconds per day. This can be corrected by adding this number of seconds once every day.

KEEPING IT SIMPLE

Circular Plots

Last month's Random Rectangles was an example of the use of the PLOT statement to draw a simple figure at random. This month we shall show a more involved screen display. The program below concentrates on the use of the graphics plot modes to draw various circles and ovals whose parameters you select.

The first plot statement sets the background color to blue, the foreground color to white, and clears the screen. Lines 20 and 30 define variables for future use. Line 130 sets the radius at 50 and line 140 places the center point of the circle in the center of the screen. These two statements assure that the plotting will not go off the screen. Lines 150 and 160 ask for two user inputs. The first asks the user to select the angles which will determine the screen display. The START and STOP values determine what portion of a circle will be drawn. The final value, STEP, selects the angle at which the lines will be drawn. The second input selects an aspect ratio. The aspect ratio is a screen character width to height ratio that can cause distortion to the circle appearance. The aspect ratio on the COMPUCOLOR II is 3 to 4, so if the user inputs .75 in response to line 160, the circle will appear balanced. Line 170 makes certain that no intolerable aspect ratios are accepted.

Lines 200 and 210 erase the screen and set plot mode, while line 220 sets up the loop that cause a complete circle to be printed. Lines 230 and 235 convert the degrees into radians and calculate the circle parameters. Line 240 causes a line to be drawn, and line 250 completes the FOR/NEXT loop that draws all the lines of the circle. Line 260 exits from plot mode, and the last line of the program sends control to the first portion of the program so that the user can choose another set of parameters.

```
10 PLOT 14,6,39,12
20 RD=3.14159265/180
30 P2=3.14159265*2
100 REM    PLOT LOOP
130 R = 50: REM CIRCLE RADIUS IS SET AT 50
140 X0=64: Y0=64: REM CIRCLE CENTER IS SCREEN CENTER, 64,64
150 INPUT "ANGLES (0-360) START,STOP,STEP :  ";D1,D2,D3
160 INPUT "ASPECT RATIO  ( <1) : ";A
170 IF A> A THEN A=1/A
200 PLOT 12
210 PLOT 2
220 FOR D=D1 TO D2 STEP D3
230 R0 = D*RD: REM R0= RADIANS CONVERTED FROM DEGREES
235 R0=R0-P2*INT (R0/P2)
240 PLOT X0 + A*R* COS(R0), Y0 + R*SIN (R0), 242
250 NEXT D
260 PLOT 255
270 GOTO 100
```

The angles that you select will determine the shape of the circle that is plotted. To get an entire circle, you must enter 0 and 360 for the START and STOP points. Enetering 30 and 60 for those same points would plot only 30 degrees of the circle. Choosing a high step value will cause a rough-edged circle to be plotted, whereas a small value will result in smoother edges. You can try experimenting with various aspect ratios. Notice the effect that different aspect ratios have on circles defined by the same angles.

SOFTWARE EXPLAINED

Othello

When Gabriel Toys first released its new board game, Othello, in 1975, it was called "The first completely new game in a hundred years". Now, through the COMPUCOLOR II, Othello has been made newer than ever. CBS toys, makers of the Othello game, have issued the only license for a computer version of the game to Compucolor Corporation. Othello combines perfectly balanced elements of skill, chance, and excitement into a sensational game. Athough strategy and rules are simple, winning will require some forethought and presence of mind.
The COMPUCOLCOR II allows a lot of flexibility in Othello-playing. You may choose to play against another person, in which case the COMPUCOLOR II .will referee the game, keeping score and disallowing illegal moves. You may play against the computer, or you may pick up some playing tips by watching the computer play itself.
Othello is played on a standard 8 x 8 square playing board as is used for chess or checkers. You will see that each game starts with four chips in the same configuration. Every time you move, you must outflank one or more of your opponent's chips. This will cause those chips to turn to your color. This is known as a flip (because in the board game, the chips have a different color on each side and must be manually flipped at every play.) You outflank an opponent's chip by placng your chip on a square so that the opponent's chip(s) are in between your new chip and some other previously played chip of your color. (See Figs.1&2) A chip may outflank
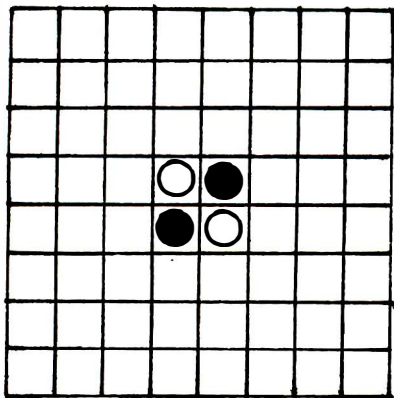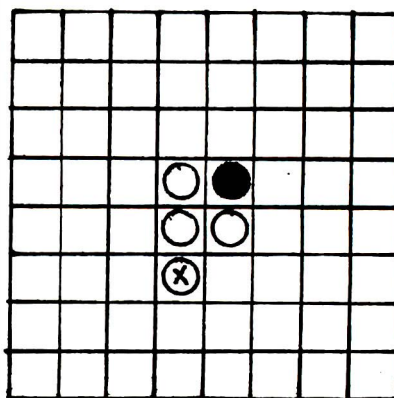
FIG 1

FIG 2

any number of opponent's chips in any one turn, in any of several directions -- horizontally, vertically, or diagonally. You must always move so that you outflank at least one of your opponents's chips. If you cannot make such a move, you must pass your turn. You instruct the computer to do so by entering a 0 at your turn. The game is over when neither player can make a legal move, and the player with the majority of squares occupied by chips of his color is the winner. As you play a number of games, you will discover that certain squares are very important to winning the game. All edge squares are desirable, because they prevent your being outflanked from one direction, and all corners are extremely important because they can never be outflanked. As you play, you should keep in mind the portions of the board that you wish to control and maneuver your playing so as to acquire these key positions. You will discover that positions can change drastically toward the end of the game, when rows are longer, and flips turn many more chips. Note Figs. 3&4.
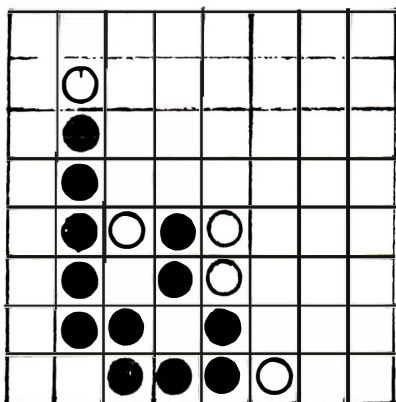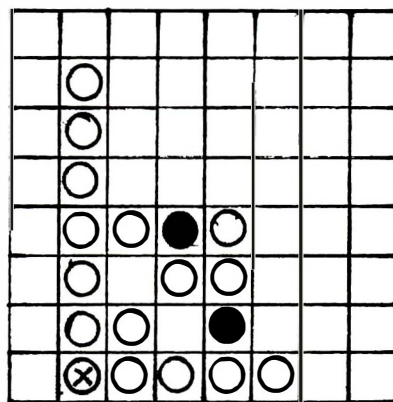
Fig 3

FIG 4

USERS' SOFTWARE FILES

Acceptance Policies

     Part of the purpose of the ColorCue newsletter is to facilitate the exchange of software among users. Having access to a wide variety of programs can make the COMPUCOLOR II even more useful for you. Many of you are spending time creating programs that play games or help with finance or home management. We are interested in seeing these programs and in reviewing them for acceptance to the Software Files.
     When a program is submitted to us, we examine it for originality, function, and style. It is very important that good documentation be received so that the program's purpose is easily discerned. You should submit programs on SofDisk, but if you have a printer, you might also send us the source listing. Programs will fall into three classes. The first are those programs which are judged so excellent that they will be sold on SofDisk Albums. For these programs, we will pay the originator anywhere from $100 to $1000, depending on program content, size, originality, etc. The second class of programs will be those that will become part of the current Users' Software Files. When a program is accepted to the Files, the programmer will receive a program of

approximately equal length and complexity from among those already submitted to the Files. There will be several categories of program types, and the programmer may specify the category of his preference. Obviously, it will take some time to build the Files up to the point where users have a wide selection of materials. However, we are hopeful that with your cooperation, the files will build rapidly. Until there is substantial material from which to chose, programmers whose products are accepted will receive through the mail not only their SofDisk upon which the program was submitted, but also a pair of formatted COMPUCOLOR II SofDisks (a $20.00 value). Users who do not contribute to the files will be able to purchase the programs. A schedule of prices will be listed in future issues.

Submissions in the third category of programs, those not considered ready for release, will simply be mailed back to their originators. Whenever possible, we will try to include suggestions on how the program can be improved and made acceptable.

We hope that this brief introduction makes acceptance policies clear. Please send in any programs you have written so that we may consider them for publication. We are hoping that the Users' Software Files will become an important feature of the Users' Group.

THE RS-232C INTERFACE

Plugging Into Peripherals

The RS-232C interface allows the user to connect any RS-232C compatible device to the COMPUCOLOR II. This enables most serial printers to be interfaced without any addtional software.

In order to connect to another machine you must be sure that the COMPUCOLOR II baud rate is compatible with that of the other machine. The default baud rate of the serial port is 9600 baud with 1 stop bit. This rate can be changed by using the ESC R sequence. A7 ON and A7 OFF give 2 and 1 stop bits, respectively. The baud rate is selected by giving a sequence which includes the stop bit, ESC R, and some number from 1 to 7 chosen from the chart below.

