FEBRUARY 1990

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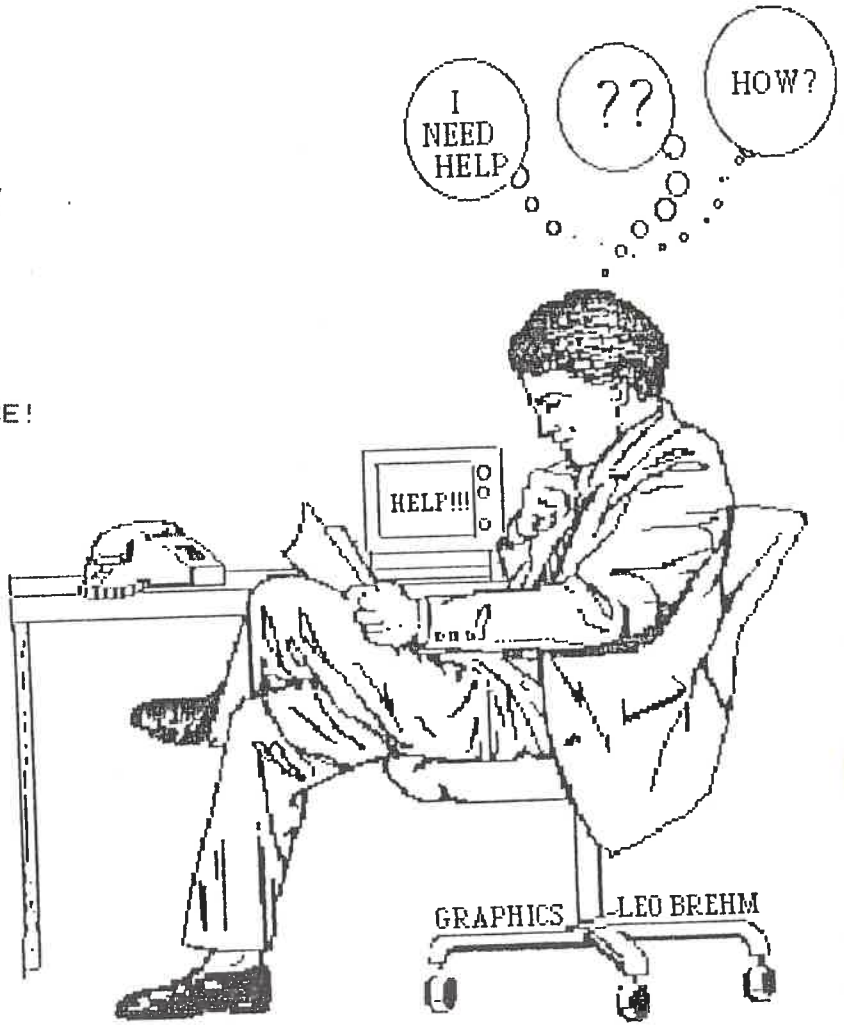
VOLUME 3
NUMBER 5

TRS-80 COMPUTING

THE BI-MONTHLY MAGAZINE FOR COLOR COMPUTER USERS

BEGINNERS ISSUE!!!!



30 PAGES FILLED WITH HINTS & TIPS, TUTORIALS, ETC... FOR THE COCO NOVICE!

* OUR ANNUAL BEGINNER'S PROGRAM WITH THE FLOWCHART
* THE COCO AS A FILING CABINET
* A LOOK AT COCO'S MATHEMATICAL FUNCTIONS
* SLIP-N-SLIDE ARCADE GAME
* AN INDEX OF EVERYTHING IN THE FEBRUARY - DECEMBER 1989 ISSUES

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TRS-80 COMPUTING

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EDITOR'S NOTE WILL RETURN NEXT MONTH.

THE CONCLUSION OF THE HIGH RESOLUTION GRAPHICS TUTORIAL WILL RETURN NEXT MONTH.

TRS-80 COMPUTING

SINCE 1987

EDITOR & PUBLISHER:

JOSEPH AHERN

PROGRAM MANAGER:

DAVID McNALLY

CONTRIBUTING EDITORS:

ALBERT NOAH

ANTON MILARDOVIC

LEO BREHM

LASER SHOW
GRAPHICS PROGRAM

COCO 3
REQUIREMENTS:
N O N E

Do you want to see some real colorful graphics? A portion of this program uses CoCo 3's HSCREEN 2 to give a spectacular laser show. All instructions to use the different functions of this program (circles, twists, etc.)are on-screen.

```
2 GOTO 4000
5 PMODE 3,1
8 ON BRK GOTO 4000
10 PCLS3
15 SCREEN 1,0
20 FOR I=3 TO 7
25 FOR J=2 TO 6
30 FOR S=0 TO 3
35 FOR R=0 TO 3
40 COLOR R,S
42 A$=INKEY$:IF A$="C" AND P=0 T
HEN P=1 ELSE IF A$="C" AND P=1 T
HEN P=0
43 IF A$="E" AND J=0 THEN J=1 EL
SE IF A$="E" AND J=1 THEN J=0
45 A=0:B=255:C=0:D=191
50 LINE(A,C)-(B,D),PSET,B
51 A$=INKEY$:IF A$="C" AND P=0 T
HEN P=1 ELSE IF A$="C" AND P=1 T
HEN P=0 ELSE IF A$="E" AND U=0 T
HEN U=1 ELSE IF A$="E" AND U=1 T
HEN U=0
52 IF A$=CHR$(12) THEN PCLS ELSE
 IF A$="P" THEN GOTO 1000
53 IF U=1 THEN LINE(A,C)-(B,D),P
SET
54 IF P=1 THEN CIRCLE(128,96),RN
D(65),S
55 A=A+J:B=B-J:C=C+I:D=D-I
60 IF A<255 AND C<191 THEN 50
65 NEXT R
70 NEXT S
75 NEXT J
76 NEXT I
80 GOTO 80
1000 HSCREEN 2:PALETTE 0,0
1010 H1=RND(150):V1=RND(90):H2=R
ND(150)+168:V2=RND(90)+100:LC=0
1012 HCOLOR RND(7),0
1013 A$=INKEY$:IF A$="P"THEN GOS
UB 1041 ELSE IF A$="B"AND Z=0 TH
EN Z=1 ELSE IF A$="B"AND Z=1 THE
N Z=0 ELSE IF A$="D" AND L=0 THE
N L=1 ELSE IF A$="D" AND L=1 THE
N L=0
1014 IF Z=0 THEN HLINE(H1,V1)-(H
2,V2),PSET ELSE IF Z=1 THEN HLIN
E(H1,V1)-(H2,V2),PSET,B
1015 IF A$=CHR$(12) THEN HCLS
1016 IF L=1 AND Z=0 THEN HLINE(H
1,V1)-(H2,V2),PSET,B:HLINE(H2,V1
)-(H1,V2),PSET ELSE IF L=1 AND Z
=1 THEN HLINE(H1,V1)-(H2,V2),PSE
T:HLINE(H2,V1)-(H1,V2),PSET
1017 LC=LC+1:IFLC=200 THEN HCLS:
GOTO 1010
1019 H1=H1-4:X=H1:GOSUB 1029:H1=
X
1021 V1=V1-4:Y=V1:GOSUB 1035:V1=
Y
1023 H2=H2+3:X=H2:GOSUB 1029:H2=
X
1025 V2=V2+2:Y=V2:GOSUB 1035:V2=
Y
1027 GOTO 1012
1029 IF X<0 THEN X=319+X:RETURN
1031 IF X>319 THEN X=X-319
1033 RETURN
1035 IF Y<0 THEN Y=191+Y:RETURN
1037 IF Y>191 THEN Y=Y-191
1039 RETURN
1041 HSCREEN 0:PMODE 3,1:SCREEN
1,0
1043 GOTO 20
4000 HSCREEN 0:CLS:PRINT@10,"LAS
ER SHOW";
4001 ON BRK GOTO 5000
4002 PRINT@39,"BY DAVID MCNALLY"
4004 PRINT@67,"(C) 1990 TRS-80 C
OMPUTING"
4006 PRINT:PRINT"MODE 1:":PRINT;
4008 PRINT"C.................CIR
CLES ON/OFF";
4010 PRINT"E.................TW
ISTS ON/OFF";
4012 PRINT"<CLEAR> KEY.........C
LEAR SCREEN";
4014 PRINT"P..........SWITCH TO
OTHER MODE!";
4016 PRINT:PRINT"MODE 2:":PRINT;
4018 PRINT"B.............LINES/B
OXES ON/OFF";
4020 PRINT"<CLEAR> KEY.........C
LEAR SCREEN";
4022 PRINT"D...........BOX AND L
INES ON/OFF";
4024 PRINT"P..........SWITCH TO
OTHER MODE!";
4026 A$=INKEY$:IF A$="" THEN 402
6
4028 GOTO 5
5000 CLS:END
```

