HOCUS 99

Home Computer Users Spotlig
a monthly publication of th
Milwaukee Area 99/4 Users Gr

APRIL 1992

MILWAUKEE AREA USER GROUP
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Group Meetings - 3rd Saturday Monthly
12:30 PM til 4:00 PM
Wauwatosa S & L - 7500 West State St.

- May 16
- June 30
- July 18 ..... Picnic
- August 15
- September 19
- October 17
- November 1 .... TI Fair
- November 21
- December 19 ... Cristmas Party

South Sub-Meeting - 3rd Tuesday Monthly
7:00 PM til 10:00 PM
Franklin State Bank - 7000 So 76th
Next Meeting - April 21, 1992

Membership Dues $12 - Family $18

<<<< HOCUS NEWSLETTER INDEX >>>>

Last Month Norm Goldberg gave a 'Beginners' guide to to Multiplan presentation at our meeting. Since this month will be our annual 'Swap Meet', there won't be any presentation, but next month we shall continue on with the "Intermediate' stage of Multiplan, with our Jim Phinney as teacher and follow that the next month with Leon Guntzy from the Racine Group as the more 'Advanced' Multiplan presentator. If that doesn't cover the topi to its bitter end, who knows, we may have to have a more-more 'Advanced' session.

May Almanac Trivia

1 May Day
2 First Commercial Satellite Transmission 1965
3 First Commercial Jet Air Service 1952
4 Academy of Motion Picture Arts & Sciences 1927
5 John Scopes, Teaching Evolution, Arrested 1925
6 Hindenburg Dirigible Exploded 1937
7 American Medical Association Founded 1847
8 Harry Truman, 33rd President, Born 1884
9 Ben Franklin Published 1st American Cartoon 1754
10 Mothers' Day
11 Salvidore Dali, Artist, Born 1904
12 1st Non-stop Balloon Crossing North America 1980
13 Printing Press Patented 1821
14 Lewis And Clark Expedition Began 1804
15 First Airline Stewardess 1930
16 Armed Forces Day
17 New York Stock Exchange Established 1792
18 Mount St. Helens Erupted 1980
19 Boys Club of America Founded 1906
20 First Trans-Atlantic Air Service 1939
21 Amelia Earhart's Solo TransAtlantic Flight 1932
22 Associated Press Founded 1900
23 First Cross Country Auto Trip 1903
24 Supersonic Concorde Began Service 1976
25 Memorial Day
26 Sally Ride, First U.S. Woman Astronaut Born 1951
27 Golden Gate Bridge Opened 1937
28 "On With The Show" First Color Talkie Movie 1929
29 John F. Kennedy, 35th President, Born 1917
30 First Indianapolis 500 Race 1911
31 17th Amendment to Constitution Ratified 1913

TI 99 COMPUTER

FORMATTER 'CRIB SHEET'

****

Text Dimension commands, as the name implies, move or share the words in the document (margins, linespacing, right justify, etc.)

```
.FI   : FILL     : PUTS AS MANY WORDS ON A LINE AS WILL FIT.
.NF   : NO FILL  : CANCELS FILL.
.AD   : ADJUST   : ALIGNS THE TEXT TO THE LEFT AND RIGHT MARGINS. (RT. JUSTIFY)
.NA   : NO ADJUST: CANCELS ADJUST.
.LM n : LF MARGIN: SETS LEFT MARGIN TO "n".
.RM n : RT MARGIN: SETS RIGHT MARGIN TO "n".
.IN n : INDENT   : CREATES AN AUTO-INDENT FROM LEFT MARGIN.
.LS n : LINE SP  : SETS LINE SPACING TO "n" LINES.
.PL n : PG LENGTH: DEFINES NUMBER OF LINES TO A PAGE.
.BP   : BEGIN PG : DEFINES FIRST LINE OF NEW PAGE.
```

Internal Format commands control the spacing of characters on a line.

```
.SP n : SPACE    : SIMILAR TO THE TAB FUNCTION.
.CE n : CENTER   : CENTERS NEXT "n" LINES BETWEEN MARGINS.
```

Highlighting commands control functions such as underline or bold and allow you to redefine characters to use them to send CTRL codes to the printer.

```
^     : REQUIRED : JOINS WORDS TOGETHER WHEN REQUIRED TO PREVENT SPLITTING IN
.     :   SPACE  :      REFORMATING, UNDERLINE, ETC.
&     : UNDERLINE: (UNDERSCORE) UNDERLINES ALL TEXT FOLLOWING UNTIL NEXT PACE.
@     : BOLD     : (OVERSTRIKE) RETYPES FOLLOWING TEXT FOUR TIMES.
.TL xx: TRANS-   : ALLOWS REASSIGNMENT OF ONE CHARACTER TO REPRESENT A NUMBER.
.     : LITERATE : OF CHARACTER VALUES TO SEND CODES TO THE PRINTER.
.CO t : COMMENT  : SIMILAR TO REM IN BASIC--ALLOWS NOTES THAT DONT PRINT.
```

Page identification commands print notes in the upper or lower corner of each page, either headers or footers.

```
.HE t : HEADER   : PRINTS TEXT (t) AND PAGE NUMBER AT TOP OF EACH PAGE.
.FO t : FOOTER   : PRINTS TEXT (t) AND PAGE NUMBER AT BOTTOM OF EACH PAGE.
.PA   : PAGE #   : RESETS PAGE NUMBER IN .HE AND .FO
```