BAUD RATE SELECTION

NUMBER KEY	1	2	3	4	5	6	7
BAUD RATE	110	150	300	1200	2400	4800	9600

After the baud rate has been properly set, data can be transmitted to the RS-232C serial port by executing an ESC M sequence. As listed in the Instruction Manual, this ESCAPE sequence sends all inputs to the COMPUCOLOR II (including all keyboard inputs and BASIC outputs) to the RS-232C port instead of to the CRT screen. Thus, the only way to break out of this mode from the CRT mode is via the CPU RESET key or in Disk BASIC by executing a POKE 33265,0 statement which resets the BASIC Output Flag to send characters to the screen in visible cursor mode.

The COMPUCOLOR II can be used as a data communications terminal with the RS-232C interface. The user enters terminal mode by stiking CPU RESET. Full or Half duplex can be set with the ESC F and ESC H codes, respectively. In half duplex, all keyboard inputs are echoed to both the

CRT and the RS-232C port. In full duplex mode, all keyboard inputs are directed only to the RS-232C port. Your choice of one or the other depends upon the requirements of the machine to which you are interfacing.

When interfacing a modem or acoustic coupler to the RS-232C serial port, it usually is not necessary to switch the transmit and receive data lines because the RS-232C port is configured as if the COMPUCOLOR II were a data communications terminal. On some computer systems that use 7-bit ASCII codes, correct parity is required. The COMPUCOLOR II is set up to transmit and receive 8 bit ASCII characters and data which precludes parity checking. The COMPUCOLOR II can receive any form of parity from the host system as long as it is in the normal text mode (non-plot modes). But it transmits with the parity bit always low. The host system should not send the following control codes unless it can control the state of the parity bit : plot mode (02), cursor XY lead-in (3) and CCI lead-in (6). In this case, proper communication will require a special communications program that executes in the user's RAM workspace, or else the host computer system can be configured to receive ASCII with parity bit low.

Another problem that may be encountered is that the COMPUCOLOR II responds to almost every ASCII control code and escape sequence. If the host computer sends control codes other than NULL, CARRIAGE RETURN, LINEFEED, and ERASE PAGE, then the COMPUCOLOR II may respond in an unexpected fashion. In these cases it is probably best if the host computer treats the COMPUCOLOR II as a TELETYPE instead of a CRT display terminal.

READING THE KEYBOARD

We have received a number of requests from COMPUCOLOR II users who want to make inputs to BASIC without the limitations imposed by the INPUT command. Our software people went to work and came up with the following BASIC routine which, when added to your program, will enable you to do any or all of the following:

a. Enter a character without its being echoed to the screen.
b. Enter a character without hitting RETURN.
c. Wait X seconds for a character and continue program if one is not hit.

```
100 REM **** GET CHARACTER FROM KEYBOARD ****
110 DATA 245, 229, 197, 1, 206, 40, 205, 36, 0, 202, -1, -1, 11
120 DATA 121, 176, 194, -1, -1, 29, 194, -1, -1, 17, 255, 255,195
130 DATA -1,-1, 95, 175, 87, 175, 50, 255, 129, 193, 225, 241,201
140 REM ** FIND END OF BASIC RAM **
150 TM = 256*PEEK(32941) + PEEK(32940)
170 REM ** CHECK TO SEE IF IT'S ALREADY LOADED **
180 IF TM> 65503 THEN 250: REM ** IT'S NOT LOADED **
190 RESTORE 110
200 FOR I = 1 TO 39: READ A
210 IF A> = 0 AND A<> PEEK (TM +I) THEN I=39: A=999
220 NEXT I
230 IF A< 256 THEN 390: REM ** IT'S LOADED, JUST SET JUMP
240 REM ** COME HERE TO LOAD PROGRAM **
```

```
250 TM = TM-39: RESTORE 110
260 REM ** LOAD MACHINE INSTRUCTIONS **
270 FOR I = 1 TO 39:READ A: ROKE TM + I, A-(A<0): NEXT I
280 REM ** LOAD ADDRESSES **
290 Z = TM +29:AD=TM+11:GOSUB 350
300 Z = TM +7: AD=TM+17:GOSUB 350
310 Z = TM +4: AD=TM+21:GOSUB 350
320 Z = TM +32:AD=TM+27:GOSUB 350
330 GOTO 370
340 REM ** LOAD ADDRESS Z AT ADDRESSES AD, AD+1 **
350 ZZ = INT(Z/256): POKE AD,Z-256* ZZ:POKE AD +1, ZZ:RETURN
360 REM ** CHANGE END OF BASIC RAM **
370 Z = TM:AD = 32940:GOSUB 350
380 REM ** LOAD BASIC JUMP LOCATION **
390 Z = TM +1:AD=33283:GOSUB 350
400 POKE 33282, 195:REM ** LOAD JUMP
410 CLEAR 25: REM ** YOU'RE DONE **
420 REM ** YOUR PROGRAM STARTS HERE **
```

This routine must be executed prior to any part of your program. You can set the "CLEAR" in line 410 to meet your program's requirements. Make sure that no variables are dimensioned prior to this or they will be lost. Once this routine is executed, the BASIC "CALL" function can be used to accept keyboard inputs. The argument of the call is the number of seconds the program will pause for a character to be input. An argument of zero (0) will result in the longest delay -- 255 seconds. A return to BASIC occurs when either a key is hit or the time expires, with the value of the call set to the ASCII value of the character hit. If no character is hit, then -1 is returned at the expiration of time.

The following examples demonstrate how this routine might be used.

a. This routine will pause 5 seconds to wait for a character. If a character is hit, it is printed.

```
500 Y = CALL (5)
510 Y<> -1 THEN PRINT CHR$(Y)
```

b. This routine fills the string A$ with characters until "RETURN" is hit. The characters are not printed on the screen. Notice that a "RETURN" (ASCII 13) is treated just like any other charcter by the routine. If no check was made for it, it would be imbedded in the string, and you could not exit the loop.

```
500 Y=CALL(0): IF Y=-1 THEN 500: REM ** DON'T LET CALL TIME OUT **
510 IF Y=13 THEN 540: IF RETURN IS HIT -- YOU'RE DONE
520 A$ = A$ + CHR$(Y): REM ADD CHARACTER TO STRING
530 GOTO 500: REM GO GET NEXT CHARACTER
540 REM ** CONTINUE PROGRAM
```

c. This routine will wait 2 seconds for a "Y" (ASCII 89) or "N" (ASCII 78) to be entered. It prints "YES" if a "Y" is entered, and "NO" if a "N" is entered.

```
500 Y = CALL (2)
```

```
510 IF Y=89 THEN PRINT "YES"
520 IF Y=78 THEN PRINT "NO"
```

COMING UP   Note: Those of you with older versions of
                                       the SHOOT game may notice a mistake
String Functions   in the instructions. The phrase
Menu   "70 0 9:PLOT 10" should read
Checkbook   "70 (enter) 9(enter)" Excuse us!
INPUT table values and functions
INPUT flag types

Please address all inquiries and suggestions to: Susan G. Sheridan
                                                  Compucolor Corporation
                                                  P.O. Box 569
                                                  Norcross, GA 30071

COMPUCOLOR CORPORATION ORDER FORM

PART #	DESCRIPTION	QUANTITY	PRICE	SUB-TOTAL
A8CC23	Compucolor II Model 3, 8K	____	$1495.00	_____
A8CC24	Compucolor II Model 4, 16K	____	$1795.00	_____
A8CC25	Compucolor II Model 5, 32K	____	$2395.00	_____

101001	Standard Keyboard, 72 Key)			
990002	Diskette - Sampler) INCLUDED WITH ALL UNITS			
999207	Instruction Manual)			

OPTIONAL KEYBOARDS (To be sent in place of 101001 Standard Keyboard)

| 101002 | CCN Keyboard, 101 Keys | ____ | $ 150.00 | _____ |
| 101000 | CCNF Keyboard, 117 Keys | ____ | $ 225.00 | _____ |

ADDITIONAL OPTIONS

PART #	DESCRIPTION	QUANTITY	PRICE	SUB-TOTAL
A8CD11	Add on Single Disk 51.2K Bytes	____	$ 500.00	_____
010044	RS232 Adapter CA Assy.	____	$ 50.00	_____
100986	16K RAM Module (Models 3 & 4 only)	____	$ 750.00	_____
999207	Instruction Manual	____	$ 3.00	_____
999208	Maintenance Manual	____	$ 50.00	_____
999209	Programming and Reference Manual	____	$ 25.00	_____
990001	SofDisk- Formatted (2-pack)	____	$ 20.00	_____
990002	SofDisk- Sampler	____	$ 19.95	_____
990003	SofDisk- Hangman	____	$ 19.95	_____
990004	SofDisk- Othello	____	$ 19.95	_____
990005	SofDisk- Math Tutor	____	$ 19.95	_____
990006	SofDisk- Chess	____	$ 19.95	_____
990007	SofDisk- StarTrek	____	$ 19.95	_____
990008	SofDisk- BlackJack	____	$ 19.95	_____
990009	SofDisk- Cubic Tic-Tac-Toe	____	$ 19.95	_____
990010	SofDisk- Personal Finance Vol. 1	____	$ 19.95	_____
990011	SofDisk- Personal Finance Vol. 2	____	$ 19.95	_____
990012	SofDisk- Bonds and Securities	____	$ 19.95	_____
990013	SofDisk- Equity	____	$ 19.95	_____
990014	SofDisk- Assembler	____	$ 24.95	_____
990015	SofDisk- Text Editor	____	$ 24.95	_____
990016	SofDisk- Personal Data Base	____	$ 29.95	_____
010047	Spare Parts Kit - Analog	____	$ 60.00	_____
010048	Spare Parts Kit - Digital	____	$ 100.00	_____
999001	Freight(unless otherwise specified, all shipments by Air Freight)			

           ($45 per computer, plus 5% on all ADDITIONAL OPTIONS)

California, Georgia, and New York Residents must add sales tax _____

TOTAL   _____

Special Shipping Instructions, if any _____

_____

NAME _____ ADDRESS _____

TELEPHONE # (HOME) _____   _____

(BUSINESS) _____   _____ZIP_____

TERMS--Cash with order.
WARRANTY--90 Days Parts and labor at factory. All warranty repairs are to
be shipped to the factory COLLECT. All returns to the factory must have a
Return Authorization Number, which is obtained by calling (404) 449-5961.
All Computer Programs sold on an "AS IS" basis without warranty.