Disk Space Saving Tip

Here's a tip on how to save space on your disks:

1. Turn your computer off, then on.

2. Type PRINT MEM

3. Load a program

4. Type PRINT MEM

5. Subtract the second number from the first, and divide the remaining number by 2304. Multiply the decimal part of the answer by 2304.

This will tell you how many bytes are used in the last granule. If the number is less than 200, you only have to get rid of 200 bytes to make your program shorter by one granule. Most programs can be shrunken, by removing extra spaces and remarks.

If you know how much memory your computer has (CoCo 2 with disk drive is 22823) and you are in the middle of writing a program, do the following:

Type PCLEAR 4:CLEAR 200,&H7FFF

Type PRINT MEM

Then do step 5 above. It might not mean much now, but in the long run, the number of disks you have will be kept to a minimum.

Anton P. Milardovic

COMPUTER PEN-PALS

The following people are proud owners of Tandy Color Computers, and would like to have penpals to talk about their CoCo and exchange ideas. Please - NO PIRACY !

ALBERT NOAH
P.O. BOX 1142
MARSHALL, NC. 28753

CHARLES B. COX
401 S. HANCOCK ST., BLDG 35
LOUISVILLE, KY. 40202

ANTON P. MILARDOVIC
94 SUNRISE PLACE
KITCHENER, ON. N2B 3S9
C A N A D A

NORMAN THODE
7807 FINCH TRAIL
AUSTIN, TX. 78745

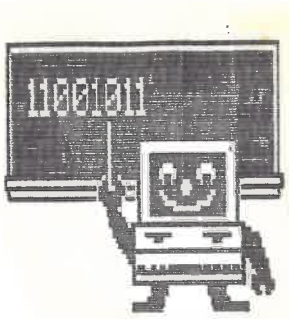
If you would like to have your name printed in the pen-pals section, send in your name & address, along with a few short sentences telling about your CoCo system, and we will print it in a future issue. As lomg as we receive your CoCo configuration, it will be printed along with your name/address.

JOE AHERN'S EDITOR'S NOTE WILL RETURN IN APRIL OF 1990.

SPECIALS

REPORTS - PROGRAMS - UTILITIES

THIS MONTH: MAKING CONVERSIONS PART III OF III



The last thing you need to know is how to convert from binary to hexadecimal, and hexadecimal to binary. Below is the conversion chart.

DECIMAL	BINARY	HEXADECIMAL
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F

To convert EFF0 to binary:

1. Find the four numbers for E.
   - They are 1110 -
2. Find the four numbers for F.
   - They are 1111 -
3. Find the four numbers for the other F.
   - They are 1111 -
4. Find the four numbers for 0.
   - They are 0000 -
5. Now put all the numbers together. 1110111111110000 is your answer.

To convert binary to hexadecimal do the same thing in reverse.

To convert 1011010000110110 to hexadecimal:

1. Divide the number into groups of 4, and find their value using the chart.
   1011=B 0011=3
   0100=4 0110=6
The hexadecimal number is B436.

To convert from decimal to hexadecimal:

1. First convert the decimal to binary.
2. Next convert the binary to hexadecimal.

To convert from hexadecimal to decimal:

1. First convert the hexadecimal number to binary.
2. Next convert the binary to decimal.

TO TRY

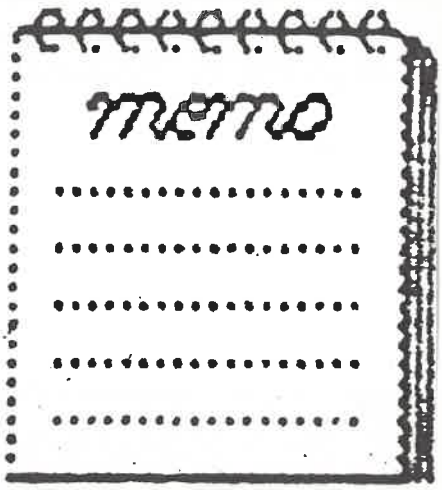
1. Convert each to hexadecimal:
a. 1011111111001100
b. 0000010000101011

2. Convert each to binary:
a. AE60
b. D018

3. Convert each to decimal:
a. FF00
b. 3FF0

* Answers to the above problems are on the last page.

THE PROGRAMMER



F E B R U A R Y

THIS MONTH'S PROGRAM

SHOPPING LIST!

