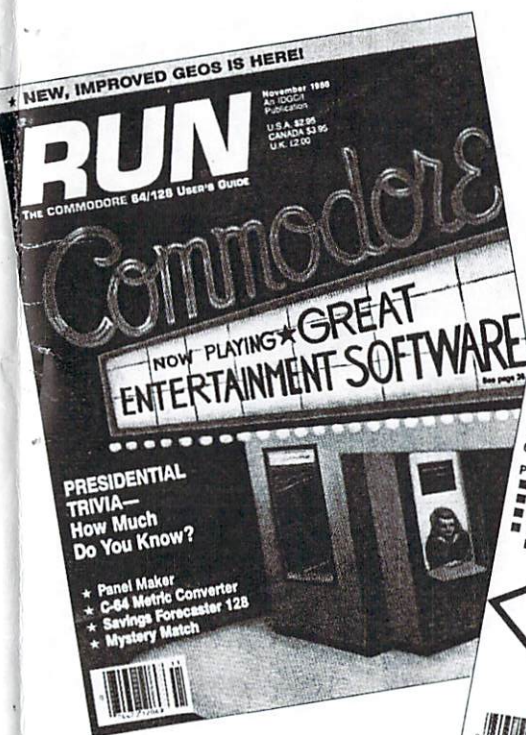


November/December 1988 Edition

RE_≡RUN

RUN Programs on Disk

For the C-64 and C-128



Plus: Two Extra Bonus Programs!



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Introduction

November–December '88 ReRUN

LOOKING FORWARD to the holiday season, this November–December 1988 edition of ReRUN contains some great programs for both the C-128 and C-64.

With the U.S. national election foremost in nearly everyone's mind, we kick off this edition of ReRUN with the first of *RUN*'s November programs, a presidential trivia game by Lou Wallace, entitled *Hail to the Chief*. Actually, this is a general-purpose, multiple-choice trivia game that can be tailored for any subject you choose, not just presidential questions. However, because of the timeliness of the fall election, it was a prime opportunity to use presidential questions.

Complementing this program is another by Lou Wallace, called *Panel Maker*, or *Panels*, for short. Used in the *Hail to the Chief* program as a windowing system, *Panels* lets you program the cursor for placement anywhere on the screen and also creates an almost unlimited number of panels that can contain text for instructions and other purposes.

For Good Measure is a C-64 program that you can use to perform a wide range of weight, length, area, volume and temperature conversions. Many ReRUN users will be able to put this great program to use in their daily lives.

One of my favorite games published this year in *RUN* is *Mystery Match*. Also known as *Concentration Station*, this C-64 game demands first-rate memory skills on the part of the players. Not only must you "buy" vowels and consonants to spell words, but you must also earn money by remembering and matching the graphic characters under a series of tiles.

November's *Easy Application* is a C-128 program called *Savings Forecaster*. Use it to keep track of and print out the value of investments and savings. The last entry from November is our C-64/C-128 *Mega-Magic*, *Mass File Deleter*, which simplifies the time-consuming problem of selectively deleting files from disks.

December's issue of *RUN* offered a wide variety of useful and entertaining programs, beginning with *Crazy Caverns*, which takes



you on a long, colorful C-64 graphics adventure, in which you must retrieve as many of Santa's missing gifts as possible in a given amount of time. A steady but quick hand on the joystick is a must.

Before describing the next program, Finance 128, I'd like to point out that a C-64 version of the program that was not published in the magazine is included on this disk as one of the bonus programs. Both versions offer twelve options for determining loan payments, the effects of various interest rates and the payoff of loans, to name but a few of the numerous functions this program performs.

Math Match is similar to the aforementioned Mystery Match, except with different strategies and end results. With Math Match, you select the number of tiles desired, and the objective is to try to match arithmetic problems with their answers, and vice-versa.

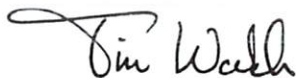
December's Easy Application is Instant Address Book, an ingenious C-128 program that takes advantage of both the 1700 and 1750 RAM expanders, multiple drives and the C-128's 80-column screen. Use it for quick access to the names and addresses of friends, relatives and business associates.

December's geoWatch column is unusual in containing a program called Icon Editor [sic] that also appears on this disk. You can use this GEOS-compatible editor to transform most of the GEOS screen icons into faces, messages or anything else you wish.

Mega-Magic consists of an interrupt-driven C-128 program for scrolling the background on your C-128 80-column screen. Written by that tireless graphics maven, Lou Wallace, 128 Scroller is a short utility that lets you create dynamic, animated backgrounds for any of your 80-column programs.

Finally, the second bonus program for this disk is Basic 7-X, for the C-128. This Basic extension adds a number of much-needed commands, such as an Old command for retrieving programs after issuing the New command, and a Chain command for appending programs to one another.

Well, that wraps things up for both this edition of ReRUN and for the year of 1988. I'll be back early in 1989 with our next edition of ReRUN, which will be better than ever. I'll see you then.



*Technical Editor
RUN Magazine*

How To Load

LOADING FROM MENU

To get started, C-64 users should type `LOAD "MENU 64",8` and press the return key. When you get the Ready prompt, the menu is loaded and you should type `RUN` to see a list of the programs on your disk. C-128 users need only press the shift and run-stop keys. When all the programs are displayed on the screen, you can run the one you select by pressing a single key.

LOADING FROM KEYBOARD

If you do not wish to use the menu program, follow these instructions.

C-64: To load a C-64 program written in Basic, type: `LOAD "DISK FILE-NAME",8` and then press the return key. The drive will whirl while the screen prints `LOADING` and then `READY`, with a flashing cursor beneath. Type `RUN` and press the return key. The program will then start running. To load a C-64 program written in machine language (ML), type: `LOAD "DISK FILENAME",8,1`

C-128: All C-64 programs can be run on the C-128 as long as your computer is in C-64 mode. All C-128 programs are clearly labeled on the directory page. Your C-128 *must* be in C-128 mode to run these programs. To load a C-128 mode program, press the `F2` key, type the disk filename and then press the return key. When the program has loaded, type `RUN`.