ORDER MUST BE SIGNED FOR ACCEPTANCE   SIGNATURE
CC217-1178

_____

Compucolor Corporation

Readers --

We have an exciting tournament planned for the West Coast Computer Faire in San Francisco. The Faire takes place on Firday, Saturday and Sunday, May 11-13, and in addition to our well-staffed booth, we will be staging the first official 'Challenge the COMPUCOLOR' Othello tournament. Othello is immensely popular all over the country, and various local competitions are held throughout the year. These are played using the standard Othello board and chips, but for the upcoming tournament, players will be eliminated by the COMPUCOLOR II, instead of by one another. The tournament is sponsored in association with CBS toys, owner of the board game, and there will be prizes of all kinds in addition to the fun and excitement of play. We hope that all of you in the San Francisco area will turn out for this competition, if not to play, then simply to watch. And if you think that you can beat the COMPUCOLOR II with one hand tied behind your back, think again! We have a new, super-duper, street-wise version of OTHELLO that we'll be using for this competition. We may release it later on a Sof-Disk. Stop by our booth for information about our latest products and displays. You can meet some of the Compucolor people with whom you've corresponded, and remember that our area dealers will be there with special demonstrations of their own.
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This Issue's MENU

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We've enclosed a special pass for those of you who plan to attend the NCC (National Computer Conference) in New York city in June. The NCC is considered by many to be **the** most important show of the year, and its draws visitors from all over America. (Many international attendees, too) This pass will get you into the show as our guest absolutely **FREE**. (a $25.00 savings) But not only that, it will obviate any waiting in line. Please note that you must fill out the form and mail it before May 15. You will get your badge by return mail, so send it in without delay. See you there!!

We're sorry about the absence of the usual colorful top border on our ColorCue front page. We've exhausted our entire supply of 'NEWS' paper and are in the process of designing some new ColorCue stationery. If you have any artistic suggestions, send them to us. We hope to get new stationery soon, but in the meantime, pardon our un-colorful appearance.

ASSEMBLER ERROR CODES

The Assembler Sof-Disk, and its companion, the Text Editor, allow you to come up with some unique programs for your COMPUCOLOR II that are faster and more flexible than similar BASIC programs would be. Many people who are using the Assembler have reported great success in completing some interesting applications. Bill Greene, of Byron, Georgia, says that he has enjoyed using the Assmbler, and that it has expanded his machine's capabilities by quite a bit. Bill taught himself Assembly Language in a very short period of time, which is pretty terrific in itself! He's made a couple of **nice** contributions to the Users Library, and we're hoping to get a good article for ColorCue from him in the near future. For Bill Greene and all the other Assembler owners, we've published below a list of all the Assembler Error Codes. Somehow, these were left out of the Assembler Manual, and Assembler users have been getting two-character messages with no way to interpret them!! We will be certain to include these codes in the next printing of the Manual, of course, but in the meantime, accept our apologies and refer to the list below. These errors during the assembly will be indicated by a code in column one of the listing line.

A - Ambiguous reference: reference to a multiply-defined symbol
B - Expression error: an invalid expression was encountered
F - Format error: invalid syntax.
I - Invalid number encounterd in an expression
M - Multiply-defined label or symbol
O - Invalid opcode encountered.
P - Phase error: Label or symbol has different value on pass 2 than on pass 1
R - Invalid register specified enoutered.
T - Symbol table overflow (insufficient RAM)
U - Reference to an undefined label or symbol encountered
V - Overflow during expression evaluation
Z - Missing end statement

ARTS AND CRAFTS DEPT.
Dust Cover

The following article was submitted by Bob Bennett of Anchorage, Alaska. This non-programming piece is something a little different for ColorCue, and we appreciate Bob's sending it in.

Here's a neat idea for you COMPUCOLOR II owners who can wield a needle and thread -- a dust cover for your computer. The COMPUCOLOR II, designed for use in the home environment, is subject to a wide variety of ills which would worry even the largest of computers. Most homes, for instance, have no air conditioning, air filtration system, or humidifying controls. In the absence of such environmental controls which larger computers are protected with, the COMPUCOLOR II can be protected with a homemade dust cover. The sewing pattern for such a dust cover is found below. When constructed of nylon or other water resistant material, this cover not only protects the keyboard and computer from dust, but also gives some protection against other accidents such as spills, leaking roofs, etc. when the machine is not in use. The cover is made of three pieces which when sewn together form a pleasing and functional cover for the COMPUCOLOR II.

To protect and extend the life of your computer, this cover can be placed over both the keyboard and the monitor after each session.

When putting the dust cover together, note that all seams are a standard 5/8 inch, and there is a 5/8 inch hem allowance at the bottom. The long edge of the center piece is stitched to the edge of the side-panel represented by a single line. All double lines denote an edge to be hemmed. To make construction easier, mark each long edge of the center piece with tailor tacks or chalk at the intervals shown. Mark the corresponding dots of each side piece. Pin, matching dots, and stitch. Clip seams at corners. If you use a washable fabric, be sure to wash it first to reduce shrinking.

Fabric Requirements: 1 1/2 yards @ 45"   1 yard @ 60"
Fabric Suggestions: denim, duck, (treat with ZEPEL) or any tightly woven nylon fabrics.
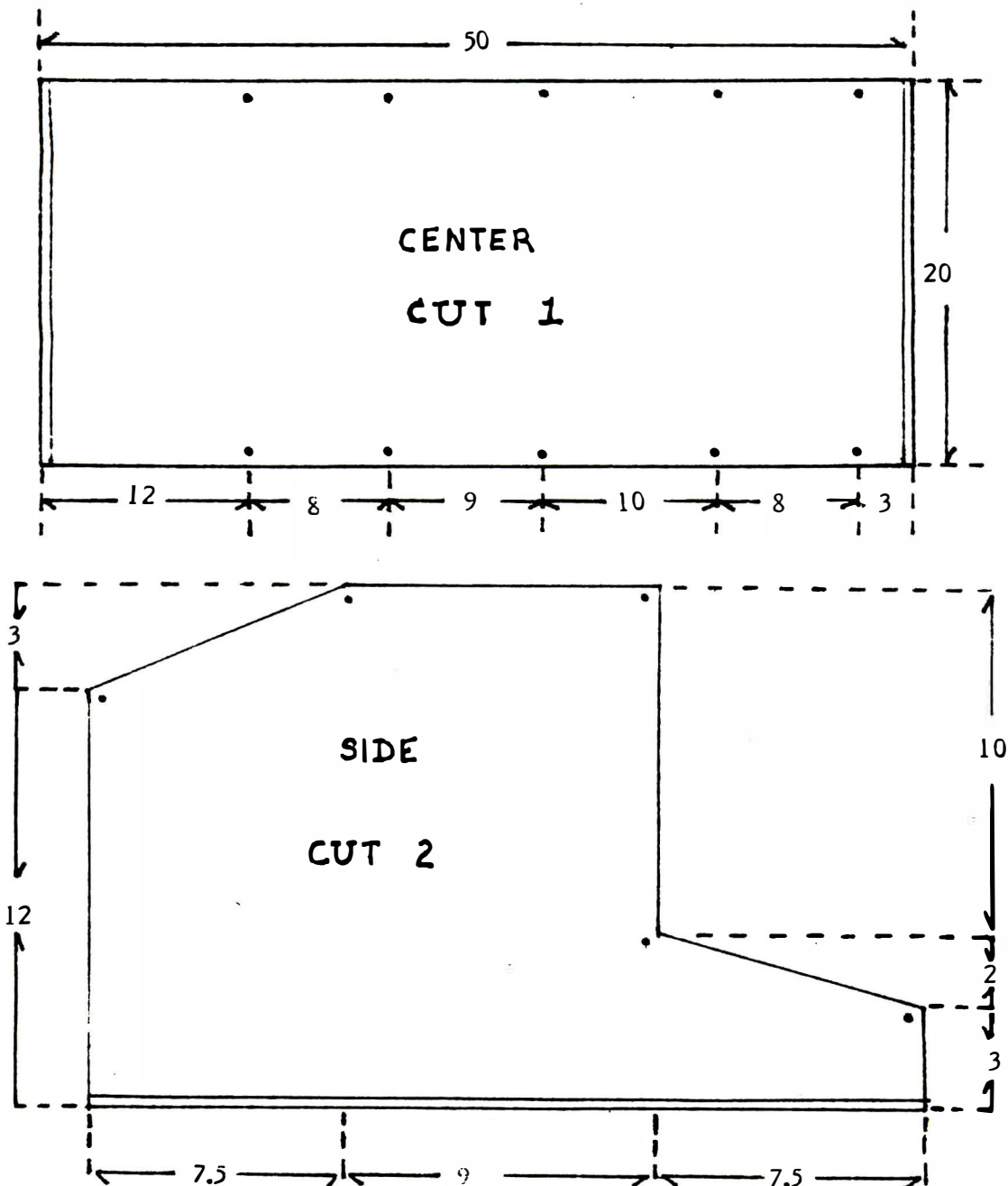
KEEPING IT SIMPLE
Generating Keywords

The Deluxe and Extended keyboards allow you to save keystrokes when programming because they have special command and function keys which print out BASIC keywords. Many of these codes can be simulated on the standard keyboard. Carl Hennig, of the University of Waterloo, in Ontario, Canada, has prepared the following list of codes that can be used to generate keywords. Many keywords are generated by pressing the CONTROL key at the same time as a character. These operate in the same way on all keyboards. All characters that are not preceded by CTRL use the COMMAND key. This can be simulated on the Standard keyboard by pressing the 'SHIFT' and 'CONTROL' keys simultaneously.

