ATTENTION

SYNTAX will definitely be late for the next several months. Please phone if you want to check on the latest issue available, we cannot answer letters because we can't afford the postage. I know the service is poor and costs more than UK magazines. I don't try to present this performance as desirable. If your budget is limited and you want quantity, we cannot help. If you want excellence, I'll continue to provide that. With a lot of your help, SYNTAX will survive--Kirt Olson.

OKAY--SO IT COMES IN BAGGIES

In our vendor reports last month, SYNTAX said Timex software doesn't come in baggies. Yes it does, and honest stuff, too. As Marty Warner-DuBay pointed out to us after getting a flurry of phone calls from her dealers for the licensed programs she sold in baggies, with photocopied documentation, on ordinary cassettes. But you can tell these legal copies from stolen stuff because the tapes are marked as distributed by Games To Learn By. Marty also tells us that they will change the packaging to use distinct features and to include a copy of their authorization to distribute these products.

Marty has negotiated damages from the Canadian store which sold these unauthorized copies and they have promised to purchase from the authorized source from now on. We owe Marty our thanks and our business for keeping these programs available to us.

Ian Singer of Integrated Data Systems is the hero of this piece--he who spent his time & money to protect your right to participate in only honest enterprises. You ought to get his catalog and see if your next purchase could return the favor.

WISH I WERE, WISH I MIGHT

Timex and Dave Higginbottem exchanged letters preliminary to deciding the terms on which they may want to talk. As of this writing, no negotiations or talks are taking place. Unofficially, we understand negotiations will be publicly announced if they actually come to pass. Right now, the field remains open.

NOT OUT OF THE WOODS YET

Tom Woods promises you will get PRO/File's manual, but he is not yet finished. Work on the 100-page book proceeds regularly despite Tom's new SyncWare News responsiblities.

NY OUT OF NUMBERS--ZEBRA AC CHANGED

New York City ran out of telephone numbers so half the city will now be area code 718. Zebra Systems bulletin board is now 718/296-2229. Zebra reports 1400 calls during the first 8 weeks of operation. This level of activity encouraged them to upgrade from the TRS-80 Model I to a Model 4 with 4 disk drives. Al Hartman, SYSOP for the Zebra BBS, says the board is full of good info that you shouldn't miss. Call soon

SINCLAIR EXPANDS EASTWARD

Sinclair Research Ltd., is building up its presence in the Middle East, where its key markets are Saudi Arabia, Egypt and the Gulf States. Alan Miles will manage Middle Eastern affairs for Sinclair, who already have a distributor network there. At the same time, John Durnford (formerly of Commodore) will manage the South East Asia territory from Singapore. Sinclair believes it has great potential in both areas for its line of personal computers. Existing sales exceed 3 million units, and Sinclair now produces 150000 units monthly.

As of mid-September, QL should be hitting the UK stores, and export sales (that's us folk) will follow later this year.

NATIONAL TS USER'S NETWORK TO FORM

Don Barnard of TSS is forming a new club that promises to provide the following services for $30/year.
o Free monthly update listing or tape of products for your system.
o Access to databases for BBS, Clubs, Newsletters, Product reviews
o Letter exchange lets you publish questions and get responses through TSS mail service.
o Assistance in forming new local user groups by forwarding notices through TSS to members in the area
o Network newsletter with Hints, programming tips, Question column,
Reviews, and so on.
o Discounts on all orders from TSS and other dealers in the program.

In addition, the network will provide product registration to eliminate duplication of titles and provide dealers with information on sources of supply and discounts. Dealers and local user's group leaders will be allowed to sell memberships once they join.

VENDOR REPORT

PleasanTrees Programming continues to supply ZX/TS software and will introduce new 2068 titles. They are closing out the last copies of "Graphics A to Z," see classifieds, this issue. You can get it later, but photocopied & 50% more costly.

Our report from Canada proved sadly true: Gladstone's Toronto store sold copied software that Games To Learn By owns exclusive rights to manufacture, but which were not purchased from GTLB. SYNTAX holds physical evidence to back these allegations. See our front-page news story on software in baggies.

SYNTAX is delivering late again and serving customers badly. According to publisher Kirt Olson, "We don't know when things will get back on schedule. It's hard to be normal in a market as troubled as this. Nobody else has survived and it's only the infinite compassion of our loyal readers that gives us hope."