SHOPPING LIST

4K
REQUIREMENTS:
PRINTER

by David McNally

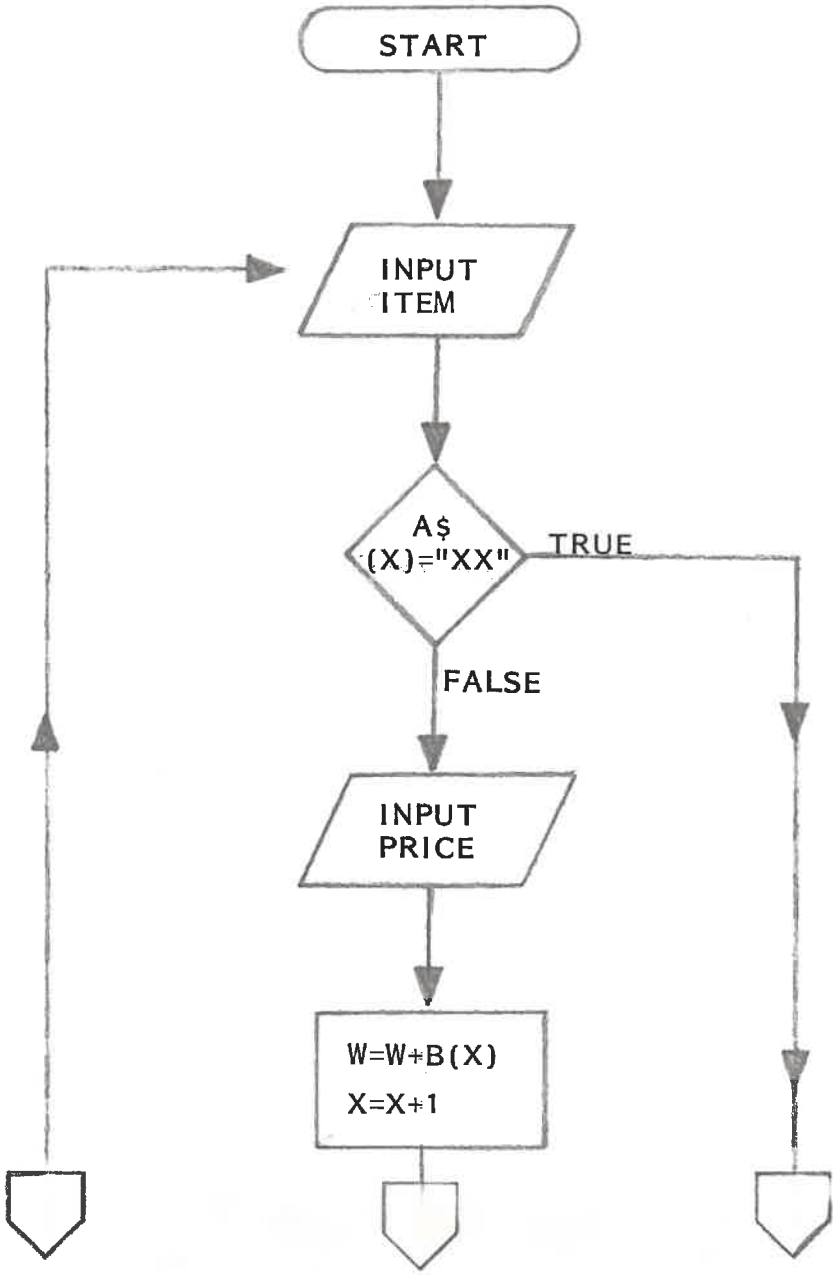
This years annual beginner's program is a shopping list maker. Type the program in and save it on tape or disk. RUN it and at the item prompt type the item's name and then press <ENTER>. Type the price at the price prompt (don't use dollar signs) and press <ENTER>. When your done type XX at the item prompt. The computer will then print out your list and figure out the sales tax (assuming the items are taxed. Change line 100 to match your state sales tax rate) and print it along with the grand total. At the end of the program listing there will be our annual flowchart. If you are having trouble reading the flowchart, see the Computer Flowcharts article in this issue.

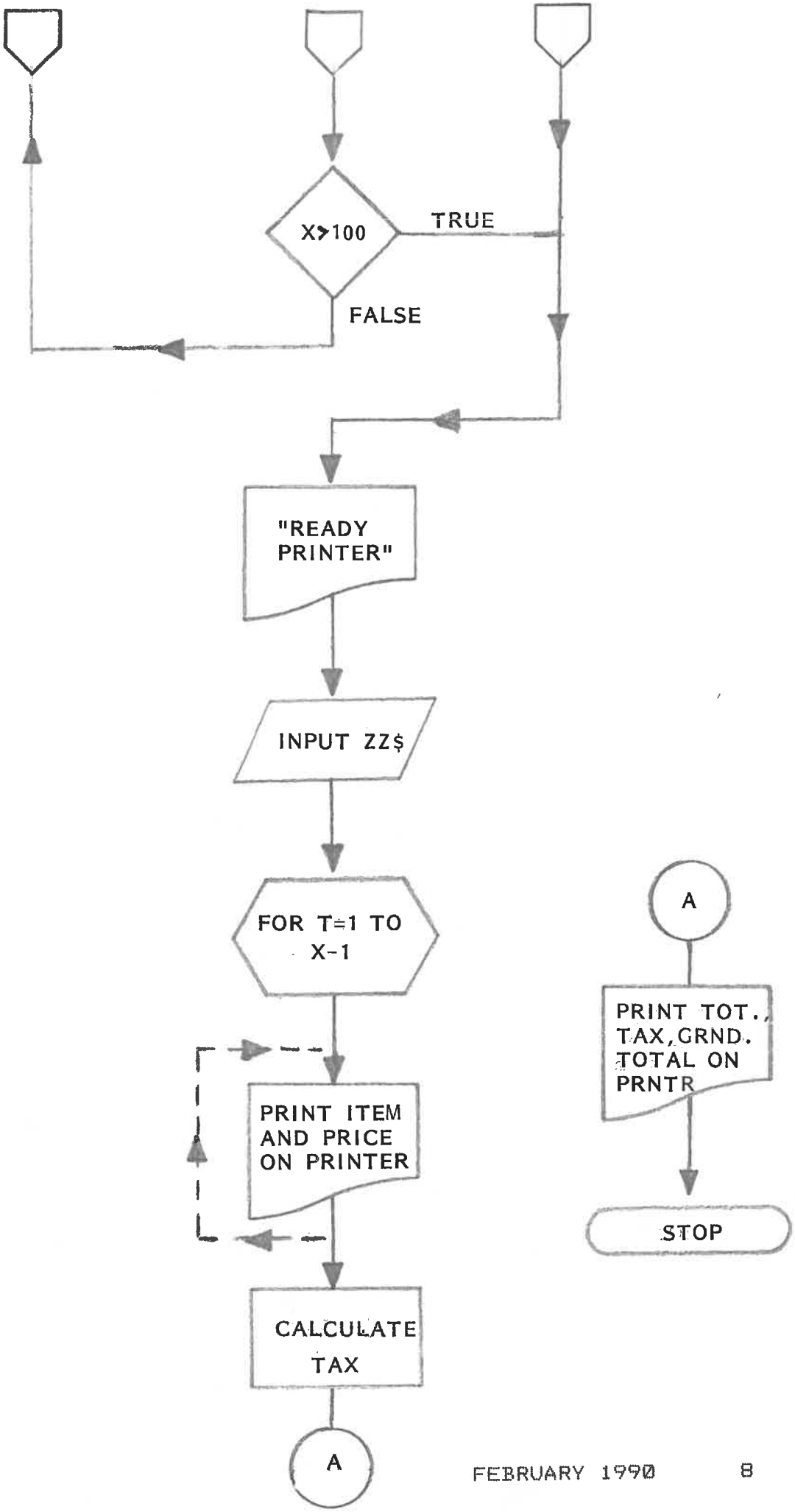
THE LISTING: SHOPLIST

```
0 ' SHOPPING LIST MAKER
1 ' COPYRIGHT (C) 1990
2 ' BY TRS-80 COMPUTING
```