ABS	CTRL 0		NEXT		B	
AND	9		NOT		2	
ATN	,		OUT		P	
CALL	CTRL 1		PLOT		R	
CLEAR	Y		POKE		U	
CONT	X		POS	CTRL	4	
COS	CTRL 9		PRINT		V	
DATA	C		PUT		Q	
DEF	Z		READ		F	
DIM	E		REM		N	A7 ON
END	@		RESTORE		K	ERASE LINE
FILE	G		RETURN		M	RETURN
FN	_ (CRT)		RND	CTRL	6	
FRE	CTRL 2		RUN		I	TAB
GET	O		SAVE		S	
GOSUB	L ERASE PAGE		SGN	CTRL	.	
GOTO	H HOME CURSOR		SIN	CTRL	:	
INP	CTRL 3		SPC(		0	
INPUT	D		SQR	CTRL	5	
INT	CTRL /		STEP		3	
LEN	>		STR$		/	
LIST	W		TAB(		FG ON	
LOAD	T		TAN	CTRL	;	
LOG	CTRL 7		THEN		1	
			WAIT		ESC	

Since you can generate all of these codes on the Standard keyboard, why get the Extended or Deluxe keyboard? The Deluxe keyboard has some special function keys whose codes can only be generated by the Standard keyboard if you are in Plot Mode. In any other mode, only the Deluxe keyboard has this capability. As for the Extended keyboard, it really saves in keystrokes, and all of you midnight hackers know how much trouble it is to hit two keys instead of just one. We also recommend the Extended or Deluxe keyboards since they make the colors easier to learn and use. And anyone using the COMPUCOLOR II for accounting purposes (or even for the Checkbook program) will appreciate the convenience of the number pad!

ADVANCED APPLICATION
Linked Lists, Part II

We've gotten many appreciative remarks about A. E. (a.k.a. 'Al') Williams' article on Linked Lists which appeared in last month's ColorCue. Here's the second part of that article, which completes the intoduction to this topic. Again, our thanks to Al for his time and energy!


LINKED LISTS
(Part II: Improved Linked Lists)

Part I (March, 1979, ColorCue) discussed the concept of sequencing a file on a key logically, rather than physically, by using a "link field" in each record to show the physical location of the next record. This article will highlight some improvements to the basic techniques, noting exactly what is improved and how.
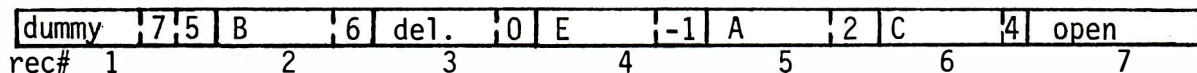
One problem with the basic routines given in Part I is that deleted records are kept as part of the record chain. This means that they will be re-read every time the file is retrieved sequentially, requiring extra processing time for no useful product. Moreover, they take up file space which could be used for other records, perhaps leading to requirements for more frequent file reorganizations.

Let's consider these two problems one at a time. Once again, the link field comes to our rescue in solving the first difficulty. We simply must save the record address of the last record retrieved in logical sequence (i.e., retrieved by link rather than physical sequence) before the record to be deleted (which will also be the physically previous record if its link field was zero.) If the link field of the deleted record is zero, we set the link field of the record whose number we save to the record number of the deleted record plus 1. If the deleted record's link is nonzero, we move it to the link field of the preceding logical record (whose number we saved.) You can see that, in either case, the deleted record is removed from the logical chain, eliminating the need to process it in reading the file sequentially, since following the link of the preceding logical record will cause the deleted record to be skipped.

For example, consider the file pictured in the following diagram:

dummy	7	5	B		6	D		0	E		-1	A		2	C		3	open	
rec# 1				2			3			4			5			6			7
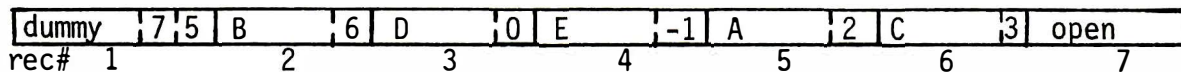
a. File before deletion of record D

dummy	7	5	B		6	del.		0	E		-1	A		2	C		4	open	
rec# 1				2			3			4			5			6			7

b. File after deletion of record D

To delete record D, we read the file sequentially by link (i.e., by ascending key) saving the FCS record number of the last record read prior to each new GET, until we reach D. At this time the saved record number should be 6, corresponding to record C. (If you don't understand why this is so, please review Part I of this article.) Because the link field of the deleted record, D, is zero, we merely add 1 to the FCS record number of the deletion, giving 4. This value is plugged into the link field of record 6, the record whose number we saved because it was retrieved last. Had the link field of D been nonzero, we would have moved it to record 6's link field instead. Since no record points to record 3 any longer, it will never be retrieved.

Notice that we could have avoided the need to save the number of the last logical record if each record had, in addition to its normal _forward_ link, a "backward" link pointing to its logical predecessor. Files so structured are called _two-way_ linked lists. Notice also, however, that two-way linked lists are harder to build, and require us to retrieve more records to make additions and deletions, since we must also update the forward link of the record preceding and the backward link of the record following (as well, for additions, as both link fields in the record being added.)

So far, so good--we've eliminated needlessly reading deleted records. Now how about reclaiming the space they take up?

We can do this by building a separate linked list (called the _free_ _list_) from all the unused record spaces when the file is created; that is, we zero the link fields in all unused records except the last, which we give a negative value to denote "end of list." We now interpret the "first available record" field on the dummy as a _free_ _list_ _pointer_, containing the number of the first record on the free list.

When a record is deleted, we simply add it to the "top" of the free list by moving the old free list pointer from the dummy to its link field and plugging its record number into the dummy as the new free list pointer. If, on the other hand, we need a record for an add, we use the record the free list pointer points to. How the free list pointer is updated depends on the link field of the record picked from the top of the list: if it was zero, we place the record's number plus 1 into the free list pointer; if it was nonzero, the link field is made the new free list pointer (that is, we follow the link of the record being removed from the free list to the next open record space, and make that the "top" of the free list.) If the free list pointer eventually has a negative "end of list" value plugged into it, the file is completely out of space, and deletions must be made, or the file expanded, before more records can be added.

If you've thoroughly read and digested the two parts of this article, you now understand linked list basic principles very well, and can apply them to creating more efficient file structures. For example, you could structure a file as a number of smaller linked lists, each with a separate pointer on the dummy; with this technique, you could partition a large, alphabetically keyed file into 26 linked lists, each with its own pointer--one for the A's, one for the B's, etc. Why? With this scheme, you can search for the "Murphy" record, for example, by reading only the "M" chain, thereby avoiding the necessity of reading Abramson's, Baker's, and Cook's records to find it; obviously, this will lead to much reduced processing time on the average.

Because this installment's material is derived rather straightforwardly from the material presented in Part I, I have chosen not to include BASIC listings covering the new ground we've explored. Nevertheless, I'd be more than happy to answer any questions you may have about linked list concepts in a future edition of _ColorCue_.

SOFTWARE EXPLAINED
The Personal Data Base

A lot of you who know what a Data Base is have been waiting anxiously for ours to come out. And a lot of you who don't know what a Data Base is have been asking 'What's it for?' The Personal Data Base is almost ready for release. We are in the process of reviewing the documentation to make sure it's complete and easy to use. We expect the Sof-Disk album to be shipped starting May 15.

A 'Data Base' is a computer system that allows the user to store data that is arranged as a number of different entries that have the same form. For example, if you were to record a list of addresses, you would see that although each individual piece of information is different, each address is written in approximately the same form as all other addresses. The data base allows you to specify a format for entering data. Once the data is stored, you can retrieve it, print it, update it, or change it as you choose.

Most businesses use some kind of data base to store their records. Here at Compucolor Corporation, we use a data base system to keep track of employees, print shipping labels, keep our dealer's addresses current -- the data base is what we use to store and print the labels for ColorCue! Until recently, data bases were only available on very large computers, but technological advances in the 1st few years have permitted implementation of data bases on microcomputers. The COMPUCOLOR II's Personal Data Base is intended primarily for use in the home. As you experiment with it, you will find many ways to make it useful. You can keep track of your personal library; create a household inventory for insurance purposes; or put your address book on the computer. A Sof-Disk is a much more convenient method of storage than the loose papers and lists is replaces.