BASIC newsletter is back with an all-games issue. Restructured as a 6-Issue per year publication, the price is now $12.95/yr. Those who subscribed for 12 issues will get them all, but over an extended time

KOPAK CREATIONS took $45 from a MI resident and does not answer his letters. The phone is disconnected Looks like Robert Schiller of KOPAK is out of business.

NEW PRODUCTS AND SERVICES

Peech II Productions supplies 2068 educational software titles ranging from VERBS to DRAWING priced under $10. For details write them: 6333 Parkman Pl, Cincinnati, OH 45213.

Magic World Software is sole source for INVO-STAR inventory management system. Cassette data storage and menu-driven functions let you print pick lists & packing slips on your 2068 + 2040. US$15 ppd in US for manual, listing and tape, POB 1184 Olympia, WA 98507. 206-786-1390

HYBRIDION announces LOAN$ to find interest rate, principal, regular & final payment, balance, term and amortization schedules for each payment of each year, and summaries For info send SASE to them at 614 Linden Hill, Lindenwold, NJ 08021.

ROMSWITCH runs Spectrum programs on 2068s, plus your 2068 software. Fits inside computer--frees edge & cartridge connectors. Detailed installation instructions with kit. No soldering or drilling. Magnetic switch, fixed at the upper right-hand of keyboard, selects ROM. Run some programs that won't run with a chameleon. $54.95 ppd assembled & tested. G. Russell Electronics, RD1 Box 539, Centre Hall, PA 16828. MC, VISA, 814-364-1325

Robert C. Fischer's T/S GRADER can record 9 classes totalling 126 students with 60 grades each, or 412 students in 10 classes with 10 grades. Capacity grows 4.5 times in 64K. Features MC speed, classes loaded together, & printer output. TS2068 version holds 68 grades per student on 385 students. $15.95 for ZX/TS, $19.95 for 2068; both for $29.95. Contact Fischer at 221 Scoggins ST., Summerville, NJ 30747

John and Catherine Grant wrote "The ZX PROGRAMMERS' COMPANION", a new book from Cambridge University Press. The authors' company, Nine Tiles Information Handling Ltd, wrote the instruction manuals and the built-in software for the ZX/TS and Spectrum machines. ISBN 0-521-27044-8 $11.95

Although not ZX/TS-specific, "The Joy of Computer Communication" by William J. Cook will interest our readers with modems. $5.95 US & $7.50 CANADA: ISBN 0-440-54412-2

Howard Sams has released the "Timex Sinclair 2068 Intermediate/Advanced Guide." Containing both Z80-general and 2068-specific machine language, + material on the AY-3-8912 sound chip and 2068 ROM calls, this book ranks with the 2068 Tech Manual as a "must buy." ISBN 0-672-22226-4 $9.95+$2.00 P&H from Sams or SYNTAX

I. Auersbacher offers four programs for 16K ZX/TS or 2068. Each costs $14.95 for tape, instructions, samples, and shipment by 1st class mail. Math Pack I does algebraic and vector math; Math Pack II does calculus functions; Weathercaster/ Analyzer predicts local, short-term weather and related indices; Astrology does natal horoscopes. 41 King St., Belleville, NJ 07109.

Pion Software Co. offers 2 printer-compatible, 16K ZX/TS programs. File Mate holds 400 records of 30 char. with variable item length, search, and delete. Stock Investor does 20 ratios, financial statement worksheets & stock values. Tapes, US$12.95 ea. $4.95 ea. for listings 541 Fairlawn Av Toronto, ON, Canada M5M 1V5. 416-781-0314

Textwriter Plus 64 for 2068 & AERCO centronics interface will print any char. size at any printout width. This upgrade of TW 2000 adds, tabs, deletes, condenses, centers & moves blocks. Screen & printer (not 2040) show 64 columns. $29.95 with manual. Bob Fingerle, 39639 Embarcadero, Fremont, CA 94538

HEADSCAN

Many programs for the 2068 use MC to gain speed or functions not possible in BASIC--for example: "Flight Simulator" and "VU-File" as sold by Timex. It's hard to make an archival copy of these programs (as approved by copyright laws) when they LOAD in several sections. Typically, these include a short, autorunning BASIC program to LOAD the remaining code and manage the housekeeping functions, then an MC section. Sometimes a title screen LOADs between the BASIC and MC. (Some also use two sequential BASIC loaders--KO)

Within the BASIC program, you often find a line like:
        10 LOAD ""CODE
which LOADs the MC to the area from which it was SAVEd. To re-SAVE the MC, you need its start address and length in bytes.