MAKING COPIES OF ReRUN FILES

Many programs on your ReRUN disk have routines that require a separate disk onto which the program writes or saves subfiles. To use these programs, you must first make a copy of the original program onto another disk that has enough free space on it to hold these newly written subfiles.

It's simple to make a copy of a Basic program. Just load it into your computer as outlined above, and then save the program back onto a separate disk that has plenty of free space for extra files.

Copying an ML program is not so simple. You cannot simply load and save an ML program; you'll need to use a disk-backup utility program, such as the one on your Commodore Test Demo disk.



Directory

PAGE	DOCUMENTATION	DISK FILENAME	FILE TYPE
		*MENU 128 _____	BASIC
		MENU 64 _____	BASIC
1	HAIL TO THE CHIEF	TRIVIA _____	BASIC
		FACTS _____	BASIC
		PRESTRIVIA SEQ _____	SEQ
4	PANEL MAKER	PANELS _____	ML
		PANELS.HEX _____	BASIC
5	FOR GOOD MEASURE	MEASURE MATE 64 _____	BASIC
9	MYSTERY MATCH	CONCENTRATION ST _____	BASIC
		CONC.LIST2 _____	BASIC
		CS + _____	ML
		BANDIT HI-SCORES _____	BASIC
		BANDIT BALL DATA _____	BASIC
11	SAVINGS FORECASTER	*SAVINGS FORECAST _____	BASIC
13	MASS FILE DELETER	MASS FILE DELETE _____	BASIC
14	CRAZY CAVERNS	BOOT CAVERNS _____	BASIC
		+ CAVERNS ML _____	ML
		SCORE GENERATOR _____	BASIC
		.SCORES _____	ML
		CAVERNS HEX LOAD _____	BASIC
15	FINANCE 128	*FINANCE 128 _____	BASIC
15	FINANCE 64	FINANCE 64 _____	BASIC
17	MATH MATCH	MATH MATCH _____	BASIC
18	INSTANT ADDRESS BOOK	*ROLODEX REPLACER _____	BASIC
20	ICON EDITER	ICON EDITER _____	BASIC
22	128 SCROLLER	*128 SCROLLER _____	BASIC
23	BASIC 7-X	f*BASIC 7-X _____	ML
		f*BASIC 7-X LOADER _____	BASIC

* — C-128 mode only

f — Bonus program

Before you run a program, carefully read the documentation that pertains to it.

Hail to the Chief

By Lou Wallace

EVERYONE LIKES TRIVIA. We talk about it at parties, read about it in the papers and watch it on TV. We also play with it, in games such as Trivial Pursuit. Well, now you can develop your own content for a trivia game to play on your C-64!

This program is a general-purpose trivia game that comes with questions on one category—the U.S. presidents—and can be expanded to include other subjects. It's a gambling game as well, where you bet money based on your knowledge.

There are three programs involved. The Trivia game itself uses the filename TRIVIA.

"Facts" is a database of facts about the presidents and contains 101 questions. It, too, is a Basic program, but in the form of a hexadecimal data list. We're publishing it that way so you won't find out what the questions and answers are while you type it in, thus making the game a lot more fun when you play. Finally, a sequential file by the name of PRESTRIVIA is the actual database of questions.

PLAYING THE GAME

Once you've loaded and run Trivia, there's a momentary pause while the program reads in the PRESTRIVIA data; then the game screen appears.

The play of each game consists of answering ten questions about the presidents, or whatever subject you make up a database for, and to win money in the process. You start with \$25 and may wager one-fourth, one-half or all of your money on each question. (All amounts are rounded down to even dollars.) Select the amount you want to bet by using the cursor keys to move the selector bar. Then press either F1, F3, F5 or F7 to choose the president you think the question refers to. If you're right, your treasury increases; if not, the correct answer is displayed and you lose what you bet.

Each winning bet returns the amount you wagered times the number of the question you're on. For example, if you're on question

1 and bet half your \$25, you win \$12, for a total of \$37. If you're on question 2, have \$50 and bet half, you win \$50 ($\25×2). At question 10, you stand to win ten times the amount you bet, whereas you can lose no more than the amount of your bet. If you dared to bet *all* you had on each of the ten questions and won each time, you'd end up with more than \$997,000,000!

THE PRESIDENTIAL TRIVIA FILE

The datafile for the presidential trivia quiz is based mostly on a book entitled *Facts About the Presidents*, written by Joseph Kane and

Figure 1. Sample Trivia database file.

```
run editors
7
dennis brisson
swain pratt
beth jala
harold bjornsen
lou wallace
tim walsh
peg lepage
10
run's editor-in-chief
1
run's managing editor
2
this is run's associate editor
4
this is run's copy editor
7
this is run's technical editor
6
this is run's technical manager
5
this is run's senior editor
3
writes the magic column
6
writes commodore clinic
5
this is one great guy!
5
```

published by Pocket Books. The file covers almost all the presidents, and, since there are 101 questions, some presidents are associated with more than one question. Even after creating the database, when I first played Trivia, I often didn't remember an answer and, as a result, lost all my money. So, do like I do now, and don't bet everything you have—unless you're really sure!

CREATING YOUR OWN DATABASES

As I mentioned, you can make up your own trivia files for use with this game. All you need is a word processor (or text editor) that saves its files in sequential form. I used RUN Script, but others, such as Easy Script, will do fine. The datafile is easy to set up, but it's important to follow the guidelines exactly.

First and foremost, everything must be in *lowercase*! Next, the first line must contain the name of the database, which can be up to 14 characters long. If it's longer, the extra will be ignored. For the built-in quiz, I called the database "presidential."

On the second line, place the number of possible answers to each question, with a minimum of four. In the presidential quiz, the number is 40—the number of presidents. Then follow with the answers, one per line.

After the answers, type in the number of questions—such as 101 for the presidential quiz. You must have at least ten questions, with each one containing no more than 36 characters. Finally, place each question on a line, followed by the number of the correct answer. Figure 1 shows a simple example of a Trivia database file.