File management commands

```
.IF f : INCLUDE  : MERGES A FILE TO PRINT A DOCUMENT TOO LARGE FOR ONE FILE.
.     :  FILE    :
```

Mail Merge option commands are used to supply values to the variables in a letter that has been set up for the mail merge option

```
.ML f  :MAIL LIST: IDENTIFIES VALUE FILE (f) FOR MAIL LIST.
*n*    :VARIABLE : INSERTED IN TEXT AS VARIABLE FOR ASSIGNMENT FROM VALUE FILE
.DP n:t:DISPLAY  : PROMPTS YOU USING TEXT "t" TO ASSIGN TO VARIABLE (*n*).
.       :  PROMPT :
```

1946

Electrical engineer J. Presper Eckert and physicist John Mauchly complete the first programmable electronic computer, ENIAC, at the University of Pennsylvania's Moore School of Electrical Engineering.

Eckert and Mauchly form the first commercial computer firm, the Electronic Control Company (later the Eckert-Mauchly Corporation), to manufacture electronic computers.

1947

Bell Labs scientists John Bardeen, Walter Houser Brattain and William Bradford Shockley revolutionize the young computer industry by inventing the transistor,

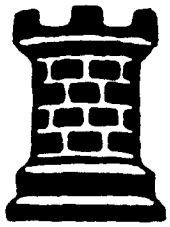
1949

M.I.T.'s Claude Shannon switches on computer game history when he demonstrates how to outline problems using game-playing machines, then builds a chess-playing machine called Caissac.

EDSAC (Electronic Delay Storage Automatic Computer) makes its first calculation on May 6. Built by Maurice Wilkes at Cambridge University, England, EDSAC performs one computation in three milliseconds. Wilkes is the first inventor to have a subroutine library in mind while designing a computer.

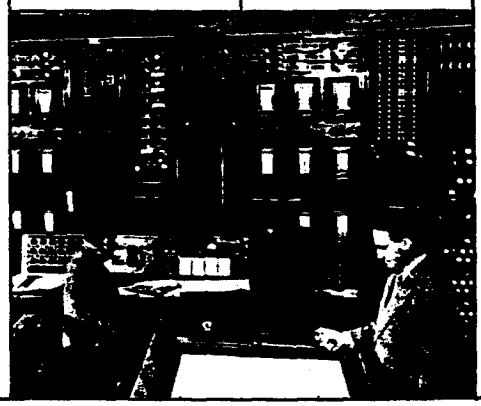
1950

On an 8 × 8 board, Alan Turing writes the first computer program to simulate chess.



Kurt Vonnegut, Jr., writes about "EPICAC" in one of the first love stories involving a computer.

The American military begins to use computers to simulate operations in its "war games."



1951

The first non-specialist computer magazine, *Computers and People* (originally titled *Computers and Automation*), comes on the market.

John Pinkerton completes the first business computer, LEO, for Lyons Teashop Company in England. LEO will be used for administrative purposes, not for calculating.

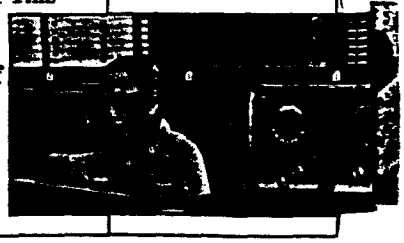
Eckert and Mauchly complete UNIVAC I (Universal Automatic Computer), the first computer specifically designed for commercial operations, and deliver it to the U.S. Census Bureau for tabulating the 1950 census.

While working on UNIVAC I, Grace Hopper meets the need for faster programming by devising a set of instructions that tells the machine how to convert its language into symbolic code. This is the A-0 compiler, the first of its kind.

1952

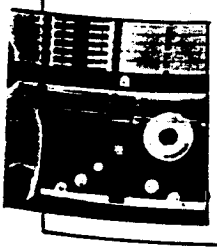
IBM, the world's largest purveyor of punched card office machines, shifts to the manufacture of electronic computers.

John Diebold's "Automation: The Advent of the Factory" leads off the string of studies that will explore the computer's impact on employment and leisure time.



1954

FORTRAN is born, through a paper titled "Specifications for the IBM Mathematical Formula Translating System, FORTRAN," written by IBM's Programming Research Group.



1955

At RCA Labs in Princeton, N.J., Harry Olson and Herbert Belar complete the RCA Electronic Music Synthesizer, the first of its kind.

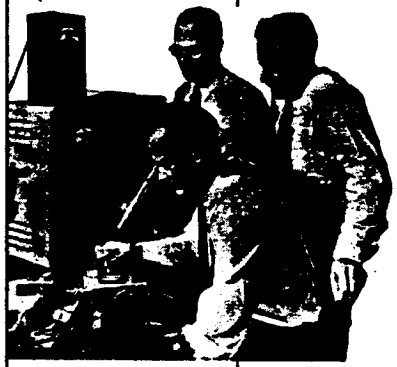
M.I.T.'s Whirlwind I introduces the first computer graphics: primitive interactive line drawings on two display consoles.

The first formal computer user group, SHARE, meets in the basement of Rand Corporation headquarters in Santa Monica, Calif. The members, including government, research, aviation and computer organizations, gather to exchange "homegrown" software in the absence of instructions for the IBM 704.