Before each program, you find a 17-byte header that contains this information. A utility program to read this information would be very helpful. The UK magazine <u>Sinclair User</u> originally published a header utility, but it calls Spectrum ROM areas which differ from the 2068. I modified the program, guided by the 2068 Technical Manual, to call the read-tape routines of the 2068 extension ROM.

You can read Spectrum headers on your 2068 with this program, but the 2068 routine will not run on your Spectrum. See the notes to the assembly language listing for a machine-code routine for Spectrum computers.

According to section 4.2.1 of the 2068 Tech Manual, a 17-byte header is saved before each program SAVE. The first byte marks program type: Ø for BASIC, 1 for a numeric array, 2 for a string array, or 3 for machine code. Then 10 bytes contain the program name (that's why you can have only 10 characters in a program name).

Bytes 12&13 represent the full length of the data to follow. They are recorded in routine fashion (byte 12+256*byte 13).

When the data reveal a BASIC program, then bytes 14&15 show the line number from which the program autoruns--if (byte 14+256*byte 15) is >Ø and <9999. If the data is for MC, then (byte 14+256*byte 15) gives the start address of the code specified when it was SAVEd.

Bytes 16&17 reveal the BASIC program length without variables. (In terms of system variables, the value is VARS-PROG). These 2 bytes equal zero for all other possibilities.

Disassembly of the tape read routine reveals some interesting things. The IX register holds the address to which data is loaded from tape (starting at 64060 for this program). Since the Utility Function Dispatcher depends upon the IX register, we cannot call the tape routine via the UFD. Register DE holds the number of bytes to be loaded--Ø11H=17D. Routines from FAØEH-FA34H are those given in the 2068 Technical Manual to call the read-tape area of extension ROM.

Our original goal was to make archival copies of MC programs. **In all of the following LOAD and SAVE steps, stop the recorder as soon as you get the Ø/Ø or Ø OK report and remove or insert the tape without rewinding.** This lets you make the copy section by section. To do so, perform the following steps:

1. RUN HEADSCAN and read the header information from the BASIC portion of your favorite program. This tells you the AUTO RUN line number of the BASIC.

Write this line number down.

2. Use HEADSCAN to read information from the header of the next part of the original program. This will usually be BYTES: "name", then the data length, and start address. If the start address=16384 and data length=6912, then that code is a SCREEN$ (usually the title screen.) Write down the values for this part of your program to use in step 8.

3. Repeat step 2 for each part of your original program.

4. Type RAND USR 0 to completely reset your 2068.

5. Rewind your original MC program tape and type MERGE "" to load the BASIC portion of the program and block autorun. Stop the tape at the 0/0 code. Do not rewind.

6. Remove your original tape from the recorder and replace it with a rewound blank. Now you key in the command SAVE "name" LINE nn (where nn=autorun line number found in step 1). As soon as SAVE finishes, stop the recorder and remove the new tape without rewinding.

7. Replace the original tape in the recorder and load the code from the original by typing LOAD "" CODE. As soon as you get the 0/0 report at the bottom of your screen, stop the recorder and remove your original tape without rewinding.

8. Put the new tape in the recorder and save the code portion of your tape by typing:
    SAVE "name" CODE aa,bb
where aa=start address and bb=data length from step 2. Stop the tape as soon as you get the 0 OK report. Remove your new tape. Don't rewind.

9. Repeat steps 7 & 8 for each code section of your program.

    After you complete these steps

for each section of the original, rewind your copy. It should behave exactly as the original.