After you've created the file, save it with the name of your choice. Then load the Trivia game, list line 55, change the filename PRES-TRIVIA to the name of the file you've created and save your version of the game to a work disk. When you run it, your new trivia database file will be used.

If you create a file that you think is really neat, send it to us here at RUN. If we like it, we might publish it in the future!

Panel Maker

By Lou Wallace

I RECENTLY WANTED to use graphics characters to make colored panels in a Basic program I was writing (see the Trivia game in this issue), so I created some simple Basic routines to generate them. Unfortunately, using the Print statement from Basic just wasn't fast enough, and I also needed a way to print data at a specific screen location. So I pulled out my trusty assembler and went to work writing a small utility to do the job. The result is Panels, and since it's a program that can be generally useful beyond my immediate need, we are including it here as a stand-alone offering.

As I indicated, Panels has two functions. One lets you position the cursor at any location on the screen, so the next Print statement will start printing at that location. The other uses the Print statement from machine language to create a variety of panels. In each case, a SYS function transfers parameters to the routine, making both very easy to use. (The machine language is located at 49152, an area often used by C-64 machine language programmers.)

Here are the two commands to include in your program:

`SYS 49152,X,Y:REM CURSOR POSITION`

and

`SYS 49155,X,Y,W,H,C,S,M:REM MAKE A PANEL`

The first positions the cursor at any X (0-39) and Y (0-24) screen location. The second is the actual panel-making routine. X and Y mark the starting location of the panel, W (2-40) is the width of the panel and H (2-25) is the height. If values outside the allowed ranges are passed to the routine, nothing will happen on the screen. Neither will anything happen if X + W is greater than 40 or Y + H is greater than 25, as the panel would be wider or taller than the screen.

C is the color of the panel (0-15), and S is the style (0-5). See Table I for a list of the styles. Finally, M (0 or 1) is the mode, with 0 creating a reverse (solid) panel and 1 an unreversed panel.

Keep in mind that, because Panels uses the Print statement, if your panel extends to the bottom of the screen, the screen will scroll up one line.

Table 1. Panel styles.

Style	Description
0	Square corners
1	Curved corners
2	Solid (no edges)
3	Outlined corners
4	Angled corners

RUN it right: C-64; printer (optional)

For Good Measure

By Michael Broussard

CHANGING FEET TO meters, gallons to liters, Celsius to Fahrenheit? How many quarts are in a bushel? If you ever need to convert measurements of length, area, volume, weight, arc or temperature into other units, Measure Mate will make it easy. It knows a multitude of units, from the common to the obscure, and you can add others.

Measure Mate is written in Basic for C-64 mode, and using it is easy. When you type RUN, the screen clears and the work display appears. There's a brief delay while the program builds some internal tables, then the cursor appears in a window near the top of the screen, next to a prompt that asks "How Many?", referring to the number of units in the measurement you want to convert.

Suppose you want to know the number of inches in two yards. The number of units in this case is two, so type 2 in the window and press the return key. If you make a mistake, use the delete key to back up.

Then the cursor will move to the next window, labeled "Convert

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From?". Type YARDS (or YD, or even YAR) and press return. Measure Mate maintains an internal list of names of units of measure, and it looks there for the first word that contains, in the same sequence, the letters typed in the window. For example, the single letter M is interpreted as meters, MI is taken to mean miles and MIC expands to microns. (For a complete list of the units of measurement and names the program knows, examine the Data statements beginning at line 2010 of the listing.) Shortly after you press the return key, Measure Mate will update the window, showing you the long form of the unit name—YARDS, in this case.

When the cursor moves to the window labeled "Convert To?", type IN and press return. Measure Mate will update the window to display the word INCHES and show the result of the conversion in the lower half of the screen:

2 YARDS = 72 INCHES

That's all there is to it!

The input windows then clear, and the cursor returns to the top so you can do another conversion. If you're all done, type Q (or QUIT) to exit the program. You can abort a conversion in progress at any time by pressing the clear key.

The results of up to four conversions are displayed on the screen at a time. When you do a fifth conversion, the first one disappears and the others scroll up. The program remembers the first 300 conversions it does, even though it can't display them all at once.

To print the four conversions shown on the screen, press the F1 key. You can print all of the stored conversions by pressing the F7 key.

PROGRAM POINTERS

Measure Mate uses a shorthand to represent area and volume measurements, such as square meters and cubic yards. Instead of typing the word "square" or "cubic," simply append a 2 or 3 to the name of the unit. For example, use YARDS3 or YD3 for cubic yards and FT2 for square feet.

To distinguish between dry and liquid measures, either type the word DRY or prefix the measure name with a D; that is, PINTS refers to liquid pints, while DRY PINTS, DPINTS and DPTS are the dry kind. On the other hand, since the generally accepted default for OUNCES is the weighty variety (16 ounces in a pound), you must specify FLUID OUNCES, FLOUNCES or FLOZ if you mean

the liquid kind (there are eight fluid ounces in a cup).

Use the "conversion history" on the screen to help do multistep conversions. For example, suppose you want to convert eight meters to feet and inches. First convert from meters to feet by typing 8 in the first window, M in the second window and FT in the third. You'll see the following result:

8 METERS = 26.2467192 FEET

Now do another conversion to change the fractional part of the foot measurement to inches by typing .2467192, FT and IN. The new result is:

.2467192 FEET = 2.9606304 INCHES

Because 2.9606304 is very close to 3, the eight meters converts to 26 feet, 3 inches.

If the program detects an error during a conversion, such as an attempt to convert inches to degrees Centigrade, it displays an error message in the status window at the bottom of the screen. This message remains visible for several seconds to make sure you have time to read and understand it. Then you're allowed to go ahead with another conversion. You can shorten the error message display time by pressing the space bar or the return key.

If you ask for a conversion that has an extremely large result, the program may terminate unexpectedly with an Overflow message. This means that the result is too large for Basic to calculate. If this happens, just restart the program.