The Data Base is easy to learn to use. For each kind of data you want to store, you set up a new data storage format. Once this format is recorded, it is a simple matter to enter existing data in response to the program's prompts. When you specify the data format, you tell the program how many characters will be in each line of information, and how many lines of information you will save for each record. A set-up for a list of addresses might look like this:

```
NAME     A 25
ADDRESSA 25
CITY     A 15
STATE    A 5
ZIP      A 7
```

The 'A' indicates that the entry will be alphanumeric. You can use 'N' to specify numeric fields. When the format is entered, you can choose the number of records you will store on the disk, and then you enter all of the information that was previously stored on paper. While you are doing the entry, the Data Base program has many convenient features that allow you to see at a glance how many records you have entered, whether or not a name is already in the file, how much space is left on the disk, and much more. The Data Base allows you to update records (we use this to change expiration dates when ColorCue subscriptions are extended), make changes in your file, delete records, or see a quick listing of the first entry in all the records so far entered. Once your information is stored, you can print out information in any form you choose. You can sort by any one of the fields, and then print in any fashion you choose. Using the example above, you might want to sort by zip codes and then print labels in this form:

NAME
ADDRESS
CITY   STATE   ZIP

The Data Base will do all of this simply and automatically. Those of you who are using the COMPUCOLOR II for your businesses may find the Data Base useful for mailing lists, employee files, or inventories.

The Data Base will be shipped starting the second week of May, so place your orders now. Those of you who have already placed orders will receive your Sof-Disks in about two weeks. The price of the Data Base is $29.95, and that includes a manual with detailed instructions for using it. You need 16K to use the program. Order part #990016.

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Playing Cards

This month's SOFTWARE EXPLAINED column has a second feature. Many of you who are writing your own game programs have been searching through listings of our Sof-Disks to find programming techniques to help you. That's a good way to learn more about BASIC and to save yourself some time. Often you can incorporate routines that we have already devised into your own programs, or you can see an example of how to approach a specific problem. We've gotten several calls from users who want to use the playing cards that we have drawn for games like BlackJack, but it seems that the lines of code are hard to find. The following program shows you exactly how it's done.

```
100 REM HOW TO MAKE A CARD
200 REM THIS PROGRAM PRINTS THE THREE OF SPADES
500 PLOT 12,15
750 PRINT THE TOP EDGE OF THE CARD
1000 PLOT 6,7: REM SET FOREGROUND WHITE
1025 PLOT 29, 244: REM PRINT UPPER LEFT CORNER
1050 PLOT 6,56: REM SET BACKGROUND WHITE
1075 FOR I=0 TO 8: REM PRINT INTERIOR OF UPPER EDGE
1100 PLOT 32
1125 NEXT
1150 PLOT 6,7: REM SET FOREGROUND WHITE
1175 PLOT 245: REM PRINT UPPER RIGHT CORNER
1200 PRINT
1500 REM PRINT INTERIOR OF CARD (BLANK)
2000 PLOT 6,56
2025 FOR I=0 TO 11
2050 PRINT"           ":REM (11 SPACES)
2075 NEXT
2500 REM PRINT THE BOTTOM EDGE OF CARD
3000 PLOT 6,7: REM SET FOREGROUND WHITE
3025 PLOT 29,246: REM LOWER LEFT CORNER
3050 PLOT 6,56: REM PRINT INTERIOR BOTTOM EDGE
3075 FOR I=0 TO 8: REM PRINT INTERIOR OF BOTTOM EDGE
3100 PLOT 32
3125 NEXT
3150 PLOT 6,7:REM SET FOREGROUND WHITE
3175 PLOT 247:REM PRINT LOWER RIGHT CORNER
3200 PRINT
```

```
3225 PLOT 6,56:REM SET BACKGROUND WHITE
3500 REM PRINT FACE OF THE CARD
4000 PLOT 3,0,1: PRINT 3: REM PRINT PIPS (3)
4025 PLOT 3,8,12: PRINT 3
4050 PLOT 3,1,2,243: REM PRINT SMALL SUIT SYMBOLS
4075 PLOT 3,9,11,243
4100 PLOT 14: REM SET LARGE CHARACTER SIZE
4125 PLOT 3,5,2,243: REM PRINT LARGE SUIT SYMBOLS
4150 PLOT 3,5,6,243
4175 PLOT 3,5,10,243
4200 PLOT 15,6,2: REM RESET SMALL CHARACTERs AND GREEN FOREGROUND
4225 PRINT:PRINT:PRINT
5000 END
```

This program is very easy to understand, -- even beginners can follow the well-commented code. You can use this program as a pattern for drawing other cards, or as a start for developing a program that will deal and draw random cards.

COMMENTS AND CORRECTIONS

An interesting occurrence in California led us to the discovery of a bug in the Biorhythms program. An 82 year-old man walked into Penninsula Office Supply (one of our dealers in California) and started to play with the COMPUCOLOR II. When he ran the Biorhythms program, and it told him the day of his birth, he insisted that the machine was wrong. Luc Serriere, Penninsula's manager, was not sure what to think. He had used the program many times and knew that if the COMPUCOLOR II says you were born on a Saturday, you **were** born on a Saturday! Closer inspection disclosed that the program adjusts for leap years only every four years. You probably know that at the end of every year, an extra portion of a day accumulates, which is equal to slightly less than 1/4 day. The formula for correcting for the extra portion of a day that collects at the end of every year is to add one day:

once every four years
except every 100 years
except every 400 years
except every . . .

Because the man's birthday fell before 1900, the program had added an extra day to his life! It had failed to make the 'except every 100 years' correction, and had counted February 29, 1900 (a day that never existed) as part of the man's life. Can anyone suggest a line to insert in Biorhythms to correct this?

****

Many of you have requested information about adding memory to your machines. If you have an 8K machine and wish to update to 16K, you must send us the logic board. The cost is $300 (plus 5% shipping and handling). Ask for part # 100964 (16K Logic Assembly). But check with your dealer first. He may be able to do it right at his store. If you wish to update from 8K to 32K, you must first have your COMPUCOLOR II updated to 16K, and then the 16K add-on RAM can be installed. The total price for this

expansion is $600. Those of you who have 16K machines can add another 16K simply and easily with the piggyback RAM which costs $400. You do not need to send anything to us. Just order part #100986 and it can be quickly installed. Again, check with your dealer. Many dealers have these parts in stock and can expand your memory in just a few minutes!

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Last month's issue contained information about a half-tone character for producing color shadings. We referred to it as the 'null' character, which it is. But, we told you that it could be formed with the DELETE key, which it cannot. The key labelled 'NULL @' is the 'checkerboard' key.

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We appreciate all the **terrific** letters we've been getting from our readers across the country. We are sorry for the delay in responding to your letters, but they are all answered personally by the ColorCue staff, and it takes us a little while! Your comments and suggestions, as well as your words of encouragement and praise, help make ColorCue a responsive newsletter. We try to work in your requests for articles, and hope we are meeting your needs. If you have an idea, an article to send in, a suggestion, or just a question, write to us at:

Compucolor Corporation
P.O. Box 569
Norcross, GA 30071

ATTN: Susan G. Sheridan

Readers --

This issue has been somewhat delayed because our staff has been travelling to the various summer trade shows, but we've returned with some terrific new products that we'll describe in this issue. The shows left us all with feelings of exhilaration and exhaustion, but each show's special flavor made it worth the effort.

4th West Coast Computer Faire (San Francisco) -- a super show!! Our OTHELLO tournament was a success, and the COMPUCOLOR II defeated around 50% of the participants, although the winner was not a COMPUCOLOR II owner (big disappointment!). It was a real pleasure to meet so many COMPUCOLOR II owners and ColorCue readers. After much correspondence by paper and ink, it was fun to finally assign faces to the personalities met by mail. Our thanks to all of you who came to say 'hi' and share your ideas and comments.

Consumer Electronics Show (Chicago) -- this show is mostly for dealers rather than consumers, but we were glad to see a few of you sneak in! We introduced a couple of new things at this show that you'll all be glad to see.
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This Issue's MENU

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National Computer Conference (New York) -- as the biggest show of the year for all computer manufacturers, this was the highlight of the season. Last minute changes in plans prevented any of the ColorCue staffers from attending, but those of you who did visit were met by our full complement of technicians, software experts, and wily salespeople. We came back with sales leads by the sackful, and something tells us that any COMPUCOLOR II owners who feel a little lonely won't be lonely much longer!

At all three shows, interest in the product was higher than ever, and we've noticed some changes in the consumers as compared to last year. People are more aware than ever of what's available and what's possible. No longer restricted to hobbyists, the range of people interested in personal computing gets wider and wider. We at Compucolor Corporation welcome this increased public awareness, since we think the COMPUCOLOR II has the best price/performance ratio available in the market. With more people more able to thoroughly investigate the equipment before they buy, we expect COMPUCOLOR II sales to skyrocket! We've been making great inroads in the educational market, and have sold numerous computers to school systems across the country.

We've decided to do a combined MAY/JUNE issue for several reasons which we think are good ones. Now some of you may think that we are trying to gyp you out of an issue of ColorCue, but of course that's not so. If you count the number of pages in this issue, you will see that it is double our usual number, and contains easily as much information as two regular issues. ColorCue is generated on a computer, and the file sizes average around 89 (HEX). This ColorCue has a file size of 10A, and those of you with 16 fingers can easily calculate that this is a BIG issue. Summer is vacation time for most of you, and it's no different with us. So we decided to just put all our ideas together and send out this super 'vacation' issue. There's plenty of info included herein, and you should all be kept busy for hours.

We are sorry to report that Susan G. Sheridan, who has been ColorCue's author for the 9 months that it has been in existence, is headed for the rainy skies of the Pacific Northwest, where she will be pursuing a freelance writing career. Even though she is one of ColorCue's most ardent fans (naturally enough!) it is not possble to generate a newsletter about a product when there's a 3000 mile separation from that product. Susan wishes to thank all of the readers who have contributed so much to the formation and continuation of ColorCue. Despite the change in venue, she hopes to maintain contact with the product, and she has craftily inserted her name and new address into the Data Base file that makes the ColorCue mailing labels!