`5 CLS:X=1:W=0`	CLEAR SCREEN, SET UP VARIABLES
`10 DIM A$(100),B(100)`	SET UP A$ AND B FOR 100 INPUTS
`20 PRINT"ITEM";X;:INPUT A$`	PRINT PROMPT TO INPUT ITEM & INPUT ITEM
`25 IF A$(X)="XX" THEN 60`	CHECK TO SEE IF A$="XX", IF SO GO TO THE PRINT ROUTINE.
`30 PRINT"PRICE";X;:INPUT B`	PRINT PROMPT TO INPUT PRICE & INPUT PRICE
`35 W=W+B(X)`	ADD PRICE TO THE RUNNING TOTAL (W).
`40 X=X+1`	ADD ONE TO ITEM COUNTER
`45 IF X>100 THEN 60`	CHECK TO SEE IF X 100, IF SO GOTO PRINT ROUTINE ELSE CONTINUE
`50 CLS`	CLEAR THE SCREEN
`55 GOTO 20`	GO TO LINE 20
`60 CLS`	CLEAR THE SCREEN
`65 PRINT"READY PRINTER. <ENTER> TO PRINT"`	PRINT READY PRINTER PROMPT
`70 INPUT ZZ$`	WAIT FOR (ENTER) TO BE PRESSED
`75 FOR T=1 TO X-1`	START LOOP AND CONTINUE UNTIL LOOP EQUALS VALUE OF X-1
`80 PRINT#-2,"ITEM ";T;" ";A$(T)`	PRINT ITEM X ON PRINTER
`85 PRINT#-2,"PRICE ";T;" $";B(T)`	PRINT PRICE X ON PRINTER
`90 NEXT T`	GO BACK TO BEGINNING OF LOOP. IF LOOP IS DONE, THEN CONTINUE

```
100 TAX=W*.05                                  CALCULATE 5% SALES TAX
105 L=INT((TAX*100)+.5)/100                    ROUND TAX TO NEAREST CENT
110 PRINT#-2                                   PRINT BLANK LINE ON PRINTER
115 Q=INT((W*100)+.5)/100                      ROUND TOTAL TO NEAREST CENT
120 PRINT#-2,"TOTAL ";Q                        PRINT TOTAL ON PRINTER
125 PRINT#-2,"TAX ";L                          PRINT TAX ON PRINTER
130 PRINT#-2,"GRAND TOTAL ";Q+L                PRINT GRAND TOTAL ON PRINTER
135 END                                        END PROGRAM
```




X>100
TRUE
FALSE
"READY PRINTER"
INPUT ZZ$
FOR T=1 TO X-1
PRINT ITEM AND PRICE ON PRINTER
CALCULATE TAX
A
A
PRINT TOT., TAX, GRND. TOTAL ON PRNTR
STOP

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COCO'S MATHEMATICAL FUNCTIONS

by Albert Noah

The CoCo (BASIC) includes some "automatic" features known as functions. Sometimes these functions are like formulas for doing certain kinds of things to numbers or strings. This month we will be looking at the SQR, EXP, SGN, and ABS math functions and why you might want to use them.

1. SQR : Finds the square root of a number.
   SYNTAX: SQR(NUMBER)

You can use this command to write a program that gives you the square root of any number. For example:

```
10 CLS
20 INPUT "WHAT IS THE NUMBER YOU WANT SQUARED";A
30 PRINT "THE SQUARE ROOT OF";A;"IS";SQR(A)
40 GOTO 20
```

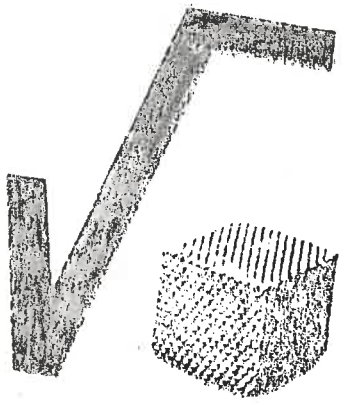
2. EXP : Returns the exponential of a number.
   SYNTAX: EXP(NUMBER)

If you type PRINT EXP(8) the value 2980.95799 is returned. The reason is 2.718281828 (exponential) raised to the 8th power equals 2980.95799

3. SGN : Tells if a number is Positive, Negative, or equals Zero.
   SYNTAX: SGN(NUMBER)

The following program will tell you if a number is positive, negative, or zero.

```
10 CLS
20 INPUT"ENTER A NUMBER";NUM
30 IF SGN(NUM)=1 THEN PRINT NUM;"IS POSITIVE"
40 IF SGN(NUM)=0 THEN PRINT NUM;"IS ZERO"
50 IF SGN(NUM)=-1 THEN PRINT NUM;"IS NEGATIVE"
60 GOTO 20
```



4. ABS: Returns the Absolute value of a number.
   SYNTAX: ABS(NUMBER)

Here's an example of using ABS:

```
10 CLS
20 INPUT "ENTER A NUMBER";NUM
30 PRINT "THE ABSOLUTE VALUE OF";NUM;"IS";ABS(NUM)
40 GOTO 10
```

I hope that this will clear up any questions that you may have had about SQR, EXP, SGN, and ABS.