                    A Friend From Memphis

    Careful reading of the TS2068 Technical Manual will reveal other information you could extract from the header, including variable names and sizes for arrays saved separately--KO.

```
LOAD A TAPE AND PRESS "PLAY"


PROGRAM: header
DATA LENGTH: 1233
AUTO START AT: 9970
PROG/VARS LENGTH: 1202



FOR ANOTHER TAPE, TOUCH ANY KEY

9970 CLEAR 63999: FOR a=64000 TO
 64052: READ b: POKE a,b: NEXT a
9975 CLS : PRINT ''''"LOAD A TAP
E AND PRESS ""PLAY"""'''
9980 DATA 55,62,0,221,33,60,250,
17,17,0,205,14,250,201,33,252,0,
205,34,250,58,33,250,211,244,219
,255
9981 DATA 203,191,211,255,251,20
1,0,243,245,219,255,203,255,211,
255,219,244,50,33,250,62,1,211,2
44,241,233
9982 RANDOMIZE USR 64000
9983 LET a=64060: LET b=PEEK a:
LET s=b
9984 IF b=0 THEN PRINT "PROGRAM:
 ";
9985 IF b=1 THEN PRINT "NUMERIC
ARRAY: ";
9986 IF b=2 THEN PRINT "CHARACTE
R ARRAY: ";
9987 IF b=3 THEN PRINT ."BYTES: "
;
9988 FOR a=64061 TO 64070: LET b
=PEEK a: PRINT CHR$ b;: NEXT a:
PRINT
9989 LET b=PEEK a+256*PEEK (a+1)
: PRINT "DATA LENGTH: ";b
9990 LET a=a+2: LET b=PEEK a+256
*PEEK (a+1): IF s=3 THEN PRINT "
START ADDRESS: ";b
9991 IF s<>0 THEN GO TO 9995
9992 IF b<1 OR b>9999 THEN GO TO
 9994
9993 PRINT "AUTO START AT: ";b
9994 LET a=a+2: LET b=PEEK a+256
*PEEK (a+1): PRINT "PROG/VARS LE
NGTH: ";b
9995 PRINT ''''"FOR ANOTHER TAPE
, TOUCH ANY KEY"
9996 PAUSE 0: GO TO 9975
SYNTACTIC SUM:  63327, TS2068
```

```
ADDR HEXCODE LABEL MNEMONIC
==============================
FA00 37              SCF
FA01 3E00            LD A,00
FA03 DD213CFA        LD IX,FA3C
FA07 111100          LD DE,0011
FA0A CD0EFA          CALL RTAP
FA0D C9              RET
FA0E 21FC00 RTAP     LD HL,00FC
FA11 CD22FA          CALL IFRT
FA14 3A21FA EXIT     LD A,(HSAV)
FA17 D3F4            OUT (F4),A
FA19 DBFF            IN A,(FF)
FA1B CBBF            RES 7,A
FA1D D3FF            OUT (FF),A
FA1F FB              EI
FA20 C9              RET
FA21 00     HSAV     NOP
FA22 F3     IFRT     DI
FA23 F5              PUSH AF
FA24 DBFF            IN A,(FF)
FA26 CBFF            SET 7,A
FA28 D3FF            OUT (FF),A
FA2A DBF4            IN A,(F4)
FA2C 3221FA          LD (HSAV),A
FA2F 3E01            LD A,01
FA31 D3F4            OUT (F4),A
FA33 F1              POP AF
FA34 E9              JP (HL)
```

In the machine code, the routine named IFRT calls the extension ROM as instructed in the 2068 Technical Manual, the code labelled RTAP says where to read the extension ROM.

Decimal addresses 64060 to 64076 contain the 17 bytes read from the header. You may PEEK them from those locations and examine them yourself.

To use the machine code on a Spectrum computer, change FA0AH to read CD5605, which calls 1366D, and forget all steps after FA0DH (=C9.) In the BASIC version, replace each number after the first 201 in line 9980 with either 201 or 0 (RETurn or NOP) and replace the first sequence 205,14,250,201 with the sequence 205,86,5,201. Line 9981 can be all 0's. If your skill permits, you can shorten the code for the Spectrum dramatically.

SCROLL CALL--EVERYBODY UP--2068

Alter ZX/TS SCROLL commands to USR 2361 for the 2068, or USR 3582 for the ZX Spectrum or Emulator. LET t=USR 2361 avoids resetting RND as happens with each RAND USR call.

ODD REPORTS FROM ALL OVER

Computers, like humans, often give confusing answers, doing the best they can to tell you what's wrong. Some years ago, I spent too many hours trying to understand the message "invalid subroutine call" in a program with no subroutines. As it turned out, I exceeded the default length of variable names on the particular machine, and it did the best it could to tell me where I had erred in this case.

When you use USR calls, you transfer absolute control of the machine to the address specified, and the function expects a RETurn instruction that will provide a 2-byte, unsigned integer as the value returned in the BC register pair.