1956

The 45-mile stretch of high-tech creativity known as Silicon Valley etches itself on the landscape of California's Santa Clara Valley.

Bardeen, Brattain and Shockley receive the Nobel Prize for their invention of the transistor. Shockley, who had left Bell Labs in 1955, founds Shockley Transistor Corporation, one of the first of the Silicon Valley firms. Engineers from Shockley Transistor will form their own major electronics firms, such as Fairchild Semiconductor.



1957

At his marriage in Amsterdam, programming expert Edsgar Dijkstra fills in his profession on the license as "programer." Finding this unacceptable on the grounds that no such profession exists, city authorities erase his entry and substitute "theoretical physicist."

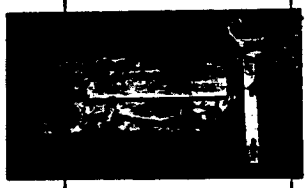
Lejaren Hiller arranges the first computer-composed music, *Illiac Suite for String Quartet.*

In Maynard, Mass., Ken Olsen starts Digital Equipment Corporation (DEC) as a mail-order parts business.

1958

Computer firms spring up along Route 128, north of Boston.

Texas Instruments' Jack St. Kilby develops the first working model of the integrated circuit.



At Control Data Corporation, Seymour Cray designs the CDC 1604, the first fully transistorized supercomputer.

1959

At Fairchild Semiconductor, Robert Noyce and Jean Hoerni develop the planar process, in which circuit components are interconnected by photoengraving on a flat, polished wafer, usually silicon. With integrated circuits, computers grow smaller and much more powerful.

CODASYL (Committee on Data Systems Languages), representing government, military and industry, meets to decide on a common language for business data processing. COBOL, for Common Business Oriented Language, is published within months, whereupon the Defense Department stipulates that all its suppliers must use the language.

1960

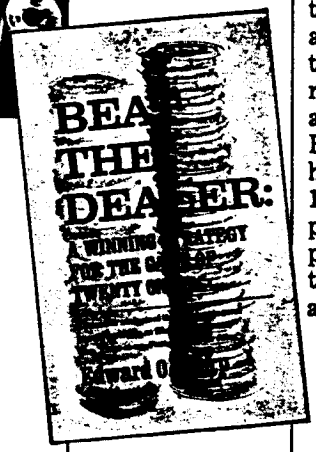
The term "software" becomes widely accepted throughout the computer industry.

1961

The National Institutes of Health Clinic Center in Bethesda, Md., implements the first computerized patient-monitoring system.

1962

Dr. Edward O. Thorp's best-selling *Beat the Dealer* describes using a computer to work out the odds at blackjack. Thorpe's system is so successful that several casinos bar him from the game.



Disk file storage is initiated with the IBM 1440 series. The 14-inch disks look like phonograph records, are arranged in stacks of six and store three million characters.

1963

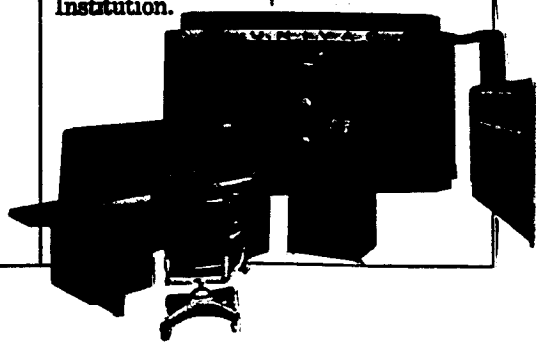
With a $30 million investment and an IBM 9090, American Airlines launches SABRE, the first computerized airline reservation system. One of the largest commercial data bases in operation, SABRE allows customers to book reservations and rent cars. By 1968 it will handle over 100,000 calls per day from passengers, travel agents and other airlines.

Ivan Sutherland, a doctoral candidate at M.I.T.'s Lincoln Laboratory, designs Sketchpad, a line-drawing system for draftsmen. Using a cathode ray display tube, the system features an electronic stylus, or light pen, to display calculations at any stage of design. Soon after, another M.I.T. researcher, Timothy Johnson, develops a collateral program to display three-dimensional drawings.

M.I.T.'s Dr. Joseph Weizenbaum develops Eliza, a program that simulates conversation between psychotherapist and patient.

General Motors Research Labs produces the first computer-designed auto part: the trunk lid for 1965 Cadillacs. The computer system is DAC-1 (Design Augmented by Computer), whose screen displays an image that can be modified with a light pen.

After more than 73,000 hours of steadfast service, UNIVAC I is retired to the Smithsonian Institution.



1964

Sara Lee, maker of frozen pastries, becomes the first fully automated factory. The Deerfield, Ill., plant uses a Honeywell 610 computer to change equipment speeds and oven temperatures and to determine what products are needed in filling orders.

In *Texas* v. *Hancock* a programmer who stole his employer's computer software, worth about $5 million, is convicted and sentenced to five years. This constitutes the first computer crime leading to criminal prosecution.

1965 1966 1967 1968 1969

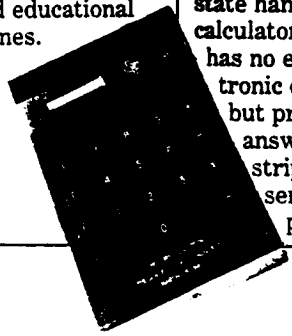
On May 1, at four A.M. in a room at Dartmouth College, John Kemeny and Thomas E. Kurtz run their first program in BASIC (Beginners' All-Purpose Symbolic Instruction Code) for non professional computer users.