Of course, our losing Susan will mean that we must depend even more on your support for ColorCue. We'll be introducing our new editor in the next issue, and you can then begin addressing your ColorCue correspondence to the new writer. In the meantime, simply use the company address and make the notation 'ATTN:ColorCue' somewhere on the envelope. Remember that we are still looking for articles, and are willing to trade ColorCue subscriptons or Sof-Disk Albums for the ones that we publish.

We receive numerous phone calls from our readers, and all their questions and ideas contribute to ColorCue's success. We don't want to put a damper on your enthusiasm, but it is very helpful if you submit these ideas to us in writing because;

1. We can answer the most frequently asked questions in ColorCue instead of individually. You still get the answers, but we save lots of time.

2. It's easier to convince the Management that there is a demand for a product or program, or that a problem exists if we can show it to them in writing.

3. Your ColorCue editor can spend more time writing, instead of talking on the phone.

If you have specific questions, we recommend that you see your dealer first. He has an excellent knowledge of the COMPUCOLOR II and can solve most problems very quickly. If you still can't resolve a problem, them pleae do feel free to call us. If it's a technical problem ask for Ron or Carl in Customer Service. If it's software, then Bruce or Ken will be happy to help.

ADVANCED APPLICATION
    Changing the Directory Name

Jever (that's Southern for 'did you ever') want to change the name at the top of your Sof-Disk directory? Maybe you never even thought about its being possible. Of course, you know that you can do it by intitializing the disk. But this does have the disadvatage of destorying the rest of the Directory, so of course you can no longer access any of the programs. Being able to insert a new name onto a disk can be quite useful. Wouldn't it be convenient to label each disk by the last date on which you used it? Or how about the time you started writing a space war game, but it eventually turned out to be a game that simulated the Hundred Years War and your disk was still labelled 'MARTIAN'? The following program will solve these pressing problems.
The program works by loading the first block of the disk into memory. This is the block which contains the Directory name. This program replaces the current name (4th through 13th bytes) with the new name and puts the changed block back on the disk. Notice that the program moves the end of BASIC to provide space for the first block of the directory to be read into. At the end of the program we turn this pointer back to its previous value.
There are a couple of interesting things that you can do with this program that are normally not possible. When you initialize a disk, you can not have spaces or special characters in the disk name. This program allows you to do anything except exceed the 10 characters maximum for the disk name. This means that you can put the directory name in any color (even in blink if you wish) and include spaces.

```
100 REM   ** CHANGE DIRECTORY NAME **
110 REM
120 REM   ** MOVE END OF BASIC BACK 130 BYTES
130 AD= PEEK (32941)* 256+ PEEK (32940):AD= AD- 130
140 POKE 32941, INT (AD/ 256):POKE 32940,AD- INT (AD/ 256)* 256
150 CLEAR 200
160 REM
170 REM   ** FIND NEW END OF BASIC
180 AD= PEEK (32941)* 256+ PEEK (32940):A= AD+ 1
190 REM
200 REM ** CONVERT ADDRESS TO HEX
210 V= INT (A/ 4096):A= A- V* 4096:GOSUB 250
220 V= INT (A/ 256):A= A- V* 256:GOSUB 250
230 V= INT (A/ 16):A= A- V* 16:GOSUB 250
240 V= INT (A):A= A- V:GOSUB 250:GOTO 330
250 IF V< 10THEN ADR$= ADR$+ RIGHT$ (STR$ (V),1)
260 IF V= 10THEN ADR$= ADR$+ "A"
270 IF V= 11THEN ADR$= ADR$+ "B"
280 IF V= 12THEN ADR$= ADR$+ "C"
290 IF V= 13THEN ADR$= ADR$+ "D"
300 IF V= 14THEN ADR$= ADR$+ "E"
310 IF V= 15THEN ADR$= ADR$+ "F"
320 RETURN
330 REM
340 REM ** READ FIRST BLOCK OF DISK INTO MEMORY
350 PLOT 27,4:PRINT "READ 0 "+ ADR$+ " 0080":PLOT  27,27
360 REM
370 REM ** FIND THE CURRENT DIRECTORY NAME
380 FOR I= AD+ 4TO AD+ 13:X= PEEK (I):N$= N$+ CHR$ (X):NEXT I
390 PRINT
400 PRINT "THE CURRENT DISK NAME IS: ";N$:PRINT
410 REM
420 REM ** REPLACE OLD NAME WITH NEW NAME
430 INPUT "ENTER THE DESIRED NEW NAME: ";S$
440 IF S$= "0"OR S$= ""THEN 530
450 IF LEN (S$)> 10THEN PRINT "NAME TOO LONG":GOTO 430
460 S$= S$+ "          ":J= 0
470 FOR I= AD+ 4TO AD+ 13:J= J+ 1
480 X= ASC (MID$ (S$,J,1)):POKE I,X:NEXT I
490 REM
500 REM ** WRITE THE BLOCK BACK TO THE DISK
510 PLOT 27,4:PRINT "WRITE 0 "+ ADR$+ " 0080":PLOT  27,27
520 REM
530 REM ** PUT END OF BASIC BACK WHERE IT WAS
540 AD= AD+ 130
550 POKE 32941, INT (AD/ 256):POKE 32940,AD- INT (AD/ 256)* 256
560 CLEAR 100
```

KEEPING IT SIMPLE
Factoring Numbers by Computer

This month's selection was sent to us by Jamie Lynn Barlow of Rochester, NY. Her program demonstrates an important element of programming -- the development of a sound algorithm. Factoring numbers is not extremely difficult, but it can be approached in several ways. The approach that Jamie uses leads to a simple, concise program. It is vital that you thoroughly think through the idea and method behind a program before you start to actually write any code. After all, programming is simply a matter of translating an idea into a series of messages understood by the computer. If the original concept is sound, the translation will be smooth, straightforward and effective. Says Jamie Lynn:

I developed this program to help myself in seventh grade mathematics. We were doing prime factorization and I needed some help. My Dad suggested that we design a program to factor any number you chose. This is what the "FACT" program does. Then we decided that it wouldn't be too hard to design a program that told you whether the nubmer you chose was a prime. If it was not a prime, it would list the factors. This program is called "FACT2".

Statement 10 of the FACT program asks you for a number. Line 20 controls the searching or looking for factors. Statement 30 determines which numbers are factors, by dividing the number you chose by all possible factors. When it finds a number that goes in evenly, it will list it as a factor. Statement 40 steps to the next possible factor, and when all possible factors have been investigated, it goes to statement 50 which goes back to the beginning and asks for another number to factor.

FACT2 uses the same method as FACT does except that FACT2 counts the number of factors the chosen number has. If the counter only counts two factors after all possible factors have been divided, it will print "I'M PRIME" because only prime numbers have just two factors.

I have no background in computers or computing to tell abut. Computers have always interested me, but until a few months ago, I never had a chance to actually use one. I found that computing on a machine can vary from very simple programs to extremely difficult, hard to put together ones. Both of these programs are in BASIC and can be used on the COMPUCOLOR II and other BASIC machines.

FACT listing:

```
10 INPUT "NUM";X
20 FOR F=1 TO X
30 IF X/F = INT(X/F) THEN PRINT F
40 NEXT F
50 GOTO 10
```

EXAMPLES:

```
NUMBER? 512
1   512
2   256
4   128
8   64
16  32
```

FACT2 listing:

```
10 INPUT "NUMBER?  ";X
15 CTR=0
20 FOR F=1 TO SQR(X)
30 IF X/F = INT(X/F) THEN PRINT F,X/F: CTR=CTR+2
40 NEXT F
50 IF CTR=2 THEN PRINT "I'M PRIME"
55 PRINT
60 GOTO 10
```

```
NUMBER? 487
1   487
I'M PRIME
```

****

COMMENTS AND CORRECTIONS

True to the promise made in last month's ColorCue, the Personal Data Base has been shipped. All back orders have been filled, and new orders are currently being taken. The new form for the documentation has been very well received, with several nice letters and phone calls about it. If you haven't seen it, why not order one of our new Sof-Disks, such as Statistics or Personal Finance I? They both have the special new documentation. We were in a hurry to ship the Personal Data Base (since some of you have been waiting since. . .) and we left out a few things in the documentation. To correct this, we've enclosed with each one a brief sheet with a few comments on it. At one point on this sheet we refer you to the 'penultimate paragraph' where you are to insert a phrase. Our Product Line Manager says that this will send everyone scurrying to his dictionary to find out that 'penultimate' means 'next to the last', and in he interest of simplicity he suggested that it be changed. But the powers that be in Technical Publications insist that 'next to the last' is inelegant and wordy, while 'penultimate' is concise and correct. In any case, the meaning is hereby made clear, and no one can say that COMPUCOLOR II ownership isn't educational!