But try 10 LET T=USR 832 right after you do a NEW on your ZX/TS. Surprise! You get C/10--the text of the string argument of VAL does not form a valid numerical expression. VAL? What string?

What's happened is that the answer couldn't be assigned as you demanded, so the computer tried to see if it could treat the answer as a string to be evaluated before assignment. It could not, and told you so--answering a question you did not know you had asked. This happens on the way back from the call, not before executing the code starting at 832.

Perhaps some ROM-dweller out there can give us an even clearer picture of all this. Until then, remember--the computer always does exactly as it should. Even a truly malfunctioning machine executes its broken cycles perfectly--though not always understandably.

Thermodynamics says you can't win, you can't break even, and you can't get out of the game--but you can learn. Observe, don't judge.

CRYPTO--8K/2K

This sophisticated coder and decoder runs in only 2K. Use it for fun as a stand-alone program, or create a subroutine to make your datafiles unintelligible without the keyword. Of course, keywords must exist somewhere, here it's Y$, and the program clears it after each run. When you make a data-protection subroutine, reset Y$.

Take the keyword out when you SAVE the program--set Y$ to some new value--and remember the exact keyword or you can't crack the code. Trying to decode after you reset Y$ produces garbage.

```
CIPHER/DECIPHER? C/D:C

KEYWORD:█████████

ENTER MESSAGE:
RAND USR 839 LOADS WITHOUT AUTOR
UN ON ZX/TS

CIPHER -->
<VXTX.=;*00T0<YQA;025-E+-.*QR,(;
)(X+?6-,+,=
```

Both the keyword and message may be of any length, but you can't use any of the graphics characters. You may use A-Z, spaces, 0-9, and any of .,:;$<>()+-=?* in either key or message.

Imre Auersbacher, Belleville, NJ

```
  5 FAST
 10 PRINT "CIPHER/DECIPHER? C/D
";
 15 INPUT Q$
 16 PRINT Q$
 18 PRINT
 20 PRINT "KEYWORD:";
 30 INPUT Y$
 40 PRINT "█████████"
 42 PRINT
 45 DIM Z(LEN Y$)
 50 FOR Z=1 TO LEN Y$
 60 LET Z(Z)=CODE Y$(Z)-13
 70 IF Z(Z)<0 THEN LET Z(Z)=51
110 NEXT Z
200 PRINT "ENTER MESSAGE:"
210 INPUT M$
220 PRINT M$
230 PRINT
260 IF Q$(1)="D" THEN GOTO 400
300 PRINT "CIPHER -->"
305 LET Y=1
310 FOR Z=1 TO LEN M$
315 IF Y>LEN Y$ THEN LET Y=1
320 LET T=CODE M$(Z)
325 LET X=Z(Y)+T+9
328 IF T=0 THEN LET X=X+64
330 LET X=X-51*INT (X/51)+13
332 IF X=63 THEN LET X=-1
334 PRINT CHR$ (X+1);
335 LET Y=Y+1
340 NEXT Z
350 GOTO 500
400 PRINT "DECODED -->"
410 LET Y=1
420 FOR Z=1 TO LEN M$
430 IF Y>LEN Y$ THEN LET Y=1
435 LET T=CODE M$(Z)
440 LET X=T-Z(Y)-24
445 IF T=0 THEN LET X=X+64
450 IF X>=13 THEN GOTO 460
454 LET X=X+51
456 GOTO 450
460 IF X=63 THEN LET X=-1
465 PRINT CHR$ (X+1);
470 LET Y=Y+1
480 NEXT Z
500 CLEAR
SYNTACTIC SUM: 51442, 8K ROM

      KEYWORD="SYNTAX"

CIPHER/DECIPHER? C/D:D

KEYWORD:█████████

ENTER MESSAGE:
<VXTX.=;*00T0<YQA;025-E+-.*QR,(;
)(X+?6-,+,=

DECODED -->
RAND USR 839 LOADS WITHOUT AUTOR
UN ON ZX/TS
```

HALL OF THE FRACTAL HACKERS--2068

Based on the Sep.84 _Scientific American_ computer software issue, the first of these programs creates fractal patterns using the method described on page 156. _Byte_ also published an article on fractal geometry, accompanied by a BASIC program which SYNTAX translated for your 2068. (Byte, Sep.84, p 172)

Fractal Rocks

Our first program starts with one large triangle, then locates and displaces the midpoint of each side, creating a 6-sided figure. Connecting the displaced midpoints creates 4 triangles. Repeating the process on each of the 4 creates 16 from which we make 64 and on up to 1024. The final figure consists solely of triangles.

