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A Your Computer Publication

Bumper Book of Programs

PROGRAMS FOR ALL AGES

- Games
- Business
- Useful Utilities
- Programming Tips
- Computer Club List

ALL POPULAR BRANDS

- Apple
- Commodore
- Dick Smith
- Hewlett Packard
- Microbee
- Sharp
- Sinclair
- Tandy
- and many more

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INTRODUCTION

HI, AND WELCOME to this bumper book of programs. *Your Computer* began publishing readers' programs in a special feature, called Pocket Programs, back in December 1982. They have been incredibly popular with our readers ever since and now appear every second month.

Happily, the supply of programs has outstripped our demand, which means we have a never-ending stock of good-quality programs to offer other readers. Recently, however, we have been embarrassed by the backlog. Programs were coming in much faster than we could print them and we were beginning to get buried under a growing pile of listings and documentation.

The solution was obvious: let's get all the programs together and publish the lot in one big collection. The contributors get to see their programs in print, you get a whole swag of programs to try out on your computer and we get to see what our desks look like.

Anyway, here they are: programs for the beginner through to the advanced; technical programs and games programs; programs from kids aged ten up to adults aged seventy. Programs in a variety of languages for all the popular machines and the more obscure ones as well. You will find lots of programs to use on your computer straightaway, and lots more that you can adapt from other computers and languages.

You will see we have divided the programs according to the machine they're written for: Apple, Commodore, Sinclair and so on. Don't restrict yourself just to looking at the brand you own. Many of the other machines' programs can easily be changed to run on different computers, and there are notes in some to suggest how you might go about doing this. In the miscellaneous section there are programs you can check out that are written more for a particular language than a particular machine.

There are also a few tricks to typing in the program that might be useful. Here are some hints I have found useful.

First, place a ruler under the line you are typing to mark your place. You don't want to start typing the wrong line midway through another, or leave a couple out. The results can be catastrophic, almost as confusing as that last sentence.

Next, check the data in data statements very carefully. When you type in normal commands and make a mistake it is usually pretty obvious. For example:

```
IB A>0 THEN ABORT
```

is a lot easier to correct than, say:

```
1000 DATA 143,233,233,087,323
```

One check you can make is to count how many numbers you should have typed in and how many you have typed in. You can also get someone to help you by reading the data to you while you type it in. If nothing else it makes for a more social occasion and makes your husband or wife, mother or father, feel wanted.

When you have typed in a program it may return an error. When you discover the line causing the error don't just check it and think "That looks OK". The best thing to do is read the line backwards, letter for letter and check each letter, number or control code against what you have typed in. That way you don't assume that everything is correct as you quickly flick your eye over the line. You plod through and verify every single character.

If you're still having trouble finding an error, another trick is to put a trace on the execution to follow the path the program takes. If your program loops uncontrollably you can use a command (TRON in many BASICs) which will show you the line

By Evan McHugh

numbers as they are being executed. Another thing you can do if you don't want to trace through the whole program is to sprinkle PRINT statements throughout or in selected locations. These can tell you all sorts of things about the execution. They can just say, "Hi, I'm at line 100 and everything is fine!", or they can tell you the value of the variable that seems to be causing the crash: "The value of C is 20."

With these few debugging tools, hopefully you should be able to work out about 99 per cent of the problems you may face. Of course, there is always that worst of bugs, the invisible, undetectable bug. These little monsters will have you tearing your hair out, glaring at your screen until three in the morning and in spite of your best efforts will never make themselves apparent. Often such bugs will cause you to despair, sell your computer and go on a skiing holiday to Europe with the proceeds.

It happens to every programmer from rank beginner to seasoned professional. For example, one of my computing lecturers was frowning at a listing a student had brought to her for some help. Another student noticed the frown and offered assistance.

"The bug must be in this line," said the lecturer, "but I've been looking at the rotten thing for two hours and there is nothing wrong with it. We've looked at everything; whatever it is must be pretty weird to cause an error." "Let's have a peep then," chirps the helpful student. "Ah yes, that comma should come before the variable, not after."

It had taken him three seconds to find the bug. It is times like that when quite talented people can get turned onto the alternative lifestyle, but please don't despair. Sometimes things can be extremely complicated with computers, but far more often they are extremely simple. The solution is to get a second opinion. Another programmer used to get his kids to check his syntax when he ran into an error. They didn't know a thing about computers, but if he explained the way syntax worked they could pick up the obvious mistakes which he had looked at for hours without noticing.

Also, you should consider joining a computing club. You will certainly meet lots of people who will gladly take a look at a listing and point out any bugs that might be causing trouble. A full listing of clubs in Australia and New Zealand is printed in this book, and we update it from time to time in *Your Computer*.

If you still can't find the bug after trying all these avenues it is time to despair, sell your computer and buy a sailboard with the proceeds.

Hopefully, having tried some of the programs in this magazine you will be inspired to write some programs of your own that you would like to submit to us for publication. Please feel free to do so. The programs we like best are ones that have some creativity about them. Say, a new way of performing an old routine, or a game that has not been put on a computer before, or a useful routine that works faster than any that are around at the moment.

If you are a rank beginner don't think there are no programs you can send in. There are plenty of other rank beginners out there who will probably find that your programs are just at the level they can understand. So, send those programs rolling in.

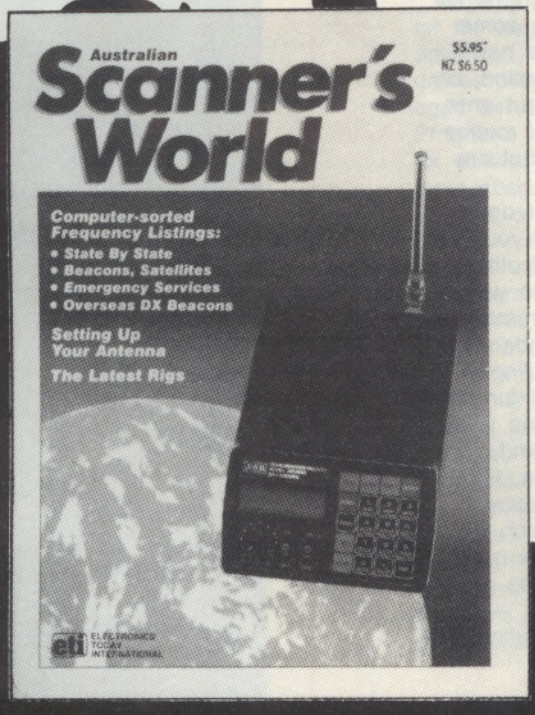
We hope you have lots of fun with the programs in this magazine. There is something for everyone. And, as my desk diary for today says, "You should try everything once, except incest and folk dancing", which I'll admit is a trifle weird, but it's not a bad approach to trying out the programs!

Enjoy and Keep On Computing! ■

GET AMONGST THE ACTION!

There's a whole world of 'action' on the bands between 30 MHz and 500 MHz. No matter whether you're interested in VHF/UHF DX, or just the local 'chatter', a scanner will put you 'in touch' with that world of action.

Australian SCANNER'S WORLD is the book that will introduce you to that other world 'beyond the shortwaves'. It contains an introduction to scanning and scanners, an article on scanner antennas — including how to build two types for yourself, along with how to erect antennas. The major part of this book is the "Listener's Guide", computer — sorted listings of services throughout Australia and New Zealand, with their frequencies listed in both frequency order and alphabetical order by service. Beacons are listed also, along with relevant overseas ones. A roundup of scanners, antennas and accessories is also included.



FIND OUT WHERE THE ACTION IS!

Australian SCANNER'S WORLD $5.95

at your newsagent

PROGRAMS FOR APPLE II

FROGGER

Frogger is a two part program, connected by the CHAIN program on the DOS 3.3 SYSTEM MASTER. The listing REM FROGGER should be saved under the name of "FROGGER", and the other under "FROGGER@". A copy of CHAIN is expected to be present on the disk when FROGGER is run.

To guide the frog:
A – up, J – left, K – right, Z – down.

M.J. Smith
Waramanga ACT

```
0  REM     <<<FROGGER>>>
1 DS = 2
5  GOSUB 8000
6  ROT= 0: SCALE= 1: HCOLOR= 3
7 J = J + 1
8 FB = 130:FC = 140
10 S1 = 10:S2 = 20:S3 = 8:S4 = 12
20 FB = 130:FC = 140
30 D$ =  CHR$ (4)
40  GOSUB 20000
50  POKE 232,0: POKE 233,64
60 AB = 90:AC = 200:AD = 60:AE = 180:AF = 210:AG = 50:AH = 210:AI = 40
70 S1 = S1 + J:S2 = S2 + J:S3 = S3 + J:S4 = S4 + J
75  GOTO 350
80  POKE  - 16368,0
85 YF = FC:XF = FB
90  IF X = 218 THEN FD = FD - 1: IF FD < 0 THEN FD = 0
95  IF X = 218 THEN 140
100  IF X = 193 THEN FD = FD + 1: IF FD = 5 THEN 10000
105  IF X = 193 THEN 140
110  IF X = 203 THEN FB = FB + 20: IF FB > 250 THEN FB = 250
115  IF X = 203 THEN 140
120  IF X = 202 THEN FB = FB - 20: IF FB < 30 THEN FB = 30
125  IF X = 202 THEN 140
130  RETURN
140  IF FD = 0 THEN FC = 140
150  IF FD = 1 THEN FC = 112
160  IF FD = 2 THEN FC = 85
170  IF FD = 3 THEN FC = 59
180  IF FD = 4 THEN FC = 31
190  ROT= 0: SCALE= 1
192  HCOLOR= 4
195  DRAW 1 AT XF,YF
200  HCOLOR= 1
210  DRAW 1 AT FB,FC
215 SC = SC + 10
220  POKE  - 16368,0
230  IF FD = 0 THEN  RETURN
240  IF FD = 1 THEN F1 = AB:F2 = AC
250  IF FD = 2 THEN F1 = AD:F2 = AD
260  IF FD = 3 THEN F1 = AF:F2 = AG
270  IF FD = 4 THEN F1 = AH:F2 = AI
280  IF FB > F1 - 27 AND FB < F1 + 27 THEN 330
290  IF FB > F2 - 27 AND FB < F2 + 27 THEN 330
300  RETURN
330  GOSUB 2000
335 FB = 130:FC = 140
340  GOTO 350
350 FD = 0
360  HGR
370  ROT= 0: SCALE= 1
380  HCOLOR= 4: DRAW 2 AT AB,110: DRAW 2 AT AC,110
390 AB = AB + S1:AC = AC + S1: IF AB > 279 THEN AB = 0
400  IF AC > 279 THEN AC = 0
410  HCOLOR= 7: DRAW 2 AT AB,110: DRAW 2 AT AC,110
412  IF FD = 1 THEN  GOSUB 230
415 X =  PEEK ( - 16384): IF X > 127 THEN  GOSUB 80
420  HCOLOR= 4: ROT= 32: DRAW 2 AT AD,96: ROT= 0
```

```
430 AD = AD - S2: IF AD < 0 THEN AD = 279
440  HCOLOR= 7: ROT= 32: DRAW 2 AT AD,96: ROT= 0
442  IF FD = 2 THEN  GOSUB 230
445 X =  PEEK ( - 16384): IF X > 127 THEN  GOSUB 80
450  HCOLOR= 4: DRAW 2 AT AF,57: DRAW 2 AT AG,57
460 AF = AF + S3:AG = AG + S3: IF AF > 279 THEN AF = 0
470  IF AG > 279 THEN AG = 0
480  HCOLOR= 7: DRAW 2 AT AF,57: DRAW 2 AT AG,57
482  IF FD = 3 THEN  GOSUB 230
485 X =  PEEK ( - 16384): IF X > 127 THEN  GOSUB 80
490  HCOLOR= 4: ROT= 32: DRAW 2 AT AH,43: DRAW 2 AT AI,43
495 AH = AH - S4:AI = AI - S4: IF AH < 0 THEN AH = 279
500  IF AI < 0 THEN AI = 279
510  HCOLOR= 7: ROT= 32: DRAW 2 AT AH,43: DRAW 2 AT AI,43
530  HCOLOR= 1: ROT= FE: SCALE= 1
532  IF FD = 4 THEN  GOSUB 230
540  DRAW 1 AT FB,FC
550 X =  PEEK ( - 16384): IF X > 127 THEN  GOSUB 80
560  POKE  - 16368,0
570  GOTO 370
2000  TEXT : HOME
2005  RESTORE
2010  VTAB 10
2020  PRINT "  SSSSS  PPPPPP  LL       AAAAA  TTTTTTT"
2030  PRINT " SSSSSSS PPPPPPP LL      AAAAAAA TTTTTTT"
2040  PRINT " SSS  SS PP   PP LL      AA   AA   TTT"
2050  PRINT " SSS     PP   PP LL      AA   AA   TTT"
2060  PRINT " SSSSSS  PPPPPPP LL      AAAAAAA   TTT"
2070  PRINT "  SSSSSS PPPPPP  LL      AAAAAAA   TTT"
2080  PRINT "     SSS PPP     LLLLLL AA   AA   TTT"
2090  PRINT " SSSSSS PPP     LLLLLL AA   AA   TTT"
2100  PRINT "  SSSSS  PPP     LLLLLL AA   AA   TTT"
2110  FOR I = 1 TO 2
2112  FOR II = 1 TO 25: READ DD: POKE 0,DD: CALL 768: NEXT
2114  RESTORE : NEXT
2120 LL = LL + 1: IF LL > 3 THEN 5000
2130  RETURN
5000  TEXT : HOME
5020  PRINT : PRINT : PRINT "  BAD LUCK!"
5030  PRINT : PRINT "  YOURE SCORE WAS ";SC
5040  IF SC > 5000 THEN  PRINT "                    NOT A BAD SCORE"
5050  FOR I = 1 TO 25: READ DD: NEXT
5055  FOR I = 255 TO 1 STEP  - 3: POKE 0,I: CALL 768: NEXT
5060  DATA 250,250,250,250,250,200,200,200,150,150,150,100,100,50,0,0,0,0,200,20
0,0,0,0,200,200
5100  END
8000  POKE 768,169: POKE 769,4: POKE 770,133: POKE 771,1: POKE 772,234: POKE 773
,234: POKE 774,234: POKE 775,173: POKE 776,48:
8001  POKE 777,192: POKE 778,136: POKE 779,208: POKE 780,4: POKE 781,198: POKE 7
82,1: POKE 783,240: POKE 784,8: POKE 785,202:
8002  POKE 786,208: POKE 787,246: POKE 788,166: POKE 789,0: POKE 790,76: POKE 79
1,7: POKE 792,3: POKE 793,96: POKE 794,208:
8010  RETURN
10000  HCOLOR= 4: DRAW 1 AT FB,FC
10002  HCOLOR= 1: DRAW 1 AT FB,9
10005  PRINT  CHR$ (4);"BLOAD CHAIN,A520"
10010  CALL 520"FROGGER2"
19000  REM DATA FOR SHAPES
20000  DATA   2,0,6,0,40,0,63,54,63,36,60,54,54,46,53,54,63,54,54,37,44,45,45,45
,53,46,36,36,63
20005  DATA   36,44,37,36,36,55,54,63,36,63,0,63,63,39,36,63,63,63,55,54,63,63,5
4,54,54,54,54,54,54
20010  DATA   45,45,54,46,45,45,45,36,44,45,45,45,45,45,54,46,45,45,45,36,44,45,
36,37,44,36,37,60,36
20015  DATA   39,60,36,63,39,36,63,63,63,55,54,63,63,63,0,0,0,0,0
20018  FOR I = 1 TO 25: READ D: NEXT
20020  FOR LOC = 16384 TO 16485: READ PP: POKE LOC,PP: NEXT LOC
20030  RETURN
```

FROGGER

```
0  REM      <<<FROGGER2>>>
1  IF DS = 0 THEN 10000
5  GOSUB 8000
6 J = J + 1: IF J > 10 THEN J = 10
10 S1 = 7:S2 =  - 23:S3 = 5:S4 =  - 10
20 FB = 130:FC = 140:SF = 0
30 D$ =  CHR$ (4)
40  PRINT D$;"BLOAD FROGGA2.SHP"
50  POKE 232,0: POKE 233,64
60 AB = 90:AC = 240:AD = 60:AE = 170:AF = 150:AG = 10:AH = 40:AI = 180
70 S1 = S1 + J:S2 = S2 - J:S3 = S3 + J
75  GOTO 350
80  POKE  - 16368,0
85 YF = FC:XF = FB
90  IF X = 218 THEN FD = FD - 1: IF FD < 0 THEN FD = 0
95  IF X = 218 THEN 140
100  IF X = 193 THEN FD = FD + 1: IF FD = 5 THEN 7000
105  IF X = 193 THEN 140
110  IF X = 203 THEN FB = FB + 20: IF FB > 250 THEN FB = 250
115  IF X = 203 THEN 140
120  IF X = 202 THEN FB = FB - 20: IF FB < 30 THEN FB = 30
125  IF X = 202 THEN 140
130  RETURN
140  IF FD = 0 THEN FC = 140:SF = 0
150  IF FD = 1 THEN FC = 112:SF = S1
160  IF FD = 2 THEN FC = 85:SF = S2
170  IF FD = 3 THEN FC = 59:SF = S3
180  IF FD = 4 THEN FC = 31:SF = S4
190  ROT= 0: SCALE= 1
192  HCOLOR= 4
195  DRAW 1 AT XF,YF
200  HCOLOR= 1
210  DRAW 1 AT FB,FC
215 SC = SC + 10
220  POKE  - 16368,0
230  IF FD = 0 THEN  RETURN
240  IF FD = 1 THEN F1 = AB:F2 = AC
250  IF FD = 2 THEN F1 = AD:F2 = AD
260  IF FD = 3 THEN F1 = AF:F2 = AG
270  IF FD = 4 THEN F1 = AH:F2 = AI
280  IF FB > F1 - 20 AND FB < F1 + 20 THEN  RETURN
290  IF FB > F2 - 20 AND FB < F2 + 20 THEN  RETURN
300  REM
330  GOSUB 2000
335 FB = 130:FC = 140
340  GOTO 350
350 FD = 0
351  HGR : HCOLOR= 1: ROT= 0
352  IF H1 = 1 THEN  DRAW 1 AT 40,9
354  IF H2 = 1 THEN  DRAW 1 AT 90,9
356  IF H3 = 1 THEN  DRAW 1 AT 140,9
358  IF H4 = 1 THEN  DRAW 1 AT 190,9
360  IF H5 = 1 THEN  DRAW 1 AT 240,9
361  HCOLOR= 3: HPLOT 1,20 TO 30,20
362  HPLOT 30,20 TO 30,1 TO 50,1 TO 50,20
363  HPLOT  TO 80,20 TO 80,1 TO 100,1 TO 100,20
364  HPLOT  TO 130,20 TO 130,1 TO 150,1 TO 150,20
365  HPLOT  TO 180,20 TO 180,1 TO 200,1 TO 200,20
366  HPLOT  TO 230,20 TO 230,1 TO 250,1 TO 250,20
368  HPLOT  TO 278,20
370  ROT= 0: SCALE= 1
380  HCOLOR= 4: DRAW 2 AT AB,105: DRAW 2 AT AC,105
390 AB = AB + S1:AC = AC + S1: IF AB > 279 THEN AB = 0
400  IF AC > 279 THEN AC = 0
410  HCOLOR= 7: DRAW 2 AT AB,105: DRAW 2 AT AC,105
411  IF FD = 1 THEN  HCOLOR= 4: DRAW 1 AT FB,FC:FB = FB + SF: IF FB >
                                                          270 OR FB
< 10 THEN 300
412  IF FD = 1 THEN  HCOLOR= 1: DRAW 1 AT FB,FC
414  GOSUB 230
415 X =  PEEK ( - 16384): IF X > 127 THEN  GOSUB 80
420  HCOLOR= 4: DRAW 2 AT AD,78
430 AD = AD + S2: IF AD < 0 THEN AD = 279
440  HCOLOR= 7: DRAW 2 AT AD,78
441  IF FD = 2 THEN  HCOLOR= 4: DRAW 1 AT FB,FC:FB = FB + SF: IF FB >
                                                          270 OR FB
< 10 THEN 300
```

```
442  IF FD = 2 THEN  HCOLOR= 1: DRAW 1 AT FB,FC
444  GOSUB 230
445 X =  PEEK ( - 16384): IF X > 127 THEN  GOSUB 80
450  HCOLOR= 4: DRAW 2 AT AF,52: DRAW 2 AT AG,52
460 AF = AF + S3:AG = AG + S3: IF AF > 279 THEN AF = 0
470  IF AG > 279 THEN AG = 0
480  HCOLOR= 7: DRAW 2 AT AF,52: DRAW 2 AT AG,52
481  IF FD = 3 THEN  HCOLOR= 4: DRAW 1 AT FB,FC:FB = FB + SF: IF FB > 270 OR FB
< 10 THEN 300
482  IF FD = 3 THEN  HCOLOR= 1: DRAW 1 AT FB,FC
484  GOSUB 230
485 X =  PEEK ( - 16384): IF X > 127 THEN  GOSUB 80
490  HCOLOR= 4: DRAW 2 AT AH,25: DRAW 2 AT AI,25
495 AH = AH + S4:AI = AI + S4: IF AH < 0 THEN AH = 279
500  IF AI < 0 THEN AI = 279
510  HCOLOR= 7: DRAW 2 AT AH,25: DRAW 2 AT AI,25
530  HCOLOR= 1: ROT= FE: SCALE= 1
531  IF FD = 4 THEN  HCOLOR= 4: DRAW 1 AT FB,FC:FB = FB + SF: IF FB > 270 OR FB
< 10 THEN 300
532  IF FD = 4 THEN  HCOLOR= 1: DRAW 1 AT FB,FC
533  HCOLOR= 4: DRAW 1 AT FB,FC
534  GOSUB 230
537  IF FB > 270 OR FB < 10 THEN  GOTO 300
540  HCOLOR= 1: DRAW 1 AT FB,FC
550 X =  PEEK ( - 16384): IF X > 127 THEN  GOSUB 80
560  POKE  - 16368,0
570  GOTO 370
2000  TEXT : HOME
2005  RESTORE
2010  VTAB 10
2020  PRINT "  SSSSS  PPPPPP  LL       AAAAA  TTTTTTT"
2030  PRINT " SSSSSSS PPPPPPP LL      AAAAAAA TTTTTTT"
2040  PRINT " SSS  SS PP   PP LL      AA   AA    TTT"
2050  PRINT " SSS     PP   PP LL      AA   AA    TTT"
2060  PRINT " SSSSSS  PPPPPPP LL      AAAAAAA   TTT"
2070  PRINT "  SSSSSS PPPPPP  LL      AAAAAAA   TTT"
2080  PRINT "     SSS PPP     LLLLLL AA   AA    TTT"
2090  PRINT " SSSSSSS PPP     LLLLLL AA   AA    TTT"
2100  PRINT "  SSSSS  PPP     LLLLLL AA   AA    TTT"
2110  FOR I = 1 TO 2
2112  FOR II = 1 TO 30: READ DD: POKE 0,DD: CALL 768: NEXT
2114  RESTORE : NEXT
2115 SF = 0
2120 LL = LL + 1: IF LL > 3 THEN 5000
2130  RETURN
5000  TEXT : HOME
5020  PRINT : PRINT : PRINT "  BAD LUCK!"
5030  PRINT : PRINT "  YOURE SCORE WAS ";SC
5040  IF SC > 5000 THEN  PRINT "                    NOT A BAD SCORE"
5050  FOR I = 1 TO 25: READ DD
5055  FOR I = 0 TO 255 STEP 6: POKE 0,I: CALL 768: NEXT
5060  DATA 250,250,250,250,250,200,200,200,150,150,100,100,0,0,0,255,0,0,0,255,0
,0,0,255,0,0,0,0,0,0
5066  FOR I = 255 TO 1 STEP  - 6: POKE 0,I: CALL 768: NEXT
5100  END
7000  REM  FD=5, OR HOME!!
7010  IF FB < 50 AND FB > 30 AND H1 = 0 THEN H1 = 1: GOTO 7100
7020  IF FB < 100 AND FB > 80 AND H2 = 0 THEN H2 = 1: GOTO 7100
7030  IF FB < 150 AND FB > 130 AND H3 = 0 THEN H3 = 1: GOTO 7100
7040  IF FB < 200 AND FB > 180 AND H4 = 0 THEN H4 = 1: GOTO 7100
7050  IF FB < 250 AND FB > 230 AND H5 = 0 THEN H5 = 1: GOTO 7100
7060  GOTO 300
7100  REM  SUCCESS!!
7102  FOR I = 1 TO 12: POKE 0, INT ( RND (1) * 100 + 1): CALL 768: NEXT
7105 HH = 0
7110  IF H1 = 1 THEN  DRAW 1 AT 40,9:HH = HH + 1
7120  IF H2 = 1 THEN  DRAW 1 AT 90,9:HH = HH + 1
7130  IF H3 = 1 THEN  DRAW 1 AT 140,9:HH = HH + 1
7140  IF H4 = 1 THEN  DRAW 1 AT 190,9:HH = HH + 1
7150  IF H5 = 1 THEN  DRAW 1 AT 240,9:HH = HH + 1
7160  IF HH = 5 THEN H1 = 0:H2 = 0:H3 = 0:H4 = 0:H5 = 0:SC = SC + 1000: FOR I =
1 TO 30: POKE 0, INT ( RND (1) * 255): CALL 768: NEXT
7170  GOTO 10000
8000  POKE 768,169: POKE 769,4: POKE 770,133: POKE 771,1: POKE 772,234: POKE 773
,234: POKE 774,234: POKE 775,173: POKE 776,48:
8001  POKE 777,192: POKE 778,136: POKE 779,208: POKE 780,4: POKE 781,198: POKE 7
```

APPLE II

LINEAR EQUATION

Two co-ordinates are entered in the form (X1,Y1) and (X2,Y2). From this data, the computer will work out the equation of the line joining these two points. It takes into account whether the line is vertical or not.

In addition, the computer will also give the midpoint, distance, gradient, y-intercept and x-intercept of the line. It takes into account whether the gradient, y-intercept or x-intercept is undefined.

Great for working out maths homework. Will work on any computer using BASIC.

S. Chan
Minto Heights NSW

```
10 CLS
20 INPUT'ENTER CO-ORDINATES (X1,Y1)';X1,Y1
30 INPUT'ENTER CO-ORDINATES (X2,Y2)';X2,Y2
40 PRINT:PRINT:PRINT
50 REM  +MIDPOINT+
60 M1=(X1+X2) 2 : M2=(Y1+Y2)/2
70 PRINT'MIDPOINT     : (';M1;' ,';M2;' )'
80 REM  +DISTANCE+
90 D=SQR(((X1-X2).TM.(X1-X2))+((Y1-Y2).TM.(Y1-Y2)))
100  PRINT'DISTANCE     :';D
110 REM +GRADIENT+
120 IF X1-X2=0 THEN 160
130 G=(Y1-Y2)/(X1-X2)
140 PRINT'GRADIENT     :';G
150 GOTO 170
160 PRINT'GRADIENT     : LINE IS VERTICAL'
170 REM +Y-INTERCEPT+
180 IF X1-X2=0 THEN 220
185 IF Y1-Y2=0 THEN 195
190 B=Y1-(G.TM.X1):GOTO 200
195 B=Y1
200 PRINT'Y-INTERCEPT :';B
210 GOTO 230
220 PRINT'Y-INTERCEPT : UNDEFINED'
230 REM +X-INTERCEPT+
240 IF Y1-Y2=0 THEN 280
245 IF X1-X2=0 THEN 255
250 C=-B/G:GOTO 260
255 C=X1
260 PRINT'X-INTERCEPT :';C
270 GOTO 290
280 PRINT'X-INTERCEPT : UNDEFINED'
290 PRINT:PRINT
300 REM +EQUATION+
310 IF X1-X2=0 THEN PRINT'EQUATION   : X =';X1:GOTO 400
320 IF Y1-Y2=0 THEN PRINT'EQUATION   : Y =';Y1:GOTO 400
330 IF B=0 THEN PRINT'EQUATION   :  Y =';G;'X':GOTO 400
340 IF B.LT.0 THEN PRINT'EQUATION    : Y =';G;'X -';ABS(B):GOTO 4
00
350 PRINT'EQUATION   : Y =';G;'X +';B
400 REM
410 PRINT.AT.960,'PRESS 'L' TO RUN AGAIN';
420 IF INKEY$.LT..GT.'L' THEN 420 ELSE RUN
```

FROGGER

```
82,1: POKE 783,240: POKE 784,3: POKE 785,202:
3002  POKE 786,208: POKE 787,246: POKE 788,166: POKE 789,0: POKE 790,76: POKE 79
1,7: POKE 792,3: POKE 793,96: POKE 794,200:
3010  RETURN
10000  HCOLOR= 4: DRAW 1 AT 55,50
10005  PRINT  CHR$ (4);"BLOAD CHAIN,A520"
10010  CALL 520"FROGGER"
20000  DATA 2,0,6,0,10,0,63,54,63,36,60,54,54,46,53,54,63,54,54,37,44,45,45,45,5
3,46,36,36,63,
20005  DATA 36,44,37,36,36,53,54,63,36,63,0,63,63,63,55,55,55,55,54,55,54,55,54,
54,46,54,46,54,46,
20010  DATA 46,46,46,45,45,45,45,45,45,45,45,45,37,37,37,37,36,37,36,37,36,36,60
,36,60,36,60,60,60,
20015  DATA 60,63,63,63,63,63,63,63,0,63,55,54,63,63,63,
20018  FOR I = 1 TO 30: READ D: NEXT
20020  FOR I = 16384 TO 16484: READ D: POKE I,D: NEXT
20030  RETURN
```

SPECIAL FUNCTION KEYS

This program will let you type in commonly used DOS commands (CATALOG etc) and Applesoft reserved words (INPUT, FOR, NEXT etc) using the control characters. For example, typing control-I will cause the word INPUT to appear exactly as though you have just typed it in from the keyboard, character by character-but it only takes a small fraction of the time. Great news for hunt and peckers!

The list of keywords and the control characters which represent them are given in the table. Putting stickers on the keys is fine in the short term, but eventually they tend to gum up the works (pun intended).

Notice that not all the available control characters are used. Some are used by Apple for special purposes (namely control – C,D,G,H,J,K,M,S,U,X).

To type in this program, first ensure that DOS has been booted, then enter the Monitor by typing CALL –151 when you will see the prompt *. Now simply type in each line of the hex code as it appears in the listing – begin each line with the line number, to be followed immediately by a colon (:) and then the first 2 digit hex code and so on. After entering the program, type 3DOG to return to Applesoft. Save the program on disk using the command:
BSAVE CUSTOM KEYS, A$9500, L$FF

To use the control character utility program, simply BRUN it from disc after booting DOS. Better still, BRUN it in your HELLO program. This program can be temporarily disconnected by a RESET or a CALL 38164. When BRUN from disk this program will be located in memory just below DOS at starting address $9500 (hex). It also protects itself from being trampled upon by Applesoft by resetting HIMEM.

This program will work on an Apple II plus with DOS 3.3, an Apple work-a-like (provided it is sufficiently alike) or an Apple IIe in the 40 column mode. It is incompatible with the Apple IIe 80 column firmware which uses many of the control characters to provide special 80 column functions.