Here are some miscellaneous notes about the units Measure Mate recognizes: Degrees, minutes and seconds refer to arc; grains is a measure of avoirdupois weight, not troy; minims and drams are fluid measures; the ton is the standard short ton (2000 pounds); and fluid measures such as quarts and gallons are standard U.S. calibrations.

TECHNICAL NOTES

Measure Mate expects the printer to be device number 4 on the serial bus. You can alter this by changing the value assigned to variable PR in the first line of the program.

The program works by using a set of base units for each measurement type. For example, the base unit for length is the meter, so to convert inches to feet, it converts the inches to meters and then the meters to feet. Expressing every other length measurement in terms of meters is an elegant technique to convert from one to

the other without having to know hundreds of formulas. However, it's subject to rounding errors. For example, when converting 5280 feet into miles, the result is .99999999—very close to but not exactly the expected answer of 1.

In order to be more user-friendly, Measure Mate examines each result before printing. If it's not in scientific notation (no E), if it contains a decimal and if the three places to the right of the decimal are 999 or 000, the program rounds up or down as appropriate. Thus, 5280 feet comes out to be 1 mile. If you prefer not to have the program do such rounding, you can disable this feature by setting variable RF to 0 in the first line of the listing.

Measure Mate is constructed so you can add your own units of measurement, provided that they express length, area, volume, weight or arc. (Temperature is a special case.) Each unit is represented by a Data statement, so adding a unit is as simple as adding a line to the program.

In the process, you need to refer to Table 1 for the code for the type of measurement you're adding. Table 1 also shows the base measure for each kind of measurement the program knows. Code 6, which specifies temperature, is not included, because it has no base measure. For this reason, you can't add more temperature measures without changing the program.

For instance, suppose you want to add a hypothetical unit of length called a gribble, which is exactly one-half meter long. For proper program operation, the Data statements are sorted in approximately alphabetical order (all the A's are together, as are the Bs, and so on), so, to add GRIBBLE to the program, we must add a Data statement in the Gs—say, after GALLONS.

The first value in the Data statement tells how many different names Measure Mate will know for this unit. Suppose you want it

Table 1. Types of measurement that Measure Mate handles.

Code	Type	Base Measure
1	Length	Meter
2	Area	Square Meter
3	Volume	Cubic Meter
4	Weight	Gram
5	Arc	Degree

to understand both GRIBBLES and GBS. That's two names, so the first value in the Data statement is 2. The second value in the Data statement specifies the type of measurement. The gribble is a measure of length, and 1 is the code for length, so that's the second value in the Data statement. The third value specifies how a gribble compares to the base measure used for length—the meter. A gribble is half a meter, so the third value is .5. Finally, the Data statement includes all the names you want the program to recognize for gribbles—in this case, GBS and GRIBBLES. Notice that the plural form of the name is used, so the program will recognize GBS and GRIBBLES, in addition to GRIBBLE, GB and GRIB.

The complete Data statement looks like this:

```
2325 DATA 2,1,.5,GBS,GRIBBLES
```

I deliberately didn't place the unit names in the Data statements in exact alphabetical order. MILES is before MICRONS, so if you type in MI as an abbreviation, Measure Mate will assume you mean miles instead of microns. If you like, you can rearrange the Data statements so the program "prefers" units of your choice. Just be sure all those with the same first letter are together, or you'll cause the program's hashing search algorithm to break. (This explains why there are two Data statements for pounds—one with POUNDS and one with the abbreviation LB. They begin with different letters.)

Give Measure Mate a try. Your kids will have fun using it to learn about basic conversions, and you may learn a thing or two yourself. For instance, most people know that normal body temperature is 98.6 degrees Fahrenheit, but, quick, what is the Centigrade equivalent?

RUN it right: C-64; joystick

Mystery Match

By John Ryan

CONCENTRATION STATION IS a two-player educational game that tests memory as well as word recognition. It's instructional and fun for youngsters, and adults will also enjoy its full sound

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effects, fast and challenging play and high-score keeping.

The rules of the game are simple: Each player tries to match random shapes hidden behind a six-by-five grid on the screen, and a successful match earns points. These points, in turn, are used to "buy" vowels and consonants in order to match a random mystery word. The first player to match the mystery word wins the round. Five rounds and 25 mystery words are built into the game, but both can be easily changed.

Load and run CONCENTRATION ST whenever you want to play Concentration Station. The game requires a joystick plugged into port 2. Both players share the joystick.

HOW TO PLAY

After you've entered the names of both players, a grid appears on the screen, with the name of the active player highlighted to the right. Within the grid, hidden from view, are 15 pairs of shapes.

During a turn, a player may select any of the options in the menu at the bottom of the screen. To match shapes within the grid, press F1. Then use the joystick to move the flashing cursor anywhere within the grid, and press the fire-button to expose the shape in that location.

Finally, move the cursor to another square to select a second shape. If the two shapes match, you get 25 points and can continue your turn—again choosing any of the five options in the menu. If you didn't make a match, the other player's name appears and it's his or her turn.

Press F3 to buy a vowel you think may be in the mystery word, or F5 to buy a consonant. They cost ten and five points, respectively. Only AEIOU are considered vowels by Concentration Station; Y is a consonant.

After your purchase, you can enter the letter at the top of the screen, and, if it is in the mystery word, it'll appear the proper number of times in the word slot at the bottom of the screen. The length of the mystery word is displayed to the right of the word slot.

Once you think you know what the whole word is, press F7 to enter your guess—at a price of 25 points. If you're right, your remaining points are transferred to the score block and you receive a bonus of 250 points.

At the end of five rounds, a "game over" message appears, and the player with the highest score wins. If all the squares have been exposed and the mystery word still hasn't been guessed (or a player

has run out of points for buying letters or guesses), you can restart the game, regardless of the current round, by pressing Q.