Harris-Intertype Corporation introduces three models of a computer designed specifically for typesetting. All of them justify automatically, and the top-end version offers near-perfect hyphenation.

Several Wall Street firms turn to computers for securities analysis and accounting.

DEC produces the first "mini" computer, incorporating many features of a large computer but with smaller storage capacity and a slower processing speed.

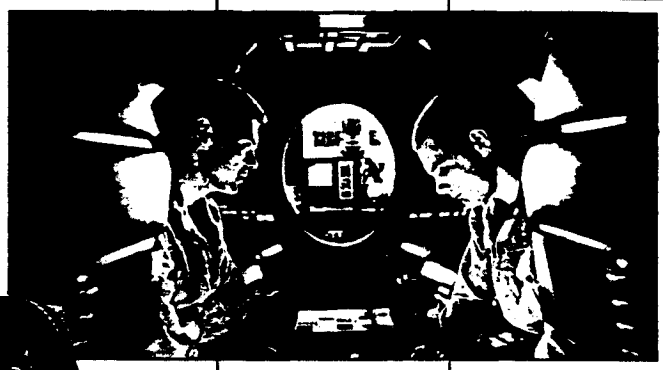
Schools begin to use computers for science simulation, math quizzes and educational games.



In the first federal case involving criminal use of computers, *U.S.* v. *Bennett*, a bank programmer is convicted of adjusting a computer to ignore all his overdraft checks.

Operation Match, one of the early computer dating services, opens in Cambridge, Mass.

Texas Instruments unveils the first solid-state hand-held calculator. It has no electronic display, but prints out answers on a strip of heat-sensitive paper.

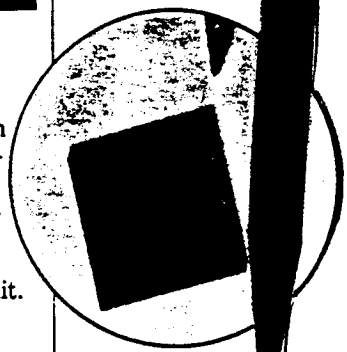


The chess-playing Mac-Hack IV is entered by Richard Greenblatt in the Massachusetts state championship, becoming the first program to compete successfully against human chess players.

Computerworld, one of the most comprehensive weekly newspapers geared to the computer industry, begins publication.

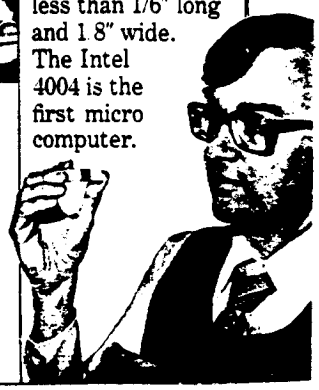
The movie *2001: A Space Odyssey* plays across the country, introducing the mutinous computer HAL.

W. Carlos' *Switched-On Bach*, an album of fugues, preludes and two-part inventions played on a Moog Synthesizer, is a big hit.



Gordon Moore and Robert Noyce leave Fairchild Semiconductor to form Intel (Integrated Electronics) Corporation.

M. E. Hoff, Jr., a young engineer at Intel, takes charge of the Busicom project involving the manufacture of chips for a Japanese calculator firm. His improvements on the design result in a central processing unit of 2,250 miniaturized transistors on a chip less than 1/6" long and 1/8" wide. The Intel 4004 is the first micro computer.



TIPS FROM THE TIGERCUB

No. 67

Tigercub Software
156 Collingwood Ave.
Columbus, OH 43213

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My three Nuts & Bolts disks, each containing 100 or more subprograms, have been reduced to $5.00 each. I am out of printed documentation so it will be supplied on disk.

My TI-PD library now has well over 500 disks of fairware (by author's permission only) and public domain, all arranged by category and as full as possible, provided with loaders by full program name rather than filename, Basic programs converted to XBasic, etc. The price is just $1.50 per disk(!), post paid if at least eight are ordered. TI-PD catalog #5 and the latest supplement is available for $1 which is deductible from the first order.

In a MICROpendium article, Jerry Stern remarked that it would be quite difficult to write a program that would accept input of a formula and then use the formula. He also thought such a program would be very slow.