Derek Chan
Hawker ACT

CAST OF CONTROL CHARACTERS

COMMAND	KEY	HINT
CATALOG	control V	disc Volume
LIST	control L	List
RUN	control R	Run
FOR	control F	For
NEXT	control N	Next
STEP	control Z	Ztep
THEN	control T	Then
CALL	control A	cAll
PEEK(	control E	pEek(
POKE	control O	pOke
PLOT	control P	Plot
GOSUB	control B	gosuB
GO TO	control Y	Y looks like a branch
INPUT	control I	Input
PRINT	?	Applesoft treats ? as PRINT
Clrs scrn set 40 col	control W	Wipes screen Window

```
*9500.95FF
9500- A9 28 85 38 A9 95 85 39
9508- 20 EA 03 A9 FF 85 73 A9
9510- 94 85 74 60 A9 1B 85 38
9518- A9 FD 85 39 20 EA 03 60
9520- 9D 00 02 E8 20 F0 FD 60
9528- 20 1B FD 1B C9 9B 90 01
9530- 60 C9 97 D0 0A A9 28 85
9538- 21 20 58 FC A9 A0 60 C9
9540- B0 F0 FB C9 B3 F0 F7 C9
9548- B4 F0 F3 C9 B7 F0 EF C9
9550- B8 F0 EB C9 BA F0 E7 C9
9558- BB F0 E3 C9 BD F0 DF C9
9560- 91 F0 DB C9 93 F0 D7 C9
9568- 95 F0 D3 C9 9B F0 CF 38
9570- E9 80 8D 9D 95 A0 00 B9
9578- 9E 95 C8 C9 AA F0 03 4C
9580- 77 95 CE 9D 95 AD 9D 95
9588- C9 00 F0 03 4C 77 95 B9
9590- 9E 95 C9 AA F0 A6 20 20
9598- 95 C8 4C BF 95 00 AA C3
95A0- C1 CC CC AA C7 CF D3 D5
95A8- C2 AA AA AA D0 C5 C5 CB
95B0- A8 AA C6 CF D2 AA AA AA
95B8- C9 CE D0 D5 D4 AA AA AA
95C0- CC C9 D3 D4 AA AA CE C5
95C8- D8 D4 AA D0 CF CB C5 AA
95D0- D0 CC CF D4 AA AA D2 D5
95D8- CE AA AA D4 C8 C5 CE AA
95E0- AA C3 C1 D4 C1 CC CF C7
95E8- AA AA AA C7 CF A0 D4 CF
95F0- AA D3 D4 C5 D0 AA D5 D4
95F8- AA AA C3 C1 D4 C1 CC 00
*
```

CATALOG INTERRUPT

```
10  REM
20  REM       CATALOGUE INTERRUPT BY
30  REM         D.S.YAN, 1984
40  REM
50  REM  ************************************************************
60  REM  * Change DOS to return to BASIC after printing 18 lines of catalog *
90  REM  ************************************************************
95  REM
100   POKE 44601,76: POKE 44602,127: POKE 44603,179
110   REM
120   REM  ********************************************
130   REM  * Change DOS to jump to $318 on end of catalog *
150   REM  ********************************************
160   REM
170   POKE 44589,24: POKE 44590,3
180   REM
190   REM  ************************************************************
200   REM  * Set up code at $310 to store stack pointer at $B39B then enter *
230   REM  * catalog routine at $AE25                                    *
250   REM  ************************************************************
260   REM
270   FOR I = 784 TO 791: READ J: POKE I,J: NEXT
280   REM
290   REM  ********************************************************
300   REM  * Set up code at $318 to clear flag at end  of directory *
330   REM  ********************************************************
340   REM
350   FOR I = 792 TO 800: READ J: POKE I,J: NEXT
355   HOME
360   D$ =  CHR$ (4): REM   <CTRL-D>
370   REM
380   REM  ****************************
390   REM  * Print first catalog page *
400   REM  ****************************
410   REM
420   PRINT D$;"CATALOG"
430   REM
440   REM  ********************************
450   REM  * Print instructions on screen *
470   REM  ********************************
480   REM
490   VTAB 1: HTAB 1: INVERSE : PRINT " <- UP / -> DOWN / <RETURN>
       NEXT PAGE": NORMAL
500   VTAB 24: INVERSE : PRINT "<D>DELETE<U>UNLOCK<L>LOCK<R>RUN<O>LOAD"
      ;: NORMAL
502   REM
504   REM  ************************************************
505   REM  * Reduce TEXT window by one line, top and bottom *
506   REM  ************************************************
507   REM
510   POKE 34,1: POKE 35,23
520   CD = 5: HTAB 8
530   IF CD < 2 THEN CD = CD + 1: GOTO 550
540   IF CD > 23 THEN CD = CD - 1
550   VTAB (CD)
560   GET CU$
570   REM
580   REM  ***************
590   REM  * Move cursor *
600   REM  ***************
610   REM
620   IF  ASC (CU$) = 08 THEN CD = CD - 1: GOTO 530
630   IF  ASC (CU$) = 21 THEN CD = CD + 1: GOTO 530
640   REM
650   REM  ************************************
660   REM  * GOTO next catalog page on <RETURN> *
680   REM  ************************************
690   REM
700   IF  ASC (CU$) = 13 THEN 1120
710   REM
720   REM  ****************************
730   REM  * Exit programme on <ESC> *
740   REM  ****************************
750   REM
760   IF  ASC (CU$) = 27 THEN 1350
770   IF  ASC (CU$) <  > 68 AND  ASC (CU$) <  > 76 AND  ASC (CU$)
      <  > 82 AND  ASC (CU$) <  > 85 AND  ASC (CU$) <  > 79 THEN 560
780   GOSUB 940
```

```
790  REM
800  REM  ****************************
810  REM  * Read filename from screen *
820  REM  ****************************
830  REM
840   PK = PK - 1:PK$ =  CHR$ ( PEEK (PK))
850   PK = PK + 1
853  REM
854  REM  ********************************************************
855  REM  * Check for five consecutive spaces on screen to indicate *
857  REM  * end of filename                                        *
858  REM  ********************************************************
859  REM
860   IF  PEEK (PK) = 160 AND  PEEK (PK + 1) = 160 AND  PEEK (PK + 2)
     = 160 AND  PEEK (PK + 3) = 160 AND  PEEK (PK + 4) = 160 THEN 980
870   PK$ = PK$ +  CHR$ ( PEEK (PK))
880   GOTO 850
890  REM
900  REM  ************************************************
910  REM  * Locate memory address of cursor screen position *
920  REM  ************************************************
930  REM
940   IF CD > 0 AND CD < 9 THEN PK = 1031 + 128 * (CD - 1)
950   IF CD > 8 AND CD < 17 THEN PK = 1071 + 128 * (CD - 9)
960   IF CD > 16 AND CD < 25 THEN PK = 1111 + 128 * (CD - 17)
970   FT =  PEEK (PK - 6): RETURN
980   PRINT D$
990   IF CU$ = "D" THEN  PRINT D$;"DELETE";PK$: VTAB CD: HTAB 1:
      CALL  - 868: VTAB CD: HTAB 8
1000  IF CU$ = "L" THEN  PRINT D$;"LOCK";PK$: VTAB CD: HTAB 1:
      PRINT "*": VTAB CD: HTAB 8
1010  IF CU$ = "R" OR CU$ = "O" THEN 1040
1020  IF CU$ = "U" THEN  PRINT D$;"UNLOCK";PK$: VTAB CD: HTAB 1:
      PRINT " ": VTAB (CD): HTAB 8
1030  GOTO 560
1040  IF FT = 212 THEN  VTAB 2: HTAB 1: CALL  - 868: HTAB 10: FLASH
      : PRINT "FILE TYPE MISMATCH": NORMAL : HTAB 8: VTAB CD: GOTO 560
1050  GOTO 1350
1060 REM  ********************************************
1070 REM  * Set up DOS to read next 21 catalog entries *
1100 REM  ********************************************
1110 REM
1120  POKE 45981,21
1130 REM
1140 REM  ************************************************************
1150 REM  * Check catalog end flag at $320 and exit if equal to zero *
1180 REM  ************************************************************
1190 REM
1200  IF  PEEK (800) = 0 THEN 1350
1210 REM
1220 REM  ************************
1230 REM  * GOTO routine at $310 *
1240 REM  ************************
1250 REM
1260  VTAB 23: HTAB 1
1270  CALL 784
1280  CD = 2: HTAB 8: GOTO 530
1290 REM
1300 REM  ****************************
1310 REM  * Change DOS back to normal *
1330 REM  ****************************
1340 REM
1350  POKE 44601,32: POKE 44602,12: POKE 44603,253
1360  POKE 44589,127: POKE 44590,179
1370  POKE 34,0: POKE 35,24
1380  HOME
1390 REM
1400 REM  ********************************************
1410 REM  * RUN,BRUN,LOAD or BLOAD filename as selected *
1430 REM  ********************************************
1440 REM
1450  IF FT = 193 AND CU$ = "R" THEN  PRINT D$;"RUN";PK$
1460  IF FT = 193 AND CU$ = "O" THEN  PRINT D$;"LOAD";PK$
1470  IF FT = 194 AND CU$ = "R" THEN  PRINT D$;"BRUN";PK$
1480  IF FT = 194 THEN  PRINT D$;"BLOAD";PK$
1490  END
1500  DATA   186,142,155,179,32,37,174,96,169,0,141,32,3,76,127,179,1
```

Writing programs requiring retrieval of files from a disk, I found it desirable to have the catalog of disk files displayed on the screen from within a BASIC program to assist the program user to enter the filename as it is stored on the disk. A more useful feature would be to have the displayed file selectable.

The program is essentially in two parts. The first part handles the DOS alteration to display one 'page' of the catalog at a time (18-21 lines). The second part of the program manipulates the screen cursor and performs DOS commands on filenames present on the screen.

The program listing contains a liberal sprinkling of REMark statements which summarise the workings of the program. These lines can be left out when typing in the program, as they are not referenced by any GOTO's or GOSUB's. A list of the main variables used are given in figure 1.

Note: It is advisable when first running the program to use a backup copy of your disk and double check the expressions in the POKE statements. Indiscriminate poking around in DOS could produce disastrous results.

Denis Yan
Ingleburn NSW

```
5  DIM J$(100)
10  GOTO 360
20  POKE 216,0
25  RESTORE
30  FOR X = 1 TO 6: READ B$(X): NEXT

50  DATA  LOAD,LOCK,UNLOCK,DELETE
    ,RENAME,EXEC
60  TEXT : HOME :D$ =  CHR$ (4): PRINT
    D$"CATALOG":B =  PEEK (37) -
    2: IF B > 22 THEN B = 22
70 T = 0:CH = 4: FOR CV = 0 TO 23
    : GOSUB 260: IF C <  > 160 THEN
     POKE P - 1,219: POKE P,T +
    193: POKE P + 1,221:T = T +
    1:S = CV
80  NEXT CV: VTAB 24:A$ = "TYPE L
    ETTER TO RUN, OR     LOAD =
    1     LOCK = 2     UNLOCK =
    3     DELETE = 4     RENAME
    = 5     EXEC = 6     SYS. GE
    N. = 7     FLASH - CATALOG =
     8     EXIT = 9     .......
    "
90 B$ = "RUN": HTAB 1: PRINT  LEFT$
    (A$,39);:A$ =  MID$ (A$,2) +
     LEFT$ (A$,1):K =  PEEK ( -
    16384): IF K < 128 THEN  FOR
    K = 1 TO 75: NEXT K:K =  FRE
    (0): GOTO 90
100  POKE  - 16368,0:K = K - 176:
     IF K < 0 OR K > 9 THEN 200
105  IF K = 9 THEN  NEW
110  IF K = 7 THEN 400
115  IF K = 8 THEN 800
120  IF K > 9 THEN 90
130  HTAB 1: CALL  - 868: IF K =
    0 THEN  NEW
140  PRINT "PRESS LETTER YOU WISH
     TO ";
150  IF K = 4 THEN  FLASH
160  PRINT B$(K);: NORMAL
170 B$ = B$(K)
180  ONERR  GOTO 290
190  CALL  - 198: NORMAL : GET K$
    :K =  ASC (K$) - 48
200  IF K < 17 OR K > T + 16 THEN
    : HOME : CLEAR : PRINT  CHR$
    (4);"RUN HELLO"
210 CH = 1:CV = S - T + K - 16: GOSUB
    260: IF C = 194 AND (B$ = "R
    UN" OR B$ = "LOAD") THEN B$ =
    "B" + B$
220  FOR CH = 6 TO 39: GOSUB 260:
    B$ = B$ +  CHR$ (C): NEXT CH
    : IF  LEFT$ (B$,6) = "RENAME
    " THEN 280
230  VTAB  PEEK (37) + 1: HTAB 1:
     CALL  - 868: PRINT B$: PRINT
    D$;B$
240  IF  LEFT$ (B$,4) = "EXEC" THEN
     HOME : PRINT D$;"MON C,I,O"
    : END
250  GOTO 30
260 C1 =  INT (CV / 8):C2 = CV -
    C1 * 8:P = 1024 + 128 * C2 +
    40 * C1 + CH:C =  PEEK (P): RETURN
270  FOR CH = 6 TO 39: GOSUB 260:
    B$ = B$ +  CHR$ (C): NEXT CH
    : HTAB 1: CALL  - 868: PRINT
    B$: PRINT D$;B$: GOTO 30
280  HTAB 1: VTAB 23: PRINT "ORIG
    INAL "; MID$ (B$,7): VTAB  PEEK
```

```
(372 HTAB 12 CALL - 868: HTAB
1: INPUT "NEW FILENAME ? ";N
E$: PRINT CHR$ (4);B$; CHR$
(44);NE$: GOTO 30
290 POKE 216,0:ERR = PEEK (222)
: IF LEFT$ (B$,6) = "DELETE
" THEN 340
300 IF ERR = 10 THEN VTAB 23: PRINT
"FILE LOCKED: (C)ONTINUE OR
(A)BORT ";
310 GET N$
320 IF N$ = "C" THEN PRINT CHR$
(4);"UNLOCK"; MID$ (B$,7): PRINT
CHR$ (4);B$;",";NE$
330 GOTO 30
340 IF ERR = 10 THEN HTAB 1: VTAB
23: PRINT "FILE LOCKED: (C)O
NTINUE OR (A)BORT ";: GET N$
: IF N$ = "C" THEN PRINT D$
;D$;"UNLOCK"; MID$ (B$,7): PRINT
D$;B$: GOTO 30
350 GOTO 30
360 ONERR GOTO 390
370 PRINT CHR$ (4);"EXEC STARTU
P FILE"
380 END
390 GOTO 20
400 HOME : INVERSE : PRINT "SYST
EM GENERATOR"
410 PRINT CHR$ (7)
420 NORMAL : PRINT : PRINT "1 -
GENERATE NEW HELLO PROGRAM"
430 PRINT : PRINT "2 - GENERATE
STARTUP FILE"
440 PRINT : PRINT "3 - INITIALIS
E DISK"
450 PRINT : PRINT "4 - GENERATE
EXEC FILE"
460 PRINT : PRINT "X - EXIT TO M
AIN MENU"
470 GET A$: PRINT
472 IF A$ = "1" THEN F$ = "": GOTO
750
475 IF A$ = "3" THEN 690
480 IF A$ = "4" THEN 620
490 IF A$ = "X" THEN RUN
500 IF A$ < > "2" THEN 400
510 HOME : INVERSE : PRINT "STAR
TUP FILE GENERATOR": NORMAL
: PRINT
520 GOSUB 660
530 PRINT :F$ = "STARTUP FILE":X
= 0
540 INPUT J$(X): IF J$(X) = "" THEN
570
550 IF J$(X) = CHR$ (2) AND X >
0 THEN X = X - 1: PRINT J$(X
): PRINT "ENTER FROM HERE ON
WARDS": PRINT : GOTO 540
560 X = X + 1: IF X < 99 THEN 540
570 PRINT D$;"OPEN ";F$: PRINT D
$;"DELETE ";F$
580 PRINT D$;"OPEN ";F$: PRINT D
$;"WRITE ";F$
590 FOR J = 0 TO X: PRINT J$(J):
NEXT J
600 PRINT D$;"CLOSE ";F$
610 PRINT : PRINT "DONE. PRESS
ANY KEY TO CONTINUE...";: GET
A$: GOTO 400
620 PRINT : PRINT
630 INPUT "WHAT FILENAME ? ";F$
640 IF VAL (F$) < > 0 OR F$ =
"" THEN PRINT CHR$ (7)"ILL
```

'ULLO 'ULLO

This program includes two new features:

1. The 'Flash Catalog' routine from the Apple DOS (3.3) Manual, which displays hidden control characters in file names as flashing letters*

2. The capability to create and use Exec files, and to set up a series of commands to be executed automatically on start-up.

These facilities may be operated by options 7 (Sys Gen) and 8 (Flash Catalog) on the menu; i.e: the message that scrolls around at the bottom of the screen. Files may be executed by using option 6 (Exec).

for the uninitiated, control characters can be put into file names as a sort of password; they can be extremely annoying if you forget what or where they are.

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Mt. Colah NSW

'ULLO 'ULLO

```
▷ EGAL FILENAME": PRINT : GOTO
   630
650 GOSUB 660: GOTO 540
660 HOME
670 PRINT "ENTER THE STATEMENTS
   YOU WISH TO BE     EXECUTED.
     PRESS RETURN BY ITSELF WHE
   N  YOU HAVE FINISHED.  USE C
   TRL-B <RETURN>  TO CHANGE YO
   UR PREVIOUS ENTRY"
680 RETURN
690 HOME : PRINT  CHR$ (7): INPUT
   "INSERT DISK TO BE INITIALIS
   ED, THEN     PRESS RETURN...
   ";Z$
700 PRINT : PRINT : INPUT "WHAT
   FILENAME DO YOU WISH TO BE E
   XECUTEDON STARTUP ? ";F$
710 IF  VAL (F$) <  > 0 THEN  PRINT
    CHR$ (7);"ILLEGAL FILENAME"
   : PRINT : GOTO 700
715 PRINT : INPUT "WHAT VOLUME N
   UMBER DO YOU WANT ? ";A
720 PRINT : PRINT : INPUT "INSER
   T DISK TO BE INITIALISED, TH
   EN  PRESS RETURN...";Z$
730 PRINT D$;"INIT ";F$;",V";A
740 PRINT : PRINT "DO YOU WANT A
    COPY OF THIS PROGRAM ON  T
   HE DISK ? ": GET Z$  IF Z$ =
   "N" THEN 400
750 HOME : INVERSE  PRINT "GENE
   RATING GREETINGS PROGRAM..."
   : NORMAL
760 IF F$ = "" THEN  PRINT : INPUT
   "WHAT FILENAME ? ";F$
770 PRINT D$;"SAVE ";F$
780 PRINT : PRINT "PRESS ANY KEY
    TO RETURN...": GET A$: GOTO
   400
800 HOME
805 RESTORE : FOR X = 1 TO 6: READ
   A$: NEXT
810 DATA    201,141,240,21,201,1
   36
820 DATA    240,17,201,128,144,1
   3
830 DATA    201,160,176,9,72,132

840 DATA    53,56,233,64,76,249
850 DATA    253,76,240,253
860 FOR I = 768 TO 768 + 27
870 READ V: POKE I,V: NEXT I
880 POKE 54,0: POKE 55,3
890 CALL 1002
900 PRINT "FLASH - CATALOG INSTA
   LLED AND READY.": PRINT : PRINT
   "PRESS ANY KEY TO CONTINUE..
   .": GET A$ GOTO 20
```

■

APPLE SPACE WAR

This is basically a Space Invaders type of game, with both player and aliens using laser weapons rather than missiles. The player has only one life, but starts with 100 energy points which decrease when he fires at, or is hit by, aliens.

It is possible to earn a score of 200, and 20 energy points, by hitting the strongest alien, but that being can inflict up to 105 points of damage on you!

The program includes instructions for playing, which may be chosen from the startup menu, and has two special features:

1 – The top fifteen scores, and the players names, are stored permanently on disk.

2 – A "Demo" mode, in which the computer plays both sides. If left unattended, the program will automatically enter this mode returning to the menu after each game to give a human a chance (if one is present). The computers top score is 180.

The game hormally starts with one alien, with more (up to 20) appearing as the game progresses. The starting number may be altered by changing the value given to NT in line 490.

If you experience problems with the disk file, try changing line 1190 to read: 1190 PRINT D$;D$;"OPEN";F$. On the subject of the disk file, use the program "Hiscore Creator" to set up the file before your first game (or to erase the high score table later).

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```
10  ONERR  GOTO 1260
20  DIM K(3)
30 K(0) = 8:K(1) = 21:K(2) = 32
40 DE$ = "D"
50  DIM D(21),C(21),T(21),A(21)
60  HOME : GOSUB 70: GOTO 330
70  PRINT "   ------------------
    ---
80  PRINT
90  PRINT "      APPLE SPACE WAR!
    !
100  PRINT
110  PRINT "      BY ANDREW MAIZE
    LS
120  PRINT "      COPYRIGHT 13.7.
    83
130  PRINT
140  PRINT "      ANOTHER GREAT G
    AME
150  PRINT "            FROM
160  PRINT "      GANYMEDE SOFTWA
    RE
170  PRINT
180  PRINT "      PHONE:(02) 477-
    2108
190  PRINT
200  PRINT "    ----------------
    -----
210  PRINT : PRINT : PRINT "PRESS
     ANY KEY TO PLAY, OR:"
220  PRINT : PRINT "D - DEMONSTRA
    TION GAME"
230  PRINT : PRINT "I - INSTRUCTI
    ONS"
240  PRINT : PRINT "X - EXIT"
250  POKE  - 16368,0:A =  PEEK ( -
    16384): IF A < 128 THEN B =
    B + 1: IF B < 500 THEN 250
260 A = A - 128
270  IF A = 88 THEN  END
280  IF A = 68 THEN DE$ = "D": GOT
    330
290  IF A = 73 THEN 1300
300  FOR X = 1 TO 75: NEXT
310  IF A < 0 THEN DE$ = "D": GOTO
    330
320 DE$ = ""
330  DIM NM$(16),SC(16)
340  GOTO 1170
350  GOSUB 380
360  GOTO 430
370  NEXT
380  GR : HOME : PRINT "---------
    --APPLE SPACE WAR!!---------
    --"
390  PRINT "----------BY ANDREW
    MAIZELS----------"
400  PRINT "HI SCORE:";NM$(1);"
    ";SC(1)
410  POKE 34,23
420  RETURN
430 S = 0:E = 0
440  HOME
450  COLOR= 2
460  FOR Y = 38 TO 39: HLIN 0,39 AT
    Y: NEXT
470 A = 20:X = 0:T = 1:C = 1:F =
    1
```

APPLE SPACE WAR

```
480 FOR X = 1 TO 20:D(X) = INT
    ( RND (1) * 15) + 1:C(X) = INT
    ( RND (1) * 29):T(X) = 1 + INT
    ( LOG (X) + ( RND (1) * X)):
    A(X) = INT ( RND (1) * 39):
    EN(X) = X * 3: NEXT
490 NT = 1
500 S% = - 16336
510 FOR QV = 1 TO NT:A = A(QV):C
    = C(QV):T = T(QV)
520 COLOR= 0: PLOT A,C: PLOT A,C
    + 1:A = A + T
530 IF INT ( RND (1) * 40) = 1 THEN
    T = - T
540 IF A > 38 THEN A = RND (1) *
    3
550 IF A < 0 THEN A = 39
560 IF C < 1 THEN C = 3
570 C = C + F: IF C < 1 OR C > 30
    THEN F = - F
580 B% = PEEK (S%)
590 COLOR= D(QV): PLOT A,C: PLOT
    A,C + 1
600 A(QV) = A:C(QV) = C:T(QV) = T
    : NEXT QV
610 PRINT "SCORE - ";S;"ENERGY -
    ";100 - E;" ";
620 HTAB 1
630 IF E > 100 THEN 1260
640 K = PEEK ( - 16384) - 128: POKE
    - 16368,0
650 IF DE$ = "D" THEN K = K( INT
    ( RND (1) * 3))
660 TT = TT + 1: IF TT > 100 THEN
    NT = NT + 1:TT = 0: IF NT >
    20 THEN NT = 20
670 MK = X
680 IF K = 8 THEN X = X - 3
690 IF K = 21 THEN X = X + 3
700 IF K = 32 THEN 850
710 IF X < 0 THEN X = 39
720 IF X > 39 THEN X = 0
730 COLOR= 0: PLOT MK,36: PLOT M
    K,37
740 COLOR= 12: PLOT X,36: PLOT X
    ,37
750 FOR QV = 1 TO NT:A = A(QV):C
    = C(QV)
760 I = INT ( RND (1) * 10)
770 IF I < > 1 THEN 830
780 COLOR= 13: VLIN C + 2,37 AT
    A
790 FOR NN = 1 TO 50: NEXT
800 B% = PEEK (S%) + PEEK (S%) -
    PEEK (S%) + PEEK (S%) + PEEK
    (S%) - PEEK (S%)
810 COLOR= 0: VLIN C + 2,37 AT A

820 IF INT (A) > X - 2 AND INT
    (A) < X + 2 THEN PRINT CHR$
    (7); CHR$ (7); CHR$ (7):E =
    E + 5 + 5 * QV: IF E > 100 THEN
    920
830 A(QV) = A:C(QV) = C: NEXT QV
840 GOTO 510
850 COLOR= 15: VLIN 35,0 AT X: FOR
    NN = 1 TO 20: NEXT : COLOR=
    0: VLIN 35,0 AT X
860 B% = PEEK (S%) + PEEK (S%) -
    PEEK (S%) + PEEK (S%) + PEEK
    (S%) - PEEK (S%) + PEEK (S
    %) + PEEK (S%) - PEEK (S%)
    + PEEK (S%)
870 E = E + 1
880 FOR Y = 1 TO NT
```

```
890  IF X =  INT (A(Y)) THEN S =
     S + 10 * Y:E = E - Y: PRINT
      CHR$ (7):
900  NEXT
910  GOTO 750
920  TEXT : HOME : PRINT "-------
     ------ HIGH SCORES: --------
     -----"
930  HTAB 1: PRINT "NAME:";: HTAB
     30: PRINT "SCORE:"
940  PRINT : PRINT
950  FOR X = 1 TO 15: VTAB X + 4:
      HTAB 1: PRINT NM$(X);: HTAB
     30: PRINT SC(X): NEXT
960  IF S > SC(15) THEN 1030
970  POKE  - 16368,0
980  IF DE$ = "D" THEN  FOR X = 1
      TO 5000: NEXT : RUN
990  POKE  - 16368,0: PRINT : PRINT
     "PRESS ANY KEY FOR ANOTHER G
     AME, OR 'X'  TO EXIT...";: GET
     A$: IF A$ = "X" THEN  END
1000  IF A$ = "D" THEN  RUN
1010 DE$ = "": GOSUB 380: FOR X =
     1 TO 1500: NEXT
1020  GOTO 430
1030  IF DE$ = "D" THEN NM$(15) =
     "THE COMPUTER": GOTO 1050
1040  PRINT : PRINT : INPUT "WHAT
      IS YOUR NAME, OH CHAMPION ?
      ";NM$(15)
1050  IF  LEN (NM$(15)) > 20 THEN
     NM$(15) =  LEFT$ (NM$(15),20
     )
1060 Y = 0
1070 SC(15) = S
1080  FOR X = 1 TO 14: IF SC(X) <
     SC(X + 1) THEN S = SC(X):SC(
     X) = SC(X + 1):SC(X + 1) = S
     :NM$ = NM$(X + 1):NM$(X + 1)
      = NM$(X):NM$(X) = NM$:Y = 1
1090  NEXT
1100  IF Y = 1 THEN Y = 0: GOTO 1
     080
1110 S =  - 1
1120 F$ = "HISCORE":D$ =  CHR$ (4
     )
1130  PRINT D$"OPEN "F$: PRINT D$
     "WRITE"F$
1140  FOR X = 1 TO 16: PRINT NM$(
     X): PRINT SC(X): NEXT
1150  PRINT D$"CLOSE"
1160  GOTO 920
1170 D$ =  CHR$ (4):F$ = "HISCORE
     "
1180  PRINT D$
1190  PRINT D$"OPEN"F$
1200  PRINT D$"READ"F$
1210  FOR X = 1 TO 15
1220  INPUT NM$(X),SC(X)
1230  NEXT
1240  PRINT D$"CLOSE"F$
1250  GOTO 350
1260  HOME : INVERSE : PRINT "GAM
     E OVER...",: NORMAL
1270  PRINT "ENERGY - ";
1280  FLASH : PRINT 100 - E;: NORMAL
1290  FOR X = 1 TO 800:A =  PEEK
     ( - 16336): NEXT : GOTO 920
1300  REM  INSTRUCTIONS
1310  HOME : INVERSE : PRINT  CHR$
     (7)"---------- APPLE SPACE
     WAR! ----------"
1320  PRINT  CHR$ (7)
1330  NORMAL : PRINT "    USE THE
     LEFT AND RIGHT ARROWS TO
          MOVE LEFT AND RIGHT."
1340  PRINT : PRINT "    USE THE
     SPACE BAR TO FIRE"
1350  PRINT  PRINT "    YOUR AIM
      IS TO SHOOT AS MANY OF THE
         ALIEN SPACE CRAFT ( COLO
     URED BLOBS )  AS YOU CAN,
     WHILE AVOIDING THEIR
     FIRE."
1360  PRINT : PRINT : PRINT "PRES
     S ANY KEY TO RETURN..."
1370  POKE  - 16368,0: GET A$: RUN
```

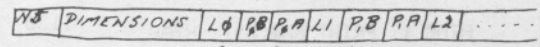
Hi-Score Creator for Apple Space War

```
10 F$="HISCORE" : D$=CHR$(4)
20 PRINT D$;"OPEN ";F$ : PRINT D$;"DELETE";F$
30 DIM NM$(15),SC(15)
40 FOR X = 1 TO 15 : NM$(X)="----------------" : NEXT X
50 PRINT D$;"OPEN";F$ : PRINT D$;"WRITE";F$
60 FOR X = 1 TO 15
70 PRINT NM$(X) : PRINT SC(X)
80 NEXT X
90 PRINT D$;"CLOSE";F$
```

SORTS

*ASORT FOR APPLE

APPLE STRING ARRAYS



L0 - Length N$(0)
P0B, P0A; address where string found.

```
]
SUPSORT          8/12/'83
]
] 00 01 EF DB 00
*
0FA0-   AD 50 10    LDA   $1050
0FA3-   8D 4A 10    STA   $104A
0FA6-   AD 51 10    LDA   $1051
0FA9-   8D 4B 10    STA   $104B
0FAC-   A2 02       LDX   #$02
0FAE-   8E F0 0F    STX   $0FF0
0FB1-   A2 FA       LDX   #$FA
0FB3-   A0 03       LDY   #$03
0FB5-   EE 4A 10    INC   $104A
0FB8-   AD 4A 10    LDA   $104A
0FBB-   D0 03       BNE   $0FC0
0FBD-   EE 4B 10    INC   $104B
0FC0-   88          DEY
0FC1-   C0 00       CPY   #$00
0FC3-   D0 F0       BNE   $0FB5
0FC5-   CA          DEX
0FC6-   E0 00       CPX   #$00
0FC8-   D0 E9       BNE   $0FB3
0FCA-   CE F0 0F    DEC   $0FF0
0FCD-   AD F0 0F    LDA   $0FF0
0FD0-   D0 DF       BNE   $0FB1
0FD2-   A9 00       LDA   #$00
0FD4-   8D 62 10    STA   $1062
0FD7-   4C 64 10    JMP   $1064
0FDA-   00          BRK
0FDB-   00          BRK
0FDC-   00          BRK
0FDD-   00          BRK
0FDE-   A2 00       LDX   #$00
0FE0-   BD 44 10    LDA   $1044,X
0FE3-   20 ED FD    JSR   $FDED
0FE6-   E8          INX
0FE7-   E0 06       CPX   #$06
0FE9-   D0 F5       BNE   $0FE0
0FEB-   60          RTS
0FEC-   00          BRK
0FED-   00          BRK
0FEE-   00          BRK
0FEF-   00          BRK
0FF0-   7F          ???
0FF1-   00          BRK
0FF2-   00          BRK
0FF3-   00          BRK
0FF4-   00          BRK
0FF5-   00          BRK
0FF6-   A5 6B       LDA   $6B
0FF8-   8D 01 10    STA   $1001
0FFB-   A5 6C       LDA   $6C
0FFD-   8D 02 10    STA   $1002
1000-   AD 40 12    LDA   $1240
1003-   C9 4E       CMP   #$4E
1005-   F0 15       BEQ   $101C
1007-   EE 01 10    INC   $1001
100A-   AD 01 10    LDA   $1001
100D-   D0 F1       BNE   $1000
100F-   EE 02 10    INC   $1002
```

GET ADDRESS FOR N$(500)
(This is one beyond the last item.)
Advance through lengths & pointers of string arrays 500 x 3 positions. (2*FA*3 or 2*250*3).
The address for length of N$(500) is placed in 104A-104B.

Place 0 in 1062 (non zero means adjacent items are being compared.)

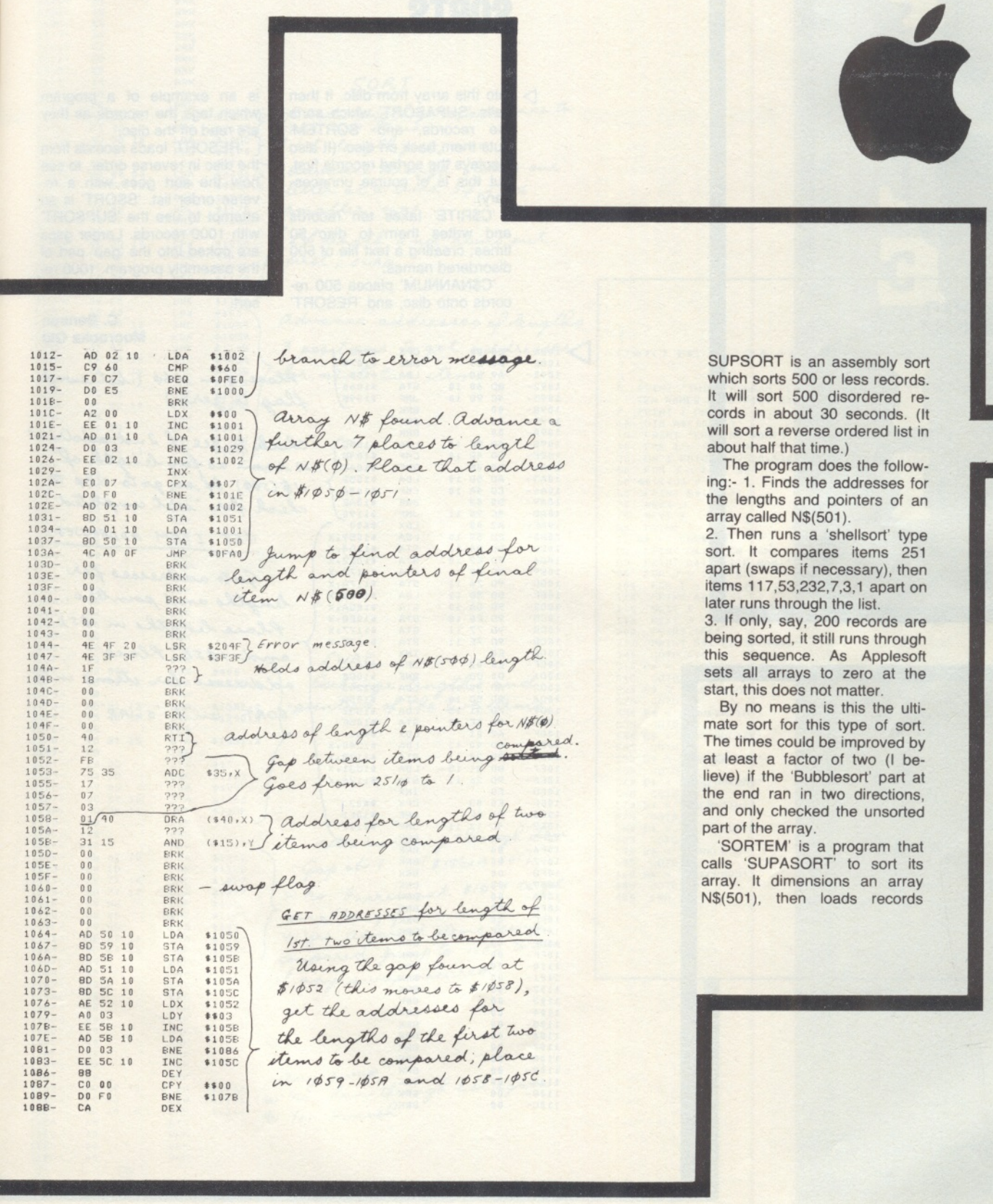
Output error message held at $1044 to $1049

Error message is a waste of time. Start of array should be found just above LOMEM.

START

6B & 6C hold address for start of array space.

Find "N" (ASCII 4E) which is start of N$ string array. If not found before $6000.