Roughness of the figure, the amount by which midpoints move, is controlled by the first DATA item of line 10. Six more DATA points set the vertices of the initial triangle using x,y coordinates in the same units as for PLOT and DRAW on the 2068. You can change any of these to get different results.

Lines 30-80 locate a midpoint & move it by a random displacement proportional to both length and the ruggedness parameter. The program from 120-190 plots the rock after each stage of fracturing. From line 220-260 the program moves the previous x,y points up in memory to make room for the next midpoints, and from 270-330 the program picks triangles to be fractured. At the end 1584 lines connect 561 points forming 1024 triangles.

Each time you RUN you get a different picture. You'll see the midpoint dots being put in place at each step. To get colored rocks, just change the INK in line 120 and in line 210.

Watching rocks form may be addictive. This program takes a little over three minutes to run and the final result is copied.

Blanchard D. Smith, Alexandria, VA

Fractal Tracks

Our second program traces the motion of points in the x-y plane, thus generating curves whose shape does not depend on size--the entire curve consists of like-shaped components. Greg Turk published an Applesoft BASIC version of this program in BYTE (Sep.84) and you should refer to that magazine for a full description and an excellent article by Peter Sorenson.

This program demonstrates how to do complex numbers in x+jy notation on your 2068. The x-y plane you view is the complex plane and whatever insight you have into complex numbers will serve you in playing with this program.

Apples number the screen such that 0,0 is top left and 159,279 is bottom right. We did not alter the code to erect the figures on 2068's

When you RUN the program, you must supply lambda, which is a complex number and thus needs an x and a y value. Most of our tests used numbers between +/- PI for xy-components of lambda. Either may be zero. Scale is a single number that shrinks the picture. Large values make small pictures.