APPEND

In the APR ColorCue we had a very nice program which appended together two BASIC programs and formed them into a single program. The only problem with it is that it doesn't work. Gasp! Most of you know that our parent company, ISC, manufactures several different models of terminals and computers. These machines are similar to the COMPUCOLOR II, but not identical, and although the routine we presented works just dandy on most of our products, it doesn't work properly on the COMPUCOLOR II because of a slight difference in the system software. The programmer who gave us the original non-functional APPEND routine was chained to his COMPUCOLOR II until he came up with a routine that does append two programs. This is a little messier than the first routine, but at least it works! You will need to use the LADR and SADR directory entries to make this routine work. Follow this sequence:

1. ESC D

2. FCS>DIR

FILENAME	LADR	SADR
PROG1.BAS	U	V
PROG2.BAS	X	Y

3. compute $\quad$ W = V - 2

$\quad\quad\quad\quad\quad$ Z = V - 2 + Y - X

$\quad\quad\quad\quad\quad$ (all values in hex)

4. FCS>LOAD PROG1.BAS U

5. FCS>LOAD PROG1.BAS W

6. FCS>SAVE TEMP.BAS U-Z $\quad\quad$ (Do not compute the value U-Z. Enter the two numbers separated by a minus sign. For example: SAVE TEMP.BAS 829A-85CF)

7. ESC E (back to BASIC)

8. LOAD"TEMP"

9. ESC D (back to FCS)

10. FCS>DEL TEMP.BAS;01

11. ESC E (back to BASIC)

12. SAVE"PROG3"

This will require that you polish up your algebra just a little bit in order to perform the calculations. You will also have to keep the hex values straight. Remember that, for example, 9A - 2 = 98. A HEX calculator is a handy thing to have, so why not try writing a short program to calculate the conversions for you, as many users have done.

DRAWING BOARD

There are so many new things this month that it's hard to know where to begin. First, we now have a clever device that brings a long-awaited feature to the COMPUCOLOR II -- **sound!** It is not a voice simulator, but rather the sort of sound that lets you add special effects to programs or write your own music by computer. The option is called 'Soundware', and it plugs into the RS-232 port via an included connector. The system consists of a speaker that sits on top of your COMPUCOLOR II, and a disk that contains the special Soundware programs. Soundware offers many possibilities. There are a lot of sounds already created for you, such as sirens, saucers, lasers, and everybody's favorite -- chipmunks! Soundware also has a composer program that lets you specify pitch and duration to

Demo

39.50-99

create your own tunes and tones. The speaker's volume is dial-adjustable, and everything you need to put sound on your COMPUCOLOR II is included in the Soundware package. The price is $50.00 Ask your dealer about this new feature.

39.99

This month we are releasing something that has been requested by almost everyone at one time or another -- lower case characters. Those of you who use the computer to type letters on upper and lower case printers will find this very useful. We have a special way of adding lower case that makes it even more attractive. You know that instead of lower case, all COMPUCOLOR II's currently have a special graphics character set that is used in many applications programs, such as CHESS and BLACKJACK. The lower case character option doesn't eliminate this capability from your machine because the addition is made by a hardware switch that is installed at the lower right of the machine. You can flip back and forth from lower case to graphics characters with just the touch of a toggle. You will have to have this option installed by your dealer or at the factory.

We are in the process of selecting a modem and a printer to be used on the COMPUCOLOR II and marketed through Compucolor Corporation. Choosing a printer presents lots of price/performance dilemmas, since it seems that everyone has a different idea of just how sophisticated a printer should be. But we think we'll make a good choice, and it will be ready for sale in September. Both the printer and the modem will be modified so that they plug directly into the COMPUCOLOR II and require no special modifications or handlers.

Software-wise there are some new goodies on the horizon. We've been promising the Statistics packages for some time, and Volume I will be shipped within a couple weeks, with volumes II and III following close behind at intervals of about one week. They include regression, time series analysis, and curve fitting. These programs are definitely not for the average consumer, but cur market surveys tell us that many of you are mathematicians, statisticians, students, and others that would have use of such programs. And we're trying hard to produce the kind of software that you want to see. So if any of you have suggestions or ideas, write to us and let us know. Personal Finance Volume I will be ready for shipment at the beginning of next month. Many of you have this disk, which contains programs to calculate annuities, on backorder, so be looking for it soon.

Those who saw it at the various shows agree that FREDI, our BASIC text editor program, is a superlative effort. FREDI's capabilities will make BASIC programming much easier, because they allow you to correct errors, search for various commands or variables, insert and renumber lines, and much more. It is very easy to use, with simple one-letter commands that perform whatever function you choose.

L -- Lists a BASIC program starting at a selected line number.
L AND SEARCH -- allows you to search for the occurrence of any variable,
  string, command or color; then lists all pertinent lines. Makes short
  work of debugging.
E -- Edit any line number
M -- Moves a line to a new location, where it can be edited or left
  unchanged.
D -- Deletes any specified range of line numbers
I -- Inserts a line number
A -- Automatically numbers inserted lines. You specify the starting line
  number and the desired increments.
B -- Transfers control back to BASIC. The edited program can now be saved
  or run. If other changes are required, an ESC sequence transfers back
  to the editor.

Another super feature of FREDI is that it comes on a Sof-Disk Album with
several other BASIC utilities that all programmers will find useful at one
time or another. There is a program called REMPAC that saves space in a
program by removing all the REM statements, and there is another program,
COMPAC, that removes all the blank spaces. The disk also includes MERGE,
wich merges two BASIC programs together, automatically interlacing the line
numbers to create an entirely new program. And, as many of you have
requested, we are including on this disk RENUM, our program renumbering
routine. RENUM allows you to specify the starting line number and the
value of the increment. It also allows you to selectively renumber any
portion of a program by specifying starting and ending line numbers in the
original program. This BASIC Utilities Sof-Disk is priced at $29.95, and
with what is contained on the disk, we feel that this is a real bargain.
It will be ready for shipment in late July, and we are currently taking
orders, so contact your dealer.

The most sophisticated users and those with some very special
applications frequently request a COMPUCOLOR II System Listing, and in our
effort to be responsive, we are now making this Listing avialable to users.
The price is $100. The listing provides information about the CRT mode and
the File Control System, and some of you have expressed a need for ths
information. Since the version of BASIC used on the COMPUCOLOR II is owned
by MICROSOFT, this is proprietary information and is not included in the
System Listing. The disk handler routine is also omitted from the listing
because of our reserved proprietorship.

SOFTWARE FILES

Recently, submissions to this department have been up, but we seem to
keep seeing 90% of the programs from 3% of the users. We know that the
rest of you are not just sitting idle, so how about sending in some of your
programs to let us have a look. A good program will net you a couple
Sof-Disks or other users' programs as a trade; and a great program could
get you several hundred dollars. Or, if you prefer, we can arrange a
royalty plan whereby you are paid a percentage of the profit from each disk

sold!   This is a way to turn a potentially unlimited profit from your programming efforts.   At any rate, it's worth a try.   Let's see what you've got.   Send all submissions to the address below:

Compucolor Corporation
P.O. Box 569
Norcross, GA   30071

ATTN: User Software Files

A HAZARD TO THE COMPUCOLOR'S HEALTH

You may be just a little bored by all the bad news about cigarette smoking, but brace yourself, because we've got some more for you.   The particles released in tobacco smoke are so small that they can easily get on your Sof-Disks and inside your disk drive.   These particles can fit between the disk and the surface of the drive head, where they can actually interfere with the drive's ability to properly read a disk.   Those of you who are heavy smokers might do well to make an effort to cut down a bit while using your COMPUCOLOR II.   And of course you should keep your Sof-Disks out of smoke-filled rooms if possible.

Now, for smokers and non-smokers alike -- please treat your Sof-Disks kindly!   On the back of each Sof-Disk cover is a list of do's and do not's about Sof-Disk care.   Be sure to read this over and handle your disks accordingly.   Most of you are careful, but occaisionally we do get requests for an exchange on a disk that suspiciously bears the imprint of Rover's dentition.   We've also seen the kind of disks that have obviously been stored next to the fireplace and look something like Dali's watches.   All of our Sof-Disks are very carefully manufacutered and tested here at Compucolor Corpration, but if, in spite of your T.L.C., a disk gives you problems within 30 days of purchase, you may return it to us or to your dealer for replacement.   Note that this warranty cannot cover disks that are damaged by user negligence.

EDIT KEYS

Several of you have written in to ask about the cluster of editing keys that appears in the upper right of the keyboard on both the Extended and Deluxe models.   Although these keys are labeled with editing commands, they as yet have no functions in any available computer mode.   Like the 16 special function keys, however, they can be individually programmed and given special assignments within a program.   Rather than omitting these keys from the keyboard, we chose to leave them where experienced programmers can take advantage of them.   We may also be making use of them in some of our forthcoming Sof-Disk Albums.

DIRECTORY ASSISTANCE
     What To Do After You Hit DIR

     To old hands at things like systems software and hexidecimal notation
and the like, reading and understanding the directory of a disk is probably
second nature. But for most people, at least a few of the column entries
don't seem to have much meaning. It's also true that you might not ever
need to know what all of the elements of the directory indicate, but at the
same time, a better understanding of how the COMPUCOLOR II uses and stores
information can only help you in your programming efforts. Below is a
sample directory taken from a SAMPLER Sof-Disk.

```
DIRECTORY CD0: SAMPLER     06

TR   NAME TYPE VR SBLK SIZE LBC LADR SADR

  03  BIORHY.BAS;01 0006 0017 3C   829A 8DD6
  03  DEMO  .BAS;01 001D 002C 7A   829A 9894
  03  PCARDS.BAS;01 0049 001C 40   829A 905A
  03  BANDIT.BAS;01 0065 0028 3A   829A 9654
  03  LOAN  .BAS;01 008D 0018 78   829A 8E92
  03  MEMTST.BAS;01 00A5 0002 7A   829A 8394
  03  CONCEN.BAS;01 00A7 001A 2D   829A 8F47
  03  COPY  .PRG;01 00C1 0004 49   829A 829F
  03  MENU  .BAS;01 00C5 0009 0E   829A 86A8
  03  METRIC.BAS;01 00CE 0014 6F   829A 8C89
  01  <FREE SPACE>  00E2 0194
```

Each column has a special significance that tells you something about the
amount, kind, and location of information on the disk. The first column is
the attribute field. This is a one byte field and can have one of two
values; either

          3 -- Unprotected File   or
          1 -- Free Space Entry

All of the space on the disk, except for the directory itself, is either a
file or free space.