```
101Z-  AD 02 10    LDA   $1002
1015-  C9 60       CMP   #$60
1017-  F0 C7       BEQ   $0FE0
1019-  D0 E5       BNE   $1000
101B-  00          BRK
101C-  A2 00       LDX   #$00
101E-  EE 01 10    INC   $1001
1021-  AD 01 10    LDA   $1001
1024-  D0 03       BNE   $1029
1026-  EE 02 10    INC   $1002
1029-  E8          INX
102A-  E0 07       CPX   #$07
102C-  D0 F0       BNE   $101E
102E-  AD 02 10    LDA   $1002
1031-  8D 51 10    STA   $1051
1034-  AD 01 10    LDA   $1001
1037-  8D 50 10    STA   $1050
103A-  4C A0 0F    JMP   $0FA0
103D-  00          BRK
103E-  00          BRK
103F-  00          BRK
1040-  00          BRK
1041-  00          BRK
1042-  00          BRK
1043-  00          BRK
1044-  4E 4F 20    LSR   $204F
1047-  4E 3F 3F    LSR   $3F3F
104A-  1F          ???
104B-  18          CLC
104C-  00          BRK
104D-  00          BRK
104E-  00          BRK
104F-  00          BRK
1050-  40          RTI
1051-  12          ???
1052-  FB          ???
1053-  75 35       ADC   $35,X
1055-  17          ???
1056-  07          ???
1057-  03          ???
1058-  01 40       ORA   ($40,X)
105A-  12          ???
105B-  31 15       AND   ($15),Y
105D-  00          BRK
105E-  00          BRK
105F-  00          BRK
1060-  00          BRK
1061-  00          BRK
1062-  00          BRK
1063-  00          BRK
1064-  AD 50 10    LDA   $1050
1067-  8D 59 10    STA   $1059
106A-  8D 5B 10    STA   $105B
106D-  AD 51 10    LDA   $1051
1070-  8D 5A 10    STA   $105A
1073-  8D 5C 10    STA   $105C
1076-  AE 52 10    LDX   $1052
1079-  A0 03       LDY   #$03
107B-  EE 5B 10    INC   $105B
107E-  AD 5B 10    LDA   $105B
1081-  D0 03       BNE   $1086
1083-  EE 5C 10    INC   $105C
1086-  88          DEY
1087-  C0 00       CPY   #$00
1089-  D0 F0       BNE   $107B
108B-  CA          DEX
```

branch to error message.

Array N$ found. Advance a further 7 places to length of N$(0). Place that address in $1050-1051.

Jump to find address for length and pointers of final item N$(500).

Error message.

Holds address of N$(500) length.

address of length & pointers for N$(0).

Gap between items being compared. Goes from 251₀ to 1.

Address for lengths of two items being compared.

- swap flag

GET ADDRESSES for length of 1st. two items to be compared.

Using the gap found at $1052 (this moves to $1058), get the addresses for the lengths of the first two items to be compared; place in 1059-105A and 1058-105C.

SUPSORT is an assembly sort which sorts 500 or less records. It will sort 500 disordered records in about 30 seconds. (It will sort a reverse ordered list in about half that time.)

The program does the following:- 1. Finds the addresses for the lengths and pointers of an array called N$(501).

2. Then runs a 'shellsort' type sort. It compares items 251 apart (swaps if necessary), then items 117,53,232,7,3,1 apart on later runs through the list.

3. If only, say, 200 records are being sorted, it still runs through this sequence. As Applesoft sets all arrays to zero at the start, this does not matter.

By no means is this the ultimate sort for this type of sort. The times could be improved by at least a factor of two (I believe) if the 'Bubblesort' part at the end ran in two directions, and only checked the unsorted part of the array.

'SORTEM' is a program that calls 'SUPASORT' to sort its array. It dimensions an array N$(501), then loads records

SORTS

into this array from disc. It then calls 'SUPASORT' which sorts the records, and 'SORTEM' puts them back on disc. (It also displays the sorted records first, but this is of course unnecessary).

'C$RITE' takes ten records and writes them to disc 50 times; creating a text file of 500 disordered names.

'C$NANNUM' places 500 records onto disc, and 'RESORT' is an example of a program which tags the records as they are read off the disc.

'RESORT' loads records from the disc in reverse order, to see how the sort goes with a reverse order list. 'SSORT' is an attempt to use the 'SUPSORT' with 1000 records. Larger gaps are poked into the 'gap' part of the assembly program. 1000 records take about 3 minutes to sort.

C. Benson
Moorooka Qld

```
108C-  E0 00     CPX  #$00
108E-  D0 E9     BNE  $1079
1090-  A9 00     LDA  #$00
1092-  8D 60 10  STA  $1060
1095-  4C 9B 10  JMP  $109B
1098-  00        BRK
1099-  00        BRK
109A-  00        BRK
109B-  AD 5C 10  LDA  $105C
109E-  CD 4B 10  CMP  $104B
10A1-  D0 0B     BNE  $10AE
10A3-  AD 5B 10  LDA  $105B
10A6-  CD 4A 10  CMP  $104A
10A9-  D0 03     BNE  $10AE
10AB-  4C 90 11  JMP  $1190
10AE-  A2 00     LDX  #$00
10B0-  BD 59 10  LDA  $1059,X
10B3-  9D D4 10  STA  $10D4,X
10B6-  9D E2 10  STA  $10E2,X
10B9-  9D 73 11  STA  $1173,X
10BC-  9D 7A 11  STA  $117A,X
10BF-  BD 5B 10  LDA  $105B,X
10C2-  9D DA 10  STA  $10DA,X
10C5-  9D E8 10  STA  $10E8,X
10C8-  9D 77 11  STA  $1177,X
10CB-  9D 7E 11  STA  $117E,X
10CE-  E8        INX
10CF-  E0 02     CPX  #$02
10D1-  D0 DD     BNE  $10B0
10D3-  AD 40 12  LDA  $1240
10D6-  8D 5D 10  STA  $105D
10D9-  AD 31 15  LDA  $1531
10DC-  8D 5E 10  STA  $105E
10DF-  A2 01     LDX  #$01
10E1-  BD 40 12  LDA  $1240,X
10E4-  9D 23 11  STA  $1123,X
10E7-  BD 31 15  LDA  $1531,X
10EA-  9D 26 11  STA  $1126,X
10ED-  E8        INX
10EE-  E0 03     CPX  #$03
10F0-  D0 EF     BNE  $10E1
10F2-  4C 17 11  JMP  $1117
10F5-  00        BRK
10F6-  00        BRK
10F7-  00        BRK
10F8-  00        BRK
10F9-  00        BRK
10FA-  00        BRK
10FB-  00        BRK
10FC-  00        BRK
10FD-  00        BRK
10FE-  00        BRK
10FF-  00        BRK
1100-  00        BRK
1101-  00        BRK
1102-  00        BRK
1103-  00        BRK
1104-  00        BRK
1105-  00        BRK
1106-  00        BRK
1107-  00        BRK
1108-  00        BRK
1109-  00        BRK
110A-  00        BRK
110B-  00        BRK
110C-  00        BRK
```

Place 0 in 1060. (Set swap flag to zero.)

Check to see if 2nd. address is same as for length of N$(50). If so, go to 1190 to check for "sort completed."

GET ITEM ADDRESSES

Go to addresses for lengths and pointers. Place lengths in 105D and 105E. Place addresses for items into "SORT" and "SWAP"

```
110D-  00          BRK
110E-  00          BRK
110F-  00          BRK
1110-  00          BRK
1111-  00          BRK
1112-  00          BRK
1113-  00          BRK
1114-  00          BRK
1115-  00          BRK
1116-  00          BRK
1117-  AD 5E 10     LDA   $105E
111A-  F0 22        BEQ   $113E
111C-  AD 5D 10     LDA   $105D
111F-  F0 4F        BEQ   $1170
1121-  A2 00        LDX   #$00
1123-  BD 00 00     LDA   $0000,X
1126-  DD 5D 92     CMP   $925D,X
1129-  F0 04        BEQ   $112F
112B-  10 43        BPL   $1170
112D-  30 0F        BMI   $113E
112F-  E8           INX
1130-  EC 5D 10     CPX   $105D
1133-  F0 09        BEQ   $113E
1135-  EC 5E 10     CPX   $105E
1138-  F0 36        BEQ   $1170
113A-  E0 00        CPX   #$00
113C-  D0 E5        BNE   $1123
113E-  A2 00        LDX   #$00
1140-  EE 59 10     INC   $1059
1143-  AD 59 10     LDA   $1059
1146-  D0 03        BNE   $114B
1148-  EE 5A 10     INC   $105A
114B-  EE 5B 10     INC   $105B
114E-  AD 5B 10     LDA   $105B
1151-  D0 03        BNE   $1156
1153-  EE 5C 10     INC   $105C
1156-  E8           INX
1157-  E0 03        CPX   #$03
1159-  D0 E5        BNE   $1140
115B-  4C 9B 10     JMP   $109B
115E-  00          BRK
115F-  00          BRK
1160-  00          BRK
1161-  00          BRK
1162-  00          BRK
1163-  00          BRK
1164-  00          BRK
1165-  00          BRK
1166-  00          BRK
1167-  00          BRK
1168-  00          BRK
1169-  00          BRK
116A-  00          BRK
116B-  00          BRK
116C-  00          BRK
116D-  00          BRK
116E-  00          BRK
116F-  00          BRK
1170-  A2 00        LDX   #$00
1172-  BD 40 12     LDA   $1240,X
1175-  48           PHA
1176-  BD 31 15     LDA   $1531,X
1179-  9D 40 12     STA   $1240,X
117C-  68           PLA
117D-  9D 31 15     STA   $1531,X
1180-  E8           INX
1181-  E0 03        CPX   #$03
1183-  D0 ED        BNE   $1172
1185-  A9 05        LDA   #$05
1187-  8D 60 10     STA   $1060
118A-  4C 3E 11     JMP   $113E
118D-  00          BRK
118E-  00          BRK
118F-  00          BRK
1190-  AD 62 10     LDA   $1062
1193-  D0 1D        BNE   $11B2
1195-  EE 77 10     INC   $1077
1198-  AD 77 10     LDA   $1077
119B-  C9 58        CMP   #$58
119D-  D0 05        BNE   $11A4
119F-  A9 05        LDA   #$05
11A1-  8D 62 10     STA   $1062
11A4-  4C 64 10     JMP   $1064
11A7-  00          BRK
11A8-  00          BRK
11A9-  00          BRK
11AA-  00          BRK
11AB-  00          BRK
11AC-  00          BRK
11AD-  00          BRK
11AE-  00          BRK
11AF-  00          BRK
11B0-  00          BRK
11B1-  00          BRK
11B2-  AD 60 10     LDA   $1060
11B5-  F0 03        BEQ   $11BA
11B7-  4C 64 10     JMP   $1064
11BA-  60          RTS
11BB-  00          BRK
11BC-  00          BRK
11BD-  00          BRK
```

SORT

If 2nd. length zero, advance to next two items.

If 1st. length zero, SWAP.

Advance through items one letter at a time. If 2nd. smaller, "SWAP".

If length 2nd. runs out first, SWAP.

Advance addresses of lengths 3 positions to get addresses for next two items.

SWAP

Exchange lengths and pointers of the two items.

after running through item
Gap of 1 ? ($1062 = $05).
(a) No. Increment $1077 to get smaller gap.
(b) Yes. Adjacent items being compared. Jump to 1182 to see if any swap occured.

Any swap ?
(a) No. Run through list again.
(b) Yes. Finish.

C$RITE

```
]
]
C$RITE     26/11/'83
]
]
5  PRINT "THIS PROGRAM PLACES A TOTAL OF 500 NAMES ON DISC;
   TEN NAMES IN STRICT DISORDER"
7  PRINT : PRINT
10  DIM A$(10,50)
15  PRINT "LOADING NAMES TO ARRAY"
20  FOR I = 1 TO 10
30  ON I GOTO 510,520,530,540,550,560,570,580,590,600
50  FOR J = 1 TO 50
60 A$(I,J) = B$
65  PRINT B$;"  ";
70  NEXT J
75  NEXT I
80  PRINT "     "
81 D$ =  CHR$ (4)
82  PRINT D$;"OPEN NAM1"
83  PRINT D$;"WRITE NAM1"
90  FOR J = 1 TO 50
100  FOR I = 1 TO 10
110  PRINT A$(I,J)
115  NEXT I
116  NEXT J
200  PRINT "FF"
217  PRINT D$;"CLOSE NAM1"
340  GOTO 690
510 B$ = "PESTERJOHN"
515  GOTO 50
520 B$ = "ALBERTSON"
525  GOTO 50
530 B$ = "JOHNSMITH"
535  GOTO 50
540 B$ = "JASONCLARK"
545  GOTO 50
550 B$ = "THORERICKS"
555  GOTO 50
560 B$ = "JONLOVEDAY"
568  GOTO 50
570 B$ = "MACMATINS"
575  GOTO 50
580 B$ = "LESLIECARE"
585  GOTO 50
590 B$ = "WORKLESS"
595  GOTO 50
600 B$ = "ALECKSON"
605  GOTO 50
690  END
```

C$NANNUM

```
]
]
C$NAMNUM     26/11/'83
]
]
2  PRINT "THIS PROGRAM PLACES 500 NAMES ON DISC IN STRICT DISORDER WITH AN
     ATTACHED 'STRING NUMBER' WITH EACH ONE"
7  PRINT : PRINT
10  DIM A$(10,50)
15  PRINT "LOADING NAMES TO ARRAY"
20  FOR I = 1 TO 10
30  ON I GOTO 510,520,530,540,550,560,570,580,590,600
50  FOR J = 1 TO 50
60 A$(I,J) = B$
65  PRINT B$;"  ";
70  NEXT J
80  NEXT I
81 D$ =  CHR$ (4)
85 N$ = "NAMNUM"
88  PRINT "     "
90  PRINT D$;"OPEN";N$
95  PRINT D$;"WRITE";N$
97  PRINT 500
100  FOR J = 1 TO 50
105  FOR I = 1 TO 10
110  PRINT A$(I,J)
140  PRINT  STR$ (K)
150 K = K + 1
160  NEXT I
170  NEXT J
210  PRINT D$;"CLOSE";N$
340  GOTO 690
510 B$ = "PESTERJOHN"
515  GOTO 50
520 B$ = "ALBERTSON"
525  GOTO 50
530 B$ = "JOHNSMITH"
535  GOTO 50
540 B$ = "JASONCLARK"
545  GOTO 50
550 B$ = "THORERICKS"
555  GOTO 50
560 B$ = "JONLOVEDAY"
568  GOTO 50
570 B$ = "MACMATINS"
575  GOTO 50
580 B$ = "LESLIECARE"
585  GOTO 50
590 B$ = "WORKLESS"
595  GOTO 50
600 B$ = "ALECKSON"
605  GOTO 50
690  END
```

Resort

```
RESORT     26/11/'83
]
]
5  LOMEM: 4644
10  DIM N$(501),R$(501)
15  PRINT "THIS PROGRAM IS TO SORT NAMES WITH RELATED STRING DATA"
16  PRINT : PRINT : PRINT
20 D$ =  CHR$ (4)
25 N$ = "NAMNUM"
30  PRINT D$;"BLOAD SUPSORT"
40  PRINT D$;"OPEN";N$
50  PRINT D$;"READ";N$
60  INPUT A1
70 A1 = A1 - 1
80  FOR I = 0 TO A1
90  INPUT N$(I)
91  IF I > 9 THEN 94
92 S$ = "00" +  STR$ (I)
93  GOTO 98
94  IF I > 99 THEN 97
95 S$ = "0" +  STR$ (I)
96  GOTO 98
97 S$ =  STR$ (I)
98 N$(I) = N$(I) + S$
99  INPUT R$(I)
100  NEXT I
120  PRINT D$;"CLOSE";N$
122  PRINT "I  ";I
125  PRINT "SORTING"
130  CALL 4086
135  FOR K = 0 TO A1
170  PRINT N$(K);"  ";
180  NEXT K
182  PRINT : PRINT
185 D$ =  CHR$ (4)
200  PRINT D$;"OPEN";N$
202  PRINT D$;"WRITE";N$
205 A2 = A1 + 1
210  PRINT A2
220  FOR I = 0 TO A1
222 L =  LEN (N$(I))
223 L1 = L - 2
224 L2 = L - 3
225 L2$ =  MID$ (N$(I),L1,3)
226 N$(I) =  MID$ (N$(I),1,L2)
228 L2 =  VAL (L2$)
230  PRINT N$(I)
232  PRINT R$(L2)
235  NEXT
240  PRINT D$;"CLOSE";N$
245  PRINT "     "
250  END
```

Read names from disk and add 3 space code.

name 001
name 002
name 053
name 437

Take code off the end.

SHOOTOUT

Shootout is a game requiring fast reflexes and keen eyesight. You are the fastest gunslinger in the west, and have been challenged by the Mexican gunfighter, El Ppa (amazing what some people's names spelt backwards translate as). His face (he don't look real mean, but he's quick on the trigger) appears on the screen. After a short pause the word DRAW also appears, with a beep if the easy game has been selected, without it the hard game is indicated.

When this happens press any key to fire. If you were quick enough, you win that shootout. If not, well, you get another chance (you can have up to 10 chances) unless that was the last battle. Your scores and his are totalled and the winner is announced.

El Ppa can be slowed down by increasing the number in line 230 or sped up by decreasing it.

Tony Humfrey
Parkes NSW

```
0  ONERR  GOTO 1
10  HOME :GAMES = 0:SHOOT = 0:DEAD = 0
20  VTAB 1
30  FOR A = 1 TO 40: PRINT "_";: NEXT
40  VTAB 11: FOR A = 1 TO 40: PRINT "_";: NEXT
50  VTAB 3: HTAB 16: FLASH : PRINT "SHOOTOUT": NORMAL : VTAB 5: PRINT "
    YOU ARE THE FASTEST GUNSLINGER IN THE WEST(OR EAST,FOR THAT MATTER)A
    ND YOU    HAVE BEEN CHALLENGED BY THE MEXICAN GUN-FIGHTER EL PPA.";
60  PRINT "YOU HAVE TO BEAT HIM IN AGUNFIGHT OR LOSE YOR TITLE AS THE BES
    T  GUNSLINGER!": VTAB 15: HTAB 14: INVERSE : PRINT "INSTRUCTIONS": NORMAL
    : PRINT : PRINT "   WHEN EL PPA DRAWS HIS GUN,YOU HAVE 1 SECOND IN W
    HICH TO DRAW   YOUR OWN GUN BY PRESSING ANY KEY"
70  PRINT "IF YOU BEAT HIM MORE THAN HALF THE TIMESYOU PLAY HIM,YOU WILL
    BE HERALDED AS THEWINNER": PRINT : INPUT "HOW MANY SHOOTOUTS(UP TO T
    EN)->";SHOOT: IF SHOOT > 10 THEN 70
71  HOME : INPUT "HARD GAME (Y/N)";D$
80  REM  GEANHD
90 C =  INT ( RND (1) * 10) + 100
100  HOME : INVERSE : VTAB 8: HTAB 18: PRINT "  ": VTAB 8: HTAB 21: PRINT
    "  "
110  VTAB 10: HTAB 20: PRINT " ": VTAB 11: HTAB 19: PRINT ". ."
120  VTAB 12: HTAB 17: PRINT " ": VTAB 12: HTAB 23: PRINT " "
130  VTAB 13: HTAB 18: PRINT "     "
140  VTAB 6: NORMAL : HTAB 16: PRINT "_________": FOR V = 7 TO 15: VTAB
    : HTAB 15: PRINT "I": VTAB V: HTAB 25: PRINT "I": NEXT V: VTAB 15: HTAB
    16: PRINT "_________"
150  FOR A = 1 TO C
160  IF  PEEK ( - 16384) > 127 THEN 310
170  NEXT A
180 V =  INT ( RND (1) * 20) + 1
190 H =  INT ( RND (1) * 36) + 1
200  IF V >  = 6 AND V <  = 16 THEN 180
210  VTAB V: HTAB H
215  IF  LEFT$ (D$,1) = "Y" THEN  INVERSE : PRINT "DRAW": NORMAL : GOTO 2
    30
220  INVERSE : PRINT "DRAW": NORMAL : REM INSERT CTRL-G INTO "DRAW"
230  FOR B = 1 TO 10
240  IF  PEEK ( - 16384) > 127 THEN 270
250  NEXT B
260  HOME : PRINT "BANG ! YOU'RE DEAD":DEAD = DEAD + 1: GET A$: GET A$: GOTO
    290
270  FOR T = 1 TO 1500: NEXT T: HOME : PRINT "YOU GOT HIM!!":GAMES = GAME
    S + 1
280  GET F$: GET F$
290  FOR M = 1 TO 1500: NEXT : IF DEAD + GAMES =  > SHOOT THEN 330
300  GOTO 80
310  FOR S = 1 TO 100:D =  PEEK ( - 16336): NEXT S
320  HOME : VTAB 12: INVERSE : PRINT "YOU TRIED TO CHEAT,BUT YOU DIDN'T W
    IN.": NORMAL : GET A$: GET S$: GOTO 80
330  HOME : PRINT "HE WON ";DEAD;" GAMES:YOU WON ";GAMES;" GAMES": FOR A =
    1 TO 1500: NEXT
340  IF DEAD > GAMES THEN 380
350  IF DEAD = GAMES THEN 400
360  IF DEAD < GAMES THEN 410
370  END
380  HOME : VTAB 9: HTAB 17: PRINT "EL PPA": VTAB 10: HTAB 17: PRINT "L
      P": VTAB 11: HTAB 17: PRINT "P    P": VTAB 12: HTAB 17: PRINT "P
      L": VTAB 13: HTAB 17: PRINT "APP LE": VTAB 2: PRINT "WHO DO WE SUP
    PORT-WE SUPPORT THE ONLY-"
390  GOTO 420
400  HOME : PRINT "IT IS A TIE!WE DEMAND A REMATCH!": FOR A = 1 TO 1500: NEXT
    : GOTO 10
410  HOME : PRINT "_____": PRINT : PRINT
    "    WE KNEW YOU COULD DO IT FOR US":
420  FOR A = 1 TO 3000: NEXT : HOME : PRINT "ANOTHER GAME,PODNER(Y/N)->";
    : INPUT Y$: IF  LEFT$ (Y$,1) = "Y" THEN  GOTO 10
430  END
```

SHOOTOUT

Shootout is a game requiring fast reflexes and keen eyesight. You are the fastest gunslinger in the west, and have been challenged by the Mexican gunfighter, El Ppa (amazing what some people's names spelt backwards translate as). His face (he don't look real mean, but he's quick on the trigger) appears on the screen. After a short pause the word DRAW also appears, with a beep if the easy game has been selected, without it the hard game is indicated.

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El Ppa can be slowed down by increasing the number in line 230 or sped up by decreasing it.

Tony Humfrey
Parkes NSW

```
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20  VTAB 1
30  FOR A = 1 TO 40: PRINT "_";: NEXT
40  VTAB 11: FOR A = 1 TO 40: PRINT "_";: NEXT
50  VTAB 3: HTAB 16: FLASH : PRINT "SHOOTOUT": NORMAL : VTAB 5: PRINT "
    YOU ARE THE FASTEST GUNSLINGER IN THE WEST(OR EAST,FOR THAT MATTER)A
    ND YOU    HAVE BEEN CHALLENGED BY THE MEXICAN GUN-FIGHTER EL PPA.";
60  PRINT "YOU HAVE TO BEAT HIM IN AGUNFIGHT OR LOSE YOR TITLE AS THE BES
    T  GUNSLINGER!": VTAB 15: HTAB 14: INVERSE : PRINT "INSTRUCTIONS": NORMAL
    : PRINT : PRINT "   WHEN EL PPA DRAWS HIS GUN,YOU HAVE 1 SECOND IN W
    HICH TO DRAW   YOUR OWN GUN BY PRESSING ANY KEY"
70  PRINT "IF YOU BEAT HIM MORE THAN HALF THE TIMESYOU PLAY HIM,YOU WILL
    BE HERALDED AS THEWINNER": PRINT : INPUT "HOW MANY SHOOTOUTS(UP TO T
    EN)->";SHOOT: IF SHOOT > 10 THEN 70
71  HOME : INPUT "HARD GAME (Y/N)";D$
80  REM  GEANHD
90 C =  INT ( RND (1) * 10) + 100
100  HOME : INVERSE : VTAB 8: HTAB 18: PRINT "  ": VTAB 8: HTAB 21: PRINT
    "  "
110  VTAB 10: HTAB 20: PRINT " ": VTAB 11: HTAB 19: PRINT ". ."
120  VTAB 12: HTAB 17: PRINT " ": VTAB 12: HTAB 23: PRINT " "
130  VTAB 13: HTAB 18: PRINT "    "
140  VTAB 6: NORMAL : HTAB 16: PRINT "_________": FOR V = 7 TO 15: VTAB
    : HTAB 15: PRINT "I": VTAB V: HTAB 25: PRINT "I": NEXT V: VTAB 15: HTAB
    16: PRINT "_________"
150  FOR A = 1 TO C
160  IF  PEEK ( - 16384) > 127 THEN 310
170  NEXT A
180 V =  INT ( RND (1) * 20) + 1
190 H =  INT ( RND (1) * 36) + 1
200  IF V >  = 6 AND V <  = 16 THEN 180
210  VTAB V: HTAB H
215  IF  LEFT$ (D$,1) = "Y" THEN  INVERSE : PRINT "DRAW": NORMAL : GOTO 2
    30
220  INVERSE : PRINT "DRAW": NORMAL : REM INSERT CTRL-G INTO "DRAW"
230  FOR B = 1 TO 10
240  IF  PEEK ( - 16384) > 127 THEN 270
250  NEXT B
260  HOME : PRINT "BANG ! YOU'RE DEAD":DEAD = DEAD + 1: GET A$: GET A$: GOTO
    290
270  FOR T = 1 TO 1500: NEXT T: HOME : PRINT "YOU GOT HIM!!":GAMES = GAME
    S + 1
280  GET F$: GET F$
290  FOR M = 1 TO 1500: NEXT : IF DEAD + GAMES =  > SHOOT THEN 330
300  GOTO 80
310  FOR S = 1 TO 100:D =  PEEK ( - 16336): NEXT S
320  HOME : VTAB 12: INVERSE : PRINT "YOU TRIED TO CHEAT,BUT YOU DIDN'T W
    IN.": NORMAL : GET A$: GET S$: GOTO 80
330  HOME : PRINT "HE WON ";DEAD;" GAMES:YOU WON ";GAMES;" GAMES": FOR A =
    1 TO 1500: NEXT
340  IF DEAD > GAMES THEN 380
350  IF DEAD = GAMES THEN 400
360  IF DEAD < GAMES THEN 410
370  END
380  HOME : VTAB 9: HTAB 17: PRINT "EL PPA": VTAB 10: HTAB 17: PRINT "L
      P": VTAB 11: HTAB 17: PRINT "P   P": VTAB 12: HTAB 17: PRINT "P
      L": VTAB 13: HTAB 17: PRINT "APP LE": VTAB 2: PRINT "WHO DO WE SUP
    PORT-WE SUPPORT THE ONLY-"
390  GOTO 420
400  HOME : PRINT "IT IS A TIE!WE DEMAND A REMATCH!": FOR A = 1 TO 1500: NEXT
    : GOTO 10
410  HOME : PRINT "_____________________________________": PRINT : PRINT
    "     WE KNEW YOU COULD DO IT FOR US":
420  FOR A = 1 TO 3000: NEXT : HOME : PRINT "ANOTHER GAME,PODNER(Y/N)->";
    : INPUT Y$: IF  LEFT$ (Y$,1) = "Y" THEN  GOTO 10
430  END
```

WORMS

'WORMS' is a game where you, as a worm, must destroy your enemy by totally blocking him so that he is forced to hit either one of your segments, his segments, the obstacles or the border. Your 'worm' starts off in a random position on the right hand side of the screen and there is a short delay before the action starts – this is so that you can pick up where you are. Once the game starts you have to complete ten rounds to win.

The game incorporates a feature that allows you to change the controlling keys to suit your preference. The only key not allowed to be used in this way is the right arrow key.

Before you can start this game you must first create the text file that' "Worms' uses. It is called 'High Scores'. To do this, type in the text file creator and run it. The disk will whirl a few seconds and then stop. Now, type in the 'Worms' program and save. The program is now ready to run.

I made the game on a black and white monitor and so I used colours that suited it. However, if you want to change the colour of the border and obstacles, the command is on line 50. The colour of the computer worm is controlled by line 73 and your worm's colour is controlled by line 225. You might want to change line 55 as well, but DON'T change the COLOR = 0 on that line.

Michael Lee
Torrens ACT

TEXT FILE CREATOR

```
by Michael Lee
10 D$ = CHR$ (4)
20  PRINT D$"OPEN HIGH SCORES"
30  PRINT D$"WRITE HIGH SCORES"
40  FOR Q = 1 TO 20
50  PRINT "0": PRINT "--------"
60  NEXT Q
70  PRINT D$"CLOSE HIGH SCORES"
80  NEW
```

The "0" on line 50 is meant to be a ZERO.
If this is not there the WORMS program will respond with an error.

```
1  TEXT : HOME : SPEED= 255
2  REM  INIT THE VARIABLES
3  REM
5 U$ = "T":D$ = "G":R$ = "H":L$ = "F": DIM C(21): DIM C$(21)
7  REM
8  REM  GOTO INSTRUCTIONS
9  REM
10  GOSUB 2060
20  GOTO 2030
40 X = 1:Y =  INT ( RND (1) * 37 + 1):X1 = 38:Y1 =  INT ( RND (1) * 37 + 1)
41 A = 4:Z = 3
45  VTAB 21: PRINT "YOU ARE ON LEVEL "G
50  GR : COLOR= 15
51  FOR Q = 1 TO G
52 X2 =  INT ( RND (1) * 26) + 7:Y2 =  INT ( RND (1) * 40):Z2 =  INT ( RND (1)
 * 40):A2 =  INT ( RND (1) * 26) + 7:B2 =  INT ( RND (1) * 26) + 7:C2 =  INT (
 RND (1) * 40): IF (Z2 < 2) OR (Z2 > 37) OR (Y2 < 2) OR (Y2 > 37) THEN  GOTO 5
2
53  VLIN Y2,Z2 AT X2
54  HLIN A2,B2 AT C2: NEXT
55  VLIN 0,39 AT 0: VLIN 0,39 AT 39: HLIN 0,39 AT 0: HLIN 0,39 AT 39: COLOR= 5
: PLOT X + 1,Y: COLOR= 2: PLOT X1 - 1,Y1: FOR Q = 1 TO 1000: NEXT Q: COLOR= 0:
 PLOT X + 1,Y: PLOT X1 - 1,Y1
56  GOTO 70
60 A =  INT ( RND (1) * 4 + 1)
70 T =  INT ( RND (1) * 100 + 1): IF T < G THEN  GOTO 60
73  COLOR= 5
75  IF A = 1 THEN Y = Y - 1
80  IF A = 2 THEN Y = Y + 1
85 M =  PEEK ( - 16336)
90  IF A = 3 THEN X = X - 1
95 M =  PEEK ( - 16336)
100  IF A = 4 THEN X = X + 1
110  IF  SCRN( X,Y) <  > 0 THEN  GOTO 1000
120  PLOT X,Y
122  REM
125  REM   GET THE DIRECTION KEYS (HUMAN)
127  REM
130  IF  PEEK ( - 16384) > 127 THEN  GET A$
140  IF (A$ = U$) AND (Z <  > 2) THEN Z = 1
150  IF (A$ = D$) AND (Z <  > 1) THEN Z = 2
160  IF (A$ = L$) AND (Z <  > 4) THEN Z = 3
170  IF (A$ = R$) AND (Z <  > 3) THEN Z = 4
175 S = S + 10 + G: VTAB 22: PRINT "SCORE="S"  "
180  IF Z = 1 THEN Y1 = Y1 - 1
190  IF Z = 2 THEN Y1 = Y1 + 1
200  IF Z = 3 THEN X1 = X1 - 1
210  IF Z = 4 THEN X1 = X1 + 1
220  IF  SCRN( X1,Y1) <  > 0 THEN :P = 1: GOTO 2000
225  COLOR= 2
230  PLOT X1,Y1
240 M =  PEEK ( - 16336)
990  GOTO 70
1000  IF A = 1 THEN Y = Y + 1
1001  IF A = 2 THEN Y = Y - 1
1002  IF A = 3 THEN X = X + 1
1005  IF A = 4 THEN X = X - 1
1010  IF (A = 1) OR (A = 2) THEN  GOTO 1030
1020  IF (A = 3) OR (A = 4) THEN  GOTO 1500
1023  REM
1025  REM  CHECK TO SEE IF THE COMPUTER HAS HIT A WALL AND TO TURN THE WORM IF
 NEED BE
1027  REM
1030 B =  SCRN( X - 1,Y):C =  SCRN( X + 1,Y)
1040  IF (B = 0) AND (C = 0) THEN A =  INT ( RND (1) * 2 + 3): GOTO 70
1050  IF B = 0 THEN A = 3: GOTO 70
1060  IF C = 0 THEN A = 4: GOTO 70
1070  GOTO 2000
1500 B =  SCRN( X,Y - 1):C =  SCRN( X,Y + 1)
1510  IF (B = 0) AND (C = 0) THEN A =  INT ( RND (1) * 2 + 1)
1520  IF B = 0 THEN A = 1: GOTO 70
1530  IF C = 0 THEN A = 2: GOTO 70
1540  GOTO 2000
1800  REM
1900  REM  IF ANY WORM GETS HIT THE PROGRAM COMES HERE.
1905  REM
2000 M =  - 16336:M =  PEEK (M) +  PEEK (M) +  PEEK (M) +  PEEK (M) +  PEEK (M
) +  PEEK (M) +  PEEK (M) +  PEEK (M) +  PEEK (M) +  PEEK (M) +  PEEK (M) +  P
EEK (M) +  PEEK (M): FOR Q = 1 TO 2500: NEXT
2010  TEXT : HOME
2020  IF P = 1 THEN  GOTO 2050
2022  REM
2023  REM  IF YOU HAVE BEATEN THE COMPUTER,COME HERE.
2024  REM
2025                IF G = 10 THEN  INVERSE : PRINT "CONGRATULATIONS": PRINT : P
RINT "YOU HAVE SUCESSFULLY DRIVEN AWAY ALL     PREDITORS.YOUR SCORE IS "S: NORM
AL : FOR Q = 1 TO 5000: NEXT : GOTO 3000
2029  INVERSE : PRINT "YOU HAVE WON": NORMAL
2030 G = G + 1: PRINT : PRINT "YOU ARE NOW ON LEVEL "G: PRINT "WATCH OUT I'M G
OING TO ATTACK!!!"
```