The program doesn't check or fix values that cause intermediate results to be too large, just live with the error reports & try again. Enter 2,0,3 to test the program--it gives a circle--then try as many as you wish. Some patterns take 15-60 minutes to show fully, others repeat within the resolution of your screen and you may see only a handful of points--KO.
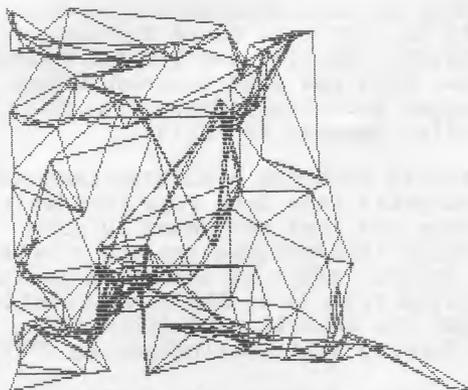
```
  10 DATA .3,80,175,255,20,0,0
  20 GO TO 90
  30 LET u=(x(k)+x(j))/2: LET v=
(y(k)+y(j))/2
  40 LET r=s*(ABS (x(j)-u)+ABS (
y(j)-v))
  50 LET x=INT ABS ((RND-RND)*r+
u): LET y=INT ABS ((RND-RND)*r+v
)
  60 IF x>255 THEN LET x=255
  70 IF y>175 THEN LET y=175
  80 PLOT x,y: LET x(i)=x: LET y
(i)=y: RETURN
  90 DIM x(561): DIM y(561)
 100 READ s: FOR j=1 TO 3: READ
x(j): READ y(j): NEXT j
 110 LET c=2: FOR t=1 TO 6
 120 INK 1: CLS
 130 LET a=0: FOR m=1 TO c-1
 140 FOR n=1 TO m
 150 LET i=a+n: LET j=i+m
 160 PLOT x(i),y(i): DRAW x(j)-x
(i),y(j)-y(i)
 170 LET i=j+1: DRAW x(i)-x(j),y
(i)-y(j)
 180 LET j=a+n: DRAW x(j)-x(i),y
(j)-y(i)
 190 NEXT n: LET a=a+m: NEXT m
 200 IF t=5 THEN GO TO 9000
 210 INK 2
 220 FOR m=c TO 2 STEP -1
 230 LET b=a+a-m
 240 FOR j=a+1 TO a+m: LET i=j+j
+b
 250 LET x(i)=x(j): LET y(i)=y(j
)
 260 NEXT j: LET a=a-m+1: NEXT m
 270 LET c=c+c-1: LET a=1
 280 FOR m=2 TO c STEP 2
 290 FOR l=a TO a+m-1 STEP 2
 300 LET i=l+m-1: LET j=l: LET k
=i+m: GO SUB 30
 310 LET i=k+1: LET j=i+1: GO SU
B 30
 320 LET i=l+m: LET k=l: GO SUB
30
 330 NEXT l: LET a=j-m: NEXT m
 340 NEXT t
9000 COPY : STOP
SYNTACTIC SUM:  61059, TS2068
```

```
  10 LET cx=127: LET cy=88
  20 LET x=0.50001: LET y=0
 100 GO SUB 5000
 110 PAPER 0: INK 3: CLS
 120 FOR i=1 TO 10: GO SUB 4000:
NEXT i
 140 GO SUB 6000
 160 GO SUB 4000
 180 GO TO 140
 999 STOP
1000 REM Square Root of (x+jy)
1005 LET t=y
1010 LET s=SQR (x*x+y*y)
1020 LET y=SQR ((-x+s)/2)
1030 LET x=SQR ((+x+s)/2)
1040 IF t<0 THEN LET x=-x
1050 RETURN
2000 REM Four Over lx+jly
2010 LET s=lx*lx+ly*ly
2020 LET lx=+4*lx/s
2030 LET ly=-4*ly/s
2040 RETURN
3000 REM x+jy Times lx+jly
3010 LET tx=x: LET ty=y
3020 LET x=tx*lx-ty*ly
3030 LET y=tx*ly+ty*lx
3040 RETURN
4000 REM Function of x+jy
4010 GO SUB 3000: REM * lambda
4020 LET x=1-x
4030 GO SUB 1000: REM Take Root
4040 IF RND<0.5 THEN LET x=-x: L
ET y=-y: REM Choose Root to Plot
4050 LET x=1-x
4060 LET x=x/2: LET y=y/2
4070 RETURN
5000 REM Get Values
5010 CLS
5020 INPUT "What is Lambda? (x,y
) ";lx,ly
5030 GO SUB 2000
5040 INPUT "What is Scale? ";sc
5050 LET sc=2*cx/sc
5060 RETURN
6000 REM Plot x,y
6010 PAPER 0: INK 7: PLOT sc*(x-
0.5)+cx,cy-sc*y
6020 RETURN
6999 STOP
7000 REM RND test
7010 LET zx=140
7020 LET zy=96
7030 LET dx=20*RND
7040 LET dy=20*RND
7050 PLOT zx+dx,zy+dy
7060 GO TO 7030
SYNTACTIC SUM:  3990, TS2068
```

CLASSIFIEDS

OUR POLICY ON CONTRIBUTED MATERIAL

SYNTAX invites you to express opinions related to any Sinclair or Timex computer or peripheral, or the newsletter. We will print, as space allows, letters discussing items of general interest. Of course we reserve the right to edit letters to a suitable length and to refuse publication of any material.

We welcome program listings for all levels of expertise, written in either Sinclair BASIC or Z80 machine code. Programs can be for any fun or useful purpose. We will test run each one before publishing it, but we will not debug programs; please send only workable listings. Programs submitted on cassette can be tested more quickly and with less chance of error.

In return for your listing, we will pay you a token fee of $2.00 per program we use. This payment gives us the nonexclusive right to use that program in any form, world-wide. This means you can still use it, sell it, or give it away, and so can we.

We will consider submissions of news and hardware or software reviews. Please keep articles short (350–400 words). Again, we reserve the right to edit accepted articles to suitable length. We will pay 7 cents per 6 characters, including spaces and punctuation, for accepted articles.

When you send in articles for possible publication in SYNTAX, please include the following information:

- How to operate the program, including what to input if it does not contain prompts.
- Whether you can run the program over again and how.
- How to exit the program.
- The Syntactic Sum (program published in June 81; send SASE for a free copy).
- What RAM size program requires.
- What ROM program uses (8K, 2068, Spectrum).
- For MC programs, what addresses must change to relocate the code and what ROM calls are used.

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