CUSTOMIZING THE PROGRAM

To decrease or increase the number of rounds per game, change the value of variable NR at the beginning of Concentration ST. Variable NW reflects the number of mystery words in the Data statements. To add or remove words, change NW accordingly, type the new words into the Data statements and then resave the program. It's that easy; but be sure that NW equals the number of mystery words, or an Out of Data error may result. If more than 50 words are used, you'll also need to adjust the DIM statement upward.

The mystery words that you choose may contain as many as 11 letters. The collection of words that I've built into the program are appropriate for players of 12 years of age or more. For younger children, you'll probably find that they're less frustrated if you replace some of the more abstract words with easier ones.

I've found, through my own children, that Concentration Station is excellent for teaching memory skills and spelling. With the incentive of competition and high-score keeping, this program offers young and old alike an entertaining diversion from the usual fare.

RUN it right: C-128, in 80-Column mode

Savings Forecaster

By Robert Gallagher

WANT TO SAVE time as well as money? Then use Savings Forecaster to predict the return on your bank account or bonds. Designed for the C-128 in 80-Column mode, this program displays the monthly value of a savings account that has a fixed interest rate. It can also be used to check the value of a Christmas Club account at any point in its life, and even the value of a fixed interest bond.

The program works on the premise that deposits are made the first of the month and interest is compounded and applied at the end of the month. It's pretty straightforward and easy to use; you need only

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answer a few simple questions and the program does the rest.

The first question is, "What is your initial investment amount?" Enter your beginning deposit or the amount paid for the bond, up to 9999.99. You don't need to prefix the amount with a dollar sign, because the program will do it for you.

Next, the program asks, "What is the annual interest rate?" It expects this number to be in decimal form, so, if the interest rate were $5\frac{1}{4}$ percent, you'd enter 5.25. Don't follow the number with a percent sign (%) or you'll get a "Redo From Start" message on the screen. There's no real harm done, however, if this should happen; you'll just be asked for the interest rate again. Make sure you enter the *annual* interest rate, since the program uses this number to compute the monthly rate.

The third question you need to answer is, "How much will you invest monthly?"

Enter the amount you plan to add to your savings each month, up to 9999.99. Once again, there's no need to enter a dollar sign. If you don't intend to make monthly deposits to this account, or if you're checking the value of a bond, answer this with a zero.

A note of caution is in order here. Just pressing the return key in response to any question could cause a problem if you're computing your second or subsequent forecast without clearing the computer's memory. The program will retrieve and use data from a previous forecast unless you change the variables by entering a dollar amount or a zero.

The next question to be answered is, "How many months do you expect to pay into this fund?" Enter the number of months you wish to forecast for this account or bond. Years and partial years must be converted into months. This is the last numerical response that you have to make.

The output of Savings Forecaster includes a list of your inputs, as well as calculations of the total amount you've paid into the account, the total interest earned and the total value of the account or bond. After your data has been entered, you'll be asked if you want the output to go to the printer or to the screen, so you can preview it. If you select the screen, you'll have another chance to get printer output after the screen display is completed. Just respond with a Y and return when asked if you want a hard copy. Finally, you'll be asked if you want to compute another forecast. A Y answer clears the screen and starts you off with the first question. An N terminates the program.

When writing Savings Forecaster, I selected black on white for the screen colors, but you can select your own color preferences by changing the values in line 40. The output format can also be easily changed by varying the number of spaces and pound signs (#) in the Print Using statements. This shouldn't be necessary, however, since the output display can include up to 999 months in the first column and up to \$99999.99 in each of the other columns.

The program discards any numbers beyond two decimal places. If your interest rate has been figured to more than two decimal places, you must round it off to one or two places before using it.

RUN it right: C-64 or C-128 (40- or 80-Column mode)

Mass File Deleter

By Kenny Lawson

OKAY, THIS TIME I mean it! I will sit down and *clean up some of my disks*. Several of them are filled with unneeded, unwanted, or just plain unknown files. A couple have several versions of programs I've been working on. But using the Scratch command, OPEN 15,8,15,"S0:Filename", could take forever.

Here comes Mass File Deleter, a program that reads the contents of a disk directory, assigns filenames to a string array, then displays those names on-screen, allowing you to select which files need to vanish with the press of a key. When you're finished picking out files to delete, another keystroke will automatically scratch all of those files for you. What a relief!

First, run the program. You'll be prompted to insert a disk to read. Press any key after the disk is in the drive, and the program will read into memory all undeleted directory files.

When the screen clears, an option menu appears on the right side of the screen. The first 12 filenames (or fewer if there are fewer files on the disk) appear on the left side of the screen, and a small arrow appears to the left of the first filename.

Use the cursor up-down key to move the arrow to the file you wish to scratch, and press the S key. (Note that the program is not

deleted at this time.) Repeat this procedure for however many files you want to delete. If your disk contains more than 12 files, press the N key to display the next 12 files, or the L key to display the last page. The N key is disabled on the last page of filenames, and you can't page forward past the first 12 names with the L key.

When you've finished selecting the files to delete, press the E key to execute. The program will display the names of all the files you selected to delete, and asks if it is okay to scratch these files. If you're sure, press Y. The files will automatically be deleted, and the program will end, displaying the number of files deleted. If you're not sure, press N, and the program terminates with no action taken. Also, pressing Q from the menu will end the program.

This program runs on a 64 and on the 128 in either 40- or 80-Column mode. The program checks for which machine it is running on, and, if in 128 mode, whether in 40 or 80 columns. It adjusts itself accordingly, going into Fast mode if you're in 80-Column mode.

This program greatly eases the pain of purging disks of unnecessary files, with the side effect of making what remains on the directories easier to read.

RUN it right: C-64; joystick

Crazy Caverns

By John Ryan

SOMETHING'S SERIOUSLY WRONG in Christmas Town! A group of rebellious elves has gone on a rampage and stolen some of Santa's finest presents.

As if that weren't bad enough, the gifts have been stashed in caverns below St. Nick's workshop, where they're guarded by crazy mechanical snowmen. It's your job, as Santa, to recover the presents.