```
2032  REM
2035  REM  IF YOU WON BUT NOT DONE TEN ROUNDS THEN REPEAT FROM HERE.
2037  REM
2040  FOR Q = 1 TO 2500: NEXT : HOME : GR : COLOR= 15: GOTO 40
2042  REM
2045  REM  IF YOU LOSE YOUR GROUNDS COME HERE
2047  REM
2050  PRINT "YOU HAVE LOST YOUR GROUNDS ON LEVEL "G: PRINT "YOUR SCORE IS "S:
FOR Q = 1 TO 1000: NEXT Q
2051 W = 1: GOTO 3000
2052  REM  GOTO 3000 TO HALL OF FAME.
2053  POKE  - 16368,0
2055  PRINT : INPUT "DO YOU WANT TO PLAY AGAIN?";A$: IF A$ = "Y" THEN S = 0:G
= 0:H1 = 0:P = 0: GOSUB 2230: GOTO 2030
2056  PRINT "GOODBYE AND THANKS FOR THE LAND!!!": END
2058  REM
2060  REM  INTRODUCTION
2065  REM
2070  HOME : VTAB 9: HTAB 18: INVERSE : PRINT "WORMS": NORMAL
2080  HTAB 15: PRINT "PROGRAMED BY"
2090  HTAB 15: PRINT "MICHAEL--LEE"
2100  PRINT : HTAB 15: PRINT "9/6/83"
2120  FOR Q = 1 TO 1000: NEXT
2140  HOME : INVERSE : PRINT "                    WORMS                    "
2145  NORMAL
2150  PRINT : PRINT "YOU ARE A WORM FIGHTING FOR POSSESION OFA PIECE OF FERTIL
E LAND"
2160  PRINT : PRINT "YOUR ENEMIES WILL TRY TO RUN YOU OUT OF IT AND YOU MUST S
TOP THEM"
2170  PRINT : PRINT "THE LONGER YOU STAY ALIVE THE MORE      POINTS YOU GET,HO
WEVER TO SUCCESSFULLY  WIN THE GAME YOU MUST FIGHT THE ENEMY   TEN TIMES"
2180  PRINT : PRINT "AS YOU PROGRESS THE ENEMY WILL GET MORE INTELLIGENT AND T
HE TERRAIN MORE        CHALLENGING"
2190  PRINT : FLASH : PRINT "GOOD LUCK": NORMAL
2200  VTAB 22: PRINT "<<<<<<<<PRESS-ANY-KEY-TO-CONTINUE>>>>>>>>"
2210  IF  PEEK ( - 16384) < 128 THEN  GOTO 2210
2220  POKE  - 16368,0
2230  HOME : INVERSE : PRINT "THESE ARE YOUR COMMANDS"
2240  NORMAL : PRINT : PRINT "  "U$"=UP"
2250  PRINT : PRINT "  "D$"=DOWN"
2260  PRINT : PRINT "  "L$"=LEFT"
2270  PRINT : PRINT "  "R$"=RIGHT"
2280  PRINT : PRINT : INPUT "DO YOU WANT TO CHANGE THESE COMMANDS?";Q$: VTAB 1
2: PRINT "
2282  IF  LEFT$ (Q$,1) = "Y" THEN  VTAB 3: HTAB 3: GET U$: PRINT U$: VTAB 5: H
TAB 3: GET D$: PRINT D$: VTAB 7: HTAB 3: GET L$: PRINT L$: VTAB 9: HTAB 3: GET
 R$: PRINT R$: VTAB 12: INPUT "ARE THESE ALRIGHT?";Q$: IF  LEFT$ (Q$,1) = "N"
THEN Q$ = "Y": GOTO 2282
2300  VTAB 12: PRINT "<<<<<<<<<<<<<<PRESS ANY KEY>>>>>>>>>>>>>>>": VTAB 12: GET
Q$: PRINT Q$: HOME : RETURN
2310  REM
2320  REM  OPEN THE HIGH SCORE FILE AND READ IT.
2330  REM
3000  IF W <  > 1 THEN S = S + 1000
3010 A$ =  CHR$ (4)
3020  PRINT A$"OPEN HIGH SCORES"
3030  PRINT A$"READ HIGH SCORES"
3040  FOR Q = 1 TO 20
3050  INPUT C(Q)
3060  INPUT C$(Q)
3065  NEXT
3070  PRINT A$"CLOSE HIGH SCORES":Z = 0
3071  REM  CHECK TO SEE IF SCORE IS BEATEN
3072  FOR Q = 1 TO 20: IF Z = 1 THEN  GOTO 3075
3073  IF S >  = C(Q) THEN Z = 1:ML = Q: FOR W = 20 TO Q STEP  - 1:C(W + 1) = C
(W):C$(W + 1) = C$(W): NEXT W
3075  NEXT Q
3076  REM
3077  REM  IF YOU BEAT A HIGH SCORE THEN TYPE IN AND SAVE NAME.
3078  REM
3080  HOME : IF Z = 1 THEN  PRINT "YOU HAVE BEATEN A HIGH SCORE PLEASE TYPEIN
YOUR NAME----------------------------": INPUT C$(ML):C(ML) = S
3100  REM
3140  REM  SORT NAMES AND PUSH THEM ALL DOWN IF SCORE IS BEATEN.ACTUALLY 3073
IS THE REAL SORT.
3150  REM
3160  PRINT A$"OPEN HIGH SCORES"
3170  PRINT A$"WRITE HIGH SCORES"
3180  FOR Q = 1 TO 20
3190  PRINT C(Q)
3200  PRINT C$(Q)
3210  NEXT
3220  PRINT A$"CLOSE HIGH SCORES"
3230 W = 0:J = 0: HOME
3240  PRINT "<<<<<<<<<<H-A-L-L--OF--F-A-M-E>>>>>>>>>>"
3250  VTAB 2: PRINT " NAMES                    SCORES"
3260  FOR Q = 1 TO 20: PRINT Q")"C$(Q)
3270  VTAB Q + 2: HTAB 27: PRINT C(Q)
3280  NEXT
3290  POKE  - 16368,0: PRINT "###############PRESS ANY KEY###############"
3300  IF  PEEK ( - 16384) < 128 THEN  GOTO 3300
3310  GOTO 2053
```

APPLE II

GRAPHICS DRAWER

Graphics Drawer enables the user to draw graphics on Hi-Res Page 2 using the Apple's keyboard.

The controls are as follows:

I – draw line upwards
J – draw line left
K – draw line right
M – draw line downwards
O – draw line diagonally up – right
U – draw line diagonally down – left
, – draw line diagonally down - right (NB all the above keys are for movement.)

C – colour (0&4 – black, 1 – green, 2 – violet, 3&7 – white, 5 – orange, 6 – green)

D – Increment – how many dots plotted per keypress.

An example of Graphics Drawer has been included to show its capabilities. There is also another program – Sample Pattern Routines which has some interesting routines.

Tony Humfrey
Parkes NSW

```
10 X = 139:Y = 90: HGR2 :COL = 3:INC = 10
11 X1 = X:Y1 = Y
20  GET M$
30  IF M$ = "I" THEN Y = Y - INC: IF Y =  < 0 THEN Y = 0
35  IF M$ = "O" THEN Y = Y - INC:X = X + INC: IF Y =  < 0 THEN Y = 0: IF
     X =  > 279 THEN X = 279
40  IF M$ = "M" THEN Y = Y + INC: IF Y =  > 191 THEN Y = 191
45  IF M$ = "," THEN Y = Y + INC:X = X + INC: IF Y =  > 191 THEN Y = 191:
      IF X =  < 0 THEN X = 0
50  IF M$ = "K" THEN X = X + INC: IF X =  > 279 THEN X = 279
55  IF M$ = "N" THEN X = X - INC:Y = Y + INC: IF X =  > 279 THEN X = 279:
      IF Y =  > 191 THEN Y = 191
60  IF M$ = "J" THEN X = X - INC: IF X =  < 0 THEN X = 0
65  IF M$ = "U" THEN X = X - INC:Y = Y - INC: IF X =  < 0 THEN X = 0: IF
     Y =  < 0 THEN Y = 0
70  IF M$ = "D" THEN 2000
75  IF M$ = "E" THEN  PRINT "": END : REM  [ CTRL-G ]
80  IF M$ = "C" THEN 1000
81  HCOLOR= COL: HPLOT X1,Y1 TO X,Y
82  GOTO 11
1000  POKE  - 16300,0: POKE  - 16303,0: HOME : VTAB 12: PRINT "COLOUR=)":
      GET COL: POKE  - 16299,0: POKE  - 16304,0: GOTO 11
2000  POKE  - 16300,0: POKE  - 16303,0: HOME : VTAB 12: PRINT "INCREMENT=
     )": GET INC: POKE  - 16299,0: POKE  - 16304,0: GOTO 11
```

Sample Pattern Routines for Graphics Drawer

```
1  HOME : PRINT "PRESS A NUMBER TO RUN PROGRAMS 1 THRU 0": GET A
2  ON A GOTO 10,100,200,300,400,500,600,700,800,900
5  HOME
8 0
10 X =  INT ( RND (1) * 38) + 1
15 Y =  INT ( RND (1) * 23) + 1
20  HTAB X: VTAB Y: PRINT "*"
30  GOTO 10
100  FOR A = 0 TO 255
110  PRINT  CHR$ (A);
120  NEXT A
125  GET A$: GOTO 1
200  HGR2
205  HCOLOR= 3
210 Y =  INT ( RND (1) * 190) + 1
220 X =  INT ( RND (1) * 255) + 1
230  HPLOT X,Y
240  GOTO 210
300  HGR2
305  HCOLOR= 3
310 Y =  INT ( RND (1) * 190) + 1
320 X =  INT ( RND (1) * 254) + 1
330 B =  INT ( RND (1) * 190) + 1
340 A =  INT ( RND (1) * 254) + 1
350  HPLOT X,Y
355  HPLOT  TO A,B
360  GOTO 310
400  HGR
410  FOR A = 1 TO 7
415  IF A = 4 OR A = 4 THEN  GOTO 410
420  HCOLOR= A
425  FOR B = 1 TO 279
430  HPLOT B,0 TO B,160
440  NEXT B
450  HGR : NEXT A
460  GOTO 1
500  HGR2
510  FOR A = 1 TO 7
515  IF A = 4 THEN  GOTO 510
520  HCOLOR= A
525  FOR B = 0 TO 191
530  HPLOT 0,B TO 279,B
540  NEXT B
550  HGR2 : NEXT A
560  GOTO 1
600  HGR2 :H =  INT ( RND (1) * 7) + 1
605  IF H = 4 THEN 600
610  HCOLOR= H
615  FOR B = 0 TO 191
620  HPLOT 0,B: HPLOT  TO B,0
625  NEXT B
630  GOTO 600
700  HGR2
710 X =  INT ( RND (1) * 279) + 1
720  FOR Y = 0 TO 191
721  HPLOT X,Y
725  NEXT Y
730  GOTO 710
800  HGR2 :H =  INT ( RND (1) * 7) + 1
805  IF H = 4 THEN 800
809 X = 0:Y = 0
810  HCOLOR= H
815  HPLOT X,Y: HPLOT 0,Y TO X,0
820 X = X + 1:Y = Y + 1: IF X > 279 THEN X = 279: IF Y > 191 THEN Y = 191
     : GOTO 810
```

COPY PROTECTOR

This program prevents copying, and, in fact, looking at programs on your disk. It uses the RWTS subroutine to change the directory file location. It is left to you to decide how to encompass this into your own greeting program. The basic idea of this program makes it quite flexible and it can be easily expanded as I will describe later.

Bytes Accessed:
$303 – Volume Number
$304 – Track Number
$305 – Sector Number
$306 – Command (01-Read 02-Write)

If you want to look at any sector on your disk or in fact when you set up your copy protector system, you just change the above four locations as required and type 315G. The sector read or written will be from $2000 – $20FF. This buffer can be changed by altering locations $308(low-byte) and $309 (high-byte).

Take a newly initialised disk and type in the program below and save it as the greeting program.

```
10 HOME
20 ?CHR$(4);"BRUN DC" 30
?CHR$(4);"CATALOG"
```

CALL-151 and type in the hex DC program as given and bsave it as the file name in 20.

Using the 315G procedure above, copy the directory of track $11-sector $OF into track $22-sector $OF. You now have a real directory in track $11 and a false one in track $22-sector $OF. When the disk is booted the program will change the VTOC so that a catalog will show the false directory. In fact, DOS can not load a program unless it is contained in the directory. To get the real directory back you simply CALL-151 then 333G.

The system I use is slightly different to the above and was first placed on a half full disk. The difference is that the greeting program is different for each directory but has the same file name.

The false directory is exactly the same as the above but the real directory points to a different track/sector list.

The easiest way to accomplish this is to save the real directories hello program as normal. Then save the false directories hello program on another disk or under a new file name on the disk you are copy protecting. Now transfer the false directory containing the files, HELLO and DC, into track $22-sector $OF by the "315G" method, using track $22-sector $OE as the track/sector list for the hello program. Write the track/sector list into the data buffer, using track $22-sector $OD as the first and only file location, and save this into track $22-sector $OE. Then load the actual tokenised sector (NB – the above hello program occupies only one sector), from the disk used to save the false hello program, into the data buffer so that it can be saved into track $22-sector $OD.

When the disk is booted the false directory will be used and the catalog will show the two files, HELLO and DC. This allows you to still retrieve the real directory even if the disk has not been booted.

Also, it is important to adjust the track-bit maps to show the sectors you have used with the RWTS. All the relative information can be gained in the DOS manual under storage of files. For the system to work, both hello programs must first BRUN DC or the false directory must first BRUN DC and the VTOC must point to the false directory while you are not using the disk. This is done by BRUNing DC for the first and second cases or booting the disk in the first case.

Michael Werner
(Send us your address, Michael!)

```
--- HEX DUMP ---

02EA: A9 01 8D 03 03 8D 0C 03 A9 11
      8D 04 03 A9 00 8D 05 03 20 1D
      03 60 01 60 01 01 01 11 0F 11
      03 00 20 00 00 01 00 01 60 01
      00 01 EF D8 A9 03 A0 00 20 D9
      03 60 20 58 FC 20 15 03 A0 01
      A9 22 99 00 20 A9 02 8D 0C 03
      20 15 03 60 A0 11 8C 04 03 A0
      00 8C 05 03 A0 01 8C 0C 03 20
      15 03 A0 01 A9 11 99 00 20 A9
      02 8D 0C 03 20 15 03 60
```

APPLESOFT COMMAND

With this short routine, you can type BASIC commands using a single key with the control key. The keys and keywords I have chosen are shown in the table at the end of the program.

BASIC commands begin at $D0D0 and occupy consecutive locations to $D25E. The first seven keys (@ to F) access commands on page $D0. The keys G to Y (excluding H, M and U) access keywords on page $D1, whilst Z accesses a keyword on page $D2.

The number of keys which access pages $D0, $D1, and $D2 could be changed altering the numbers in locations $0333 and $033D respectively.

The keywords could be changed by substituting the least significant byte of the address of the new command for one of those on the list.

Enter the monitor and type in the program beginning at $0300. Save the program by typing:

```
BSAVE ACE, A$300,L$91
```

To run the program type BRUN ACE from disk or BLOAD ACE followed by CALL 768. If you begin the program from the monitor with 3006, you must re-enter Applesoft by typing 3D0G, as typing Control-C will produce CALL. Before running a program in Applesoft hit the reset button to revert to the normal input routine.

The program works by passing all input through ACE. If

```
]CALL-151

*300.390

0300- A9 D2 85 1B A9 03 85 1D
0308- 85 39 A9 76 85 1C A9 00
0310- 85 19 A9 19 85 38 4C EA
0318- 03 20 4A FF A5 19 D0 2E
0320- A5 45 20 1B FD 85 45 C9
0328- 9B 90 04 20 3F FF 60 29
0330- 7F A8 C9 07 B0 06 C6 1B
0338- C6 1B D0 06 C9 1A B0 02
0340- C6 1B B1 1C F0 20 85 06
0348- E6 19 A9 00 85 07 A5 45
0350- A4 07 A5 06 85 1A B1 1A
0358- C9 80 B0 08 09 80 E6 07
0360- 85 45 D0 C7 85 45 A9 00
0368- 85 19 A9 D2 C5 1B F0 04
0370- E6 1B D0 F8 F0 B5 EF D3
0378- D6 F9 DA E9 DE 93 00 9A
0380- 56 4F 90 00 49 29 17 10
0388- 09 A4 EF 00 64 25 C7 A9
0390- 3B
```

```
0800                    1          TTL "APPLESOFT COMMAND ENTRY (ACE)"
0800                    2  * BY JOHN GALLAGHER. FEB.83
0300                    3          ORG $300
0300                    4          OBJ $800
0006                    5  ASTR    EPZ $06              ;TEMP.STORE A REG.
0007                    6  CHRCNT  EPZ $07              ;KEYWORD CHAR.COUNT
001A                    7  WRDADD  EPZ $1A              ;STORE KEYWORD ADDRESS
001C                    8  TBLADD  EPZ $1C              ;STORE LOOKUP TBL ADDRESS
0019                    9  WRDEND  EPZ $19              ;KEYWORD END FLAG
0038                   10  INHOOK  EPZ $38              ;INPUT HOOK
0045                   11  ASAVE   EPZ $45              ;A REG.STORE
0319                   12  START   EQU $319             ;INPUT ROUTINE
032B                   13  RETURN  EQU $32B
032F                   14  NXTWRD  EQU $32F             ;NEXT KEYWORD
034E                   15  NXTCHR  EQU $34E             ;GET NEXT CHAR.
0366                   16  NXTKEY  EQU $366             ;PREPARE FOR NEXT KEY
0376                   17  LKTBL   EQU $376             ;LOOKUP TABLE BEGINS
03EA                   18  EXIT    EQU $3EA             ;EXIT THRU I/O UPDATE
FD1B                   19  KEYIN   EQU $FD1B            ;READ KEYBOARD
FF4A                   20  IOSAVE  EQU $FF4A            ;SAVE REGISTERS
FF3F                   21  IOREST  EQU $FF3F            ;RESTORE REGISTERS
0300                   22  *
0300                   23  * INITIALIZATION
0300                   24  *
0300 A9 D2             25          LDA #$D2             ;HIGH PAGE KEYWORD ADDRESS
0302 85 1B             26          STA WRDADD+1
0304 A9 03             27          LDA /START
0306 85 1D             28          STA TBLADD+1
0308 85 39             29          STA INHOOK+1
030A A9 76             30          LDA #LKTBL
030C 85 1C             31          STA TBLADD
030E A9 00             32          LDA #$00
0310 85 19             33          STA WRDEND           ;CLEAR WORD END FLAG
0312 A9 19             34          LDA #START
0314 85 38             35          STA INHOOK
0316 4C EA 03          36          JMP EXIT             ;EXIT THRU I/O UPDATE
0319                   37  * START INPUT ROUTINE
0319 20 4A FF          38          JSR IOSAVE
031C A5 19             39          LDA WRDEND *         ;IF NOT END OF WORD
031E D0 2E             40          BNE NXTCHR           ;GET NEXT CHARACTER
0320 A5 45             41          LDA ASAVE
0322 20 1B FD          42          JSR KEYIN
0325 85 45             43          STA ASAVE
0327 C9 9B             44          CMP #$9B             ;CHECK FOR CTRL.KEY
0329 90 04             45          BCC NXTWRD           ;IF CTRL GET KEYWORD
032B                   46  * RETURN
032B 20 3F FF          47          JSR IOREST           ;RESTORE & RETURN
032E 60                48          RTS
032F                   49  * NXTWRD
032F 29 7F             50          AND #$7F             ;REMOVE MSB
0331 A8                51          TAY
0332 C9 07             52          CMP #$07             ;IF NOT @-F CONTINUE
0334 B0 06             53          BCS >1
0336 C6 1B             54          DEC WRDADD+1         ;IF @-F THEN
0338 C6 1B             55          DEC WRDADD+1         ;DEC TO $D0
033A D0 06             56          BNE >2
033C C9 1A             57  ^1      CMP #$1A             ;IF Z LEAVE AT $D2
033E B0 02             58          BCS >2
0340 C6 1B             59          DEC WRDADD+1         ;IF G-Y DEC TO $D1
0342 B1 1C             60  ^2      LDA (TBLADD),Y       ;LOOKUP INDEX
0344 F0 20             61          BEQ NXTKEY           ;IF KEY NOT USED RETURN
```

ENTRY

CTRL is pressed, the key following it is used to generate an index to obtain the least significant byte of the address of the BASIC command which is stored in a table beginning at $0376. This byte is then stored in $1A.

The most significant byte is stored in $1B and has an initial value of $D2. This is decremented to $D0 if keys @ to F are pressed and to $D1, if any other key apart from Z is pressed.

BASIC commands are stored with the MSB set only for the last character, and this is used to clear the word end flag ($19). A character counter ($07) provides the index to obtain each character from the keyword after its address has been located.

The initialisation routine sets the input hook to the beginning of the ACE input routine at $0319.

J. Gallagher
Paradise Park

```
0346 85 06      62              STA ASTR            ;STORE LO BYTE KEYWORD ADDRESS
0348 E6 19      63              INC WRDEND          ;SET WORD END FLAG
034A A9 00      64              LDA #$00
034C 85 07      65              STA CHRCNT          ;CLEAR CHR COUNT
034E            66  * NXTCHR
034E A5 45      67              LDA ASAVE
0350 A4 07      68              LDY CHRCNT
0352 A5 06      69              LDA ASTR            ;GET LO BYTE KEYWORD ADDRESS
0354 85 1A      70              STA WRDADD
0356 B1 1A      71              LDA (WRDADD),Y      ;GET NEXT CHARACTER
0358 C9 80      72              CMP #$80            ;LAST CHARACTER ?
035A B0 08      73              BCS >3
035C 09 80      74              ORA #$80
035E E6 07      75              INC CHRCNT
0360 85 45      76              STA ASAVE
0362 D0 C7      77              BNE RETURN
0364 85 45      78  ^3          STA ASAVE
0366            79  * NXTKEY
0366 A9 00      80              LDA #$00
0368 85 19      81              STA WRDEND          ;CLEAR WORD END FLAG
036A A9 D2      82              LDA #$D2
036C C5 1B      83  ^5          CMP WRDADD+1
036E F0 04      84              BEQ >4
0370 E6 1B      85              INC WRDADD+1        ;INC TO $D2
0372 D0 F8      86              BNE <5
0374 F0 B5      87  ^4          BEQ RETURN
0376            88  * LOOK UP TABLE
0376 EF         89              HEX EF              ;@=TEXT
0377 D3         90              HEX D3              ;A=FOR
0378 D6         91              HEX D6              ;B=NEXT
0379 F9         92              HEX F9              ;C=CALL
037A DA         93              HEX DA              ;D=DATA
037B E9         94              HEX E9              ;E=READ
037C DE         95              HEX DE              ;F=INPUT
037D 93         96              HEX 93              ;G=GO TO
037E 00         97              HEX 00              ;H NOT USED
037F 9A         98              HEX 9A              ;I=IF
0380 56         99              HEX 56              ;J=FLASH
0381 4F        100              HEX 4F              ;K=INVERSE
0382 90        101              HEX 90              ;L=LET
0383 00        102              HEX 00              ;M NOT USED
0384 49        103              HEX 49              ;N=NORMAL
0385 29        104              HEX 29              ;O=HOME
0386 17        105              HEX 17              ;P=HPLOT
0387 10        106              HEX 10              ;Q=HCOLOR=
0388 09        107              HEX 09              ;R=HGR2
0389 A4        108              HEX A4              ;S=GO SUB
038A EF        109              HEX EF              ;T=THEN
038B 00        110              HEX 00              ;U NOT USED
038C 64        111              HEX 64              ;V=VTAB
038D 25        112              HEX 25              ;W=HTAB
038E C7        113              HEX C7              ;X=POKE
038F A9        114              HEX A9              ;Y=RETURN
0390 3B        115              HEX 3B              ;Z=PEEK
0391           116              END

***** END OF ASSEMBLY
```

TYPE

Type is a game designed to increase your typing skills on the Apple. It clears the screen and flashes a letter on the screen in a random place. You are given a certain amount of time in which to press that key (time is selected at the beginning of the program by the user). If you do not press the key within that time you go onto the next key (10 to 50 letters, selected by you at the beginning of the program). If you press the incorrect key, you are not penalised but must still press the correct key.

This program could easily be adapted for use on other micros. The statement in line 1600 simply clicks the speaker. The timing may have to be adjusted on faster or slower micros (this was done on a IIe). This is in the for-next loops.

The statement in 1300 simply gets a character or checks if one has been pressed. It can be changed to an 'INKEY$' statement. 'Inverse' makes all characters printed after it appear black on white (instead of white on black) until the 'Normal' statement.

All the rems can be omitted.

Tony Humfrey
Parkes NSW

```
1  REM _________________
2  REM !               !
3  REM !      TYPE     !
4  REM !               !
5  REM ! BY T.Humfrey  !
6  REM !               !
7  REM !_______________!
8  REM
9  REM ____________________
10  REM  Member of the
11  REM
12  REM  Parkes High School
13  REM
14  REM  COMPUTER-
15  REM
16  REM            CLUB
17  REM
18  REM ____________________
100  HOME : ONERR  GOTO 2700
200  INPUT "No. OF GAMES(10 TO 50
     )->";GAMES
300  IF GAMES < 10 OR GAMES > 50 THEN
     100
400  PRINT : PRINT : PRINT : PRINT
     : PRINT : INPUT "SPEED (0.5
     SECONDS TO 5 SECONDS)   ->";
     SPD: IF SPD < 0.5 OR SPD > 5
      THEN 400
500  FOR G = 1 TO GAMES
600  HOME
700 V =  INT ( RND (1) * 24) + 1
800 H =  INT ( RND (1) * 40) + 1
900 C =  INT ( RND (1) * 61) + 34
1000 C$ =  CHR$ (C)
1100  VTAB V: HTAB H: PRINT C$
1200  FOR A = 1 TO SPD * 100
1300  IF  PEEK ( - 16384) > 127 THEN
      GET R$
1400  IF R$ = C$ THEN 2000
1500  NEXT A
1600  FOR B = 1 TO 100
1700 A =  PEEK ( - 16336)
1800  NEXT B
1900  NEXT G
1950  GOTO 2250
2000  PRINT "HIT": FOR T = 1 TO 4
     00: NEXT T
2100 I = I + 1
2200  NEXT G
2250  HOME : INVERSE : VTAB 1: HTAB
     14: PRINT "SPEED ";SPD;"C/P/
     S": NORMAL
2300  VTAB 11: PRINT "YOU GOT ";I
     ;" OUT OF ";GAMES;" RIGHT": PRINT

2400  IF I =  > GAMES - (GAMES /
     5) THEN  PRINT "GREAT GOING!
     ": FOR F = 1 TO 1000: NEXT :
      GOTO 2650
2500  IF I < GAMES - (GAMES / 5) AND
     I =  > GAMES / 2 THEN  PRINT
     "FAIRLY GOOD": FOR F = 1 TO
     1000: NEXT : GOTO 2650
2600  IF I < GAMES / 2 THEN  PRINT
     "NEED PRACTICE": FOR F = 1 TO
     1000: NEXT : GOTO 2650
2700  PRINT "ANOTHER GAME(Y/N)";:
      GET Y$: IF Y$ = "Y" THEN  GOTO
     100: IF Y$ = "N" THEN  END :
      GOTO 2700

12800 REM INSERT CTRL-G IN LINE 2000
```

LORD OF THE RINGS

This is a program written for a 48K Apple II+ aimed at restoring peace to Middle Earth. It is a long listing and to save typing it out, I will put it on disk for everyone who sends me a disk and five dollars. All proceeds will go to the Parkes High School Computer Club. Please mark all parcels "Computer disks – keep away from magnets". Write care of Your Computer and it will be passed on.

Shaun Humfrey
Parkes NSW

```
0  TEXT : HOME
2  REM   LORD OF THE RINGS BY SHAUN HUMFREY
5  HOME : CLEAR
7 M = 0
10  HTAB 12: INVERSE : PRINT "LORD OF THE RINGS": NORMAL
20  VTAB 5: PRINT : VTAB 5: INPUT "ENTER NAME ->";N$
35  IF N$ = "LEGOLAS" THEN 75
37  IF N$ = "BILBO" THEN 80
40  IF N$ = "BOROMIR" THEN 85
42  IF N$ = "SAURON" THEN 5
44  IF N$ = "GANDALF" THEN 5
45  IF N$ = "THEODEN" THEN 5
46  IF N$ = "ARAGORN" THEN 5
47  IF N$ = "FRODO" THEN 5
48  IF N$ = "GALADRIEL" THEN 5
49  GOTO 100
50 R$ = "ELF":RS$ = "ELVES":W$ = "BOW": GOTO 200
55 R$ = "DWARF":RS$ = "DWARVES":W$ = "AXE": GOTO 200
57 R$ = "HOBBIT":RS$ = "HOBBITS":W$ = "KNIFE": GOTO 200
60 R$ = "HUMAN":RS$ = "HUMANS":W$ = "SWORD": GOTO 200
70  PRINT : PRINT "GREETINGS GIMLI,SON OF GLOIN.": FOR I = 1 TO 2000: NEXT I: GO
TO
     55
75  PRINT : PRINT "I WISH THEE WELL,LEGOLAS.": FOR I = 1 TO 2000: NEXT I: GOTO 5
0
80  PRINT : PRINT "GREETINGS BILBO,FINDER OF THE RING.": FOR I = 1 TO 2000: NEXT
 I
     : GOTO 57
85  PRINT : PRINT "GOOD LUCK ON YOUR QUEST,BOROMIR.": FOR I = 1 TO 2000: NEXT I:
 GOTO
     60
100  PRINT : PRINT : PRINT "(1) DWARF": PRINT : PRINT "(2) ELF": PRINT : PRINT "
(3
     ) HUMAN": PRINT : PRINT "(4) HOBBIT": PRINT : PRINT : PRINT
110  PRINT "ENTER RACE ->";: GET R
120  IF R > 4 THEN 100
126  IF R < 1 THEN 100
130  ON R GOTO 55,50,60,57
199  REM  INSTRUCTIONS
200  HOME
210  PRINT "  WELCOME TO RIVENDELL,";N$;".": PRINT : PRINT "YOU HAVE BEEN CHOSEN
 T
     O REPRESENT ": PRINT : PRINT RS$;" IN THE COMPANY SELECTED TO ": PRINT : PR
INT
     "DESTROY THE RING OF SAURON.": PRINT : PRINT : PRINT "DO YOU WANT MORE INFO
RM
     ATION ABOUT THE": PRINT : PRINT "THE RING ? ";: GET A$
220  IF A$ = "Y" THEN 250
225  IF A$ = "N" THEN 400
230  GOTO 200
249  REM  ABOUT THE RING
250  HOME : PRINT " THE RINGS OF POWER WERE FORGED IN THE": PRINT : PRINT "CRACK
 O
     F DOOM BY SAURON,EVIL LORD OF": PRINT : PRINT "MORDOR.THESE RINGS CORRUPT T
HE
      SPIRIT": PRINT : PRINT "AND DECAY THE BODY.KNOWING THIS HE": PRINT : PRINT
 "
     GAVE NINE RINGS TO MEN,SEVEN TO DWARVES": PRINT
260  PRINT "AND KEPT THE RULING RING TO CONTROL THE": PRINT : PRINT "OTHERS.THRE
E
     GOOD RINGS WERE MADE BY": PRINT : PRINT "ELVES,BUT THEY TOO ARE AFFECTED BY
 T
```

LORD OF THE RINGS

```
     HE": PRINT : PRINT "ONE RULING RING."
270  PRINT : PRINT " MEN AND DWARVES WITH THE RINGS FELL": PRINT : PRINT "INTO T
HE
      SERVICE OF SAURON."
275  VTAB 24: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
277  HOME : PRINT "THE NINE MEN WITH RINGS WORSHIPED": PRINT : PRINT "SAURON.ONL
Y
     THREE OF THE SEVEN ": PRINT : PRINT "DWARF-LORDS CAME TO SAURON.THE OTHERS"
: PRINT
     : PRINT "WERE KILLED BY DRAGONS OR DEMONS."
279  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
280  HOME : PRINT " SAURON LOST THE RULING RING IN BATTLE": PRINT : PRINT "AGAIN
ST
      A RACE OF MEN FROM ACROSS THE": PRINT : PRINT "GREAT SEA.CENTURIES LATER I
T
     WAS": PRINT : PRINT "FOUND BY A SMALL BEING CALLED SMEAGOL.": PRINT : PRINT
 "
     HE EVENTUALLY LOST IT AND IT WAS ": PRINT
290  PRINT "LATER FOUND BY A HOBBIT NAMED BILBO.HIS": PRINT : PRINT "NEPHEW,FROD
O,
     NOW HAS IT.FRODO IS IN": PRINT : PRINT "YOUR COMPANY AS RINGBEARER."
300  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
400  HOME
410  PRINT "ALSO IN YOUR PARTY ARE GANDALF,A ": PRINT : PRINT "POWERFUL WIZARD;A
RA
     GORN,RIGHTFUL KING ": PRINT : PRINT "OF GONDOR;AND FRODO,THE RINGBEARER."
420  VTAB 21: PRINT "PRESS ANY KEY TO EMBARK ON YOUR": PRINT : PRINT "JOURNEY";:
 GET
     A$
499  REM  THE BEGINNING!!!
500  HOME
510  PRINT " YOU EMBARK ON A COLD WINTER MORNING.": PRINT : PRINT "YOU WALK MANY
 L
     EAGUES UNTIL"
520  PRINT : PRINT "YOU REACH THE ANCIENT AND LONG ": PRINT : PRINT "ABANDONED D
WA
     RF-KINGDOM OF MORIA WHICH": PRINT : PRINT "FILLS THE INSIDE OF A MOUNTAIN."
530  PRINT : PRINT "HERE YOU HAVE A CHOICE...WILL YOU GO": PRINT : PRINT "THROUG
H
     THE REALMS OF MORIA OR GO OVER": PRINT : PRINT "THE MOUNTAIN VIA A SMALL PA
TH
      ? "
540  PRINT : PRINT : PRINT "(ENTER M FOR MORIA AND P FOR PATH.) ";: GET D$
545  PRINT
550  IF D$ = "P" THEN 600
555  IF D$ = "M" THEN 800
560  GOTO 540
599  REM  MOUNTAIN PATH
600  HOME : PRINT " AS YOU ASCEND THE MOUNTAIN A SNOWSTORM": PRINT : PRINT "STAR
TS
     .THIS COULD BE WORSE THAN YOU": PRINT : PRINT "THOUGHT."
610  PRINT : PRINT : PRINT "ARE YOU SURE YOU WANT TO GO ON ? ";: GET A$
615  PRINT
620  IF A$ = "N" THEN 520
625  IF A$ = "Y" THEN 650
630  GOTO 610
650 B =  INT ( RND (1) * 10) + 1: IF B < 3 THEN 670
660  PRINT : PRINT "THE SNOWSTORM DIES DOWN,AND YOU ": PRINT : PRINT "CONTINUE U
P
     THE PATH": PRINT : PRINT : PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE
";
     : GET A$
662 M = M + 300
665  GOTO 680
670  PRINT : PRINT "THE BLIZZARD CONTINUES AND YOU FREEZE": PRINT : PRINT "TO DE
AT
```


```
     H.": PRINT : PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GO
TO
     9000
680  HOME : PRINT "YOU PROCEED UNTIL YOU COME TO A FORK": PRINT : PRINT "IN THE
RO
     AD."
690  PRINT : PRINT "WILL YOU GO LEFT OR RIGHT ? ";: GET D$
700  IF D$ = "L" THEN 720
705  IF D$ = "R" THEN 750
710  GOTO 690
720  HOME : PRINT "YOU TAKE THE LEFT PATH.SOON YOU HEAR A": PRINT : PRINT "DISTA
NT
      RUMBLE.YOU LOOK UP TO SEE": PRINT : PRINT "TONNES OF ROCK FALLING TOWARDS
YO
     U.": PRINT : PRINT "YOUR PARTY HAS BEEN KILLED IN AN": PRINT : PRINT "AVALA
NC
     E."
730  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 9000
750  HOME : PRINT "YOU TAKE THE RIGHT PATH.YOU WALK DOWN": PRINT : PRINT "THE OT
HE
     R SIDE OF THE MOUNTAIN SAFELY."
770  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
790  GOTO 1100
799  REM  MORIA
800  HOME
810  PRINT "YOU ENTER MORIA SLOWLY.IT IS DARK AND": PRINT : PRINT "THERE IS A SE
NS
     E OF EVIL IN THE AIR.": PRINT : PRINT "THIS COULD BE WORSE THAN YOU THOUGHT
."