No programmer could resist a challenge like that, so -

```
100 DISPLAY AT(1,3)ERASE ALL
:"PROGRAMMABLE CALCULATOR":"
":"  V1.1 by Jim Peterson"
:: CALL INIT
110 DISPLAY AT(5,1):" Input
 any mathematical  formula
 in the form of a  valid B
ASIC statement, usingA for t
he value to be calcu-"
120 DISPLAY AT(9,1):"lated a
nd B thru F for the  values
to be input.":" Examples -
":"  A=(B-C)^D-7":"  A=B-C
+C*.1-C*.0575":"  A=INT(ABS
(B-C))-PI"
130 DISPLAY AT(17,1):" To c
hange the formula,  enter
0 for all values."
135 DISPLAY AT(20,1):"This v
ersion can handle FOR/NEXT l
oops, IF THEN ELSE,  MAX, M
IN and <>"
140 DISPLAY AT(24,7):"PRESS
ANY KEY" :: DISPLAY AT(24,7)
:"press any key" :: CALL KEY
(0,K,S):: IF S=0 THEN 140 EL
SE CALL HCHAR(7,1,32,18*32)
150 A$="" :: DISPLAY AT(8,1)
ERASE ALL:"FORMULA?" :: LINP
UT F$ :: ON WARNING NEXT
160 DATA ),182,(,183,=,190,+
,193,-,194,*,195,/,196,^,197
,ABS,203,ATN,204,COS,205,EXP
,206,INT,207,LOG,208
170 DATA SGN,209,SIN,210,SQR
,211,TAN,212,PI,221
175 DATA ::,130,FOR,140,TO,1
77,NEXT,150,STEP,178,IF,132,
THEN,176,ELSE,129,MAX,223,MI
N,22,<,191,>,192,",",179
180 RESTORE 160 :: FOR J=1 T
O 32 :: READ X$,W
190 P=POS(F$,X$,1):: IF P<>0
 THEN F$=SEG$(F$,1,P-1)&CHR$
(W)&SEG$(F$,P+LEN(X$),255)::
 GOTO 190
200 NEXT J :: J=0
205 P=POS(F$," ",1):: IF P<>
0 THEN F$=SEG$(F$,1,P-1)&SEG
$(F$,P+1,255):: GOTO 205
210 IF J=LEN(F$)THEN 240 ::
J=J+1 :: Z$=SEG$(F$,J,1):: I
F POS(".0123456789",Z$,1)=0
THEN A$=A$&Z$ :: GOTO 210
220 N$=N$&Z$ :: Z$="" :: IF
J=LEN(F$)THEN 230 :: J=J+1 :
: Z$=SEG$(F$,J,1):: IF POS("
.0123456789",Z$,1)<>0 THEN 2
20
230 A$=A$&CHR$(200)&CHR$(LEN
(N$))&N$&Z$ :: N$="" :: GOTO
 210
240 A$=A$&CHR$(130)&CHR$(136
)&CHR$(0):: GOSUB 330 :: CAL
L HCHAR(12,1,32,250)
250 W=0 :: IF POS(A$,"B",1)<
>0 THEN DISPLAY AT(12,1):"B=
?" :: ACCEPT AT(12,5):B :: W
=W+B
260 IF POS(A$,"C",1)<>0 THEN
 DISPLAY AT(13,1):"C=?" :: A
CCEPT AT(13,5):C :: W=W+C
270 IF POS(A$,"D",1)<>0 THEN
 DISPLAY AT(14,1):"D=?" :: A
CCEPT AT(14,5):D :: W=W+D
280 IF POS(A$,"E",1)<>0 THEN
 DISPLAY AT(15,1):"E=?" :: A
CCEPT AT(15,5):E :: W=W+E
290 IF POS(A$,"F",1)<>0 THEN
 DISPLAY AT(16,1):"F=?" :: A
CCEPT AT(16,5):F :: W=W+F
300 ON ERROR 310 :: GOTO 320
310 CALL SOUND(400,110,0,-4,
0):: DISPLAY AT(12,1):RPT$("
",250):: DISPLAY AT(24,5):"
INVALID FORMULA" :: RETURN 1
50
320 IF W=0 THEN 150 :: GOSUB
 350 :: DISPLAY AT(18,1):"A=
";A :: GOTO 250
330 CALL PEEK(-31952,A,B)::
CALL PEEK(A*256+B-65534,A,B)
:: C=A*256+B-65534
340 FOR J=1 TO LEN(A$):: CAL
L LOAD(C+J-3,ASC(SEG$(A$,J,1
)))):: NEXT J :: RETURN
350 !**************************
**********************************
**********************************
**********************************
```

This method can also be used for the iterative calculator which I published in Tips #65. Just delete lines 100-140, 280-320 and 350 of the above and substitute-

```
100 DISPLAY AT(3,1)ERASE ALL
:"ITERATIVE CALCULATOR V1.1"
:"":"     by Jim Peterson" :
: CALL INIT
110 DISPLAY AT(7,1):" Will
solve difficult equa-tions s
uch as A=X^X-SQR(X)  by iter
ation."
120 DISPLAY AT(11,1):" Inpu
t any mathematical  formul
a in the form of a  valid
BASIC statement, usingA for
the known value and X"
130 DISPLAY AT(15,1):"for th
e value to be deter-  mined.
":" Examples - ":"  A=X^X-
SQR(X)":"  A=SQR(X^X)"
140 DISPLAY AT(20,1):" To c
hange the formula,  enter
0 for value to calcu- late."

280 DISPLAY AT(12,1):"A=?" :
: ACCEPT AT(12,5):C :: DISPL
AY AT(16,5):"" :: IF C=0 THE
N 150

350 X=1 :: GOSUB 380
351 IF A<C THEN DISPLAY AT(1
4,5):X :: Y=X :: X=X*2 :: GO
SUB 380 :: GOTO 351 ELSE 353
352 IF A>C THEN DISPLAY AT(1
8,5):X :: Y=X :: X=X/2 :: GO
SUB 380 :: GOTO 352
353 IF A=C OR A=B THEN DISPL
AY AT(14,5):"" :: DISPLAY AT
(18,5):"" :: DISPLAY AT(16,5
):X :: GOTO 280 ELSE B=A ::
Z=(ABS(X-Y))/2 :: Y=X
354 IF A<C THEN X=X+Z :: DIS
PLAY AT(14,5):X ELSE X=X-Z :
: DISPLAY AT(18,5):X
355 GOSUB 380 :: GOTO 353
```

Here's a little-known peculiarity of TI XBasic -

```
100 ACCEPT AT(1,1):M$ :: IF
M$="" OR ASC(M$)<32 THEN 100
```

Now, if you press Enter, which is a null string or "" you would expect execution to go back to 100 - but it tries to find the ASCII of a null string, and crashes!