As you search, you must tread perilous ice bridges and snow packs, where miscalculation means a long, long drop to the ground. You must also confront crazy snowmen and misshapen Christmas trees, and you'll find events irritatingly unpredictable.

Plug a joystick into port 2 and load Crazy Caverns with the boot



program called "BOOT CAVERNS". Be sure to leave the program disk in the drive for further disk accesses.

Crazy Caverns features five screens, one for each cavern where a present is hidden, and five difficulty levels, each one giving you less time to search than the one before. When you find a gift and touch it, a magical sled appears. You must get to it (not easy), and it takes you to the next cavern. If you were really fast, you might even go immediately to a new level without needing the sled. You have five tries to collect the five gifts at each level of difficulty.

A shrinking colored bar—denoting depletion of the air supply—at the right side of the screen indicates the time elapsed. The bar shrinks faster as you progress from level to level. To pause the action, press the P key; to resume play, press any key.

Score is based solely on speed, and, if your score is high enough, you can preserve it in Santa's Hall of Fame for all to see. Just save the score file from the Score menu before exiting the game.

You'll need a keen sense of timing and good distance judgment to succeed at Crazy Caverns—and you can't afford to dally. Christmas Eve is almost here!

RUN it right: C-64 or C-128 in 40-column mode

Finance 64/128

By Jim Wickes

IF YOU NEED to borrow some money or have some extra to invest, Finance 64/128 will track the value of possible loans or investments over time. It can assist you with everything from major purchases to a retirement fund, and is a powerful learning tool, as well. The entry screens feature an easy, fill-in-the-blanks format, and the entire program runs from the numeric keypad.

Both C-64 and 128 versions are included on the disk, and they share the same menu, shown in Figure 1. As you can see, the first six options concern loans. When you select Regular Payments, enter the dollar value of the loan as the amount financed, the interest rate in percent (12.25, for example), the term of the loan in years

and the number of payments per year. The program will then compute your regular payment, total amount of the payments and total interest over the course of the loan.

Loan payments seldom work out to exact dollars-and-cents amounts, so it's customary to make an adjustment on the last installment. To compute it, use the Last Payment option. Amount Financed works backward from Regular Payments to determine the amount of the original loan.

Balance of a Loan is handy for determining a loan payoff amount. For any payment number, enter the number of payments you've already made, plus one. Term of a Loan takes a desired monthly payment and known interest rate to calculate the term in years. Annual Interest Rate is calculated from the principal amount of the loan and payment information.

Options 7-12 concern investments that accrue compound interest. Future Value computes the value of any investment at any future date, and Initial Investment operates in reverse. Regular Withdrawals and Minimum for Withdrawal are concerned with regular withdrawals from an investment. Future Value of Regular Deposits calculates the future value of an investment built with regular additions.

Figure 1. Finance 128 menu.

Loans

1. Regular Payments
2. Last Payment
3. Amount Financed
4. Balance of a Loan
5. Term of a Loan
6. Annual Interest Rate

Investments

7. Future Value
8. Initial Investment
9. Regular Withdrawals
10. Minimum for Withdrawal
11. Future Value of Regular Deposits
12. Nominal Interest Rate

Nominal Interest Rate figures the annual interest rate (as opposed to the effective interest from compounding).

While I've taken pains to provide a bug-free program, some degree of common sense is required on your part. Obviously, a loan of \$100,000 can never be repaid at \$25 a month. There are also limits in the program. The interest rate must be less than 100%, the maximum principal amount less than ten million dollars, the number of years less than 100, and the maximum loan payment must be no more than \$999.

Help is available in the header message block, and pressing the escape key will get you out of any option. If you make a mistake during entry, use the cursor-up key to return to the line to be corrected.

I've kept Finance 128 short and simple. Custom printouts, an 80-column screen, disk routines, and so forth, could be easily added, but those possibilities, my friends, I leave to you!

RUN it right: C-64; one or two joysticks

Math Match

By David Schneider

MATH MATCH IS a one- or two-player game patterned after the card game Concentration, but with a *big* twist. You don't try to match two identical symbols; instead, you match an arithmetic problem with its answer.

Player 1 uses a joystick in port 1, and player 2 a joystick in port 2. The menus, which are controlled by joystick 1, let you specify one or two players and the type of arithmetic problems you want: addition, subtraction, multiplication, division, or a random mixture. You can also choose the maximum size of the numbers in the problems and the number of "cards" to be used.

To keep the game from getting absurdly difficult, all division problems work out evenly. However, subtraction problems may have negative answers.

After you go through the menus, the game screen appears, showing

the cards "lying" face down and an asterisk on the card in the upper-left corner. Use your joystick to move the asterisk to any card on the screen, then press the fire-button to turn that card face up.

When you've turned two cards over, the computer checks for a match. If it finds one, the cards flash and then turn black, at which point you can continue your turn. If you haven't made a match, the cards turn face down again, either in a few seconds or when you move your joystick. And, if you have an opponent, it's then his or her turn. All the time you're playing, the top line of the screen displays the time elapsed and which player's turn it is.

When all the cards on the screen have been matched, the computer displays the game summary, telling how long the game lasted and how many tries it took to complete the matches. If you're in Two-Player mode, it also tells how many cards each player matched and declares the winner.

RUN it right: C-128, in 80-Column mode; 1700 or 1750 RAM Expander optional

Instant Address Book

By Loren Lovhaug

ROLODEX REPLACER 128 (RR128) is a Basic 7.0 program that quickly stores and recalls telephone and address information. Unlike most Rolodex programs you may have seen, this one is totally self-contained—your data is actually stored as Data statements within the program itself. The advantage to this approach is that once you load RR128 from disk, the program never has to access the disk drive again, making it fast and convenient to use. Another nifty feature of RR128 is its ability to stand by in a 1700 or 1750 RAM Expansion unit (REU) while you load and run another program.

Once you've run ROLODEX REPLACER 128, the program begins by initializing itself and then determining whether you have an REU attached to your computer. The main menu appears next. Notice that the title bar lists the total amount of RAM that's available in your system (128K without an REU, 256K with a 1700 or 640K with



a 1750). The five options on the main menu are: Browse, Find, Add, Save and Escape. To select one, press the first letter of any of the first four options or the escape key, which will exit the program.