820  PRINT : PRINT "ARE YOU SURE YOU WANT TO GO ON ? ";: GET A$
822  PRINT
825  IF A$ = "N" THEN 520
830  IF A$ = "Y" THEN 850
840  GOTO 820
850  PRINT : PRINT "GANDALF EMITS A GLOW FROM THE END OF ": PRINT : PRINT "HIS S
TA
     FF.YOU CAN SEE SIDE PASSAGES TO": PRINT : PRINT "THE LEFT AND RIGHT."
860  PRINT : PRINT "DO YOU WANT TO EXPLORE A SIDE PASSAGE ?": GET A$
862  PRINT
865  IF A$ = "Y" THEN 890
870  IF A$ = "N" THEN 1000
875  IF A$ = "L" THEN 900
880  IF A$ = "R" THEN 950
885  GOTO 860
890  PRINT : PRINT "LEFT OR RIGHT ? ";: GET A$
891  PRINT
892  IF A$ = "L" THEN 900
894  IF A$ = "R" THEN 950
895  GOTO 890
899  REM  ORC DOOR
900  HOME : PRINT "YOU WALK DOWN THE PASSAGE AND COME TO A": PRINT : PRINT "A DO
OR
     ."
905  PRINT : PRINT "WILL YOU OPEN IT ? ";: GET A$: PRINT
910  IF A$ = "N" THEN 920
912  IF A$ = "Y" THEN 925
915  GOTO 905
920  PRINT : PRINT "YOU LEAVE THE DOOR AND COME BACK TO THE": PRINT : PRINT "MAI
N
     HALLWAY.": FOR I = 1 TO 3500: NEXT I: GOTO 1000
925  HOME : PRINT "YOU BREAK THROUGH THE DOOR AND ARE": PRINT : PRINT "IMMEDIATE
LY
      CONFRONTED BY A BAND OF ": PRINT : PRINT "ORCS."
927  PRINT : PRINT "WILL YOU FIGHT OR RUN ? ";: GET F$
928  PRINT
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LORD OF THE RINGS

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929  IF F$ = "R" THEN 945: IF F$ = "F" THEN 930: GOTO 927
930  HOME : PRINT "ARAGORN DRAWS HIS SWORD AND HEWS AT THE": PRINT : PRINT "ORCS
.L
     IGHTNING LEAPS FROM GANDALF'S": PRINT : PRINT "STAFF,KILLING MANY ORCS.YOU
WI
     ELD YOUR": PRINT : PRINT W$;" SKILLFULLY."
932 K =  INT ( RND (1) * 25) + 1:S =  INT ( RND (1) * 10) + 1
934  PRINT : PRINT "DURING BATTLE YOU FIGHT VALIANTLY AND": PRINT : PRINT "KILL
";
     K;" ORCS."
935  IF S < 3 THEN 946
937  PRINT : PRINT "EVENTUALLY,YOU KILL ALL THE ORCS.": VTAB 22: PRINT "PRESS AN
Y
     KEY TO CONTINUE";: GET A$
938  PRINT : PRINT
939 M = M + 800: GOTO 860
945  HOME :S =  INT ( RND (1) * 10) + 1: IF S < 4 THEN 947
946  PRINT "YOU ARE ALL SLAUGHTERED BY THE ORCS": FOR I = 1 TO 3000: NEXT I: GOT
O
     9000
947  PRINT "YOU RUN DOWN THE TUNNEL BACK TO THE": PRINT : PRINT "MAIN HALLWAY":
FOR
     I = 1 TO 3000: NEXT I: GOTO 1000
950  HOME : PRINT "YOU ARE CONFRONTED BY A FIRE DEMON,A": PRINT : PRINT "BALROG.
":
      PRINT : PRINT "WILL YOU FIGHT OR RUN ? ";: GET F$
951  PRINT
952  IF F$ = "F" THEN 960
954  IF F$ = "R" THEN 957
955  GOTO 950
957 C =  INT ( RND (1) * 10) + 1
958  IF C < 3 THEN 947
959  PRINT : PRINT "THE BALROG CASTS A SPELL,AND YOU CANT": PRINT : PRINT "LEAVE
 T
     HE ROOM."
960  PRINT : PRINT "YOU ATTACK THE BALROG WITH YOUR ";W$: PRINT : PRINT "ARAGORN
 L
     EAPS AT THE BALROG'S THROAT."
962  IF F$ = "R" THEN 965
963  GOTO 970
965  PRINT : PRINT "THE BALROG CASTS GANDALF INTO AN ABYSS.":GA$ = "DEAD"
967  GOTO 972
970 GA =  INT ( RND (1) * 10) + 1
971  IF GA < 3 THEN 965
972 S =  INT ( RND (1) * 10) + 1
975  IF S < 4 THEN 980
977  GOTO 984
980  PRINT : PRINT "THE BALROG FIGHTS LIKE A DEMON (WHICH": PRINT : PRINT "IT IS
)
     AND KILLS YOU ALL.": PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE";: GE
T
     A$: GOTO 9000
984  PRINT : PRINT : PRINT
985  PRINT : PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: HOME : PRINT "WITH YOUR
 "
     ;W$;" YOU WOUND THE": PRINT : PRINT "BALROG IN THE THROAT,KILLING IT."
986 M = M + 600
987  PRINT : PRINT "ON THE FLOOR YOU FIND A RING.": IF GA$ = "DEAD" THEN 990
989  PRINT : PRINT "GANDALF SAYS IT IS ONE OF THE LOST": PRINT : PRINT "RINGS OF
 P
     OWER OF THE DWARF-LORDS."
990  PRINT : PRINT "THE RING IS ONLY TO BE USED IN EXTREME": PRINT : PRINT "EMER
GE
     NCIES.": VTAB 22
992 I$ = "RING"
995  PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
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1000  HOME : PRINT "YOU NEAR THE EXIT TO MORIA.": PRINT : PRINT "SUDDENLY YOU HE
AR
      THE BOOM OF DISTANT ": PRINT : PRINT "DRUMS AND ORC ISSUE FORTH FROM THE":
 PRINT
     : PRINT "EASTERN DOOR."
1010  IF GA$ = "DEAD" THEN 1050
1020  PRINT : PRINT "GANDALF CASTS A SPELL AND THE EASTERN": PRINT : PRINT "DOOR
 A
     ND NEARBY CEILING COLLAPSE": PRINT : PRINT "KILLING THE ORCS.": VTAB 22: PR
INT
     "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 1100
1050  PRINT : PRINT "WILL YOU FIGHT OR RUN ? ";: GET F$
1052  PRINT
1055  IF F$ = "R" THEN 1080: IF F$ = "F" THEN 1060: GOTO 1050
1060  HOME : PRINT "YOU AND ARAGORN FIGHT SIDE BY SIDE": PRINT : PRINT "KILLING
MA
     NY ORCS.YOUR ";W$;" IS A": PRINT : PRINT "GOOD WEAPON."
1065 S =  INT ( RND (1) * 10) + 1:K =  INT ( RND (1) * 20) + 1
1070  PRINT : PRINT "YOU KILL ";K;" ORCS WITH YOUR ";W$
1075  IF S < 4 THEN 1079
1076 M = M + 600
1077  PRINT : PRINT "YOU FINALLY KILL ALL THE ORCS.": PRINT : PRINT : PRINT : PR
INT
     "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 1100
1079  PRINT : PRINT "YOU FIGHT VALIANTLY BUT SOON TIRE.": GOTO 1090
1080 S =  INT ( RND (1) * 10) + 1: IF S < 3 THEN 1100
1090  PRINT : PRINT "THE ORCS KILL YOU ALL.": PRINT : PRINT : PRINT : PRINT "PRE
SS
      ANY KEY TO CONTINUE";: GET A$: GOTO 9000
1100  HOME : PRINT "YOU REST AT THE FOOT OF THE MOUNTAIN TO": PRINT : PRINT "PLA
N
     YOUR NEXT MOVE."
1110  PRINT : PRINT "WILL YOU GO THROUGH THE STRANGE FOREST": PRINT : PRINT "OF
LO
     THLORIEN TO GET TO GONDOR TO GET": PRINT : PRINT "HELP,OR GO STRAIGHT TO MO
RD
     OR ?"
1120  PRINT : PRINT "(ENTER G FOR GONDOR,M FOR MORDOR.)";: GET D$
1122  PRINT
1125  IF D$ = "M" THEN 5000
1130  IF D$ = "G" THEN 1500
1140  GOTO 1120
1499  REM  LOTHLORIEN
1500  HOME
1505  PRINT "STRANGE TALES ARE TOLD ABOUT THE FOREST": PRINT : PRINT "OF LOTHLOR
IE
     N."
1510  PRINT : PRINT "ARE YOU SURE YOU WANT TO GO ON ? ";: GET A$
1511  PRINT
1512  IF A$ = "N" THEN 1100
1515  IF A$ = "Y" THEN 1520
1517  GOTO 1500
1520  HOME : PRINT "ELVISH WARRIORS CAPTURE YOU AND TAKE ": PRINT : PRINT "YOU T
O
     THEIR QUEEN,GALADRIEL."
1525  IF GA$ = "DEAD" THEN 1530
1528  GOTO 1540
1530  PRINT : PRINT "GANDALF IS ALSO THERE.APPARENTLY,HE ": PRINT : PRINT "SURVI
VE
     D THE BALROG.HE LOOKS WISE AND ": PRINT : PRINT "MORE DISTANT THAN BEFORE."
1535 GA$ = ""
1540  PRINT : PRINT "GALADRIEL OFFERS YOU FOOD AND REST": PRINT : PRINT "WHICH Y
OU
      GRATEFULLY ACCEPT.SEVERAL": PRINT : PRINT "DAYS LATER YOU DECIDE TO LEAVE.
":
      PRINT : PRINT "GALADRIEL WARNS THAT THERE IS TROUBLE": PRINT : PRINT "BREW
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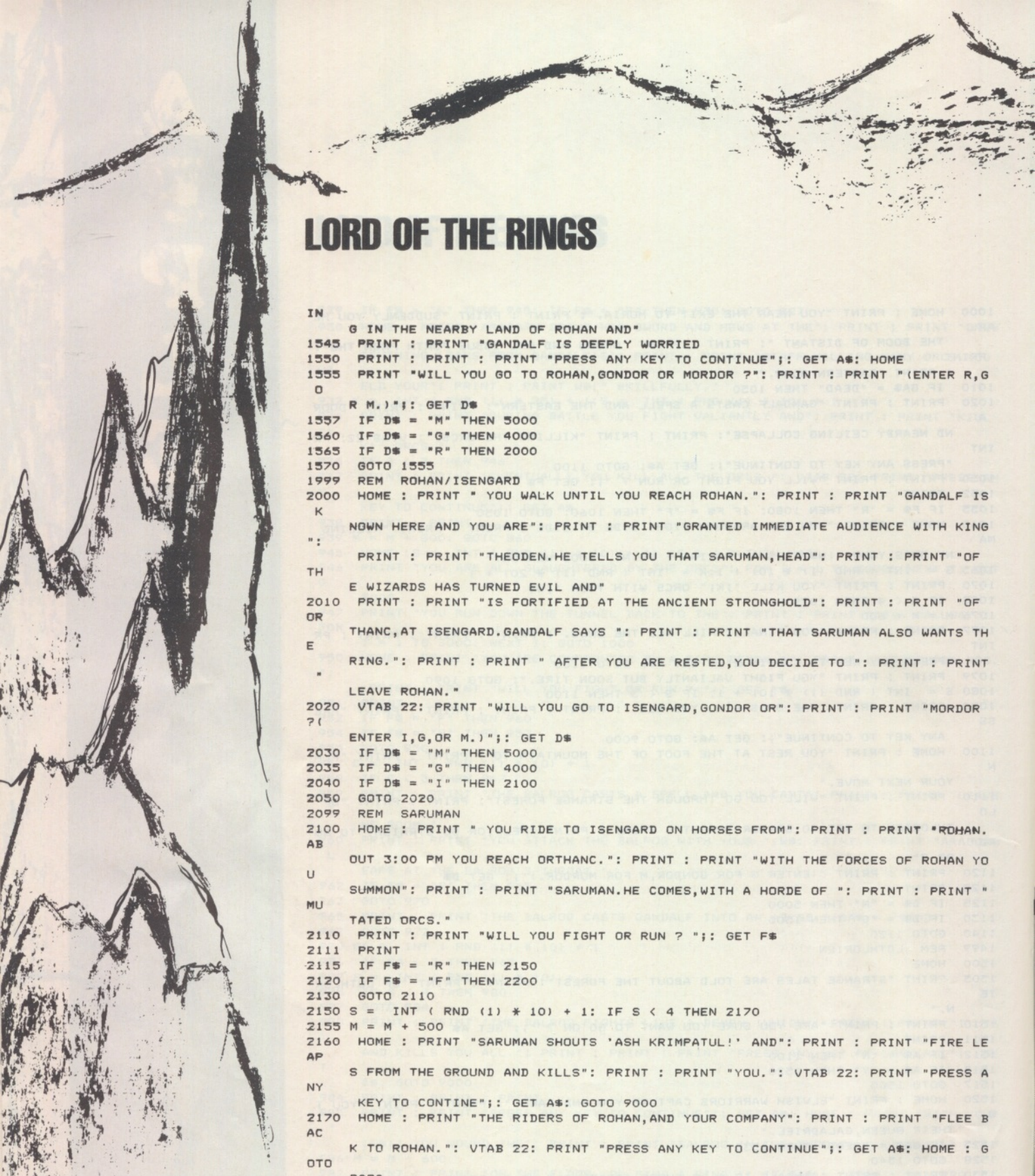

LORD OF THE RINGS

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IN
     G IN THE NEARBY LAND OF ROHAN AND"
1545  PRINT : PRINT "GANDALF IS DEEPLY WORRIED
1550  PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: HOME
1555  PRINT "WILL YOU GO TO ROHAN,GONDOR OR MORDOR ?": PRINT : PRINT "(ENTER R,G
 O
     R M.)";: GET D$
1557  IF D$ = "M" THEN 5000
1560  IF D$ = "G" THEN 4000
1565  IF D$ = "R" THEN 2000
1570  GOTO 1555
1999  REM  ROHAN/ISENGARD
2000  HOME : PRINT " YOU WALK UNTIL YOU REACH ROHAN.": PRINT : PRINT "GANDALF IS
 K
     NOWN HERE AND YOU ARE": PRINT : PRINT "GRANTED IMMEDIATE AUDIENCE WITH KING
":
      PRINT : PRINT "THEODEN.HE TELLS YOU THAT SARUMAN,HEAD": PRINT : PRINT "OF
TH
     E WIZARDS HAS TURNED EVIL AND"
2010  PRINT : PRINT "IS FORTIFIED AT THE ANCIENT STRONGHOLD": PRINT : PRINT "OF
OR
     THANC,AT ISENGARD.GANDALF SAYS ": PRINT : PRINT "THAT SARUMAN ALSO WANTS TH
E
     RING.": PRINT : PRINT " AFTER YOU ARE RESTED,YOU DECIDE TO ": PRINT : PRINT
 "
     LEAVE ROHAN."
2020  VTAB 22: PRINT "WILL YOU GO TO ISENGARD,GONDOR OR": PRINT : PRINT "MORDOR
?(
     ENTER I,G,OR M.)";: GET D$
2030  IF D$ = "M" THEN 5000
2035  IF D$ = "G" THEN 4000
2040  IF D$ = "I" THEN 2100
2050  GOTO 2020
2099  REM  SARUMAN
2100  HOME : PRINT " YOU RIDE TO ISENGARD ON HORSES FROM": PRINT : PRINT "ROHAN.
AB
     OUT 3:00 PM YOU REACH ORTHANC.": PRINT : PRINT "WITH THE FORCES OF ROHAN YO
U
     SUMMON": PRINT : PRINT "SARUMAN.HE COMES,WITH A HORDE OF ": PRINT : PRINT "
MU
     TATED ORCS."
2110  PRINT : PRINT "WILL YOU FIGHT OR RUN ? ";: GET F$
2111  PRINT
2115  IF F$ = "R" THEN 2150
2120  IF F$ = "F" THEN 2200
2130  GOTO 2110
2150 S =  INT ( RND (1) * 10) + 1: IF S < 4 THEN 2170
2155 M = M + 500
2160  HOME : PRINT "SARUMAN SHOUTS 'ASH KRIMPATUL!' AND": PRINT : PRINT "FIRE LE
AP
     S FROM THE GROUND AND KILLS": PRINT : PRINT "YOU.": VTAB 22: PRINT "PRESS A
NY
      KEY TO CONTINE";: GET A$: GOTO 9000
2170  HOME : PRINT "THE RIDERS OF ROHAN,AND YOUR COMPANY": PRINT : PRINT "FLEE B
AC
     K TO ROHAN.": VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: HOME : G
OTO
     2020
2200  HOME : PRINT "YOU LEAD THE FORCES OF ROHAN INTO": PRINT : PRINT "BATTLE.YO
U
     KILL "; INT ( RND (1) * 15) + 1;" ORCS WITH YOUR": PRINT : PRINT W$;"."
2210 S =  INT ( RND (1) * 10) + 1: IF S < 6 THEN 2250
2220  PRINT : PRINT "SARUMANS ORCS KILL ALL OF YOU.": VTAB 22: PRINT "PRESS ANY
KE
     Y TO CONTINUE";: GET A$: GOTO 9000
2250  PRINT : PRINT "GANDALF FIGHTS SARUMAN AND DESTROYS HIM.": PRINT : PRINT "T
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HE
      SURVIVING ORCS IMMEDIATELY ": PRINT : PRINT "SURRENDER."
2252 M = M + 1000
2255  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: HOME
2260  PRINT " YOU ENTER SARUMAN'S ROOM IN SEARCH OF": PRINT : PRINT "ANYTHING US
EF
     UL.ON THE DESK YOU SEE ": PRINT : PRINT "A GLASS SPHERE."
2265  PRINT : PRINT "WILL YOU GET IT ? ";: GET A$
2267  PRINT
2270  IF A$ = "Y" THEN 2300
2280  IF A$ = "N" THEN 2400
2290  GOTO 2265
2300  HOME : PRINT "YOU GET THE SPHERE AND SHOW IT TO ": PRINT : PRINT "GANDALF.
HE
      SAYS IT IS A SEEING STONE,A": PRINT : PRINT "PALANTIR,OR BASICALLY A CRYST
AL
      BALL."
2305 P$ = "SPHERE"
2310  PRINT : PRINT "WILL YOU USE IT ? ";: GET A$
2315  PRINT
2320  IF A$ = "Y" THEN 2350
2325  IF A$ = "N" THEN 2400
2330  GOTO 2310
2350 P =  INT ( RND (1) * 10) + 1: IF P < 4 THEN 2370
2352 M = M + 200
2355  HOME : PRINT "YOU GAZE INTO THE PALANTIR AND SEE": PRINT : PRINT "A GIANT
SP
     IDER IN A SMALL TUNNEL.THIS": PRINT : PRINT "VISION FADES AND IS REPLACED B
Y
     THE": PRINT : PRINT "CRACK OF DOOM.BEFORE IT IS SAURON.HE IS": PRINT : PRIN
T
     "WAITING FOR YOU."
2360  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 2400
2370  HOME : PRINT "YOU LOOK INTO THE PALANTIR AND SEE": PRINT : PRINT "SAURON.H
E
     SEES YOU AND SUDDENLY A LIGHT": PRINT : PRINT "STABS OUT OF THE PALANTIR AN
D
     KILLS YOU": VTAB 22
2375  PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 9000
2400  HOME : PRINT "YOU RIDE BACK TO ROHAN,THINKING OF THE": PRINT : PRINT "DAY'
S
     EVENTS.YOU FINALLY DECIDE TO ": PRINT : PRINT "LEAVE ROHAN."
2410  VTAB 22: PRINT "WILL YOU GO TO GONDOR OR MORDOR ? ";: GET D$
2420  IF D$ = "M" THEN 5000
2425  IF D$ = "G" THEN 4000
2440  GOTO 2410
3999  REM GONDOR
4000  HOME
4010  HOME : PRINT "YOU ARRIVE AT GONDOR IN THE EVENING.YOU": PRINT : PRINT "ARE
 G
     RANTED AN AUDIENCE WITH THE": PRINT : PRINT "STEWARD OF GONDOR.HERE ARAGORN
 P
     UTS ": PRINT : PRINT "FORTH HIS CLAIM TO THE THRONE OF ": PRINT : PRINT "GO
ND
     OR."
4020 B =  INT ( RND (1) * 10) + 1: IF B < 5 THEN 4050
4025 M = M + 500
4030  PRINT : PRINT : PRINT "HE IS DISBELIEVED AND YOU ARE BANISHED": PRINT : PR
INT
     "FROM THE KINGDOM.YOU DECIDE TO GO TO": PRINT : PRINT "MORDOR WITHOUT THE A
ID
      OF GONDOR."
4040  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 5000
4050  PRINT : PRINT "THE STEWARD KNEELS AND PLEDGES HIS": PRINT : PRINT "ALLEGIE
NC
     E TO ARAGORN.": PRINT : PRINT " DAYS LATER.GONDOR IS BESEIGED.THE": PRINT :
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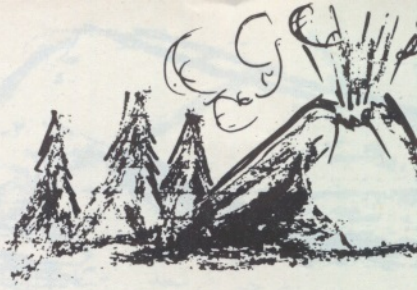

LORD OF THE RINGS

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 PRINT
     "FORCES OF SAURON HAVE GATHERED.THERE": PRINT : PRINT "ARE MILLIONS OF ORCS
,S
     OME WARGS (GIANT": PRINT : PRINT "WOLVES),AND SOME DRAGONS.": PRINT : PRINT

4060  PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
4065  HOME : PRINT "WILL YOU FIGHT OR SURRENDER ? ";: GET F$
4070  IF F$ = "F" THEN 4100
4080  IF F$ = "S" THEN 6050
4090  GOTO 4065
4100  HOME : PRINT "YOU HELP DEFEND GONDOR.A DRAGON SWOOPS": PRINT : PRINT "LOW
AN
     D YOU KILL IT WITH YOUR ";W$;".": PRINT : PRINT "YOU KILL MANY WARGS AND OR
CS
      BUT YOU": PRINT : PRINT "ARE TIRING."
4105 M = M + 700
4110 S =  INT ( RND (1) * 10) + 1: IF S < 7 THEN 4150
4120  PRINT : PRINT "GONDOR IS SOON LAID IN RUBBLE BY THE": PRINT : PRINT "INVAD
ER
     S.A WARG LEAPS AT YOUR THROAT.": PRINT : PRINT "YOU ARE DEAD."
4130  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
4140  GOTO 9000
4150  PRINT : PRINT "YOU CAPTURE THE LEADER OF THE INVASION.": PRINT : PRINT "IT
 I
     S A HUMAN WARRIOR.YOU TELL HIM TO": PRINT : PRINT "MAKE HIS FORCES RETREAT
AN
     D THEY DO.": PRINT : PRINT "YOU'VE WON THE BATTLE!!"
4160  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: HOME
4165  IF P$ = "SPHERE" THEN 4170
4166  GOTO 4200
4170  PRINT "BACK IN THE THRONE ROOM YOU DECIDE TO": PRINT : PRINT "USE THE PALA
NT
     IR."
4172 M = M + 200
4175 P =  INT ( RND (1) * 10) + 1: IF P < 7 THEN 4180
4177  PRINT : PRINT "YOU SEE WHOLE ARMIES STILL LEFT IN ": PRINT : PRINT "MORDOR
."

4178  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE": GET A$
4179  GOTO 4200
4180  PRINT : PRINT "YOU SEE SAURON.HE SEES YOU AND MUTTERS": PRINT : PRINT "SOM
ET
     HING.IMMEDIATELY YOU ARE DEAD."
4190  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 9000
4200  HOME : PRINT "YOU DECIDE THAT A SMALL PARTY IS ALL": PRINT : PRINT "THAT C
AN
      BE USED TO DESTROY THE RING.": PRINT : PRINT "THE ORIGINAL PARTY SETS OUT
TO
      MORDOR.": PRINT : PRINT "THE STEWARD RULES GONDOR AGAIN."
4210  VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
4999  REM  MORDOR
5000  HOME : PRINT " YOU HAVE ARRIVED AT THE GATES OF : PRINT : PRINT "MORDOR.WI
LL
      YOU GET IN THROUGH THE ": PRINT : PRINT "GATES OR THROUGH A TUNNEL AT THE"
: PRINT
     : PRINT "WESTERN EDGE OF MORDOR ?"
5010  PRINT : PRINT "(ENTER G FOR GATE,T FOR TUNNEL.)";: GET D$
5011  PRINT
5015  IF D$ = "G" THEN 5050
5020  IF D$ = "T" THEN 5200
5030  GOTO 5010
5050  IF GA$ = "DEAD" THEN 5060
5055  GOTO 5070
5060  PRINT : PRINT "HOW CAN WE GET THROUGH LOCKED GATES": PRINT : PRINT "WITHOU
T
     GANDALF ?!": FOR I = 1 TO 5000: NEXT I: GOTO 5010.
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5070  PRINT : PRINT "GANDALF CASTS A SPELL AND THE GATES": PRINT : PRINT "ARE DE
MO
     LISHED."
5075 M = M + 2000
5080 N =  INT ( RND (1) * 10) + 1: IF N < 2 THEN 5100
5090  PRINT : PRINT "THROUGH THE GATES RIDES THE NAZGUL.THE": PRINT : PRINT "NIN
E
     MEN WITH RINGS OF POWER.THEIR": PRINT : PRINT "CAPTAIN SCREAMS AND CHARGES
AT
      THE ": PRINT : PRINT "COMPANY.THE OTHER EIGHT FOLLOW AND THEY": PRINT : PR
INT
     "SLAY THE WHOLE PARTY.": PRINT : PRINT : PRINT : PRINT : PRINT "PRESS ANY K
EY
      TO CONTINUE";
5095  GET A$: GOTO 9000
5100  PRINT : PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 6
00
0
5200  HOME : PRINT "YOU TRAVEL UP A DISUSED TUNNEL LEADING": PRINT : PRINT "TO T
HE
      CRACK OF DOOM.SUDDENLY AN ": PRINT : PRINT "ENORMOUS SPIDER LEAPS OUT OF T
HE
      DARK": PRINT : PRINT "AT YOU.LEGEND SAYS THE SPIDER IS CALLED": PRINT : PR
INT
     "'SHELOB' AND IS EXTREMELY DANGEROUS."
5210  PRINT : PRINT "WILL YOU FIGHT OR RUN ? ";: GET F$
5211  PRINT
5215  IF F$ = "F" THEN 5270
5220  IF F$ = "R" THEN 5240
5230  GOTO 5210
5240  HOME :S =  INT ( RND (1) * 10) + 1: IF S < 3 THEN 5260
5250  PRINT "THE SPIDER SHOOTS A HUGE WEB AT THE ": PRINT : PRINT "PARTY AND YOU
 A
     RE CAPTURED TO BE EATEN": PRINT : PRINT "BY SHELOB.": VTAB 22: PRINT "PRESS
 A
     NY KEY TO CONTINUE";: GET A$: GOTO 9000
5260  PRINT : PRINT "YOU RUN DOWN THE TUNNEL,TO THE EXIT.": VTAB 22: PRINT "PRES
S
     ANY KEY TO CONTINUE";: GET A$: GOTO 6000
5270  HOME : PRINT "ARAGORN AND YOU ATTACK SHELOB.": PRINT
5272 M = M + 500
5275 C =  INT ( RND (1) * 10) + 1:S =  INT ( RND (1) * 10) + 1
5277  IF C < 3 THEN 5290
5280  GOTO 5300
5290  PRINT "GANDALF SHOUTS 'ANNON EDHELLEN' AND ": PRINT : PRINT "SHELOB SHRIVE
LS
      AND DIES.": VTAB 22: PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 6000
5300  PRINT : PRINT "YOUR ";W$;" DOES TREMENDOUS DAMAGE TO": PRINT : PRINT "SHEL
OB
     'S EYES.FINALLY YOU SHATTER IT'S": PRINT : PRINT "HEAD.": VTAB 22: PRINT "P
RE
     SS ANY KEY TO CONTINUE";: GET A$
6000  HOME : PRINT "ONCE IN MORDOR,YOU QUICKLY FIND THE": PRINT : PRINT "CRACK O
F
     DOOM.STANDING BEFORE IT IS": PRINT : PRINT "SAURON,HIMSELF.THE PARTY IS PAR
AL
     IZED": PRINT : PRINT "BY FEAR."
6010  PRINT : PRINT "WILL YOU FIGHT OR SURRENDER TO SAURON ?";: GET F$
6011  PRINT
6015  IF F$ = "F" THEN 6100
6020  IF F$ = "S" THEN 6050
6025  GOTO 6010
6050  HOME : PRINT "YOUR PARTY IS TAKEN PRISONER AND THE": PRINT : PRINT "RULING
 R
     ING IS CONFISCATED."
6060  IF I$ = "RING" THEN 6065
```

LORD OF THE RINGS

```
6062  GOTO 6070
6065  PRINT : PRINT "THE DWARF RING FROM MORIA IS ALSO": PRINT : PRINT "TAKEN."
6070  PRINT : PRINT "BEFORE YOU ARE EXECUTED YOU ARE FORCED": PRINT : PRINT "TO
SE
     E SAURON ARISE TO CONQUER": PRINT : PRINT "MIDDLE-EARTH.": PRINT : PRINT :
PRINT
     "PRESS ANY KEY TO CONTINUE":: GET A$: GOTO 9000
6100  HOME : IF I$ = "RING" THEN 6150
6110 M = M + 5000
6120  GOTO 6200
6150  PRINT "YOU REMEMBER THE RING YOU FOUND IN ": PRINT : PRINT "MORIA.YOU SHOU
T
     IN A STRANGE TONGUE": PRINT : PRINT "'NAUR AN EDRAITH AMMEN!'"
6160 I =  INT ( RND (1) * 10) + 1
6165  IF I < 5 THEN 6169
6167  PRINT : PRINT "SAURON LAUGHS AT YOU AND BLASTS YOU ": PRINT : PRINT "WITH
LI
     GHTNING BOLTS.": PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE":: GET A$
: GOTO
     9000
6169 M = M + 1000
6170  PRINT : PRINT "AS YOU SAY THIS SAURON WITHERS AND ": PRINT : PRINT "DIES.Y
OU
      ARE FREE TO DESTROY THE RING.": PRINT : PRINT : PRINT "PRESS ANY KEY TO CO
NT
     INUE":: GET A$: GOTO 7000
6200  PRINT "OVERCOMING YOUR FEAR,YOU AND ARAGORN": PRINT : PRINT "ATTACK SAURON
.H
     E RETALIATES WITH BOLTS": PRINT : PRINT "OF LIGHTNING."
6210  IF GA$ = "DEAD" THEN 6230
6220  PRINT : PRINT "GANDALF TRIES MANY SPELLS TO DESTROY": PRINT : PRINT "SAURO
N,
     BUT NONE SEEM TO WORK."
6230 S =  INT ( RND (1) * 15) + 1: IF GA$ = "DEAD" THEN 6240
6235  IF S < 5 THEN 6259
6236 M = M + 1000
6237  GOTO 6250
6240  IF S < 3 THEN 6259
6241 M = M + 2000
6242  GOTO 6250
6250  GOTO 6167
6259  PRINT
6260  IF GA$ = "DEAD" THEN 6270
6265  PRINT "THE COMBINED ATTACK OF ARAGORN,YOU AND ": PRINT : PRINT "GANDALF IS
T
     OO MUCH FOR SAURON.HE IS": PRINT : PRINT "DEAD.YOU CAN NOW DESTROY THE RING
."
     : GOTO 6300
```