SGN() and ABS()

TRS-80 COMPUTING

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TRS-80 Computing, a bi-monthly magazine for Color Computer users, has up to 35 pages filled with programs, great articles, product reviews, graphics, hints & tips, etc... Different issues feature games, graphics, utilities, business, beginner's guides, and always our end-of-the-year holiday issue. Just to show you that every other month brings you a variety for your Tandy Color Computer. So subscribe to TRS-80 Computing today! (trial issues can be bought for $1.50 each)

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THANK-YOU!

TRS-80 COMPUTING
65 OAK ROAD
CANTON, MA. 02021-2605

SLIP N SLIDE
by Albert Noah

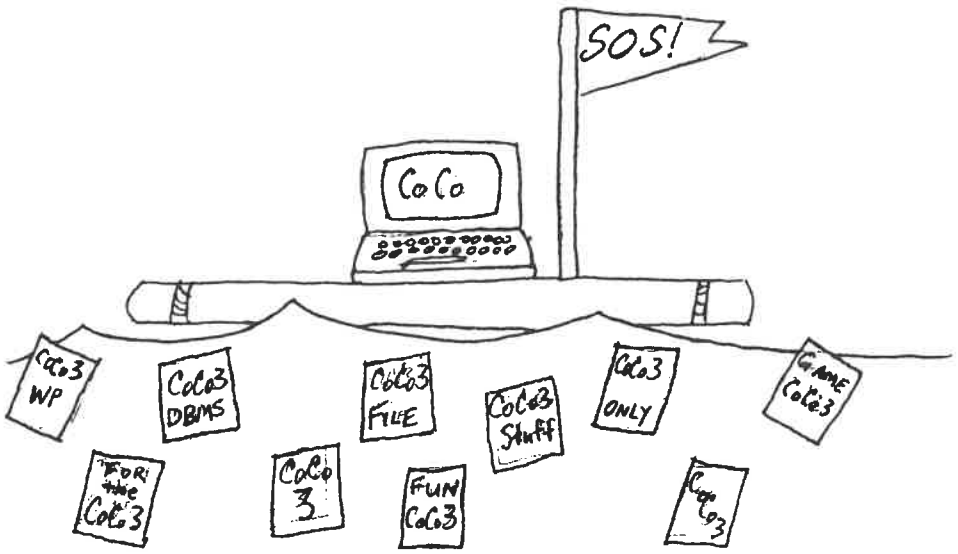
16K ECB
REQUIREMENTS:
N O N E

Try out this little addictive arcade game. Using the arrow keys, move your slimer around the screen and pick up (or collect) the different colors of slime. You can score up to 7 points depending on which "slime" you get. Your slimer gets longer after every target hit. When RUNing the program, you will be asked what type of speed you want (FAST OR NORMAL). Fast (F) simply turns the high-speed poke on. Normal (N) leaves it alone. You will then be asked if you want instructions. The instructions also tell you how many points each piece of colored slime is worth. When playing the game, be careful not to hit the outer walls (boundaries) or run into yourself when making turns; this will cause you to lose a life. Have fun!

THE LISTING: SLIPSLDE

```
0 ' COPYRIGHT 1990  TRS-80 COMPU
TING
1 CLS:PRINT@453,"FAST OR NORMAL
(F/N)?"
2 AN$=INKEY$:IF AN$="F"THEN4ELSE
 IF AN$="N"THEN3:ELSEGOTO2
3 POKE65494,0:GOTO52
4 POKE65495,0:GOTO52
5 OX=DX:OY=DY:DX=0:DY=0:C=0
6 IF PEEK(UP)=KP THEN DY=-1:C=1
7 IFPEEK(DN)=KP THEN DY=1:C=1
8 IF PEEK(LT)=KP THEN DX=-1:C=1
9 IF PEEK(RT)=KP THEN DX=1:C=1
10 IF C=0THENDX=OX:DY=OY
11 PX=PX+DX:PY=PY+DY
12 WX(HP)=PX:WY(HP)=PY:HP=HP+1
13 IF HP>EL THEN HP=0
14 PT=POINT(PX,PY):IF PT<1 THEN1
7
15 IF PT=WC THEN 33
16 GOSUB21
17 SET(PX,PY,WC)
18 RESET(WX(TP),WY(TP))
19 TP=TP+1:IF TP>EL THEN TP=0
20 GOTO5
21 SC=SC+PT
22 SOUND T1,1
23 PB=SW*INT(PY/2)+INT(PX/2)+UL
24 POKE PB,BL
25 PRINT@LL,USING PR$;SC,CT-CS;
26 EL=EL+1-(PT>3)-(PT>5)
27 IF EL>EM THEN EL=EM
28 TL=RND(RH)*SW+RND(RW)+UL
29 IFPEEK(TL)/DV<>INT(PEEK(TL)/D
V)THEN28
30 IF TL=PB THEN28
31 POKE TL,CL(PT)
32 RETURN
33 FOR I=1TO5
45 FORI=1TO62
46 SET(I,1,WC):SET(I,28,WC)
47 NEXTI
48 FORI=1TO31
49 SET(1,I,WC):SET(62,I,WC)
50 NEXTI
51 RETURN
52 DIMWX(205),WY(205):WC=8
53 CT=5:UL=1024:LL=481:WC=8:BL=1
28:RW=30:RH=13:SW=32
54 T1=176:T2=89:T3=58:EM=200:DV=
16
55 UP=341:DN=342:LT=343:RT=344:K
P=247
56 CL(1)=143:CL(2)=159:CL(3)=175
:CL(4)=191:CL(5)=207:C(6)=223:CL
(7)=239
57 PR$=" SCORE=####    LIFES   L
EFT=# "
58 GOSUB44:GOSUB76
59 SC=0:CS=0
60 EL=10:HP=9:TP=0
61 PX=60:PY=27
62 GOSUB44
63 PRINT@LL,USING PR$;SC,CT-CS;
64 DX=0:DY=-1
65 FOR PT=1TO7
66 GOSUB28
67 NEXTPT
68 GOTO5
69 IF SC>HS THEN HS=SC
70 CLS:PRINT@167,USING "YOUR SCO
RE WAS ####";SC
71 PRINT@231,USING "HIGHSCORE  I
S ####";HS
72 PRINT@295,"WANT TO PLAY AGAIN
?"
73 AN$=INKEY$:IF AN$="Y"THEN59
74 IF AN$<>"N"THEN73
```

```
34 SET(PX,PY,WC)
35 SOUNDT2,1
36 RESET(PX,PY)
37 SOUND T3,1
38 NEXTI
39 CS=CS+1
40 FOR I=0TO EL
41 WX(I)=0:WY(I)=0
42 NEXTI
43 IF CS=CT THEN 69 ELSE 60
44 CLS0
75 CLS:POKE65494,0:END
76 TI$(0)="SLIP -N":TI$(1)="- sl
ide"
77 I=1:J=0
78 PRINT@487,"NEED INSTRUCTIONS?
";
79 PRINT@204,LEFT$(TI$(J),I);
80 I=I+1:IF I=8THENI=1:J=ABS(J-1
)
81 SOUND 60+5*I-10*I*J,2
82 AN$=INKEY$:IFAN$="N"THEN93
83 IF AN$<>"Y"THEN79
84 CLS:PRINT@9,"SLIP -N- SLIDE"
85 PRINT" SCORE AS MANY POINTS A
S YOU      CAN BEFORE YOU DIE "CT
"TIMES."
86 PRINTTAB(10)CHR$(138)" "CHR$(
133)," 1 POINT"
87 FOR I=2TO7
88 PRINTTAB(10)CHR$(138)CHR$(CL(
I))CHR$(133),I"POINTS"
89 NEXT
90 PRINT "THE ARROW KEYS CONTROL
 YOUR      DIRECTION. YOU CAN ALS
O MOVE     DIAGONALLY,  THE 'SLIM
E' GETS    LONGER AFTER EACH TARG
ET HIT."
91 PRINT@485,"PRESS [enter] TO B
EGIN";
92 IF INKEY$<>CHR$(13)THEN92
93 RETURN
```