     The next field is perhaps the most familiar part of the directory. It
consists of the filename, separated by a period from the file type, which
is separated by a semi-colon from the version number. The filename may be
any combination of alphanumeric characters up to six characters long, but
you cannot use special characters such as % or & in filenames. You name a
file with the SAVE command, in which you must specify a file name. For
example: SAVE"COLORS" would save whatever program was currently in memory,
and list it on the directory under the name COLORS.

     The file type may be any three alphanumeric characters, but certain
specified types have special meanings to the File Control System. BAS

denotes a BASIC program, and RND indicates a BASIC random file. The PRG and LDA types are also recognized by FCS. The LDA type is in the format of a series of data followed by addresses in memory where the data are to go. This means that along with the data, extra infomation is being stored and this requires extra space on the disk and this takes longer to load. The Assembler produces this type file because it facilitates faster assembly. The default type for the LOAD command is LDA. If you do not specify another type, then system will default to the LDA and not, for example, to a BAS file with the same 6-letter name. When the computer loads the LDA version, all the data is placed where specified by the addresses in the file. It is then saved in the memory image format. This is the simplest and most compact format. Since the starting and ending address of the program is known from the assembly, and since the program is in memory, it can be saved in the PRG format. The SAVE command will default to the PRG type.

The PRG, LDA, BAS, RND and SCR types all have previously designated meanings, but you may create file types and names that have special meaning to your programs. BASIC may use a file type other than RND. The RND file is merely the default type. However, if you open a file to use as an RND file, you must make sure that the file is in the RND format. The name does not matter, the information does. Those of you who have the Personal Data Base can look at that directory and see how the file types INF and INX, among others, are stored on the disk. This is an example of a special file type being created for use by a specified program.

The field which immediately follows the file name and type is the version number. When you create a file with the same name and type as one already on the disk, the File Control System will give the new file the next version number. This is a hexidecimal number which takes up one byte and ranges from 1 to FF (1 to 155 decimal). When you run, copy, or otherwise access a program without specifying a particular version, the system will default to the file with the largest version number, that is, the most recent version.

The next field is the starting block. A Sof-Disk is divided into 400 blocks of 128 bytes each, much in the same way that an eight-track cartridge is divided into 8 tracks of specified lengths. The directory starts at block zero, and information about each addition to the disk is recorded in the space reserved for the directory. The amount of space set aside for this purpose is variable. When you initialize a disk with the following sample command: INI CD0:COLORCUE the directory space defaults to 3 blocks. If you have a special purpose in mind for the disk, you may want to specify the number of blocks reserved for the directory. For example, if you want to save only two very long programs, you would need very little space for your two-entry directory, and could use this initialization command: INI CD0:COLORCUE 1. If you wanted to save a large number of files, you might want to increase the space alloted to the directory so that there would be room for dozens of entries. You might initialize the disk with a directory block sized 9. You must always allot at least 1 block, and you cannot allow more that 20 blocks for the directory.

Programs and files will be saved on the disk starting at the first block not reserved for the directory, and the column labelled SBLK (starting block) tells you where on the disk each new file is saved.

The field which lists the size of each entry is very useful. It indictes how may blocks are used by a particular file. This, when compared to the free space entry, lets you know whether or not another version of any file can be saved. It also lets you know exactly how much space was taken up by any improvements or changes that were added to recent versions of a file. As mentioned above, each block contains 128 bytes. Any given file may or may not be of a size that will fit exactly into 128 byte blocks, so the LBC field (Last Block Count) tells you (and FCS) how many bytes of the last block are used. This information can be useful in certain space-concious applications, where using every byte optimally is important.

A BASIC program that is stored on disk (and in memory for that matter) is not recorded as the series of words that you see when you list the program. BASIC has fewer than 256 commands, so each one is encoded into one byte, and then stored in that fashion. For example, if 21 is defined as 'GOTO', then each GOTO will be stored in one byte, and when the program is listed, a GOTO will be printed everytime a 21 is encountered. This saves memory, disk space, and time.

The load address field tells where in memory to put the file if it is a memory image type, and the starting address field tells the computer where to begin execution if it is a PRG file. These last two bits (24?) of informion are not always needed, and may be quite meaningless for some types of files.

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USER CORRESPONDENECE

Myron Steffy, of Sun City, Arizona, writes to us with a short routine and a few nice comments:

Dear Susan,

I am the proud owner of a COMPUCOLOR II purchased about a month ago and have been going through the back issues of 'ColorCue'. It is a wonderful way to help out the 'new boys'.
I held off buying a computer until just recetnly. I had decided that I wanted two things that neither Heath or Radio Shack had; color and graphics. Was tempted by the 'Apple', but didn't want a bunch of separate pieces strung together with cables as is my ham radio gear. Then along came the COMPUCOLOR II and I was sold. By the way, the first program I wrote was for the amateur satellite "Oscar". The program prints out the beam azimuth and elevation every minute in real time for each transit.
Here is a little four-line routine to transfer a screen display form one disk to another without imprinting 'READY' or any other command on the screen for display.

```
10 PLOT 27,4:PRINT "LOAD TABLE.DIS": PLOT 27,27
20 FOR I=1 TO 10000:NEXT I
30 PLOT 27,4:PRINT"SAVE TABLE.DIS 6000 1000":
40 PLOT 27,27
```

To use, enter the above program in BASIC and insert the disk with the orginal display. Type 'RUN' and wait for the display to appear on the screen. When it is complete you have about 10 seconds afforded by the loop at line 20 to remove the first disk and insert the receiving disk. No print will appear on either disk or dislay. This is probably not very original, but it took me a few minutes to figure it out!

Sincerely Yours,

Myron Steffy

Dear Myron,

I don't know how original it is, but since no one else has sent one in like it, it's plenty original enough to publish in ColorCue! So glad you're enjoying your COMPUCOLOR II and ColorCue. You aren't alone in wanting a computer that's completely self-contained. Many buyers, school systems especially, are mentioning that as an important factor in their decision to buy. And of course those bright colors never hurt. . .

Susan

****

From Springfield, Missouri, Tom Hudson writes in to tell of his experiences. He's also looking for some correspondence with other COMPUCOLOR II owners. Why not write a letter to him? Getting to know some other users, even by long distance, can help you find new uses and ideas for your computer.

Dear Susan,

First of all, let me say that the COMPUCOLOR II is the finest microcomuter sytem I have ever had the privilege of working on.

Since recieving my computer, I have found that the CCII has several disticnt advantages over its competition, the primary one being the fact that the CCII's disk operating system is stored in ROM. The Apple and TRS-80 both use 9K of the user's RAM for their DOS! Of course, that are many other advantages too numerous to list here.

I'm thinking of ordering a Maintenance Manual and would like to know what it covers. For example, I have some experience with color TV and the color guns of my CCII do not seem to want to line up in the left-hand portion of the screen. Does the Manual cover his sort of thing?

P.S. Could you by any chance put my name and address in ColorCue, to inform other users that I'd like to correspond with them?

Sincerely,

Tom Hudson
2369 E. Seminole
Springfield, MO 65804

Dear Tom,

Our Maintenance Manual has been very popular with those COMPUCOLOR II owners who have some electronics background. It does discuss convergence of the system, as well as other hardware repairs. It includes complete schematics and drawings of the COMPUCOLOR II's internal features, and for anyone with an innate curiosity about how things work it's a good investment.

Your name and address are printed as you requested. I may be a little biased, but I think that COMPUCOLOR II owners are a really special group of people. I bet you'll get some super letters from some nice people. I know I do!

Susan

LINE LENGTH

Some of you who have already bought printers have been calling in to tell us that it's too bad that the COMPUCOLOR II can't output any lines longer than 64 characters. You say that your printer uses 120 width paper, and you'd like to print that many characters across. It's true that the COMPUCOLOR II has only 64 characters on the screen, but you can output lines up to 255 characters long. In the Programming and Reference Manual, and in the Instruction Manual, we have listed in the Key memory locations the POKE value that allows you to do this. It is 33289. For example, if you want to output 120 characters, include this program statement:

POKE 33289,120

SUBSCRIPTION RENEWAL

We weren't kidding when we told you a couple of months ago that the $6.00 price on a year's ColorCue subscription was an introductory offer. That offer expires in August, so you've got just a couple weeks to send in your checks. After this summer, the price goes back up to the standard $1.00 per issue. We are very pleased at the number of renewals we've received so far, and such a high rate of response really motivates the staff. If you haven't renewed your subscription, fill out the next page today.

USER'S GROUP TO START

Our Canadian COMPUCOLOR II owners (and their numbers are growing everyday) will be pleased to know that our Toronto area dealer, House of Computers, is starting a Users Group! The first meeting will be held on August 8th -- that's the second Wednesday in the month. Mark Herzog, store owner, invites all COMPUCOLOR II users and anyone else who's interested in color graphics to attend this first meeting. It will be held at the store, and it's a chance for all of you to swap some programs and ideas. Please contact Mark for further details about time, directions to the store, etc.

HOUSE OF COMPUTERS   (416) 482-4336
368 Eglinton Ave. West
Toronto, Ontario
CANADA   M5N 1A2