```
6266  RETURN
6270  PRINT "TOGETHER YOU AND ARAGORN DEFEAT THE ": PRINT : PRINT "DARK LORD.WEL
L
     DONE.YOU CAN NOW DESTROY": PRINT : PRINT "THE RING."
6300  PRINT : PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 7
00
     0
7000  HOME : PRINT "FRODO GIVES YOU THE RING TO DESTROY"
7010  PRINT : PRINT "WILL YOU DO IT ? ";: GET O$
7020  IF O$ = 'N' THEN 7099
7025 O =  INT ( RND (1) * 10) + 1: IF O < 3 THEN 7090
7027 M = M + 1000
7030  PRINT : PRINT "YOU GAZE INTO THE CRACK OF DOOM AND SEE": PRINT : PRINT "GR
EE
     N FLAMES AND LAVA WITHIN.YOU TOSS": PRINT : PRINT "THE RULING RING IN AND W
AT
     CH IT MELT."
7040  IF I$ = "RING" THEN 7050
7045  GOTO 7300
7050  PRINT : PRINT "AS THE RULING RING MELTS,THE DWARF-RING": PRINT : PRINT "FR
OM
     MORIA GLOWS AND DISAPPEARS.": GOTO 7500
7090  HOME : PRINT "YOU FIND YOURSELF UNABLE TO PART WITH": PRINT : PRINT "THE R
IN
     G."
7095 E$ = "Y"
7099  PRINT
7100  PRINT : PRINT "YOU TAKE OVER THE FORCES OF MORDOR AND": PRINT : PRINT "PRO
CL
     AIM YOURSELF THE NEW DARK LORD": PRINT : PRINT : PRINT "HAIL ";N$;",LORD OF
 E
     VIL.": PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE";: GET A$: GOTO 760
0
7300  PRINT
7500  PRINT : PRINT : PRINT "PRESS ANY KEY TO CONTINUE";: GET A$
7510  HOME : PRINT "WELL DONE,";N$;"."
7520  PRINT : PRINT : PRINT "YOU ARE A CREDIT TO ";RS$;" EVERYWHERE."
7530  PRINT : PRINT : PRINT "AS A REWARD,ARAGORN (WHO IS NOW KING OF": PRINT : P
RINT
     "GONDOR) GIVES YOU ";M;" GOLD": PRINT : PRINT "PIECES FOR YOUR CONTINUED BR
AV
     ERY."
7600  PRINT : PRINT : PRINT : PRINT : PRINT "DO YOU WANT TO PLAY AGAIN ? ";: GET
 A
     $
7610  IF A$ = "Y" THEN 5
7620  HOME : SPEED= 255: END
```

RAIDERS

The object is to enter a maze of caves, acquire the golden idol and return.
Along the way you may pick up objects which will help you. For example the rope must be used to swing across the crevices and the shield is protection from the darts. Gold is used to buy maps. Torches and elixers fend off monsters.

On the map black indicates a wall and cannot be passed.

When darts are being fired at you, defend yourself using Paddle (O) to move the shield. You must knock out 4 of the 7 darts. When in battle with a monster use the key 'p' to bash him and 's' to shield...

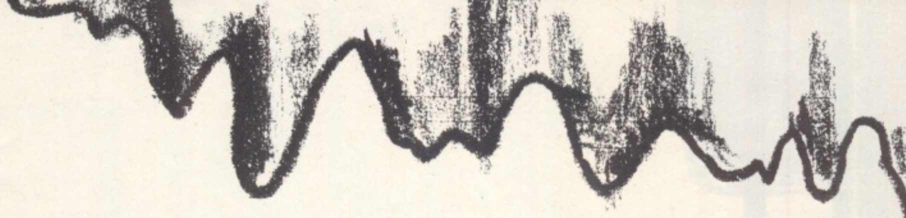
Mike Bantick
Mount Beauty Vic

```
10  DIM D(40,40)

100  DIM C$(13)

130 X = 20:Y = 38

160  HOME : INVERSE : PRINT "                                        ": VTAB 5:
PRINT "
     "

170 LF = 10

190  FOR I = 2 TO 4: VTAB I: HTAB 1: PRINT " ": VTAB I: HTAB 39: PRINT " "

220  NEXT

250  NORMAL : VTAB 3: HTAB 2: PRINT "              EXPLORERS              "

310  VTAB 7: PRINT " THIS WILL TAKE APPROX'LY 55 SEC....."

340  VTAB 10: PRINT "         CREATING           MAZE

370 V = 20:S = 38

380  IF PS = 1 THEN V = 20:S = 1:X = 20:Y = 1

400 D(V,S) = 1:TY =  INT (3 *  RND (1)) + 1: IF TY = 1 AND PS = 0 THEN S = S -
1: GOTO 490

420  IF PS = 1 AND TY = 1 THEN S = S + 1

430  IF TY = 2 THEN V = V - 1

460  IF TY = 3 THEN V = V + 1

490  IF S = 0 THEN 610

500  IF S = 39 THEN 610

520  IF V = 0 THEN V = 1

550  IF V = 39 THEN V = 38

580  GOTO 400

610  FOR I = 1 TO 400:V =  INT (38 *  RND (1)) + 1:S =  INT (38 *  RND (1)) + 1
:D(V,S) = 1

640  VTAB 15: PRINT  TAB( I / 2)"."

670  NEXT

700  REM  PLACE OBJECTS.....

730  FOR I = 1 TO 100

760 D =  INT (38 *  RND (1)) + 1:S =  INT (38 *  RND (1)) + 1: IF D(D,S) = 2 TH
EN 760

790 D(D,S) = 2: NEXT

820  FOR I = 1 TO 70

850 D =  INT (38 *  RND (1)) + 1:S =  INT (38 *  RND (1)) + 1: IF D(D,S) > 1 TH
EN 850

880 D(D,S) = 3: NEXT

910  FOR I = 1 TO 50

940 D =  INT (38 *  RND (1)) + 1:S =  INT (38 *  RND (1)) + 1: IF D(D,S) > 1 TH
EN 940

970 D(D,S) = 4: NEXT
```

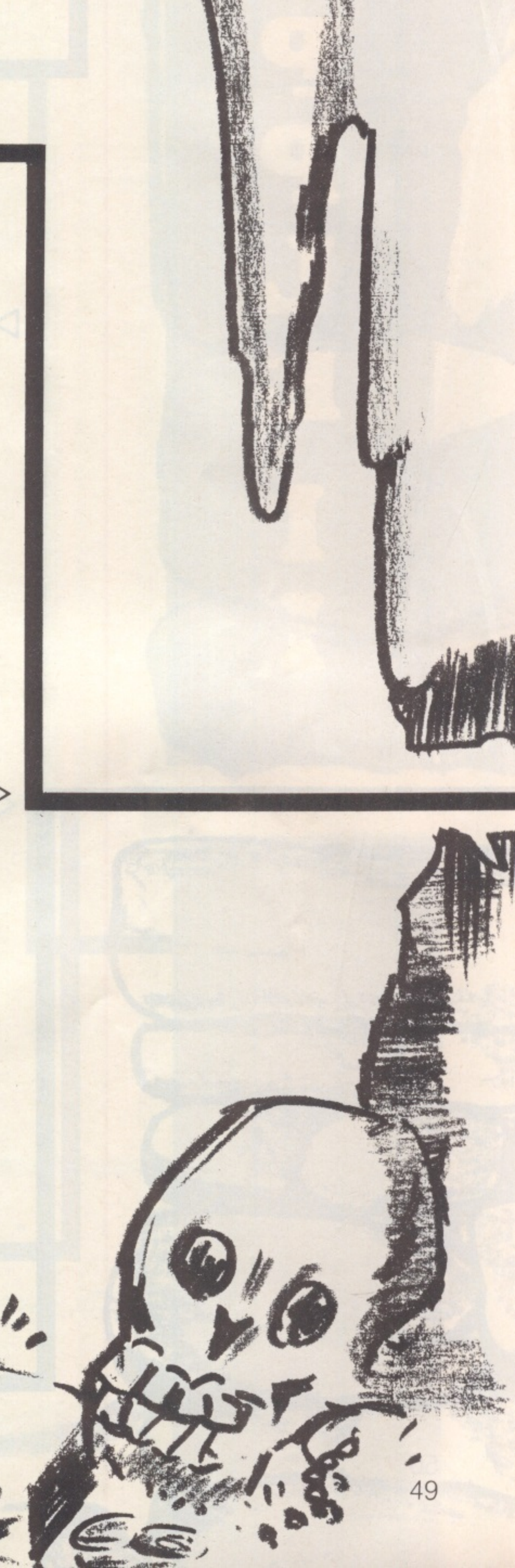
```
1000  FOR I = 1 TO 40

1030 D =  INT (38 *  RND (1)) + 1:S =  INT (38 *  RND (1)) + 1: IF D(D,S) > 1 T
HEN 1030

1052 D(I,U) = 0

1060 D(D,S) = 5: NEXT

1090  FOR I = 1 TO 10

1120 D =  INT (38 *  RND (1)) + 1:S =  INT (38 *  RND (1)) + 1: IF D(D,S) > 1 T
HEN 1120

1150 D(D,S) = 6: NEXT

1180  FOR I = 1 TO 3

1210 D =  INT (38 *  RND (1)) + 1:S =  INT (38 *  RND (1)) + 1: IF D(D,S) > 1 T
HEN 1210

1240 D(D,S) = 7: NEXT

1270  REM  52 SECONDS

1300  FOR I = 1 TO 200:D =  INT (38 *  RND (1)) + 1:S =  INT (38 *  RND (1)) +
1:F =  INT (6 *  RND (1)) + 8

1330 D(D,S) = F: NEXT

1360  FOR I = 2 TO 13: READ C$(I): NEXT

1390  DATA  GOLD,SHIELD,TORCH,ROPE,ELIXER,SAND,TRADER,DARTS,TRONS,WUP,LOPTROP,D
REVICE

1420  HOME : ON D(X,Y) GOTO 1450,1930,1930,1930,1930,1930,1930,2710,7000,3670,3
670,3670,5440

1430  RESTORE

1450  PRINT : PRINT : PRINT "YOU CAN MOVE .....          LIVES ";LF

1460  IF LF <  = 0 THEN  END

1480  NORMAL

1500 PF = 0

1510  IF D(X + 1,Y) > 0 THEN  PRINT : PRINT "EAST":PF = PF + 1

1540  IF D(X - 1,Y) > 0 THEN  PRINT : PRINT "WEST":PF = PF + 1

1570  IF D(X,Y - 1) > 0 THEN  PRINT : PRINT "NORTH":PF = PF + 1

1600  IF D(X,Y + 1) > 0 THEN  PRINT : PRINT "SOUTH":PF = PF + 1

1610  IF PS = 1 AND PF = 1 AND SP = 1 THEN  PRINT : PRINT "OH ! NO! A DEAD END
 /////SQUISH///////":LF = LF -  INT (5 *  RND
    (1)) + 1:SP = 0

1630  PRINT : PRINT : PRINT "WHICH (N,E,W,S)  ";: INPUT A$: IF A$ <  > "N" AND A
$ <  > "S" AND A$ <  > "E" AND A$ <  > "W" THEN
     PRINT : PRINT "YOU MUST MOVE": GOTO 1450

1660  IF A$ = "N" AND D(X,Y - 1) = 0 THEN  PRINT : PRINT "OUCH": GOTO 1450

1690  IF A$ = "S" AND D(X,Y + 1) = 0 THEN  PRINT : PRINT "OUCH": GOTO 1450
```

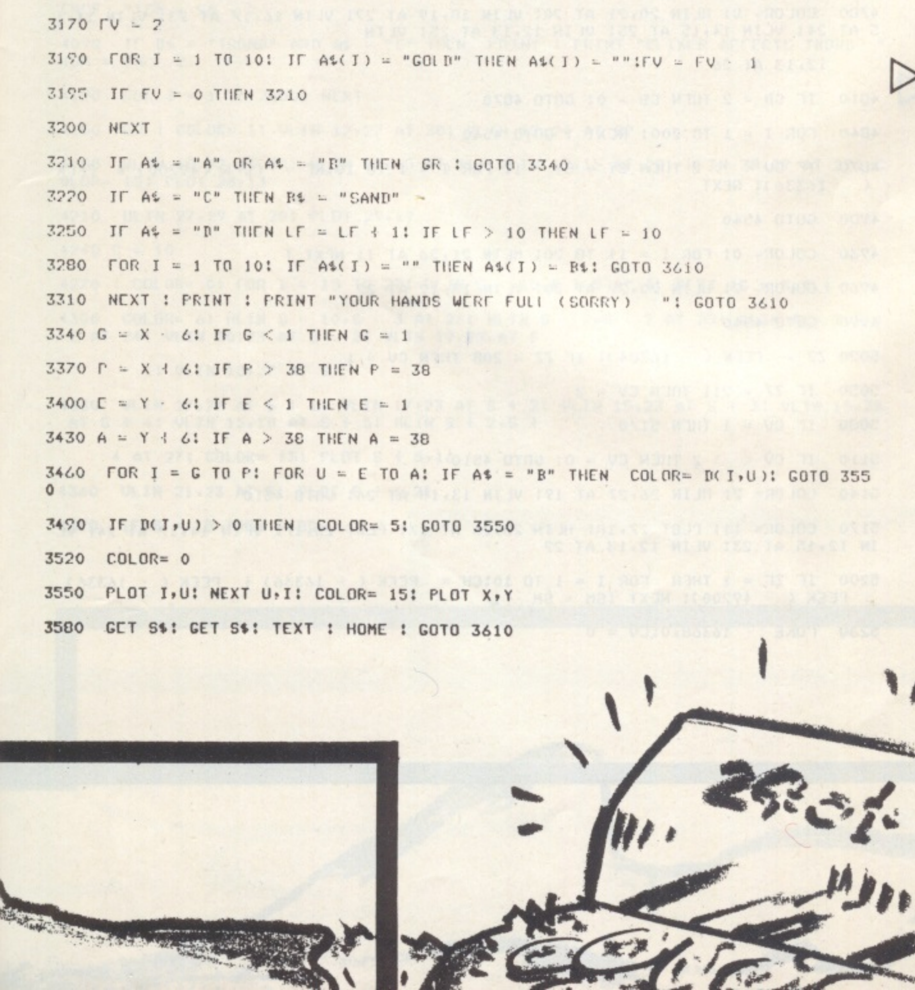
RAIDERS

```
1720  IF A$ = "E" AND D(X + 1,Y) = 0 THEN  PRINT : PRINT "OUCH": GOTO 1450

1750  IF A$ = "W" AND D(X - 1,Y) = 0 THEN  PRINT : PRINT "OUCH": GOTO 1450

1780  IF A$ = "N" THEN Y = Y - 1: IF Y = 1 THEN 10000

1810  IF A$ = "E" THEN X = X + 1

1840  IF A$ = "W" THEN X = X - 1

1870  IF A$ = "S" THEN Y = Y + 1: IF PS = 1 AND Y = 38 THEN 12000

1900  GOTO 1420

1930  HOME : PRINT : PRINT "THERE IS A ";C$(D(X,Y));". DO YOU

1960  PRINT : PRINT "PICK IT UP (P) OR LEAVE IT (L) ";: INPUT A$: IF A$ < > "L
" AND A$ < > "P" THEN 1930

1990  IF A$ = "L" THEN  PRINT : PRINT "OK !!    ";C$(D(X,Y));" LEFT  ": FOR I =
 1 TO 1000: NEXT : GOTO 1450

2020 D$ = C$(D(X,Y))

2050  PRINT : PRINT "OK !!  ";D$;" PICKED UP

2080  FOR I = 1 TO 10: IF A$(I) = "" THEN A$(I) = D$: GOTO 2140

2110  NEXT I: PRINT : PRINT "YOUR HANDS ARE FULL": GOTO 1960

2140 D(X,Y) = 1: IF D$ = "GOLD" THEN GO = GO + 100

2170 WE = 0:GO = 0: FOR I = 1 TO 10: IF A$(I) = "" THEN 2270

2180 D$ = A$(I): IF D$ = "GOLD" OR D$ = "SHIELD" OR D$ = "SAND" THEN WE = WE +
100

2185  IF D$ = "GOLD" THEN GO = GO + 100

2190  IF D$ = "TORCH" THEN WE = WE + 50

2200  IF D$ = "ROPE" THEN WE = WE + 30

2210  IF D$ = "ELIXER" THEN WE = WE + 10

2270  NEXT

2290  FOR I = 1 TO 1500: NEXT : HOME : PRINT "            INVENTORY.....

2320  PRINT : PRINT

2350  FOR I = 1 TO 10: IF A$(I) = "" THEN 2410

2380  PRINT : PRINT A$(I)

2410  NEXT

2440  IF WE > 500 THEN 2500

2470  FOR I = 1 TO 2000: NEXT : GOTO 1420

2500  PRINT : PRINT "TO HEAVY..WHICH DO YOU WANT TO DROP ";: INPUT A$: FOR I =
1 TO 10: IF A$ < > A$(I) THEN  NEXT I: PRINT

     : PRINT "YOU DONT HAVE ";A$: GOTO 2290

2530  IF A$ = "GOLD" THEN GO = GO - 100

2660 A$(I) = ""

2680  GOTO 2170
```



```
2710  HOME : PRINT "****************************************"
2740  PRINT "*                                      *": PRINT "*                TRAD
ING POST               *": PRINT "*
                                       *"
2770  PRINT "****************************************"
2800  PRINT : PRINT "YOUR TOTAL GOLD =";GO
2830  IF GO = 0 THEN  PRINT : PRINT "YOU POOR BEGGER ........": GOTO 3610
2860  PRINT : PRINT "============ITEMS FOR SALE============"
2890  PRINT : PRINT
2920  PRINT "(A)  MAP<1> ··········100 G/P
2950  PRINT : PRINT "(B)  MAP<2> ··········200 G/P
2980  PRINT : PRINT "(C)  SACK OF SAND ···200 G/P
3010  PRINT : PRINT "(D)  LIFE ···········200 G/P
3040  PRINT : PRINT "(E)  NOTHING ·········=== G/P
3070  PRINT : PRINT : PRINT "WHAT IS THE ONE THING YOU WANT ";: INPUT A$
3100  IF A$ = "E" THEN 3610
3130  IF A$ = "A" THEN GO = GO - 100:FV = 1: GOTO 3190
3160 GO = GO - 200: IF GO < 0 THEN GO = GO + 200: PRINT "NICE TRY": FOR I = 1 T
0 700: NEXT : GOTO 2710
3170 FV = 2
3190  FOR I = 1 TO 10: IF A$(I) = "GOLD" THEN A$(I) = "":FV = FV - 1
3195  IF FV = 0 THEN 3210
3200  NEXT
3210  IF A$ = "A" OR A$ = "B" THEN  GR : GOTO 3340
3220  IF A$ = "C" THEN B$ = "SAND"
3250  IF A$ = "D" THEN LF = LF + 1: IF LF > 10 THEN LF = 10
3280  FOR I = 1 TO 10: IF A$(I) = "" THEN A$(I) = B$: GOTO 3610
3310  NEXT : PRINT : PRINT "YOUR HANDS WERE FULL (SORRY)   ": GOTO 3610
3340 G = X - 6: IF G < 1 THEN G = 1
3370 P = X + 6: IF P > 38 THEN P = 38
3400 E = Y - 6: IF E < 1 THEN E = 1
3430 A = Y + 6: IF A > 38 THEN A = 38
3460  FOR I = G TO P: FOR U = E TO A: IF A$ = "B" THEN  COLOR= D(I,U): GOTO 355
0
3490  IF D(I,U) > 0 THEN  COLOR= 5: GOTO 3550
3520  COLOR= 0
3550  PLOT I,U: NEXT U,I: COLOR= 15: PLOT X,Y
3580  GET S$: GET S$: TEXT : HOME : GOTO 3610
```





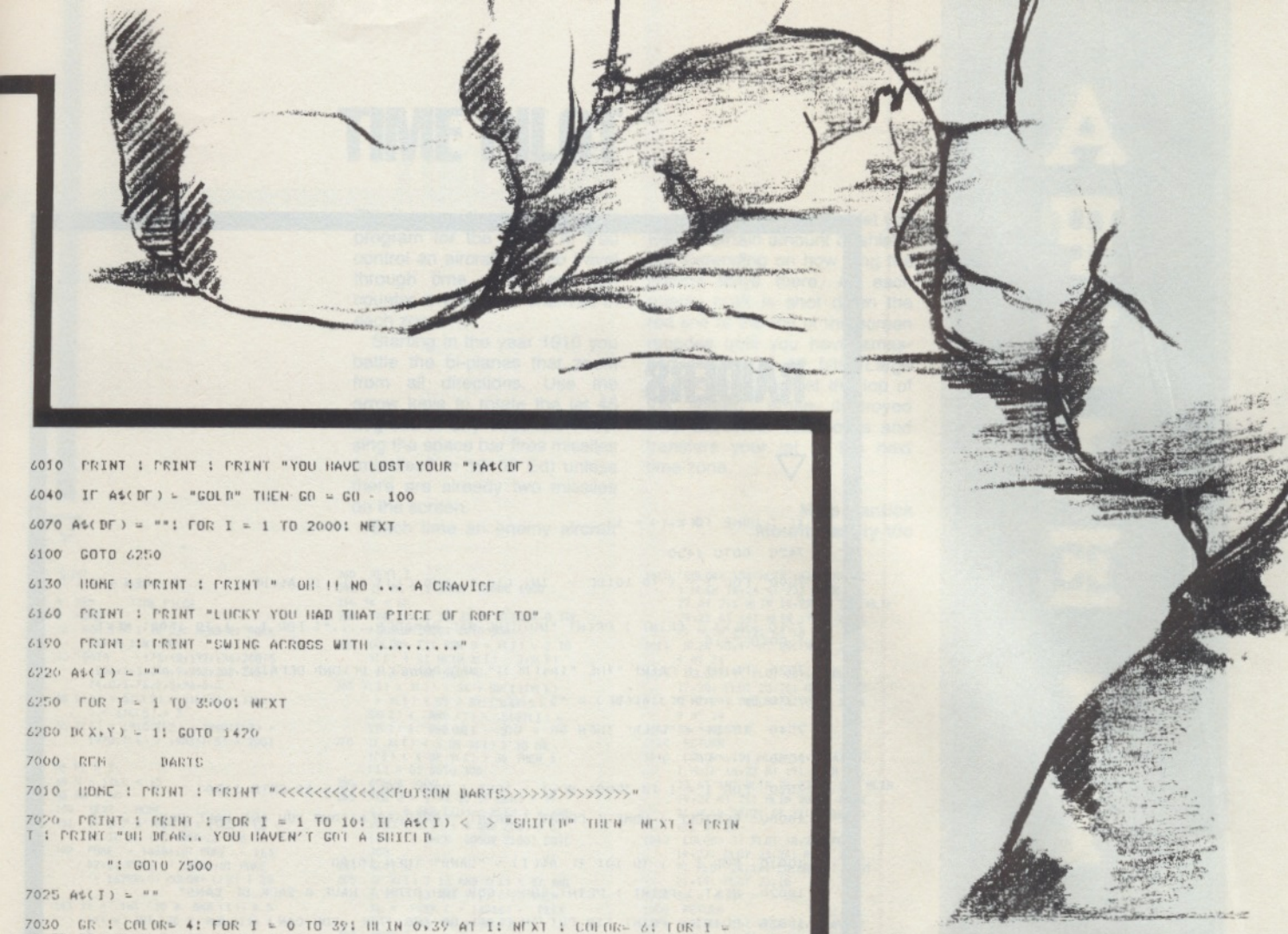
RAIDERS

```
4420  FOR I = 1 TO 200: NEXT

4450  GOTO 4270

4480  VTAB 21: PRINT "                    ENGAGE...                    "

4510 ZF =  INT (3 *  RND (1)) + 1: ON ZF GOTO 4630,4930,5020

4540  IF SM < 1 THEN  HOME : PRINT "     YOU HAVE DEFEATED THE ";D$: FOR I = 1
TO 2000: NEXT :D(X,Y) = 1: TEXT : HOME : GOTO

     1420

4570  IF SY < 1 THEN  HOME : PRINT "   YOU HAVE BEEN DEFEATED 'BAD LUCK!'":LF =
 LF   1: GOTO 5290

4600  GOTO 5020

4630  COLOR= 0: FOR I = 11 TO 20: HLIN 21,26 AT I: NEXT I

4660 SD = SD + 1

4690  IF SD = 2 THEN 4780

4720  COLOR= 8: HLIN 20,21 AT 20: VLIN 15,19 AT 21: VLIN 13,15 AT 22: VLIN 11,1
2 AT 23: VLIN 11,12 AT 24

4750  GOTO 4810

4780  COLOR= 8: HLIN 20,21 AT 20: VLIN 18,19 AT 22: VLIN 16,17 AT 23: VLIN 14,1
5 AT 24: VLIN 14,15 AT 25: VLIN 12,13 AT 25: VLIN

     12,13 AT 26

4810  IF SD = 2 THEN SD = 0: GOTO 4870

4840  FOR I = 1 TO 200: NEXT : GOTO 4540

4870  IF CV <  > 2 THEN SY = SY - 1: FOR I = 1 TO 10:KF =  PEEK (49200) *  PEEK
(   16336): NEXT

4900  GOTO 4540

4930  COLOR= 0: FOR I = 11 TO 20: HLIN 21,26 AT I: NEXT I

4960  COLOR= 9: HLIN 20,22 AT 20: VLIN 13,19 AT 22

4990  GOTO 4540

5020 ZZ =  PEEK ( - 16384): IF ZZ = 208 THEN CV = 1

5050  IF ZZ = 211 THEN CV = 2

5080  IF CV = 1 THEN 5170

5110  IF CV <  > 2 THEN CV = 0: GOTO 4510

5140  COLOR= 2: HLIN 26,27 AT 19: VLIN 13,18 AT 26: GOTO 4510

5170  COLOR= 11: PLOT 27,18: HLIN 25,26 AT 17: PLOT 25,17: VLIN 14,17 AT 24: VL
IN 12,15 AT 23: VLIN 12,13 AT 22

5200  IF ZF = 1 THEN  FOR I = 1 TO 10:GH =  PEEK ( - 16336) +  PEEK ( - 16336)
   PEEK ( - 49200): NEXT :SM = SM - 1

5230  POKE  - 16368,0:CV = 0
```

```
3610  FOR I = 1 TO 2000: NEXT :D(X,Y) = 1: GOTO 1420

3670  HOME : PRINT "                         MONSTERS          "

3700  PRINT "                        ()()()()

3730  PRINT : PRINT : PRINT : PRINT " PREPARE YOURSELF AND USE....

3760  PRINT : PRINT : PRINT "  (S) FOR SHIELD

3790  PRINT : PRINT "  (F) TO STRIKE

3820  PRINT : PRINT "DO YOU WANT TO USE AN ELIXER,OR TORCH  "

3850  PRINT : PRINT "TO DEFEND YOURSELF (E,T OR N 'NONE') ";: INPUT A$:SM =  IN
T (14 *  RND (1)) + 3:SY =  INT (8 *  RND (1))

     + 3

3880 D$ = C$(D(X,Y))

3910  IF A$ = "N" THEN 4150

3940  IF A$ = "E" THEN 4030

3970  FOR I = 1 TO 10: IF A$(I) <  > "TORCH" THEN  NEXT I: PRINT "YOU HAVN'T GO
T A TORCH": GOTO 3820

3980 A$(I) = ""

4000  GOTO 4060

4030  FOR I = 1 TO 10: IF A$(I) <  > "ELIXER" THEN  NEXT I: PRINT "YOU HAVN'T G
OT AN ELIXER": GOTO 3820

4040 A$(I) = ""

4060  IF D$ = "WUP" AND A$ = "T" THEN  PRINT : PRINT "TORCH LOWERS WUP'S CONFID
ENCE  ":SM = SM - 2

4090  IF D$ = "TRONS" AND A$ = "E" THEN  PRINT : PRINT "ELIXER AFFECTS TRONS  "
:SM = SM - 2

4120  FOR I = 1 TO 2000: NEXT

4150  GR : COLOR= 1: VLIN 12,27 AT 30: VLIN 12,24 AT 29

4180  VLIN 18,22 AT 28: VLIN 12,15 AT 31: VLIN 12,15 AT 28: HLIN 28,29 AT 27: C
OLOR= 15: PLOT 28,13

4210  HLIN 27,29 AT 20: PLOT 29,19

4240 S = 10

4270 : COLOR= 0: FOR I = 15 TO 27: HLIN S - 10,S + 5 AT I: NEXT :S = S + 1

4300  COLOR= 6: HLIN S - 10,S - 3 AT 26: HLIN S - 7,S - 2 AT 25: HLIN S - 3,S +
 2 AT 24: VLIN 20,23 AT S - 2: VLIN 19,23 AT S

     - 1: VLIN 18,27 AT S

4330  VLIN 17,27 AT S + 1: VLIN 17,23 AT S + 2: VLIN 15,23 AT S + 3: VLIN 15,23
 AT S + 4: VLIN 15,18 AT S + 5: HLIN S + 2,S +

    4 AT 27: COLOR= 15: PLOT S + 5,16

4360  VLIN 21,23 AT S: PLOT S + 1,21

4390  IF S = 15 THEN 4480
```

RAIDERS

```
5260  GOTO 4510

5290  FOR I = 1 TO 10: IF A$(I) < > "" THEN 5350

5320  NEXT : PRINT : PRINT "YOU HAVE NOTHING WORTH STEALING     ": GOTO 5380

5350  PRINT : PRINT "THE ";D$;" HAS STOLEN YOUR ";A$(I): IF A$(I) = "GOLD" THEN
 GO = GO - 100

5360 A$(I) = ""

5380  FOR I = 1 TO 2000: NEXT : TEXT : HOME

5410 D(X,Y) = 1: GOTO 1420

5440  FOR I = 1 TO 10: IF A$(I) = "ROPE" THEN A$(I) = "": GOTO 6130

5470  NEXT

5500  HOME : PRINT "                    CREVICE

5530  PRINT : PRINT : PRINT "   OH !! NO !!  .....ARGHHHHHHHHHHHHHH": FOR I = 1
 TO 25:KE = PEEK ( - 16336) + PEEK ( - 16336

     ) + PEEK (49200) + PEEK ( - 16336): NEXT

5540 LF = LF + 1

5560  FOR I = 1 TO 1000: NEXT : GR : COLOR= 8

5590  FOR I = 20 TO 39: HLIN 0, INT (5 * RND (1)) + 17 AT I: HLIN  INT (5 * R
ND (1)) + 23,39 AT I: NEXT

5620 XX = 5:YY = 15

5650  COLOR= 0: FOR I = YY - 5 TO YY + 3: HLIN XX - 4,XX + 4 AT I: NEXT

5680  COLOR= 7: HLIN XX - 3,XX - 2 AT YY - 4: PLOT XX - 2,YY - 3: HLIN XX - 1,X
X + 2 AT YY - 2: HLIN XX,XX + 1 AT YY - 1: HLIN

     XX,XX + 1 AT YY

5710  PLOT XX + 3,YY - 1: HLIN XX + 3,XX + 4 AT YY

5740  COLOR= 2: PLOT XX,YY - 4: COLOR= 10

5770  HLIN XX,XX + 3 AT YY + 1: PLOT XX + 3,YY + 2: HLIN XX - 1,XX AT YY + 3: P
LOT XX,YY + 2

5800  IF XX = 20 THEN YY = YY + 1: PRINT "ARGHHHHHHHHHH": GOTO 5860

5830 XX = XX + 1

5860  IF YY = 35 THEN 5920

5890  GOTO 5650

5920  TEXT : HOME : VTAB 10: PRINT "            SPLATTTTT !!!!            ": F
OR I = 1 TO 1000: NEXT I

5950  FOR I = 1 TO 10:DF =  INT (10 * RND (1)) + 1: IF A$(DF) < > "" THEN 601
0

5980  NEXT : GOTO 6280
```



```
6010  PRINT : PRINT : PRINT "YOU HAVE LOST YOUR "A$(DF)

6040  IF A$(DF) = "GOLD" THEN GO = GO - 100

6070 A$(DF) = "": FOR I = 1 TO 2000: NEXT

6100  GOTO 6250

6130  HOME : PRINT : PRINT "  OH !! NO ... A CRAVICE

6160  PRINT : PRINT "LUCKY YOU HAD THAT PIECE OF ROPE TO"

6190  PRINT : PRINT "SWING ACROSS WITH ....."

6220 A$(I) = ""

6250  FOR I = 1 TO 3500: NEXT

6280 D(X,Y) = 1: GOTO 1420

7000  REM       DARTS

7010  HOME : PRINT : PRINT "<<<<<<<<<<<<<<POISON DARTS>>>>>>>>>>>>>>"

7020  PRINT : PRINT : FOR I = 1 TO 10: IF A$(I) <  > "SHIELD" THEN  NEXT : PRIN
T : PRINT "OH DEAR.. YOU HAVEN'T GOT A SHIELD