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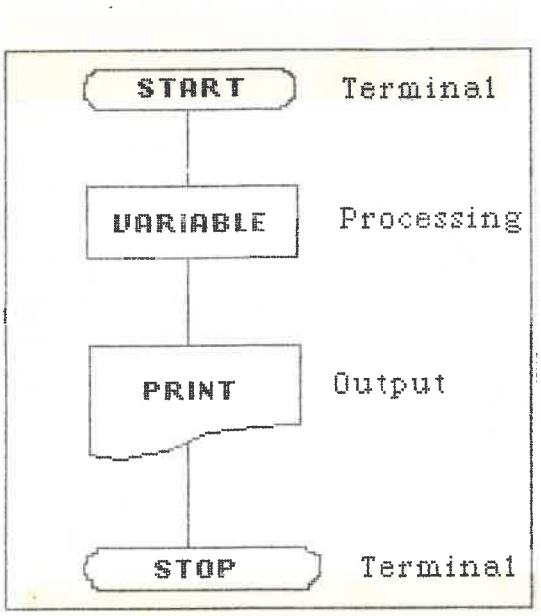
Computer Flowcharts

by Joe Ahern

As of last year, in our first beginners issue (February 1989), we followed our main program with a diagram called a flowchart. Many of you that have just begun using computers, may not know what a flowchart is, or how it is read. That's why I am writing this article; to introduce you to computer flowcharts and to show you what the different symbols mean.

First of all, a flowchart, by definition, is merely a sketch or diagram that gives a step-by-step procedure on how you will instruct the computer to solve a problem (this is also known as an algorithm).

A flowchart uses certain symbols that can be translated into computer instructions. See Figure 1 for the most commonly used flowcharting symbols.



F I G U R E 1

Now the three commonly used symbols shown in Figure 1 that I will be discussing in this article are: terminal, processing, and output.

The terminal symbol, an oval shaped symbol, is used to indicate the beginning and end of a flowchart.

The processing symbol, a rectangle, is used when we want to assign a value to a variable.

The symbol used for output is supposed to look like a piece of paper carelessly torn from a printer.

All flowcharting symbols are connected by "flow arrows" that you follow when reading a computer flowchart.

The symbols used in flowcharting can be easily and neatly drawn by using a flowcharting template, a piece of plastic with holes cut out that are the necessary shapes. Flowchart templates even have the flow arrows, along with all the different symbols.

If you plan to buy a flowcharting template in the near future, I suggest the one sold at Radio Shack (cat. #26-254). They sell it for $2.49.

I have one suggestion when drawing flowcharts: A flowchart should be "language independent". In other words, it should show you how to solve a problem no matter what computer language you are using. Therefore, a flowchart should not include any specific commands from any specific language.

I am concluding this article with two examples. Each example has a description of a program, an algorithm, and the flowchart.

EXAMPLE 1

A truck travels at a rate of 45 miles per hour for 5 hours. We want a program to calculate and print the distance the truck traveled. (This is the description)

Here is the program:

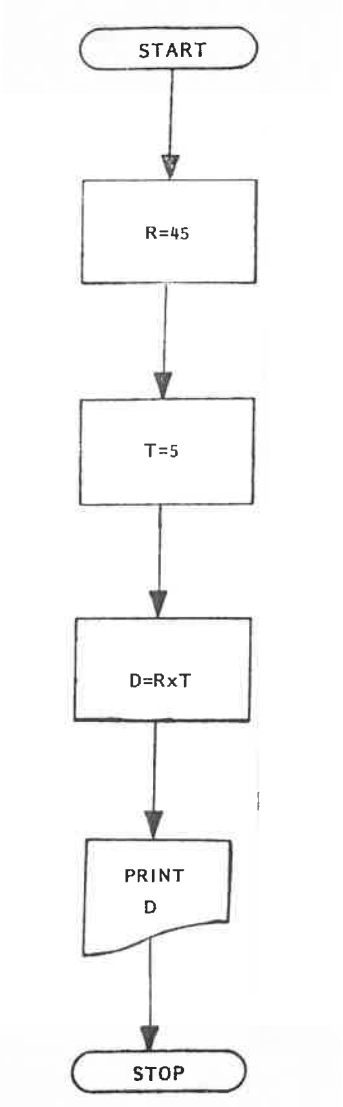
```
10 R=45
20 T=5
30 D=R*T
```

```
40 PRINT D
```

Here is what the program does step-by-step (algorithm):

1. Assigns 45 to R
2. Assigns 5 to T
3. Assigns to D the value calculated by the formula D=RxT
4. Prints the value of D

Now the above algorithm leads to the flowchart below:



Remember when reading the flowchart above, find the START symbol and from there follow the flow arrows until the STOP symbol is reached. Always try and draw flowcharts so that it can be read from top to bottem.

EXAMPLE 2

A farmer wishes to fence in his vegetable garden. The garden is rectangular in shape and measures 60 feet by 30 feet. Fencing costs $4 per foot. The program should calculate and print (with a label) the amount of fencing needed and the total cost of the fence.