MENU OPTIONS

The **Browse** option lets you examine up to five entries at a time in your RR128 database. Use the up-and-down cursor key to scroll forward and backward through your data or the escape key to return to the main menu.

The **Find** option quickly locates records according to one of the RR128 data fields: Name, Address, City, State or Zip. Press the first letter of a field to enter search data for that field. Once you've entered the data and pressed return, RR128 will locate all the entries containing that data within the field you chose.

The search data can contain as many characters as you like, and the more you enter, the more specific your search can be. When RR128 finds your search data, it displays the records involved and offers three options: Change a record, Delete a record and Escape to the main menu. Like the main menu options, these are selected by pressing the first letter or the escape key. If the program doesn't find your search data, it notifies you and returns you to the main menu.

The **Add** option is for entering new data into your database. Just fill in the blanks provided for each field, using the C-128's screen editor to correct any typing mistakes. You can even use the screen editor's escape-key sequences, such as escape/A (toggles Auto-Insert mode) and escape/J or escape/K (move to the beginning or end of your data, respectively). Another RR128 feature that speeds data entry is the special "data recall" option, which lets you press just @ and return to repeat field definitions.

After you've finished entering data, you're asked if you want to make any changes. If so, press the first letter of the field you wish to alter and make your changes; otherwise, press return to signify that your data is just the way you want it. Pressing escape aborts the entry process and returns you to the main menu.

The **Save** option resaves RR128 to disk, with any additions or changes incorporated. When you select this option, the program asks for a filename and offers the filename you used the last time as a default. If you choose this default, the previous version of RR128 gets scratched during the save.

Once you select a filename, RR128 asks which disk unit you'd like to save the program to. Respond with a valid drive unit (8-11). After

the save, RR128 displays the directory of the disk in the unit you specified.

Pressing the **escape** key at the main menu exits RR128 in a way that depends on whether you have an REU connected to your computer. If no REU is present, program execution ends; but, in case you forgot to save the program, it isn't erased from the computer's memory. You can then save it manually by entering DSAVE or restart it by entering GOTO 99.

If you have an REU connected, such a failsafe isn't necessary, since RR128 is automatically copied into the REU. Upon exiting, RR128 is cleared from the computer's memory, but remains available by pressing the F6 key whenever you need to find a phone number or address. Should you or another program erase this magic function of the F6 key, you can reaccess RR128 by entering SLOW:FETCH 139,7168,65338,1:RUN, if the REU is a 1700, or SLOW:FETCH 139,7168,65338,7:RUN, if you have a 1750.

RAM EXPANSION USERS NOTE

While RR128 tries to "stay out of the way" in the REU, other applications may overwrite its area in the highest bank. If so, you'll lose your data, so make sure you resave RR128 to disk after making any changes to your data.

When being retrieved from the REU, RR128 expects the start-of-Basic pointers at locations 45 and 46 to point to location 7169 (\$1C01). If you suspect that the start of Basic has been altered or the 40-Column graphics screen has been allocated, you probably should reset the pointers by entering POKE 45,1:POKE 46,28.

RUN it right: C-64; GEOS

Icon Editor

By Wayne Dempsey

MY ICON EDITOR PROGRAM (spelled *Editor* because Icon Editor is a trademark of Berkeley Softworks) lets you change and personalize

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almost any icon on the GEOS deskTop. The only one you cannot alter is the Commodore icon, because its picture is stored internally.

CREATING ICON EDITER

Icon Maker allows you to save a copy to a work disk, which can be converted to GEOS format for use with GEOS. After you load the program, it tells you to insert a blank disk. When you're prompted to confirm the fact that you want to format the disk, answer Y, and Icon Editor will take about ten minutes to save a binary version of itself to disk.

Next, boot GEOS and open the work disk. When the prompt appears, convert the disk to GEOS format. The Icon Editor is now ready for use.

WORKING WITH ICON EDITER

To enter Icon Editor, double-click its icon on the deskTop. The Icon Editor screen appears, along with a dialog box asking for the filename of the icon you want to change.

At the bottom of the dialog box are two icons—Cancel and Disk. Clicking on Cancel reloads the deskTop; clicking Disk lets you insert a new disk. *Do not* switch disks without first clicking on the Disk icon.

After you type the filename of the icon you want to edit, the icon is loaded from the current disk. An enlarged picture of the icon appears in the center of the screen, with an actual-size icon shown at the right. You change the icon by pressing the mouse button and moving the pointer through the large pixel-picture.

Pressing the button also lets you toggle between Draw and Erase. The pointer turns black to draw and pink to erase.

The File Menu icon gives you three options: Save, Recover or Quit. Any changes to the edited icon are temporary until you choose Save. Choosing Recover restores the original icon, and Quit reloads the deskTop without saving the icon.

Since changes are permanent after you choose Save, be careful not to accidentally erase an important icon.

RUN it right: C-128, in 80-Column mode

Scroll, Scroll, Scroll Your Screen

By Lou Wallace

THIS PROGRAM JAZZES up a text display screen on the C-128 in 80-Column mode by animating the background with a smooth scrolling display that rivals the Amiga.

When you run 128 SCROLLER, it'll poke in the machine language, then create a simple display to show the scrolling effect. The machine language is in the form of a Basic loader in lines 150-510. Incorporate this part of the listing into your own programs and activate it with SYS DEC ("0B00"). It will then scroll the screen until you press a key, whereupon the screen clears and returns program control to you.

The effect is generated by continuously redefining the space character in the uppercase/graphics character set (which is in VDC RAM in 80-Column mode). I used a simple grid pattern for the effect, but you can use your own sets of data to generate other effects. (A second set of values for you to experiment with are in the Data statements.)

When you need a space character for purposes other than scrolling, use the lowercase/uppercase character set. And finally, you can change the scrolling speed by poking location 2975 with some value other than the default, 25.