        ": GOTO 7500

7025 A$(I) = ""

7030  GR : COLOR= 4: FOR I = 0 TO 39: HLIN 0,39 AT I: NEXT : COLOR= 6: FOR I =
18 TO 22: VLIN 34,37 AT I: NEXT

7035  COLOR= 9: PLOT 20,33: COLOR= 0: PLOT 23,35: PLOT 17,35

7040 S = 20: FOR I = 1 TO 7:C(I) =  INT (10 *  RND (1)) + 11:P(I) =  INT (20 *
RND (1)) + 10: NEXT

7045 DF = 0

7046 ST = 0

7050  COLOR= 4: HLIN S - 1,S + 1 AT 30:GF =  PDL (0) / 8 + 4: IF GF < S THEN S
= S - 1

7060  IF GF > S THEN S = S + 1

7070  COLOR= 13: HLIN S - 1,S + 1 AT 30

7080  FOR I = 1 TO 7: COLOR= 4: PLOT P(I),C(I):C(I) = C(I) + 1: IF C(I) = 35 TH
EN  PRINT "                OUCH !!

        ":DF = DF + 1:ST = ST + 1:P(I) = 0:C(I) = 0

7090  COLOR= 15: PLOT P(I),C(I): IF  SCRN( P(I),C(I) + 1) = 13 THEN P(I) = 0:C(
I) = 0:ST = ST + 1

7100  IF ST = 7 THEN 7400

7110  NEXT I: GOTO 7050

7400  IF DF > 3 THEN  PRINT : PRINT "    OH !! DEAR THAT HURT.............": 
GOTO 7500

7410  PRINT : PRINT "    /////////SAVED///////  ": FOR I = 1 TO 3000: NEXT : TE
```

RAIDERS

```
XT : HOME :D(X,Y) = 1

7420  GOTO 1450

7500  FOR I = 1 TO 10:DF =  INT (10 *  RND (1)) + 1: IF A$(DF) <  > "" THEN 752
0

7510  NEXT : PRINT : PRINT "NOTHING WAS DAMAGED.....": FOR I = 1 TO 1500: NEXT
: GOTO 7410

7520  PRINT : PRINT "THE ";A$(DF);" WAS DAMAGED BEYOND REPAIR"

7530 D$ = A$(DF):A$(DF) = ""

7540  IF D$ = "GOLD" THEN GO = GO - 100

7550 LF = LF - 1

7590  FOR I = 1 TO 3500: NEXT : TEXT : HOME :D(X,Y) = 1: GOTO 1450

10000  RESTORE : HOME : PRINT : PRINT "CONGRATULATIONS YOU ARE HALF WAY....."

10010  FOR I = 1 TO 10: IF A$(I) = "SAND" THEN 10100

10020  NEXT : PRINT : PRINT "OH ! GOD YOU DIDN'T HAVE A SACK OF SAND"

10030  PRINT : PRINT "TO PUT IN PLACE OF THE IDOL..YOU CAN

10040  PRINT : PRINT "HEAR A RUMBLE AND A ENORMOUS STONE

10050  PRINT : PRINT "SPHERE IS ROLLING DOWN AT YOU...DO NOT "

10060  PRINT : PRINT "RUN INTO A DEAD END OR YOU WILL BE "

10070  PRINT : PRINT "SQUISHED.....

10075 SP = 1

10080  GOTO 10150

10100  PRINT : PRINT "YOU NOW HAVE THE GOLDEN IDOL SO TRY TO "

10120  PRINT : PRINT "TRY TO MAKE IT BACK TO THE ENTRANCE

10150 DS = 1

10151  FOR I = 1 TO 38: FOR U = 1 TO 38: IF D(I,U) > 8 THEN 10155

10152 D(I,U) = 0

10155  NEXT U,I

10160  GOTO 380

12000  HOME : PRINT : PRINT "WELL DOWN ========

12010  PRINT : PRINT "YOU HAVE SURVIVED///////
```

TIME PILOT

This is an action/low resolution program for the Apple II. You control an aircraft able to travel through time zones and encounter a variety of enemies in each zone.

Starting in the year 1910 you battle the bi-planes that zoom from all directions. Use the arrow keys to rotate the jet 45 degrees in any direction. Pressing the space bar fires missiles (missiles? in 1910? Ed) unless there are already two missiles on the screen.

Each time an enemy aircraft passes over your central jet you lose a certain amount of shielding depending on how long the enemy stays there. As each enemy craft is shot down the red line at the top of the screen recedes until you have amassed a total of 40 hits. Large alien craft appear at the top of the screen. When destroyed they are worth 500 points and transfers your jet to the next time zone.

Mike Bantick
Mount Beauty Vic

APPLE II

```
]LIST

5  REM      TIME PILOT
6  HOME
10  FOR I = 1 TO 23: READ N: POKE
    769 + I,N: NEXT
12  DATA     173,48,192,136,208,5
    ,206,1,3,240,9,202,208,245,1
    74,0,3,76,2,3,96,0,0
50 L(1) = 5:L(2) = 2:L(3) = 1:L(4
    ) = 6:L(5) = 3
55 T(1) = 1910:T(2) = 1940:T(3) =
    1970:T(4) = 1983:T(5) = 2001

56 PL = 3
60 V = 1:LL = 15
65 SH = 40
100  TEXT : HOME
101  IF V > 5 THEN V = 1:LL = LL -
    5: IF LL < 5 THEN LL = 5
102  POKE  - 16304,0: POKE  - 163
    02,0: POKE  - 16300,0: POKE
     - 16298,0: COLOR= L(V) + 20

103 XX =  INT (30 *  RND (1)) + 5
    :YY =  INT (30 *  RND (1)) +
    5
104  FOR I = 0 TO 39: VLIN 0,47 AT
    I: NEXT I
105 BG = 0
107 X =  INT (30 *  RND (1)) + 5:
    Y =  INT (30 *  RND (1)) + 5
    :SY = 1:SX = 1
108  COLOR=  INT (20 *  RND (1)) +
    1: FOR I = 1 TO 350
110  PLOT X,Y:X = X + SX:Y = Y +
    SY: IF X > 38 THEN SX =  - 1

115  IF X < 1 THEN SX = 1
117  IF Y < 1 THEN SY = 1
118  IF Y > 46 THEN SY =  - 1
119  IF I / 3 =  INT (I / 3) THEN
     POKE 768,L(V) * 10: POKE 76
    9,7: CALL 770
120  NEXT I
140  FOR I = 1 TO 1500: NEXT I: TEXT
    : HOME : VTAB 10: HTAB 18: PRINT
    "YEAR": INVERSE : VTAB 12: HTAB
    18: PRINT T(V): NORMAL
145  FOR I = 1 TO 1500: NEXT I
155  GR
156  IF RS = 1 THEN RS = 0: GOTO
    170
160 NU = 39
170  COLOR= L(V) + 1: FOR I = 0 TO
    39: HLIN 0,39 AT I: NEXT I: COLOR
175 TT = L(V) + 1
180  FOR I = 1 TO 3:C(I) = 0:X(I)
     = 0: NEXT I

190 R = 4: GOSUB 1000
199  REM  START LOOP
200  FOR I = 1 TO 2: IF C(I) = 0 THEN
    240
210  COLOR= TT: PLOT C(I),Z(I):C(
    I) = C(I) + BX(I):Z(I) = Z(I
    ) + BY(I)
220  IF C(I) < 0 OR C(I) > 39 OR
    Z(I) < 1 OR Z(I) > 39 THEN C
    (I) = 0: GOTO 240
230  COLOR= 9: PLOT C(I),Z(I)
240  NEXT I
245  IF BG = 1 THEN  GOSUB 4000
246 TK = SH
250  FOR I = 1 TO 3: IF X(I) = 0 THE
     GOSUB 2000: GOTO 300
260  COLOR= TT: FOR U = Y(I) - 2 TO
    Y(I) + 2: HLIN X(I) - 3,X(I)
    + 3 AT U: NEXT U
265 X(I) = X(I) - SX + SX(I):Y(I)
    = Y(I) - SY + SY(I):SX(I) =
    SX(I) +  RND (1) - .5:SY(I) =
    SY(I) +  RND (1) - .5
270  IF X(I) < 3 OR X(I) > 35 OR
    Y(I) < 4 OR Y(I) > 35 THEN X
    (I) = 0: GOTO 300
280  GOSUB 3000
282  FOR U = 1 TO 2: IF C(U) > X(
    I) - 4 AND C(U) < X(I) + 4 AND
    Z(U) < Y(I) + 4 AND Z(U) > Y
    (I) - 4 THEN  GOSUB 2100: GOTO
    300
283  NEXT U
285  IF X(I) > 13 AND X(I) < 27 AND
    Y(I) > 13 AND Y(I) < 27 THEN
    KL =  PEEK ( - 16336) -  PEEK
    ( - 16336):SH = SH - 1
300  NEXT I
301  IF TK <  > SH THEN  GOSUB 10
    00
305 FF = R
310 Z =  PEEK ( - 16384): POKE  -
    16368,0: IF Z = 166 THEN R =
    R - 1: IF R < 1 THEN R = 8
315  IF Z = 149 THEN R = R + 1: IF
    R > 8 THEN R = 1
320  IF FF <  > R THEN  GOSUB 100
    0
330  IF Z = 160 THEN  POKE 768,50
    : POKE 769,20: CALL 770: GOTO
    340
335  GOTO 400
340  FOR I = 1 TO 2: IF C(I) = 0 TH
    BX(I) = 2 * SX:BY(I) = 2 * S
    Y: GOTO 345
342  NEXT I: GOTO 400
345  IF R = 1 THEN C(I) = 20:Z(I)
     = 15
346  IF R = 2 THEN C(I) = 24:Z(I)
     = 16
347  IF R = 3 THEN C(I) = 25:Z(I)
     = 20
348  IF R = 4 THEN C(I) = 24:Z(I)
     = 24
349  IF R = 5 THEN C(I) = 20:Z(I)
     = 25
350  IF R = 6 THEN C(I) = 16:Z(I)
     = 24
351  IF R = 7 THEN C(I) = 15:Z(I)
     = 20
352  IF R = 8 THEN C(I) = 16:Z(I)
     = 16
400  VTAB 21: PRINT "SCORE "SC"
      SHIELDING "SH" "
410  IF SH < 1 THEN  GOSUB 5000
800  GOTO 200
999  END
1000  COLOR= TT: FOR I = 16 TO 24
    : VLIN 16,24 AT I: NEXT I: ON
    R GOTO 1010,1040,1070,1100,1
    130,1160,1190,1220
1010  COLOR= 15: HLIN 16,24 AT 22
    : HLIN 16,24 AT 23: HLIN 17,
    23 AT 21: HLIN 18,22 AT 20: HLI
    18,22 AT 19: HLIN 19,21 AT 1
    7: HLIN 19,21 AT 18
1011  HLIN 16,17 AT 24: HLIN 23,2
    4 AT 24
1015  COLOR= 9: PLOT 20,16: PLOT
    17,20: PLOT 23,20: HLIN 19,2
    1 AT 24: COLOR= 2: VLIN 18,1
    9 AT 20
1017 SX = 0:SY =  - 1
1020  RETURN
1040  COLOR= 15: HLIN 16,22 AT 20
    : HLIN 16,23 AT 19: HLIN 18,
    23 AT 18: HLIN 21,23 AT 17: HLIN
    19,22 AT 21: HLIN 20,22 AT 2
    2: HLIN 20,21 AT 23: HLIN 20
    ,21 AT 24
1042  COLOR= 9: PLOT 18,21: PLOT
    19,22: PLOT 23,20: PLOT 20,1
    7: PLOT 24,16: COLOR= 2: PLOT
    21,19: PLOT 22,18
1045 SX = .5:SY =  - .5
1050  RETURN
1070  COLOR= 15: VLIN 16,24 AT 17
    : VLIN 16,24 AT 18: VLIN 17,
    23 AT 19: VLIN 18,22 AT 20: VLIN
    18,22 AT 21: VLIN 19,21 AT 2
    3: VLIN 19,21 AT 22: VLIN 16
    ,17 AT 16: VLIN 23,24 AT 16:
     COLOR= 9
1072  PLOT 24,20: VLIN 19,21 AT 1
    6: PLOT 20,17: PLOT 20,23: COLOR=
    2: HLIN 21,22 AT 20
1075 SX = 1:SY = 0
1080  RETURN
1100  COLOR= 15: HLIN 16,22 AT 20
    : HLIN 16,23 AT 21: HLIN 18,
    23 AT 22: HLIN 21,23 AT 23: VLIN
    16,19 AT 20: VLIN 16,19 AT 2
    1: VLIN 18,19 AT 22: PLOT 19
    ,19: COLOR= 9
1102  PLOT 19,18: PLOT 18,19: PLOT
    24,24: PLOT 20,23: PLOT 23,2
    0: COLOR= 2: PLOT 21,21: PLOT
    22,22
1105 SX = .5:SY = .5
1110  RETURN
1130  COLOR= 15: HLIN 16,24 AT 17
    : HLIN 16,24 AT 18: HLIN 17,
    23 AT 19: HLIN 18,22 AT 20: HLI
    18,22 AT 21: HLIN 19,21 AT 2
    2: HLIN 19,21 AT 23: HLIN 16
    ,17 AT 16: HLIN 23,24 AT 16:
     COLOR= 9
1132  HLIN 19,21 AT 16: PLOT 20,2
    4: PLOT 17,20: PLOT 23,20: COLO
    2: VLIN 21,22 AT 20
1135 SX = 0:SY = 1
1140  RETURN
1160  COLOR= 15: VLIN 16,22 AT 20
    : VLIN 16,23 AT 19: VLIN 18,
    23 AT 18: VLIN 21,23 AT 17: HL
    24,21 AT 20: HLIN 24,21 AT 2
    1: HLIN 22,21 AT 22: PLOT 21
    ,19: COLOR= 9
1162  PLOT 16,24: PLOT 21,18: PLOT
    22,19: PLOT 17,20: PLOT 20,2
    3: COLOR= 2: PLOT 18,22: PLOT
    19,21
1165 SX =  - .5:SY = .5
1170  RETURN
1190  COLOR= 15: VLIN 16,24 AT 23
    : VLIN 16,24 AT 22: VLIN 17,
    23 AT 21: VLIN 18,22 AT 20: VLI
    18,22 AT 19: VLIN 19,21 AT 1
    8: VLIN 19,21 AT 17: VLIN 16
    ,17 AT 24: VLIN 23,24 AT 24:
     COLOR= 9
1192  VLIN 19,21 AT 24: PLOT 20,1
    7: PLOT 20,23: PLOT 16,20: COLO
    2: HLIN 18,19 AT 20
1195 SX =  - 1:SY = 0
1200  RETURN
1220  COLOR= 15: HLIN 18,24 AT 20
    : HLIN 17,24 AT 19: HLIN 17,
    22 AT 18: HLIN 17,19 AT 17: VLI
    21,24 AT 20: VLIN 21,24 AT 1
    9: VLIN 21,22 AT 18: PLOT 21
    ,21: COLOR= 9
1222  PLOT 16,16: PLOT 20,17: PLOT
    17,20: PLOT 22,21: PLOT 21,2
    2: COLOR= 2: PLOT 18,18: PLOT
    19,19
1225 SX =  - .5:SY =  - .5
1230  RETURN
2000  IF  INT (LL *  RND (1)) + 1
     = 2 THEN 2030
2010  RETURN
2030 TY =  INT (4 *  RND (1)) + 1
    : IF TY = 1 THEN X(I) = 4:Y(
    I) =  INT (30 *  RND (1)) +
    5:SX(I) = 1:SY(I) = 0: RETURN
```

TIME PILOT

```
2040  IF TY = 2 THEN X(I) = 35:Y(
    I) =  INT (30 * RND (1)) +
    5:SX(I) =  - 1:SY(I) = 0: RETURN

2050  IF TY = 3 THEN X(I) =  INT
    (30 * RND (1)) + 5:Y(I) = 5
    :SX(I) = 0:SY(I) = 1: RETURN

2060 X(I) =  INT (30 * RND (1)) +
    5:Y(I) = 35:SX(I) = 0:SY(I) =
    - 1: RETURN
2100  FOR S = 1 TO 5: IF S / 2 =
    INT (S / 2) THEN  POKE  - 1
    6304,0: POKE  - 16302,0: POKE
    - 16299,0: POKE  - 16298,0:
    GOTO 2105
2102  POKE  - 16304,0: POKE  - 16
    301,0: POKE  - 16300,0: POKE
    - 16298,0
2105  POKE 768,20: POKE 769,10: CALL
    770: NEXT S
2107  FOR S = Y(I) - 2 TO Y(I) +
    2
2110  COLOR= TT: HLIN X(I) - 3,X(
    I) + 3 AT S: NEXT S:SC = SC +
    10 * V: COLOR= 15: PLOT NU,0
    :NU = NU - 1: IF NU =  - 1 THEN
    NU = 0: IF BG = 0 THEN BG =
    1:X =  INT (30 * RND (1)) +
    5:Y = 5
2111  COLOR= TT: PLOT C(U),Z(U)
2115 C(U) = 0
2117 X(I) = 0
2120  RETURN
3000  ON V GOTO 3010,3050,3100,31
    50,3200
3010  COLOR= 4: HLIN X(I) - 1,X(I
    ) + 1 AT Y(I) - 2: VLIN Y(I)
    - 1,Y(I) + 1 AT X(I): HLIN
    X(I) - 3,X(I) + 3 AT Y(I) +
    1: HLIN X(I) - 3,X(I) + 3 AT
    Y(I) + 2: COLOR= 0
3011  PLOT X(I) + 2,Y(I) + 2: PLOT
    X(I) - 2,Y(I) + 2
3015  POKE 768, INT (5 * RND (1)
    ) + 240: POKE 769,4: CALL 77
    0
3020  RETURN
3050  COLOR= 12: HLIN X(I) - 1,X(
    I) + 1 AT Y(I) - 2: VLIN Y(I
    ) - 1,Y(I) + 2 AT X(I): HLIN
    X(I) - 3,X(I) + 3 AT Y(I) +
    1: COLOR= 8: PLOT X(I) - 2,Y
    (I) + 1: PLOT X(I) + 2,Y(I) +

    1: COLOR= 2
3052  PLOT X(I),Y(I) + 1: FOR U =
    1 TO 3: POKE 768,241: POKE 7
    69,3: CALL 770: NEXT U
3060  RETURN
3100  COLOR= 14: HLIN X(I) - 1,X(
    I) + 1 AT Y(I) - 2: HLIN X(I
    ) - 3,X(I) + 3 AT Y(I): HLIN
    X(I) - 2,X(I) + 2 AT Y(I) +
    1: PLOT X(I),Y(I) + 2: COLOR=
    1
3105  PLOT X(I) - 3,Y(I) - 1: PLOT
    X(I) + 3,Y(I) - 1: PLOT X(I)
    ,Y(I) - 1: POKE 768, INT (30
    * RND (1)) + 100: POKE 769
    ,10: CALL 770
3110  RETURN
3150  COLOR= 3: HLIN X(I) - 3,X(I
    ) + 3 AT Y(I) - 1: HLIN X(I)
    - 2,X(I) + 2 AT Y(I): HLIN
    X(I) - 1,X(I) + 1 AT Y(I) +
    1: PLOT X(I),Y(I) + 2: PLOT
    X(I) - 3,Y(I) - 2: PLOT X(I)
    + 3,Y(I) - 2
3155  COLOR= 9: PLOT X(I),Y(I) -
    2: COLOR= 5: VLIN Y(I),Y(I) +
    1 AT X(I): FOR U = 1 TO 3: POKE
    768,90: POKE 769,4: CALL 770
    : NEXT U
3160  RETURN
3200  COLOR= 13: HLIN X(I) - 3,X(
    I) + 3 AT Y(I) - 1: HLIN X(I
    ) - 3,X(I) + 3 AT Y(I) + 2: VLI
    Y(I),Y(I) + 1 AT X(I) - 3: VLIN
    Y(I),Y(I) + 1 AT X(I) + 3: COLOR
    2: VLIN Y(I),Y(I) + 1 AT X(I
    ) + 2: VLIN Y(I),Y(I) + 1 AT
    X(I) - 2
3205  FOR U = 1 TO 5: POKE 768,(6
    - U) * 10: POKE 769,5: CALL
    770: NEXT U
3210  COLOR= 11: HLIN X(I) - 1,X(
    I) + 1 AT Y(I): HLIN X(I) -
    1,X(I) + 1 AT Y(I) + 1: RETURN

4000  COLOR= TT: FOR I = X - 3 TO
    X + 3: VLIN Y - 3,Y + 3 AT I
    : NEXT I
4005 Y = Y + 2
4010  FOR I = 0 TO 3: COLOR=  INT
    (40 * RND (1)) + 1: HLIN X -
    I,X + I AT Y - I: HLIN X - I
    ,X + I AT Y + I: VLIN Y - I,
    Y + I AT X + I: VLIN Y - I,Y
    + I AT X - I: NEXT I
4012  POKE 768, INT (30 * RND (1
    )) + 10: POKE 769,7: CALL 77
    0
4015  IF Y > 38 THEN V = V + 1: POP
    : GOTO 100
 4020  FOR I = 1 TO 2: IF C(I) = 0
    THEN 4050
 4030  IF C(I) > X - 3 AND C(I) <
    X + 3 AND Z(I) > Y - 3 AND Z
    (I) < Y + 3 THEN 4040
4035  NEXT I: GOTO 4050
 4040  FOR I = 1 TO 30: IF I / 2 =
    INT (I / 2) THEN  POKE  - 1
    6304,0: POKE  - 16302,0: POKE
    - 16299,0: POKE  - 16298,0:
    GOTO 4045
 4042  POKE  - 16304,0: POKE  - 16
    301,0: POKE  - 16300,0: POKE
    - 16298,0
 4045  FOR U = 1 TO 50: NEXT U,I:V
    = V + 1:SC = SC + 500: GOTO
    100
 4050  IF Y > 12 AND Y < 28 AND X >
    12 AND X < 28 THEN SH = SH -
    2:KL =  PEEK ( - 16336) +  PEEK
    (49200)
 4060  RETURN
5000 PL = PL - 1
5010  FOR I = 1 TO 50:KL =  PEEK
    ( - 16336) +  PEEK ( - 16336
    ) -  PEEK ( - 16336): FOR U =
    1 TO I / 2: NEXT U: COLOR= 1
    3: HLIN  INT (40 * RND (1))
    , INT (40 * RND (1)) AT  INT
    (40 * RND (1))
5020  VLIN  INT (40 * RND (1)), INT
    (40 * RND (1)) AT  INT (40 *
    RND (1))
5025  NEXT I
5026 SH = 50
5030  IF PL = 0 THEN 5100
5035 RS = 1
5040  FOR I = 1 TO 1000: GOTO 100

5100  PRINT : PRINT : PRINT "SCOR
    E "SC"  ANOTHER *:: INPUT A$
    : IF  LEFT$ (A$,1) = "N" THEN
    END
5110  CLEAR : GOTO 5
```

WIPEOUT

```
LIST

 10  REM  ****************
 12  REM  * GEOFF MORGAN *
 14  REM  *    1983      *
 16  REM  ****************
 20  HOME
 30  GOSUB 1500
 40  VTAB 22: HTAB 8: PRINT "HELLO! I'M ---- !"
 50  VTAB 24: HTAB 8: INPUT "WHAT IS YOUR NAME? ";N$
 60  HOME : VTAB 22: HTAB 8: PRINT "DO YOU NEED HELP BEFORE"
 70  VTAB 24: HTAB 8: PRINT "STARTING THE GAME?  (Y/N)";
 80  GET Y$: IF Y$ = "Y" THEN 110
 90  IF Y$ = "N" THEN 130
 100  GOTO 80
 110  GOSUB 1620
 120  GOTO 140
 130 D = 1: GOSUB 1620
 140  IF D = 1 THEN 260
 150  TEXT : HOME : PRINT  TAB( 5)N$ + "-";
 160  PRINT : PRINT : PRINT  TAB( 5)"THE DIGIT INDICATED MUST"
 170  PRINT : PRINT : PRINT  TAB( 5)"MUST BE REMOVED IN ONE MOVE."
 180  PRINT : PRINT : PRINT : PRINT  TAB( 5)"FOR EXAMPLE-"
 190  PRINT : PRINT  TAB( 18)"TO 'WIPE OUT' THE"
 200  PRINT : PRINT  TAB( 5)"3 IN 32, 30 (3 TENS) MUST BE"
 210  PRINT : PRINT  TAB( 5)"SUBTRACTED FROM 32 TO GIVE 2."
 220  VTAB 24: PRINT  TAB( 6)"(PRESS 'SPACE BAR' TO CONTINUE.)";
 230  GET A$: IF A$ = " " THEN 250
 240  GOTO 230
 250  GOSUB 1950
 260  TEXT : HOME : VTAB 4: HTAB 8: PRINT N$ + "-";
 270  VTAB 6: HTAB 8
 280  PRINT "TO SELECT THE NUMBERS YOU"
 290  PRINT : PRINT  TAB( 8)"WOULD LIKE TO WORK WITH"
 300  PRINT : PRINT  TAB( 8)"TYPE THE NUMBER PRECEDING"
 310  PRINT : PRINT  TAB( 8)"YOUR SELECTION."
 320  PRINT : PRINT : PRINT  TAB( 12)"1. TENS"
 330  PRINT  TAB( 12)"2. HUNDREDS"
 340  PRINT  TAB( 12)"3. THOUSANDS"
 350  PRINT  TAB( 12)"4. TEN-THOUSANDS"
 360  PRINT  TAB( 12)"5. HUNDRED-THOUSANDS"
 370  PRINT  TAB( 12)"6. MILLIONS"
 380  GET B$
 390 Z =  VAL (B$):ZZ = Z + 1
 400  IF Z > 0 THEN 420
 410  GOTO 430
 420  IF Z < 7 THEN 450
 430  PRINT : PRINT : PRINT  TAB( 7)"YOU DID NOT PRESS A NUMBER FROM 1 TO
    6. TRY AGAIN.";
 440  FOR G = 1 TO 2000: NEXT : GOTO 260
 450 CC = 0
 460 C = 1
 470  IF C = 11 THEN 1140
 480 RR$ = "":M$ = "":LL$ = "":R$ = ""
 490 X =  RND (2)
 500 X =  INT (X * 10 ^ ZZ)
 510  IF X < 10 ^ Z THEN 480
 520  HOME : VTAB 12: HTAB 12
 530 X$ =  STR$ (X)
 540  IF Z > 2 THEN 910
 550  PRINT X$
 560 Y =  RND (9):Y =  INT (Y * 10)
```

WIPEOUT is an educational drill and practice program designed to strengthen place value skills. The student can select the magnitude of the numbers to be worked with – six levels (tens through millions) – and instructions can be called for at any point during the game.

The student is required to 'wipe out' the randomly selected digit in the randomly selected number within the range chosen. For example, to 'wipe out' the '3' in 23 576, '3000' is entered as the number to be subtracted to give 20 576.

Geoff Morgan
Ferny Hills Qld

```
570  IF Y = 0 THEN 560
580  IF Y = 4 THEN 560
590  IF Y = 8 THEN 560
600  IF Z < 3 THEN 650
610  IF Z = 3 THEN ZZ = 5
620  IF Z = 4 THEN ZZ = 6
630  IF Z = 5 THEN ZZ = 7
640  IF Z = 6 THEN ZZ = 9
650  IF Y > ZZ THEN 560
660 YY = Y
670  FOR T =  LEN (X$) TO 1 STEP  - 1
680 RR$ = RR$ + ( MID$ (X$,T,1)): NEXT
690 Y$ =  MID$ (RR$,Y,1)
700  IF Y$ = "0" THEN 560
710  IF Y$ = " " THEN 560
720 V =  LEN (X$) - Y
730  FOR G = 1 TO 3: VTAB 13: HTAB 12 + V: PRINT "^";
740  GOSUB 950
750  VTAB 13: HTAB 12 + V: PRINT " ": GOSUB 950
760  NEXT : VTAB 13: HTAB 12 + V: PRINT "^"
770  VTAB 16: HTAB (4): PRINT "WIPE OUT THE DIGIT MARKED BY THE '^'"
780  FOR G = 1 TO 200: NEXT
790  IF Y < 4 THEN 830
800  IF Y = 9 THEN 820
810 Y = Y - 2: GOTO 840
820 Y = Y - 3: GOTO 840
830 Y = Y - 1
840  VTAB 19: HTAB 6: PRINT "TYPE THE NUMBER"
850  HTAB 6: INPUT "TO BE SUBTRACTED - ";RR$: GOSUB 1730
860 P =  VAL (Y$):Q = P * (10 ^ Y):PP = X - Q
870  IF PP <  >  INT (PP) THEN PP =  INT (PP + 1)
880 BB = X - RR
890  IF BB = PP THEN 960
900  GOTO 1290
910 R$ =  RIGHT$ (X$,3)
920  IF Z = 6 THEN 940
930 P = Z - 2:L$ =  LEFT$ (X$,P):X$ = L$ + " " + R$: GOTO 550
940 M$ =  MID$ (X$,2,3):LL$ =  LEFT$ (X$,1):X$ = LL$ + " " + M$ + " " + R
    $: GOTO 550
950  FOR G = 1 TO 500: NEXT : RETURN
960  GOSUB 2040
970  VTAB 12: HTAB 12 + V
980  IF VV <  > 0 THEN 1000
990  PRINT " ";: GOTO 1010
1000  PRINT "0";:
1010  PRINT  CHR$ (7);: FOR W = 1 TO 2000: NEXT
1020  HOME : VTAB 13: HTAB 8:P =  RND (1):P =  INT (P * 10)
1030  IF P = 1 THEN 1070
1040  IF P = 2 THEN 1080
1050  IF P = 3 THEN 1090
1060  GOTO 1020
1070  FLASH : PRINT "- - WELL DONE ";N$;" - -": GOTO 1100
1080  FLASH : PRINT "# # MARVELLOUS ";N$;" # #": GOTO 1100
1090  FLASH : PRINT "* * YOU BEAUTY ";N$;" * *": GOTO 1100
1100  FOR G = 1 TO 1000: NEXT
1110 ZZ = Z + 1:I = 0
1120  NORMAL : HOME :CC = CC + 1:RR$ = "":C = C + 1: GOTO 470
1130  GOTO 1140
1140  VTAB 12: HTAB 8: PRINT N$ + " - "
1150  HTAB 8: PRINT "GOOD WORK!"
1160  PRINT
1170  PRINT  TAB( 8)"YOU HAVE ";CC;" OUT OF ";C - 1;" CORRECT!"
1180 I = 0
1190  GOTO 1200
1200  FOR G = 1 TO 2000: NEXT G
1210  HOME : VTAB 12: HTAB 8: PRINT "PRESS 'SPACE BAR' TO CONTINUE"
1220  PRINT : PRINT : PRINT  TAB( 8)"PRESS 'E' TO END"
1230  GET G$:
1240  IF G$ = " " THEN 260
1250  IF G$ = "E" THEN 1270
1260  GOTO 1230
1270  HOME : VTAB 12: HTAB 5: PRINT "THANK YOU FOR PLAYING ";N$;
1280  END
1290  FOR W = 1 TO 3: PRINT  CHR$ (7);: NEXT
1300  VTAB 22: HTAB 6
1310 P =  RND (1):P =  INT (P * 10)
1320  IF P = 1 THEN 1360
1330  IF P = 2 THEN 1370
1340  IF P = 3 THEN 1380
1350  GOTO 1310
1360  PRINT "# # SORRY, NOT CORRECT ";N$: GOTO 1390
1370  PRINT "# # THAT'S A MISTAKE ";N$: GOTO 1390
1380  PRINT "# # YOU MISSED THAT ";N$: GOTO 1390
1390  PRINT : PRINT  TAB( 7)"TRY AGAIN! # #";
1400  FOR G = 1 TO 2000: NEXT
1410  VTAB 19: PRINT  SPC( 100);
1420  VTAB 22: HTAB 6: PRINT  SPC( 100);
1430 I = I + 1: IF I = 3 THEN 1450
1440  GOTO 840
1450  HOME : VTAB 13: HTAB 8:
1460  PRINT "THE CORRECT NUMBER TO"
1470  PRINT : PRINT  TAB( 8)"SUBTRACT IS "; VAL (Y$) * 10 ^ Y;
1480  FOR G = 1 TO 2000: NEXT
1490 I = 0:RR$ = "":C = C + 1: GOTO 470
1500  GR : COLOR= 14: FOR X = 0 TO 39: HLIN 0,39 AT X: NEXT
1510  COLOR= 1
```

WIPEOUT

▽

```
1520  VLIN 12,26 AT 2: VLIN 12,26 AT 8: HLIN 4,6 AT 12: VLIN 12,26 AT 4:
   VLIN 12,26 AT 6
1530  VLIN 23,26 AT 3: VLIN 23,26 AT 7
1540  VLIN 12,26 AT 11: VLIN 12,26 AT 13: HLIN 13,17 AT 12: HLIN 13,17 AT
   18: VLIN 12,16 AT 17
1550  VLIN 12,17 AT 17
1560  VLIN 12,26 AT 19: HLIN 19,22 AT 12: HLIN 19,20 AT 17: HLIN 19,22 AT
   26
1570  VLIN 12,26 AT 24: VLIN 12,26 AT 27: HLIN 24,27 AT 12: HLIN 24,27 AT
   26
1580  VLIN 12,26 AT 29: VLIN 12,26 AT 32: HLIN 29,32 AT 26
1590  HLIN 34,38 AT 12: VLIN 12,26 AT 36
1600  GOSUB 1670
1610  RETURN
1620  COLOR= 14: FOR X = 12 TO 26: HLIN 0,39 AT X
1630 G =  PEEK (S)
1640  FOR Y = 1 TO 100
1650  NEXT Y: NEXT X
1660  RETURN
1670 S =  - 16336
1680  FOR B = 1 TO 50
1690 G =  PEEK (S) -  PEEK (S) +  PEEK (S): NEXT
1700  FOR B = 1 TO 50
1710 G =  PEEK (S) -  PEEK (S) +  PEEK (S) -  PEEK (S) +  PEEK (S) -  PEEK
   (S) +  PEEK (S)
1720  NEXT : RETURN
1730 E =  LEN (RR$)
1740  IF RR$ = "" THEN 840
1750  FOR L = 1 TO E
1760 EE$ =  MID$ (RR$,L,1)
1770 EE =  ASC (EE$)
1780  IF EE = 32 THEN 1810
1790  IF EE < 48 THEN 1830
1800  IF EE > 57 THEN 1830
1810  NEXT L
1820 RR =  VAL (RR$): RETURN
1830  IF E <  > 1 THEN 1870
1840  IF EE = 81 THEN 1940
1850  IF EE = 82 THEN 260
1860  IF EE = 72 THEN 150
1870  FOR W = 1 TO 2: PRINT  CHR$ (7);: NEXT
1880  VTAB 22: PRINT "YOU DID NOT ENTER ";: INVERSE : PRINT "A NUMBER GRE
   ATER": NORMAL
1890  HTAB 14: INVERSE : PRINT "THAN ZERO!": NORMAL
1900  FOR W = 1 TO 2000: NFXT
1910  VTAB 22: PRINT  SPC( 80);
1920  PRINT  CHR$ (7);: VTAB 20: PRINT  SPC( 39);
1930 RR$ = "": GOTO 840
1940  HOME : GOTO 1140
1950  HOME : VTAB 8: HTAB 5: PRINT "DURING THEN GAME ENTER:"
1960  PRINT : HTAB 9: PRINT "'Q' TO QUIT"
1970  PRINT : HTAB 9: PRINT "'R' TO RETURN TO MENU"
1980  PRINT : HTAB 9: PRINT "'H' TO GET INSTRUCTIONS"
1990  VTAB 18: HTAB 4: PRINT "PRESS 'SPACE BAR' TO CONTINUE."
2000  GET G$
2010  IF G$ = " " THEN 2030
2020  GOTO 2000
2030  RETURN
2040 VV = V: RETURN