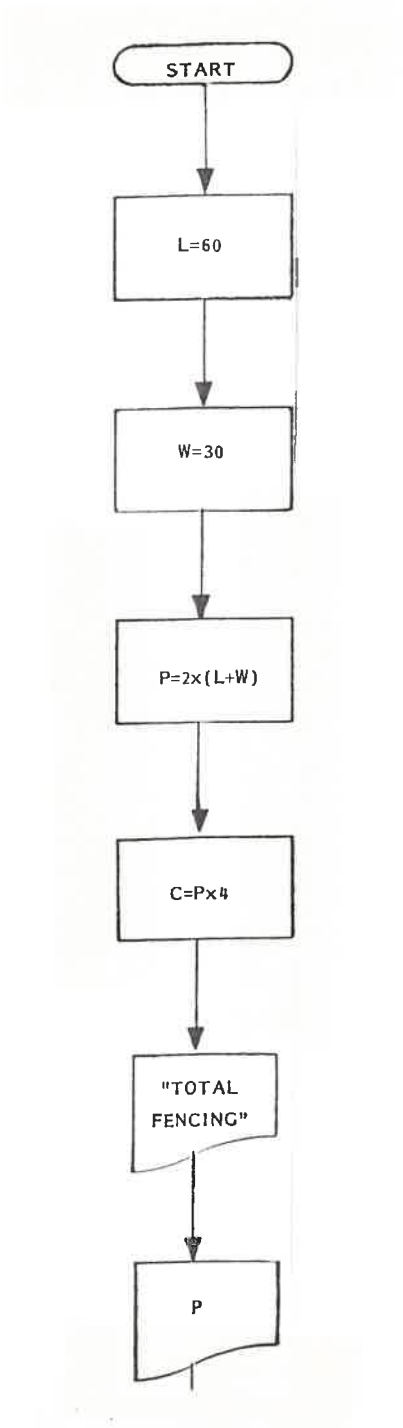
The program to solve this problem:

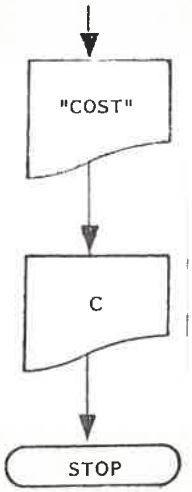
```
10 L=60
```

```
20 W=30
30 P=2*(L+W)
40 C=P*4
50 PRINT "TOTAL FENCING ";P
60 PRINT "COST ";C
70 END
```

The algorithm:

1. Assigns 60 to L
2. Assigns 30 to W
3. Calculates P (perimeter) by the formula P=2 X (L+W)
4. Calculate C by C=Px4
5. Prints P (with label)
6. Prints C (with label)





Notice in the flowchart above that in the output symbols, where the values of the variables are printed, the word "PRINT" is missing. As I've stated before, your flowchart should be language independent, so this is something we want to do.

Also in the output symbols, where the labels "TOTAL FENCING" and "COST" are, you notice that they are in quotes. When indicating on a flowchart that you want a message printed, you enclose it in quotation marks and place it in the output symbol.

I hope that you now have more of a broad idea on what flowcharts are, how they are used, and how to draw one of your own. I have shown you "simple" flowcharts. To see a more complicated one, see the beginner's program flowchart on page 6.

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The Color Computer As A Filing Cabinet
Part I: Basic Commands For Opening/Closing Data Files

By: Anton Peter Milardovic

I think that all of us at one time or another wanted to keep a list of stuff on our computer. That includes songs, tapes, movies, records and, of course, our computer programs! Well, computer programmers (those who made the computer) had filing as one of the ideas for the use of a computer.

I must state two things before going on. First of all, you will see that all of my examples are done using the disk drive. All the commands will work the same for tape (-1), except for WRITE. Tape users should substitute PRINT.

This part will focus on WRITE and INPUT, and what is called "SEQUENTIAL ACCESS". What this means is that you can only read your data file in the same order as you wrote it. Makes sense, right? Well, with disk there is also a faster method called "DIRECT ACCESS", which we will discuss in further detail in the next issue.

Take a look at the following program. Maybe even type it in to see what it does:

```
10 OPEN"O",#1,"TEST.DAT"              ( Tape Users:
20 WRITE #1,"THIS IS A TEST"            Change #1 to #-1
30 CLOSE #1                             & WRITE to PRINT)
```

Try it out? Okay, the disk drive spun for a while. Now what? Check the directory. There's a new entry there --- TEST.DAT.

I will explain the program one line at a time.

Line 10 OPENs buffer 1 for OUTPUT to a file called TEST.DAT. There are 16 buffers you can open. -1 for tape, and 1-15 for disk drive. You can have 15 files on disk open at the same time! That's one of the advantages to disk over tape.

Line 20 PRINTs "THIS IS A TEST" to buffer 1. When the buffer gets filled (256 characters) or when the file is CLOSEd (as in line 30) the contents of the buffer are dumped to disk.

Line 30 CLOSEs buffer 1. If you don't specify which buffer you want to close, the computer will close all buffers. This would happen when you open more than one buffer.

Okay. The next step would then be to retreive this data. Try the following program:

```
10 OPEN"I",#1,"TEST.DAT"        (Tape Users: Remember to
20 INPUT #1,A$                   Change the #1 to #-1)
30 PRINT A$
40 CLOSE #1
```

When you run it, you see on the screen: THIS IS A TEST. What about the second line? Try putting in the following line:

```
35 GOTO 20
```

Now what? You get an Input past the End of file error. That means that you are trying to retreive more data than exists. So how will the computer know when to stop? You get it to check if this is the end of the file, of course! Add this:

```
15 IF EOF(1) THEN 40
35 GOTO 15
```

There. That's better. Now, the program opens the file, and checks if there is data to read. If so, it reads it, puts it on the screen, and repeats the loop, until there's nothing left to read.

If you haven't already noticed, I have indicated that disk users must use WRITE and tape users use PRINT. Why, you ask? The reason is this:

```
WRITE #1, 5,"This is a string", 16, "123"
     will write 5,"This is a string", 16, "123"
     to the disk.

PRINT #1, 5,"This is a string", 16, "123"
     will write
                5
                This is a string
                16
                123
     to the disk.
```

With PRINT, you get an <ENTER> between all variables, and you cannot distinguish between strings and numerics. Also, if the string you PRINT has a comma or semi colon in it, the string would be split where they occur.

In other words, WRITE writes EXACTLY what you want it to write. No alterations, no surprises.