You must write IF M$="" TH EN 100 ELSE IF ASC(M$)<32 TH EN 100 .

And another peculiarity that caused me an hour of total frustration while trying to debug a program - it is well known that CALL KEY in mode 3, CALL KEY(3,K,S), will cause all subsequent INPUT or ACCEPT AT to be in upper case; but what it actually does is internally depress the Alpha Lock, so that ASCII 97 through 122 are read as 65 through 90 - and it disables character sets above 8, ASCII above 95, so that you cannot INPUT or ACCEPT even the printable characters ASCII 96 or 123 through 126, or any FCTN or CTRL input with an ASCII above that.

If you only use the Triton Super Extended Basic module for running programs, not writing them, you may not be aware of some of its most useful features. For example if you are answering an input prompt by typing something shorter over the de-

fault on the screen, you don't have to blank out the remaining characters - just use CTRL C. Take a look at page 8 of the manual for other useful features.

E(SEG$(X$,1,A)):C$

In a recentt Tips, I gave a method for reading the entire 13- or 14-digit number which the TI has in memory, by printing it to disk in internal format and reading it back. If I had read the Extended Basic manual more carefully, I would have known a simpler method. If you know where the decimal point will be, just use an IMAGE 14 characters long. Try this - PRINT USING "-.### ##########":17/19.07

If you don't know where the decimal will be, this subprogram will do the job if the number is within the range of -9,999,999,999 to 9,999,999,999; otherwise it will be in exponential notation as usual.

```
100 CALL CLEAR
110 ACCEPT AT(10,1):X :: CAL
L FULLNUM(12,1,X):: GOTO 110
20000 SUB FULLNUM(R,C,X):: P
=POS(STR$(X),".",1):: IF X>9
999999999 OR X<-9999999999 O
R P=0 THEN DISPLAY AT(R,C):X
 :: SUBEXIT
20010 DISPLAY AT(R,C):USING
RPT$("#",P-1)&"."&RPT$("#",1
4-P):X :: SUBEND
```

I worked this one up from a routine in the Swedish newsletter "Programbiten". It will convert to/from any base from 2 to 36.

```
100 CALL CLEAR :: CALL SCREE
N(2):: FOR S=0 TO 12 :: CALL
 COLOR(S,16,2):: NEXT S :: X
$="0123456789ABCDEFGHIJKLMNO
PQRSTUVWXYZ"
110 DISPLAY AT(3,5):"BASE CO
NVERTING" :: DISPLAY AT(10,1
):"From which base?":"":"To
which base?"
120 ACCEPT AT(10,18)VALIDATE
(DIGIT)SIZE(-2):A :: IF A>36
 OR A<2 THEN 120
130 ACCEPT AT(12,16)VALIDATE
(DIGIT)SIZE(-2):B :: IF B>36
 OR B<2 THEN 130
140 DISPLAY AT(14,1):"Number
?" :: ACCEPT AT(14,9)VALIDAT
```

1 is added to the number of

```
E(X$,A)
150 FOR I=LEN(C$)TO 1 STEP -
1 :: D$=SEG$(C$,I,1):: IF AS
C(D$)>57 THEN E=ASC(D$)-55 E
LSE E=VAL(D$)
160 F=F+(E*A^(ABS(I-LEN(C$))
)):: NEXT I
170 FOR J=INT(LOG(F+0.5)/LOG
(B))TO 0 STEP -1 :: G=INT(F/
B^J):: F=F-G*B^J
180 IF G>9 THEN H$=H$&CHR$(G
+55)ELSE H$=H$&STR$(G)
190 NEXT J :: DISPLAY AT(20,
1):H$ :: H$="" :: GOTO 120
```

I have finally replaced my faithful Gemini 10X printer with the new NX1020R and it promptly gave me a problem until I tracked down a serious flaw in its logic. The manual fails to warn you emphasized print cannot be used in combination with condensed print. This is also true of other printers. If you try that combination with them, they condense but do not emphasize. The NX1020 gives me emphasized print but it is not condensed!

```
ESTORE 120 :: GOTO 110
```

The Coco column in Computer Monthly had a contest to write the shortest program to figure first class postage. My one-liner is not as short but does a better job.

```
100 INPUT "OUNCES? ":A :: PR
INT .23*(INT(A)-(INT(A)<>A))
+.06 :: GOTO 100
```

Here's how that works. The rate is .29 for the first ounce and .23 for each additional ounce, so we can just multiply ounces by .23 and then add .06 more to the total. However, partial ounces count as full ounces. INT(A) strips off any decimal portion so .23*INT(A) multiplies by the ounces not including the decimal part, if any. (INT(A)<>A) compares A to the integer of A. If they are different, INT(A)<>A has a "truth" value of -1 and a double negative is a plus so

```
/N(4):: N(1)=N(1)+I
```

ounces to be multiplied by. Otherwise it has a "false" value of 0 so nothing is added.