]
```

APPLE SPEED LOCK

Lots of unlocked files on your disk, and hours of typing to lock them up away from the kids? Try Speed-Lock.

The Speed-Lock will first catalog the disk, and when the end of catalog is reached, a short data POKE sequence is run, (about 6 seconds) and a menu placed at the top of the screen: Lock, Unlock, Normal, Quit. Selection of Lock will cause the drive to step through each listing on the Displayed catalog only, and lock the files. Unlock performs in the same manner. Normal simply catalogs the disk, then exits the program. Quit simply clears the screen and ends.

For disks with full catalogs, that is, more than 1 screen-full, only the last screen display will be locked. A short catalog interrupt sequence should be no problem so you can lock the first screens and then move on.

R. Chalmers
Inala Qld

```
]LIST

10  TEXT : HOME : CLEAR
20  REM                        ==========                    SPEED
    LOCK              ==========

30  PRINT  CHR$ (4)"CATALOG"
40  DIM A(24),N$(30)
50 :
60  FOR I = 1 TO 24: READ A(I): NEXT I
70  REM IX/VII/MCMLXXXII
80 T =  PEEK (37)
90  IF T >  = 23 THEN S = 0: GOTO 110
100 S = 5
110  GOSUB 380
120  INVERSE : VTAB 1: HTAB 1: PRINT "(L)OCK  (U)NLOCK  (N)ORMAL
    (Q)UIT";: NORMAL : PRINT " ?"; CHR$ (8);: GET AN$
130  HOME
140  IF AN$ = "L" THEN 190
150  IF AN$ = "U" THEN 310
160  IF AN$ = "Q" THEN 260
170  IF AN$ = "N" THEN 270
180  GOTO 120
190  PRINT "LOCK   "
200  FOR X = S TO T
210 N$(X) =  MID$ (N$(X),7)
220  PRINT  CHR$ (4)"LOCK"N$(X)
230  VTAB 1: HTAB 5: PRINT " "N$(X)
240  NEXT X
250  GOTO 120
260  GOTO 500
270  PRINT : HOME
280  PRINT  CHR$ (4)"CATALOG"
290  GOTO 260
300  END
310  PRINT "UNLOCK   "
320  FOR X = S TO T
330 N$(X) =  MID$ (N$(X),7)
340  PRINT  CHR$ (4)"UNLOCK"N$(X)
350  VTAB 1: HTAB 7: PRINT " ";N$(X)
360  NEXT X
370  GOTO 120
380  FOR X = S TO 24
390  FOR Y = 0 TO 29
400 N$(X) = N$(X) +  CHR$ ( PEEK (A(X) + Y))
410  NEXT Y
420  IF  MID$ (N$(X),2,1) =  CHR$ (160) THEN 440
430  NEXT X
440 XX = X - 1
450  RETURN
460  DATA  1024,1152,1280,1408
470  DATA  1536,1664,1792,1920,1064,1192,1320,1448,1576,1704,1832
   ,1960,1104,1232,1360,1488,1616,1744,1872
480  DATA  2000
490  FOR X = S TO T: PRINT  LEFT$ (N$(X),1): NEXT X
500  DEL 10,490: CLEAR : END
```

HI-RES REVERSE

When using the Apple's hi-res screen, you have a whole world of graphic capabilities at your fingertips. But sometimes, as I have found, you can create a complex picture or graph and then say to yourself 'It would look a lot better if the whole screen was reversed'. Here is a short Assembly Language program that will do this for you. To utilise it simply BRUN the program after saving it to disk.

Martin Scerri
Mulgrave VIC

```
10  CLEAR : TEXT : HOME : INVERSE
     : PRINT  SPC( 40): VTAB 2: HTAB
     1: PRINT " ": VTAB 2: HTAB 4
     0: PRINT " ": VTAB 3: HTAB 1
     : PRINT  SPC( 40): NORMAL : VTAB
     2: HTAB 10: PRINT "EPSON GRA
     PHICS DUMP": VTAB 5
20  POKE 34,3
30  GOSUB 130
40  INPUT "INVERSE? (Y OR N):";IN
     $
50  INPUT "ENLARGED? (Y OR N):";E
     N$
60  IF  LEFT$ (IN$,1) = "Y" THEN
     I = 32
70  IF  LEFT$ (EN$,1) = "Y" THEN
     E = 64
80  POKE 1913,E + I + 1
90  POKE 1913,E + I + 1
100  PRINT  CHR$ (4);"PR#1"
110  PRINT  CHR$ (17)
120  PRINT  CHR$ (4);"PR#0": POKE
     34,0: END
130  PRINT  CHR$ (4);"CATALOG"
140  PRINT
150  INPUT "NAME OF HI-RES SCREEN
      TO LOAD:";RE$
160  PRINT  CHR$ (4);"BLOAD";RE$;
     ",A$2000"
170  RETURN
65535  REM ******************
65535  REM COPYRIGHT (C) 1983
65535  REM 23/7/83
65535  REM MARTIN SCERRI
65535  REM WRITTEN BY:
65535  REM ******************
```

```
*
JCALL-151

*6000L

6000-   8D 50 C0     STA   $C050
6003-   8D 52 C0     STA   $C052
6006-   8D 54 C0     STA   $C054
6009-   8D 57 C0     STA   $C057
600C-   A9 00        LDA   #$00
600E-   A8           TAY
600F-   85 F8        STA   $F8
6011-   A9 20        LDA   #$20
6013-   85 F9        STA   $F9
6015-   AA           TAX
6016-   B1 F8        LDA   ($F8),Y
6018-   49 FF        EOR   #$FF
601A-   91 F8        STA   ($F8),Y
601C-   C8           INY
601D-   D0 F7        BNE   $6016
601F-   E6 F9        INC   $F9
6021-   CA           DEX
6022-   D0 F2        BNE   $6016
6024-   60           RTS
6025-   FF           ???


*
JCALL-151

*6000.6025

6000- 8D 50 C0 8D 52 C0 8D 54
6008- C0 8D 57 C0 A9 00 A8 85
6010- F8 A9 20 85 F9 AA B1 F8
6018- 49 FF 91 F8 C8 D0 F7 E6
6020- F9 CA D0 F2 60 FF
```

RESPONSE TIME

This subroutine can be included in teaching programs to gain student responses in a specified time.

Harry Klose
Wauchope NSW

```
)LIST

10  HOME : TEXT
15  VTAB 5: HTAB 1: PRINT "PLEASE
     TYPE YOUR NAME AND PRESS TH
    E      RETURN KEY"
20  PRINT  CHR$ (7): REM  - THIS
    SIGNIFIES THE BEGINNING OF 3
     SECONDS FOR RESPONSE
25 N = N + 1
30 X =  PEEK ( - 16384)
40  POKE  - 16384,0
50  IF N = 120 GOTO 300
51  REM  VALUE OF N CAN BE VARIED
     ACCORDING TO TIME REQUIRED,
     THE VALUE HERE IS ABOUT 3 S
    ECONDS
60  IF X < 128 GOTO 25
65  IF X > 127 GOTO 200
200  VTAB 8: HTAB 1: INPUT "";A$
210  VTAB 20: HTAB 1: PRINT "THAN
    K YOU ";A$
250  STOP
300  FOR I = 1 TO 3: PRINT  CHR$
    (7): NEXT : PRINT "YOU WERE
    TOO SLOW"
301  REM  - CHR$(7) SIGNIFIES THA
    T TIME IS UP
999  PRINT
1000  REM :THIS SUBROUTINE CAN BE
     INCLUDED IN TEACHING PROGRA
    MS TO GAIN STUDENT RESPONSES
     IN A SPECIFIED TIME.
1009  PRINT
1010  REM :THIS PROGRAM CREATED B
    Y HARRY KLOSE 1 MAY 1982
```

COMPUTER CLUB LIST

ACT

ACT Micro 80 Users Group, Bill Cushing, 10 Urambi Village, Kambah, 2902, 062 313630.
ACT Vic 20 Users Association, Chris Groenhout, 25 Kerferd St, Watson, 2602, 062 41 2316, Meetings 1st Monday each month at Boy's Grammar Scout Hall, Red Hill, 7.30 onwards.
ACTARI, Chris McEwan, Co-Ordinator, ACTARI, P.O. Box E112, Canberra, 2600, 062 88 7861.
Apple User Group (ACT), Jeff Brock, 1 Buckley Circuit, KAMBAH, 2902, 062 313630.
Australian ZX80 Users Group(AZUG), David Brudenall, 19 Godfrey Street, Campbell, 2601, for ZX80/Microace owners.
Canberra ACT Sirius User Group, Jim Bland, 062 81 2824, 062 81 2832.
Canberra Compucolor Club (CCC), Meets 7.30 on first Sunday of every month at the offices of Digital Equipment, 28 Lonsdale Street, Braddon ACT.
Canberra Microbee Users Group, Hugh Gibson, Microbee Store, Level 1, Cooleman Court, Weston, 2611, 062 88 6384.
Canberra Microbee Users Group, Adrian Van Wierst, 9 McGowan Street, Dickson, 062 49 7030.
Canberra Micro-80 User Group, Milt Cottee, 33 Crawford Cres, Flynn, 2615, 062 58 8822, meetings third Monday each month 7.30 pm in the small theatrette, Reid TAFE, for System 80, TRS-80 etc.
Canberra NEC Users Group, Mal Smith, PO Box 173, Belconnen 2616, meets first Tuesday each month at Main Conference Room, CSIRO Headquarters, Limestone Avenue at 7.30, (062) 54 1614.
Canberra Osborne Group, c/o Geoff Cohen, P.O. Box 136, Kippax, 2615, 062 54 7608.
Micsig, Registrar, P.O. Box 446, Canberra, 2601.

NT

Alice Springs Microbee Users Group, Douglas Craigie, c/- PO Box 3230, Alice Springs 5750.
Darwin Microbee Users Group DBUG, Felino Molina, P.O. Box 3111, DARWIN, 5794, 089 82 5613bh, 089 88 1455ah.
N.T. Computer Club, Ian Diss, meets at Wulagi Primary School on the first and third Thursday of each month at 7.30. Users of all machines and other interested parties welcome, (089) 27 9208.
N.T. 80 Computer User Group, R T O'Brien, 433 McMillans Road, JINGILI, DARWIN, 5792.
The Microcomputer Assoc. of the N.T, Andy Smith, Darwin Community College, CASUARINA, 5792.
VZ-200 Users Club, 7 Abbott Crescent, Malak, Darwin 5793, (089) 272830.

SA

AACC, Adelaide Atari Computer Club, meets at Gilles Street Primary School, City, on first Monday (second if first is on Public Holiday) of each month. Secretary, PO Box 333, Norwood, SA 5067.
Adelaide Lotus 1-2-3 User Group, Paul Wragg, Pannell Kerr Foster, GPO Box 1969, Adelaide.
Adelaide Micro User Group, R. G. Stevenson, 36 Sturt Street, Adelaide, 5000, for TRS-80 and System 80 Users.
Adelaide Osborne Group, Russell Barter, The Secretary, 410 Regency Road, PROSPECT, 5082.
Beebnet, BBC and Econet User Group P.O. Box 262, KINGSWOOD, 5062, The group intends to produce a newsletter on a monthly basis. It is interested in any software producers or distributors who would be interested in serving the groups market requirements.
Commodore/Vic Computer Users Assoc., Mr Eddie Hann, 13 Miranda Road, PARALOWIE, 5108, The SA branch meets monthly.
Compucolor-Intecolor User of S.A., P.O. Box 86, Torrensville, 5031, 08 352 3296.
DEC Personal Computer Special Interest Group, see NSW entry.
IBM-PC S.A. Users' Group, PO Box 68, Walkerville 5081.
Kaypro User Group, Myles Wakeham, 100 Pirie Street, Adelaide, 5000, 08 223 6333, meetings 1st Tuesday each month.
Microbee Users Group of S.A. MUGSA, The Secretary, GPO Box 767, Adelaide 5001.
S.A. Commodore Computers U.G., Eddie Hann, The Secretary, P.O. Box 427, North Adelaide, 5006, 258 6367, meetings second Tuesday each month, 7.30 at Royal Caledonian Hall, 379 King William St, Adelaide.
S.A. Foundation for Computer Literacy, Michael Kennett, PO Box 210, Norwood 5067, caters for children from 6 years (unaccompanied) or 4 years with older friend or brother or sister. Special emphasis on the needs of handicapped, and educably disabled and socially disadvantaged children, but ALL children welcome. Family participation encouraged, phone (08) 51 5474.
S.A. Peach User Group, Geoff Drury, 27 Creslin Tce, Camden Park 5038, (08) 352 2555 or 295 2778 (ah), special interest group attached to the SA Microprocessor Group which holds separate meetings.
S.A. Microprocessor Group Inc SAMG, The Secretary, P.O. Box 113, Plymton, 5038, 08 278 7288.
Sorcerer Users Group of S.A., Don Ide, 14 Scott Road, Newton 5074.
South Australian Apple Users Club, The Secretary, SAAUC, C/- The Bookshelf, 169 Pirie Street, Adelaide, 5000.
South East Computer Enthusiasts' Group, Glenn Mibus, 3 Millard St, Mount Gambier 5290, 087 25 1046, meetings 2nd and 4th Tuesday of each month from 6.30 at Mt Gambier High School Computer Room, for all machines and interested parties.

COMPUTER CLUB LIST

NSW

Albury-Wodonga Dist Mbee U.G., Eric Eulenstein, 202 Kooba St, Albury, 2640, 060 25 1601.

Apple Users Disk Exchange Club, Peter Lapic, 45 Malabar Street, Canley Vale 2166.

Apple Users Group, Colin Rutherford, P.O. Box 505, Bankstown, 2200, meets 6.30 pm second Monday of each month (Tue after pub. hol.) at Sydney Grammar School, Stanley Street, Sydney, 02 520 0926.

Atari Computer Enthusiasts, Tony Reeve, PO Box 4514, Sydney 2001.

Ausborne, Brian Carney, 477 4492, P.O. Box C530 Clarence Street, Sydney, 2001, meetings third Wednesday each month at 6.30 in the North Shore Council Chambers, for Osborne users.

Ausbug, Stephen Ford, P.O. Box 62, Londonderry, 2753.

Australasia ZX80 Users Group, Tony Mowbray, 87 Murphys Ave, Kieraville, 2500, 042 28 5296, for ZX80/81 Microace owners.

Australasian ZX80 Users Newsletter, 87 Murphys Ave, Kieraville, 2500.

Blue Mountains Microbee Computer Club, Roger Cooper, 047 58 7238.

Blue Mountains Computer Club, Eric Lindsay or T. Macindoe, C/- P.O. Faulconbridge, 2776.

Broken Hill Microbee Users Group, Peter Cotter, 533 Radium Street, Broken Hill, 080 881621.

Central Coast Apple Users Group, C.W. Lee, 662 The Entrance Road, Wamberal 2260, meetings first Tuesday each month at the Niagara Park Public School from 7.30 pm, (043) 84 3419.

Central Coast Computer Club, Max Maughen, P.O. Box 36, Ettalong Beach, 2257, 043 24 2711, 1st and 3rd Tuesday every month at Applied Technology, West Gosford, for all types of computer.

Commodore Users Group, John Guidice, G.P.O Box 4721, Sydney, 2001.

Compucolor Users Group, Tony Lee, 52 Cowan Road, St. Ives 2075, phone (02) 449 8824.

Cumberland Computer User Group, S. O'Neil, 02 682 3851.

DEC Personal Computer Special Interest Group, Marion Rhydderch, DEC Australia, Northern Tower, Chatswood Plaza, Railway Street, Chatswood 2067, 02 412 5252.

Dubbo and District Microbee Users Group, Coralie Taylor, 18 Cunningham Street, Dubbo 2830, meets 4th Wednesday each month at 7.30 in the Dubbo High School Computer Room.

A.P.F. Users Group, Norm McMahon, 288 Kissing Point Road, TURRAMURRA, 2074, 02 44 2645.

Hawkesbury Commodore Computer Club, Richard Farrell, 12 Inverary Drive, Kurmond 2757, meets 4th Tuesday of each month at 7.30pm at Neighbourhood Centre, West Market Street, Richmond.

Hawkesbury MicroBee Computer Club, Bruce Rennie, 045 67 7329.

HP Desktop Computer Users Group, Dr. R. W. Harris, CSIRO Division of Mineral Physics, PMB 7, Sutherland 2232, 02 543 3460

Hunter U. G.- All Microcomputers, Secretary, P.O. Box 39, BROADMEADOW NSW, 2298, Meets on the second Wednesday of each month in Room 308, building W, University of Newcastle at 7.45pm. Membership is primarily Apple II orientated, but anyone with interest in micros welcome.

Illawarra Microbee Computer Club, Ronald Read, 49 Beatus Street, Unanderra, 2526.

Illawarra Super 80 Users Group, Jim O'Grady, Chairman, P.O. Box 1775, Wollongong, 2500.

Kaypro Users Group N.S.W., Harry Richards, 4/2 Bortfield Drive, Chiswick, 2046, 02 713 1585, meets 2nd Tuesday each month at 8.00 pm in the Burwood R.S.L.

Sydney Lotus 1-2-3 User Group, Ron Pollak, (02) 29 5316.

Macarthur Computer Association, J Napier, 23 Athel Tree Crescent, Bradbury 2560, meets first Monday each month at Airds High School, Briar Road Campbelltown at 7.30 each month, all machines are catered for, 046 25 2055.

Macquarie Microbee Users Group, Brian Thompson, meetings first Monday each month at Denistone East Primary School at 7.30 pm, 02 85 1659 after hours.

MEGS (Microcomputer Enthus. Group), John Whitlock, P.O. Box 1309, Chatswood 2067. Meetings third Monday each month at rear of St. Andrew's Presbyterian Church, 37 Anderson Street, Chatswood, (02) 638 1142.

Mi Computer Club, Norma Jackson, P.O Box 21, Waterloo, 2017, 02 662 8888.

Microbee Users Club (Broken Hill), Peter Cotter, 533 Radium Street, Broken Hill 2880, 080 88 1621.

Newcastle Microbee Users Group, Lee Osman, 12 Cleverton Close, Warners Bay 2282, 049 48 8813.

Newcastle Microcomputer Club, Angus Bliss, PO Box 293, Hamilton 2303, meetings 2nd and 4th Monday each month at room G12, Physics Building, Newcastle Uni, 049 67 2433.

N.S.W. Primary School Microbee Users Group, Mr Peter Stretton, c/- Hunters Hill Primary School Alexandra Street, Hunters Hill 2110.

N.S.W. 6800 Users Group, 27 Georgina Ave., Keiraville, 2500.

Northern Beaches Vic User Group, E. Tuxford, 161 Barrenjoey Rd., Newport, 2106, Ph 997 2467, Community Centre (If We're lucky).

Northern N.S.W MICC Chapter, Alen Hartley, Dundurrabin via Dorrigo, 2433, 066 57 8160.

N.S.W Peach User Club, Daniel Soussi, 02 698 8286, weekly meetings on Saturday from 2pm at 'Cybernetics Research' 120-122 Lawson St Redfern.

OSI Users Group, Nigel Bisset, 02 411 7142.

Pocket Computer Users Club, George Antonijevic, 02 683 4296, for those interested in pocket computers, whatever the brand. Meetings held on the first Wednesday of each month at 7.30pm at the 'Woodstock' Community Centre, Church St. Burwood.

Sorcerer Users Group, P.O. Box E162, St James, 2000, meetings 1st Tuesday each month at 7th Floor Datec House, 220 George Street, Sydney at 7.30pm.

Southern Districts Commodore Users Group, Lex Toms, 602 8691, 3 Lucille Crescent, Casula 2170, Meetings 1st and 3rd Wednesday each month, API Hall Currajong Road, Prestons.

Sutherland Super 80 Group, Jim Traeger, 02 525 2018, Super 80.

Sydcom 64 (C64 User Group), Andrew Farrell, meetings first Tuesday of each month at 6.30 pm above Computerwave, George Street, Sydney, 02 99 2640.

Sydney Forth Group, Peter Tregeagle, 10 Binda Road, Yowie Bay, 2228, 02 524 7490, meets 2nd Friday of each month at 7.00pm in the John Goodsell Building, UNSW room LG19.

Sydney MicroBee Users Club, Colin Tringham, 92 6408, PO C233, Clarence St, Sydney 2000, Meetings 3rd Sat each month 1-5 pm McMahons Point Hall, Blues Point Rd North Sydney.

Sydney Peach User Group, Ben Sharif, 261 Northumberland Street, Liverpool, 2170, 02 601 8493.

Sydney TRS-80 Users Group, meetings 2nd, 3rd and 4th Saturday of each month at Botany, phone (02) 666 4716 bus hours.

TAG-The Access Group, Bob Dolton, PO Box 943, Orange 2800, for Access and Actrix users.

T.I. Sydney Home Computer U.G., P.O. Box 149, Pennant Hills, 2120.

Wagga Microbee Users Group, John Simmons, 47 Undurra Drive, Glenfield 2650, 069 31 1302, meetings 1st and 3rd Tuesdays each month in the Tolland-Glenfield Neighbourhood Centre at 8.00pm.

Wizzard User Group, John Mifsod, 150 Bouganville Road, Blackett, 2770, 02 628 0801.

ZX-Spectrum Users Club, Craig Kennedy, P.O. Box 466, Epping, 2121.

QLD

Adventure Club, Christine Ogden, 37 Samford Road, Leichhardt, Ipswich 4305, for all Adventure type game players.

Apple-Q the Brisbane User Group, The Secretary, P.O. Box 721, SOUTH BRISBANE, 4101, Has User Group days every third Sunday of month at Hooper Education Centre, Kuran St. Wavell Heights. Centre is open from 8.30am till 4.30pm, members encouraged to bring Apple along.

Australian Sirius Users Group, P.O. Box 204, CHERMSIDE, 4032, 07 350 2611, Looks after the needs of Sirius One and Victor 9000 computer users. For membership form write to above address.

Basic User Group, Chris Lucey, Cranium Computers, 34 Lawless Street, Blackwater 4717.

Brisbane Medfly Users Group, K.J. Walker, 120 Highgate Street, Coopers Plains 4108.

Brisbane Sinclair (Spectrum) Computer Club, V. Lewis, 37 Samford Road, Leichhardt Ipswich 4305, meets third Sunday at Everton Park State High School, at 2.00, 07 355 7809.

Brisbane Super 80 Users Group, Gary Gatfield, 08 355 3173.

Brisbane Youth Computer Group, A. Harrison, P.O. Box 396, Sunnybank, 4109.

Cairns District Microbee Users Group, Chas Eustance, 21 Marr Street, Edmonton 4869, (070) 554531.

Commodore Computer Users Group QLD, Mrs D D Dillan, P.O. Box 127, STONES CORNER, 4120.

Commodore Users Group, John Egan, P.O. Box 274, SPRINGWOOD, 4127, 07 287 2705, Is for owners of Pet/CBM and Vic-20 machines. Meetings held on the first Tuesday of the month at 130 Petrie Terrace, Brisbane.

Computer Owner's Group, Betty Adcock, 42 Lucan Ave, Aspley, 4034, 263 4268, 2nd Wednesday each month, 7.45 pm, all kinds of computer are catered for.

DEC Personal Computer Special Interest Group, see NSW entry.

Gold Coast Microbee User Group, Col McLaren, 1-100 Imperial Parade, Labrador, 4215, 075 314610, meetings first Sunday each month, 3.00 at the Southport High School.

IREE Microcomputer Interest Group, N Wilson, P.O. Box 811, ALBION, 4010.

Mackay Microbee User Group, Geoff Gehring, Box 230, Mackay, 4740, 079 42 3214.

Osborne Users Group of Qld Uni, Glen McBride, meetings 2nd Thursday each month open to all, 07 371 4243.

Superboard Users Group, Ed Richardson, 146 York Street, NUNDAH, 4012.

Tandy, Apple, Commodore UG, Chris Lucey, 34 Lawless Street, Blackwater 4717.

The Microcomputer Society, The Secretary, P.O. Box 580, FORTITUDE VALLEY, 4006, Meetings are held on the second Friday of each month in the Old Town Hall, corner Vulture and Graham Streets, Sth Brisbane. Meetings start at 7.30pm if main gate is closed use the back stairway.

Townsville MicroBee User Group TMUG, Mannie Van Rijswijk, PO Box 5751 M.C., Townsville 4810, meetings 7.30 pm on second and fourth Monday each month on the Ground Floor, St Margaret Mary's Secondary School, Crowle Street, Hermit Park.

TRS80/System 80 Computer Group, Secretary, 16 Laver Street, Macgregor 4109, (07) 343 5771, meets first Sunday each month at Lindum Hall, Lindum Street, Lindum at 2.00pm.

ZX 81 Club, P. Carswell, 22 Braud Street, BUNDABERG, 4670.

NZ

1802 Users Group, P.O. Box 6210, AUCKLAND, NEW ZEALAND, For those who own an ETI-660 or a COSMAC VIP, you can contact the 1802 Users Group. Be kind and send them a return addressed envelope and some International Reply Coupon.

Nelson Vic Users Group, Peter Archer, Nelson VIC Users Group, C/o P.O. Box 860, Nelson N.Z., for Vic and Commodore.

Wellington Microcomputer Soc. Inc, Lindsay Williams, 2 Pope Street, PIMMERTON, NEW ZEALAND.

ZX81 Club, R Skelton, C/- Harbourside Orchard, WAIUKU NEW ZEALAND.

TAS

***DEC Personal Computer Special Interest Group,** see NSW entry.

Devonport Computer Interest Group, John Steveson, R.S.D 422, SHEFFIELD TASMANIA, 7306, 004 92 3237.

Spectravideo Computer Users Group, Mr W. P. Decket, 48 Heather Street, LAUNCESTON, 7250, 44 4836, Membership to the club costs $15 which entitles members to a newsletter and to discounts on computer equipment.

Tasbeeb, John Hannon, PO Box 25, North Hobart 7000, meetings first Monday each month at Elizabethan Matriculation College in D Block at 8pm, 002 34 2704, for BBC computers.

Tasmanian T.I. User Group, Coordinator, 1 Benboyd Court, ROKEBY, 7019, 002 29 4009, meetings third Sunday of each month at University of Tasmania, room 373.

TAS-Micro, Peter Deckert, Unit 1/456 West Tamar Road, RIVERSIDE, LAUNCESTON, 7250.

Tasmanian Commodore Users Assoc., Vincent T. Staggard, The Secretary, G.P.O. Box 391D, Hobart, 7000, 002 72 0295, Commodore and others.

Tasmanian OSI User Group, David Tasker, 111 Bass Highway, WESTBURY, 7303.

COMPUTER CLUB LIST

VIC

Apple Users Society of Melbourne, D. Halprin, 03 387 3221, PO Box 43, Forest Hill 3131.

AT Microcomputer Club, Grant Forest, 03 8792257ah, 03 699 2888 bh. This club has been formed for people interested in the Applied Technology DGOS Z80.

Atari User Groups Melbourne, Kelvin Eldridge, P.O. Box 173, 3073.

Australian Forth Interest Group, Tony Latermore, P.O. Box 704, SALE, 3850, 051 44 2011.

Australian North Star Users Assoc., P.O. Box 194, WANGARATTA, 3677.

Ballarat Computer Users Group, Publicity Officer: John Preston, 053 31 4363.

Billanook Computer Forum, Mr Maurie Canterbury, Cardigan Road, Mooroolbark 3138, (03) 725 5388.

BUG 80 (Burwood Users Group), P.O. Box 46, BLACKBURN SOUTH, 3130.

Chip 8, 6800, 1802 User Group, Frank Rees, 27 King Street, BOORT, 3537.

Compucolor Users Group, L Ferguson, 12 Morphett Avenue, ASCOT, 3342.

DEC Personal Computer Special Interest Group, see NSW entry.

Forth Interest Group, Lance Collins, P.O. Box 103, CAMBERWELL, 3124, (03) 29 2600, Meets on the first Friday of the month at the Bowen Street Neighbourhood Centre, 102 Bowen Street, Camberwell South.

Geelong Commodore Computer Club, D Gerrard, 15 Jacaranda Place, Belmont 3216, (03) 44 2863.

Geelong Computer Club, Peter McKeon, P.O. Box 93, GEELONG, 3220.

IBM & Columbia Computer Users Club, Giles Bray, 22/11 Auburn Grove, Hawthorn East, 3123, 82 7632, 2nd Tuesday each month, 7.30 at the Victorian College of Pharmacy.

Kaypro Users Group of Victoria, George Kunz, PO Box 159, Forest Hill 3131, 03 857 5462, meetings fourth Sunday each month at Burwood State College Community Resources Centre at 2 pm.

KAOS (Ohio Scientific), David Anear, 49 Millewa Crescent, DALLAS, 3047.

Latrobe Valley Colour Computer U.G., George Francis, 31 Donald Street, Morwell, 3840, 22 1389, for TRS-80 & MC10 users.

Melbourne Atari Computer Enthusiast, PO Box 133, Mulgrave North 3170, meetings held on first Sunday of each month at 11.40am at Monash University Rotunda.

Melbourne Lotus 1-2-3 Users Group, Robert Taylor, (03) 267 4800.

Melbourne MicroBee Users Group, Pres Grant Forrest, PO Box 157, Nunawading 3131, meetings 7.00 pm second Wednesday each month at VIC State College-Burwood Campus, 221 Burwood Highway, Burwood.

Melbourne PC User Group, Stephen Wagen or Christopher Leptos, c/o Pannell Kerr Foster, 14th Floor, 500 Bourke Street, Melbourne 3000, phone (BH) (03) 605 2222.

Melbourne Peach Users Group (MPUG), P.O. Box 191, Rosanna, 3084, 03 434 2541.

Melbourne Super 80 Users Group, Hon. Sec. Victor Shuttleworth, 03 723 2713.

MICOM, Microcomputer Club of Melb., P.O. Box 60, CANTERBURY, 3126.

National Mutual Micro Users Group, R Prewett, NMLA, PO Box 2830AA, GPO Melbourne 3001, for National Mutual staff.

National Sinclair User Group, P.O. Box 148, GLEN WAVERLEY, 3150.

National ZX80 Users Club, 24 Peel Street, COLLINGWOOD, 3066.

NEC Portable User's Group, D Green, meetings second Wednesday of each month at Myers Computer Centre Lonsdale Street at 7.30 pm, (03) 611 3380.

Northn/Westn Sub. Comp. Users Group, John King (Secretary), 284 Union Road, MOONEE PONDS, 3039, 03 338 9304, Contact CP/M Data Systems.

Peninsula Computer Club, George Thompson, 3 Patterson Street, Bonbeach, 3196, 772 2674, 2nd Tuesday each month at Chisholm College, Frankston, many types of computers are catered for.

Sharp Computer Users Association, The President, 7 Faye Street, East Burwood 3151.

Spectravideo Users Group, Mitch Raitt, Fernhill, Tindal's Road, Warrandyte 3113, (03) 844 3485.

Sorcerer Computer Users (Australia), Secretary, G.P.O. Box 2402, MELBOURNE, 3001.

TI-99/4A Users Group Melbourne, Wayne Worladge, 123 Ashburn Grove, Ashburton, 03 25 1832.

The Motorola User Group Soc. (MUGS), Clive Allan, 11 Haros Avenue, NUNAWADING, 3131, 03 878 1298, Group is interested in 6800/02/09 based computers, particularly if running Flex although this is not a prerequisite to join.

Vic. Assoc. of Computer Educators, Arthur Totrall, P.O. Box 69, WHITTLESEA, 3757.

Victorian VZ200 User Group, Luigi Chiodo, 24 Don St., Reservoir, 3073, 03 460 3770.

Victorian Wizzard Users Group, Barry Klein, 24 Russell Street, Bulleen 3105.

Yarrawonga Computer User Group, Chris Younger, 057 44 3859, 10 Witt Street, Yarrawonga, 3730, for all machines.

ZX81 Software Exchange, C/- Chips Taens, 5 Muir Street, MT. WAVERLEY, 3149.

WA

Agriculture Users Group, c/- Mr R Fenwick, Dept. of Agriculture, Albany 6330. For farmers and the agriculture service industries.

CU WEST WA Compucolor/Intecolor U.G, John Newman, 8 Hillcrest Drive, DARLINGTON, 6070.

DEC Personal Computer Special Interest Group, see NSW entry.

KAOS-W.A.,Gerry Ligtermoet, 09 450 5081, 39 Cloister Ave, MANNING, 6152, for Ohio Scientific Users.

OSWEST-Osborne Users Group of W.A., Mal Ferguson, PO Box 199, Mundaring 6554, meets first and third Wednesday at the Palmyra Recreation Centre and the Subiaco Exhibition Hall respectively from 7.30, 09 295 1449, for Osborne and other interested computer users.

Kaypro User Group of WA, Ainslie Sharpe, PO Box 91, Claremont 6010, 09 384 5511, meetings 2nd and 4th Mondays of each month in the Canteen of the Department of Agriculture, Jarrah Road, South Perth.

Perth 80 Users Group, C Powell, 09 457 6849, for System 80 and TRS 80 Users.

Perth Hitachi Peach Club, The Secretary, 1 Charf Court, Riverton, 6155, 09 367 5880, for Hitachi Peach & 6809s.

Sorcerer Computer Users of Aust., The Secretary, 90 King George Street, PERTH SOUTH, 6151, 09 367 6351.

Super 80 Users Group Perth, Garry Black, 19 Bendigo Way, CITY BEACH, 6015, 09 385 8813.

The W. A. Atari Computer Club, Mr Alf Gaebier (Secretary), P.O. Box 7169, Cloisters Square, PERTH, 6000.

W.A. Microbee Club, Mike Oborn, 09 447 5366.

Vic-Ups, G. Padfield, 09 451 4629.

W.A. Wizzard Users Group, John REid, 13 Wenlock Road, Wattleup 6166, 09 410 2359.

W.A. ZX Users Group, Phil Taylor, 09 328 4111, (bh).

WA University Computer Club, 2nd Floor, University of WA, Guild Building, 09 386 1455.

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