* * * * * * * * *

You might be asking, "What happens if I save a list of stuff like that, and then I want to add something?" Well, with sequential access there's only one way to do it. Type in the following program:

```
10 OPEN"O",#1,"GROCERY"
20 FOR X = 1 TO 9
30 READ A$
40 WRITE #1, A$
50 NEXT X
60 CLOSE #1
70 DATA MILK, EGGS, BREAD, HONEY, CHIPS,
        POP, CAKE, ICE CREAM, HOT DOGS
```

Now let's say you forgot that you need pop corn. First save the above program as GROCLIST. Now type in and run the following program:

```
10 OPEN"I",#1,"GROCERY"
20 OPEN"O",#2,"GROCERY2"
30 IF EOF(1) THEN 70
40 INPUT #1, A$
50 WRITE #2, A$
60 GOTO 30
70 WRITE #2, "POP CORN"
80 CLOSE #1,#2
```

Do you know what that did? First it opened the file GROCERY in buffer 1 for input. Then it opened GROCERY2 in buffer 2 for output. Then it checked for the end of file in buffer 1. While there's still more data there, it read it into memory, and wrote it to buffer 2. When there's no more data in buffer 1, it wrote POP CORN into buffer 2 and closed both files.

That wasn't too hard, was it? Now that you have that list, let's say you went shopping, but didn't buy everything. How would you delete items bought from the list? Try this:

```
10 OPEN"I",#1,"GROCERY2"
20 OPEN"O",#2,"NEW LIST"
30 IF EOF(1) THEN 110
40 INPUT #1, A$
50 ?"DID YOU BUY THE ";A$
60 EXEC44539:A$=INKEY$
70 IF A$="Y" THEN 30
80 IF A$="N" THEN 60
90 WRITE #2, A$
100 GOTO 30
110 CLOSE #1,#2
```

What this does is ask if you bought something; if you answer yes, it goes back and reads more data, if you answer no, it adds it to the new list.

Of course, if you only bought one thing, say chips you could go about it this way:

```
10 OPEN"I",#1,"GROCERY2"
20 OPEN"O",#2,"NEW LIST"
30 IF EOF(1) THEN 80
40 INPUT #1, A$
50 IF A$="CHIPS" THEN 30
60 WRITE #2, A$
70 GOTO 30
80 CLOSE #1,#2
```

Which would rewrite everything except for CHIPS.

Okay, here's some homework until next month's issue: Write a program with which you can:

a) make a new list
b) add to an existing list

c) delete something from that list
d) view the whole list

Feel free to add your own options to the menu; eg. view dir, print list (on printer), etc.

And if you think you can handle it, make a few modifications so that you can have more than one thing in the input. For example, an inventory program, where you have to input name of item, unit price and amount. (HINT: you'll need to change your WRITE to read WRITE #1, A$,B,C$, etc.; same with your inputs. Don't get the order of your variables screwed up!)

Then if you're really daring, you will have to add an option where you can CHANGE something in the list.Using the example above, that would be either price or amount.

Happy CoCoing!

* * * * * * * *

NEXT MONTH: Mr. MAPster brings you GET, PUT, FIELD and LOF. For a sneak preview, take a look at Chapters 7 and 9 of your Color Computer Disk Manual.

If you have any questions or comments with regards to this article, feel free to write to Anton Peter Milardovic at 94 Sunrise Place, Kitchener, Ontario, Canada, N2B 3S9. Be sure to include your full mailing address for quickest response.

SLAM - BAM

Slam Bam is a basketball slam dunk simulation game written for a 128k Color Computer 3, with one joystick. The program allows one or two players and about 27 different slam dunks. The dunks are realistic looking and you can even break the backboard. You can practice your dunks and then compete against a friend. There is even a judge that scores your dunks. After your competition, you can save your high scores on tape or disk and load them back later. Although the instruction manual gets you a little lost, you pick up how to play the game without a lot of difficulty. I definitely recommend that you add Slam Bam to your software collection!

Erich Sweaney Software, c/o The CoCo Notes Newsletter, P.O. Box 45434, Tacoma, WA. 98445 (206) 535-9733

* FOR A MORE COMPLETE LIST OF ERICH SWEANEY SOFTWARE, SEE THE FULL PAGE AD IN THIS ISSUE.

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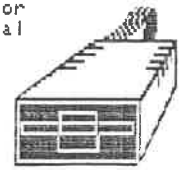

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All programs include ins.manuals

Annual Index - 1989

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TRS-80 COMPUTING ON DISK

TRS-80 Computing On Disk are all the programs, articles, & advertisements all put together on one 5.25 inch disk, starting with the June/1989 issue. Back issues of TRS-80 Computing On Disk are not available. If you want something that was in the June/87 - April/89 issue, you would have to order magazine back issues or TRS-80 Computing On Tape. Simply fill out the form below, and enclose it with cash or check (Use our address on the front cover). Thank-you.

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1 PAGE	6 MAGAZINES	$14.00
1 PAGE	12 MAGAZINES	$18.00

TRS-80 COMPUTING CLASSIFIED RATES

MININUM 2 LINES 80 CHARACTERS EACH
EACH LINE IS $.60

* FOR MORE INFORMATION ON ADVERISING, REQUEST OUR ADVERTISING SHEET.

SUBMITIONS

IF YOU HAVE A PROGRAM THAT YOU WOULD LIKE TO PUT IN OUR MAGAZINE, SEND IT ON TAPE OR DISK. (WE'RE SORRY BUT WE CAN'T TYPE IN LISTINGS) IF WE LIKE IT, IT WILL BE PRINTED IN THE FOLLOWING ISSUE. MAKE SURE THE PROGRAM IS ERROR-FREE, AND ANY INSTRUCTIONS OR DESCRIPTIONS ARE INCLUDED WITH IT. WE ARE ALSO LOOKING FOR 1 OR 2 LINE PROGRAMS. THESE MAY BE TYPED ON A STANDARD PIECE OF PAPER.

SPREAD THE WORD ABOUT US!!

** NOTICE - THIS WILL BE THE LAST TIME WE WILL PRINT THE CLASSIFIED SECTION UNLESS WE GET ENOUGH RESPONSE FOR IT NEXT MONTH. WE WILL STILL HAVE THE SECTION AVAILABLE, WE JUST WON'T PRINT IT UNLESS THERE IS AN AD TO GO IN THERE. WE HAVE DROPPED THE RATE FROM $1.50 TO $.60.

ANSWERS (SPECIALS)
PAGE 4

1. a. BFCC
   b. 042B

2. a. 1010111001100000
   b. 1101000000011000

3. a. 1111111100000000
   b. 0011111111110000

ADVERTISER'S INDEX