A self-styled financial adviser has been making the headlines lately by claiming that anyone can become a financial wizard by buying a $19 compound interest calculator. Save yourself $19 -

```
100 CALL CLEAR :: ON WARNING
```

average inflation rate of 4%

```
NEXT
110 DISPLAY AT(12,1):"A sum
of $      invested at     %
interest for    years compou
nded     times per    year w
ill become"
120 DATA 12,11,5,13,1,4,13,2
0,2,14,12,3
130 FOR J=1 TO 4 :: READ A,B
,C :: ACCEPT AT(A,B)VALIDATE
(NUMERIC)SIZE(C):N(J):: NEXT
 J
140 FOR J=1 TO N(3)*N(4):: N
(1)=N(1)+N(1)*N(2)/100/N(4):
: NEXT J :: DISPLAY AT(16,1)
:USING "$$$$$$$.##":N(1):: R
```

In Tips #65 I described a method of using DSKU to make the Funlweb Formatter recognize FCTN A, C and Z instead of &, @ and % to avoid garbled program listings. Jan Alexandersson in Sweden says that can be very dangerous. I should have mentioned that you should make the changes to a separate copy of Funlweb which you should not use to print text formatted by others, and you should not distribute text formatted with these alternative codes and those who use the version of TI-Writer which TI sold overseas should not use this method at all, because it uses those FCTN keys for special letters of foreign languages.

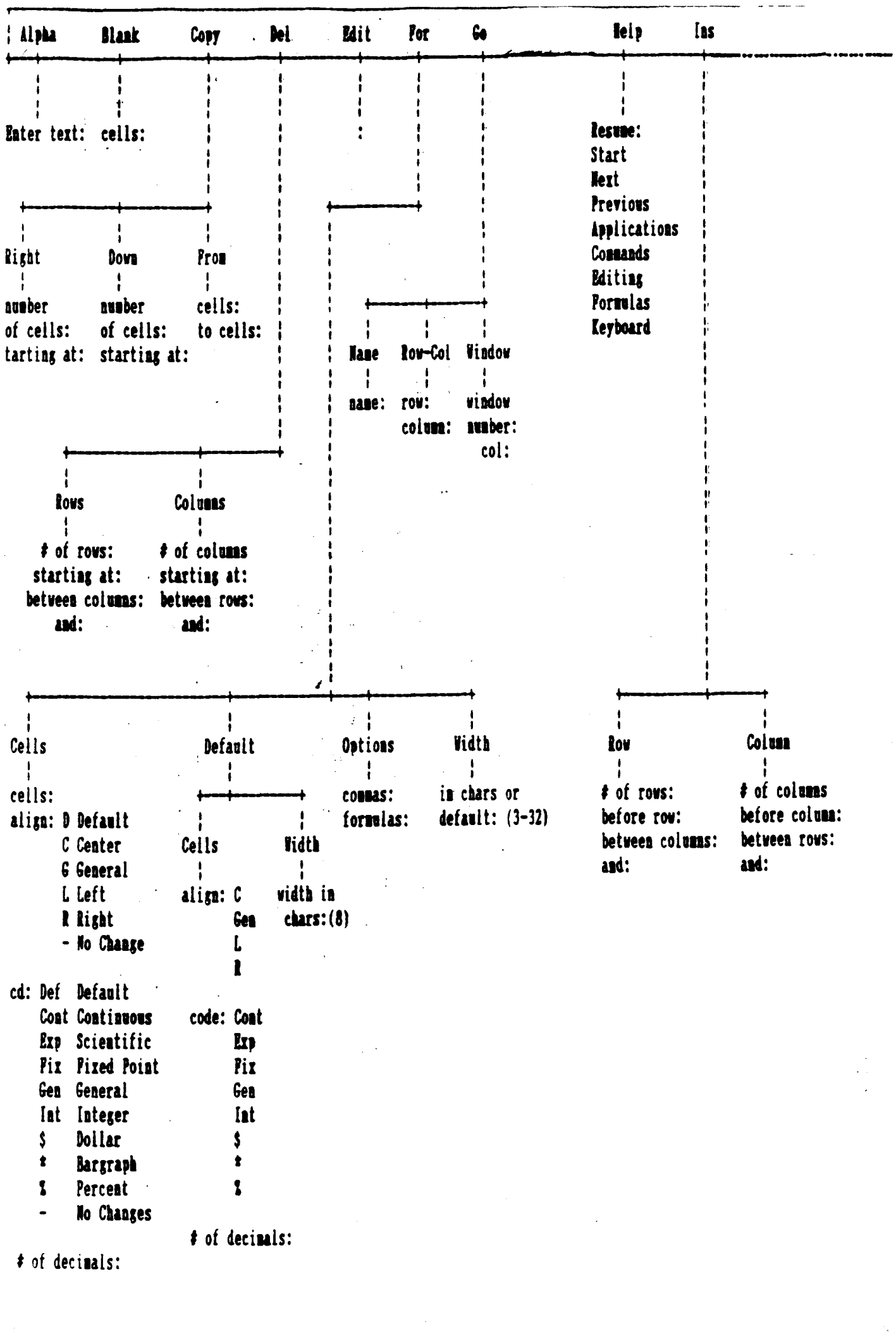
But don't believe the answers you get. Such calculations are worthless unless taxes and inflation are considered. Try this one -

```
100 CALL CLEAR :: ON WARNING
 NEXT
110 DISPLAY AT(12,1):"A sum
of $      invested at     %
interest for    years compou
nded     times per    year w
ith tax rate of     %"
120 DISPLAY AT(16,1):"and av
erage inflation rate of
 % will have a buying power
of"
130 DATA 12,11,5,13,1,4,13,2
0,2,14,12,3,15,23,4,17,4,4
140 FOR J=1 TO 6 :: READ A,B
,C :: ACCEPT AT(A,B)VALIDATE
(NUMERIC)SIZE(C):N(J):: NEXT
 J
150 N(2)=N(2)/100 :: N(5)=N(
5)/100 :: N(6)=N(6)/100
160 FOR J=1 TO N(3)*N(4):: I
=N(1)*N(2)/N(4):: I=I-I*N(5)

170 N(1)=N(1)-N(1)*N(6)/N(4)
180 NEXT J :: DISPLAY AT(19,
1):USING "$$$$$$$.##":N(1)::
 RESTORE 130 :: GOTO 110
```