To generate your own screens, print spaces to get the scrolling effect you want, or simply clear the screen and print other characters where you don't want the scrolling to appear. Then use the SYS command to get things scrolling.

Basic 7-X

By Daniel Montes

COMMODORE 128 USERS EVENTUALLY discover that, although Basic 7.0 has many commands C-64 Basic lacks, it could use still more program-editing tools. Basic 7 Extension (7-X for short) adds seven such commands to Basic 7.0 for modifying and debugging.

Basic 7-X commands are recognized by the computer's interpreter in the same way as Basic 7.0 commands, except that they take priority and are interpreted first. The 7-X commands are listed below, including the abbreviation and format for each, a description of what the command does and, where needed, some examples.

OLD

Abbreviation: O{shift/L}

Format: OLD

Old restores a Basic program after the New command has been issued, provided you haven't entered any other lines. Access this command from Direct mode.

CHAIN

Abbreviation: C{shift/H}

Format: CHAIN "filename" <,Ddrive number> <ON> <,Udevice number>

The program called "filename" is loaded from disk and automatically appended to the program residing in memory. The defaults are drive 0 and unit 8. The Chain command shares the DLoad command's format.

Chain is invaluable for linking collections of subroutines. Although it's advisable for the file you're appending to have higher line numbers than the program in memory, it's not necessary. Basic 7.0's Renumber command can renumber chained programs of virtually any size.

Examples:

CHAIN "filename". "Filename" is loaded from unit 8 and appended to the program in memory.

CHAIN (R6\$),U9. Variable R6\$ holds the name of the program to be appended from unit 9.

FIND

Abbreviation: F{shift/I}

Format: FIND @string@ <first line><- last line>

Find scans a program for the specified string, which can range in length from 1 to 32 bytes. If the string is found, the entire line where it's located is listed to the screen. If more than one match exists in the same line, the line is listed as many times as the string occurs.

The syntax for specifying the range of lines is the same as in Basic 7.0's List command, except a comma must separate the range from the rest of the command. Also, the two @ signs must be included as delimiters; all characters inside are taken as part of the string to be found.

The string can be composed of variables or of groups of Basic keywords; or it can consist of a combination of both. Keywords within quotes are not tokenized, and the quotes themselves are ignored.

Examples:

FIND @A\$=@. Displays every line that assigns a new value to the variable A\$.

FIND @"A\$="@. Like all math operators, = is a reserved sign and gets tokenized despite the quotation marks.

FIND @PRINT@,3000-. Lists all occurrences of the Print command, beginning at line 3000.

FIND @"PRINT THIS PAGE"@,-3500. The word PRINT isn't tokenized, and the string is sought from the beginning of the program to line 3500.

FIND @?Z(I)@,300-500. Lists those lines from 300 to 500 in which the variable Z(I) is printed. The question mark is an abbreviation for a Print statement.

CHANGE

Abbreviation: CHA{shift/E}

Format: CHANGE @string 1@string 2@ <,first line><- last line>

String 1 is sought in the specified range of lines and, if found, replaced by string 2. Each string can be up to 32 bytes long. String 2 can be null (0), in which case string 1 is just deleted. The types of strings allowed are the same as in the Find command. Change works only in Direct mode, since using it in Program mode would modify the program containing it.

Examples:

CHANGE @BYTE@"CHARACTER"@. All occurrences of the string BYTE are replaced with the string CHARACTER. Be careful with this example, because it contains the reserved word CHAR. You must enclose the string in quotes to prevent tokenizing.

CHANGE @ @,250-. All the spaces beginning at line 250 are removed. Again, exercise caution—this command deletes spaces within quotes.

DUMP

Abbreviation: D{shift/E}

Format: DUMP

The values of all non-array variables, including functions and floating point, integer and string variables, are listed in the order they were created. Functions are listed only as FUNCTION.

Example:

DUMP

PI = 3.14159265

F\$ = "INVESTMENT"

KT% = - 16883

SI = FUNCTION

HP\$ = "HORSE POWER"

RESAVE

Abbreviation: R{shift/E}

Format: RESAVE "filename" <,Ddrive number> <ON> <,Udevice number>

Resave is a lot like Basic 7.0's Save-with-Replace, except it won't corrupt your disk contents, because it scratches the old version of the file before saving the new one. This technique is slower than the one Save-with-Replace uses, but the safety is worth it.

As with Basic 7.0's Scratch command, Resave asks you to confirm your intention if you're in Direct mode. Also, although the first part of the command, which scratches the old file, lets you use wild cards (the ? and * characters), the second part doesn't recognize them as valid filename characters. If you use a wild card there, the disk drive will issue a syntax error.

Examples:

RESAVE "SPACEGAME"

RESAVE (FL\$ + ".LDR"),U9,D0

LLIST

Abbreviation: L{shift/L}

Format: LLIST <first line> <- last line>

LList performs exactly the same way as Basic 7.0's List, except it sends the output to the printer, not the screen. It uses a logical file number (LFN) of 17 (11 in hex) and a secondary address (SA) of 0. If you need to use another LFN, or if your printer requires another SA, you must disassemble Basic 7-X to modify these settings.

You can abort the listing with the stop key, but the printer might continue to print any text left in its buffer.

ACTIVATING BASIC 7-X

To activate Basic 7-X, use Menu 128 or use one of the following statements:

BLOAD"BASIC 7-X":BANK15:SYS4864 if you have a 1541 disk drive

BOOT"BASIC 7-X" if you have a 1571.

MULTIPLE COMMANDS

If you use multiple statements within a line that includes any Find or Change commands, be sure to close all quotes before the colon that separates those statements. For example, 100 FIND @"LINES@:DIRECTORY won't work, because the ending quotes are missing. After the string has been found, a message saying there's

a syntax error in line 100 will be issued. The line should read 100
FIND @"LINES"@:DIRECTORY.

There you have them—seven of the handiest C-128 commands
you'll encounter anywhere. Grab those LLists and Chains and get
to work! ■

RE **== RUN**

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