By the first method, $1000 invested at 7% for 10 years compounded quarterly would double in value to $2001.60. By the second method, if the interest was taxed at 15% it would still be worth $1950. But if you factor in an average inflation rate of 4% that $1950 would only have a buying power of $1305 - if the price of bread today was $1 per loaf and that price remained constant in relation to wages, you could buy 1000 loaves today or invest the money and buy 1305, not 2001, ten years from now.

I know that this formula is oversimplified, but there is no way to calculate accurately anyway, since future rates of taxes and inflation cannot be predicted.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R Right
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Width
in chars or default: (3-32)
Row
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between columns:
and:
Column
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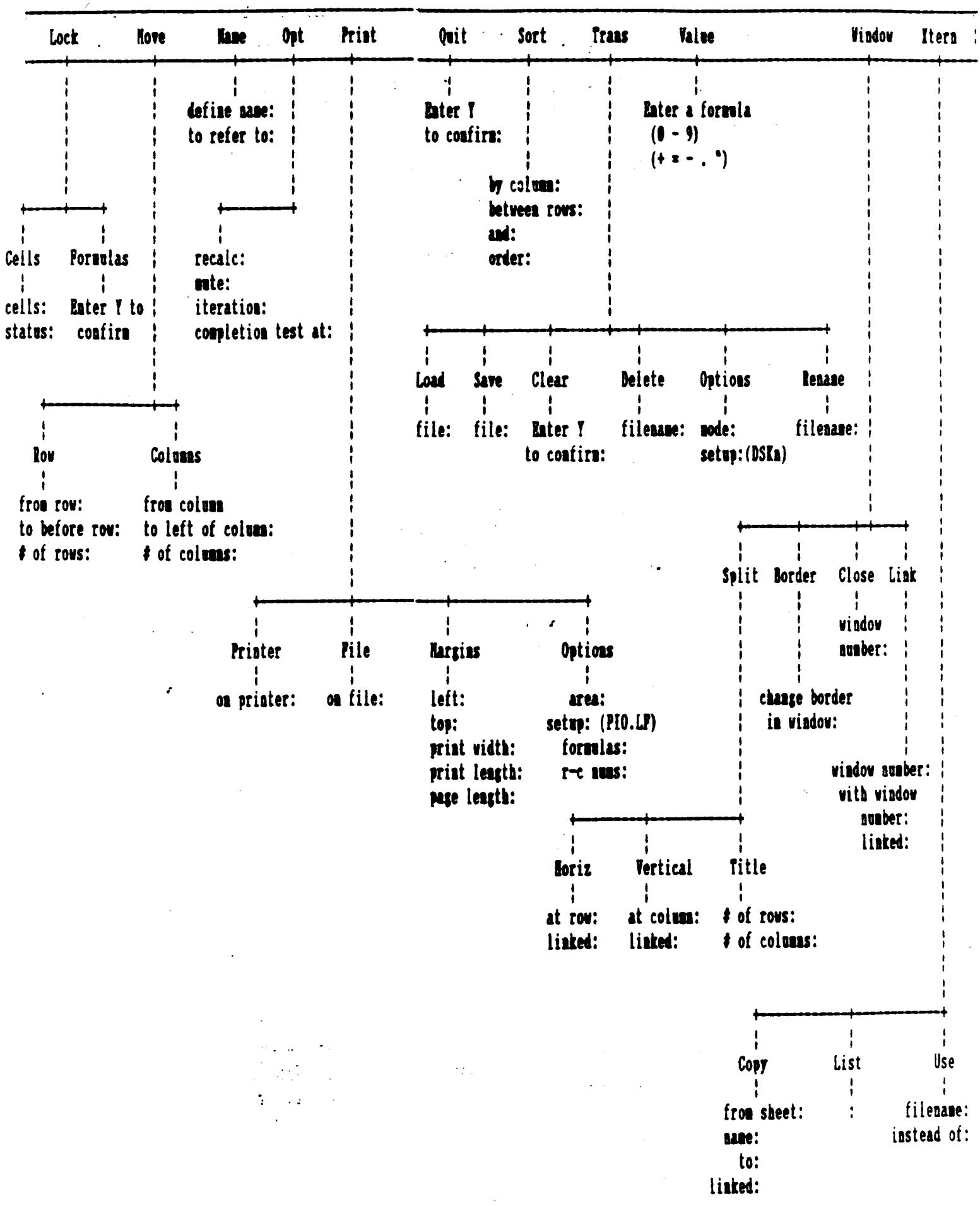
before column:
between rows:
and: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