FIRST CANADIAN COMPUTER NEWS

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Winners:

Judging the entries in the First Canadian Computer Contest was a real delight. The winners are :

First Prize : $300 : Wayne Hammerschlag : Battleship
Second Prize : $150 : Duncan Elliott : Master Mind
Third Prize : $ 50 : Chris Gray : First Canadian Car Race

We were surprized to learn that Wayne and Duncan are High School students (Ph.D's eat your hearts out), and even more surprized to discover that they both attend Silverthorn Collegiate Inst. in Etobicoke. So our congratulations also go to their teacher, Mr.   Lovelace, who is obviously doing an excellent job.

Wayne's program was selected because, in addition to being a very interesting game to play, it is excellently documented. In fact, many manufacturers supplying the hobby computer market would do well to follow this example.

Duncan's program is a gem. It uses only 50 lines of code, but it keeps you going for hours at any level of difficulty you wish to set for yourself.

Chris's program has all that a good game should have. It is simple, easy to learn, fast and challenging.

As we promised, the winning programs are reprinted in this news- letter. Wayne's and Duncan's programs were both written for the PDP-8. Chris's program was written for the SWTP 6800. These may require minor modifications if you wish to run them on other systems.

SOL owners tune up !

Software Technology's MUSIC SYSTEM is available in a package that runs in 2K and includes :

. A high level music language with a one pass compiler with output that can be located anywhere in memory. Any 3-part score can be entered. Even non-musicians can use it with ease.

. All standard musical notation is supported, including any key signature : any time signature : any clef notation : note values from whole to 1/64th. notes : rests : dotted notes : triplets : staccato : articulation : accidentals.

. Full support for repeats : second endings : refrains.

. Transpose to or from any key.

All you need is your own hi-fi (with amplifier) and jack.

Complete hardware and software package available from stock.

$30.00 postpaid.

BATTLESHIP
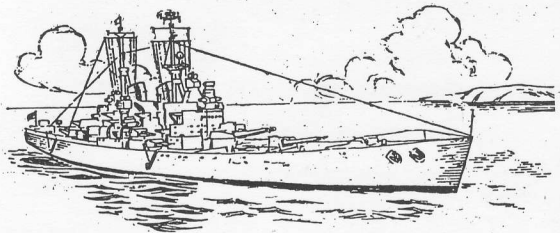
NAVAL INTELLIGENCE HAS JUST LEARNED THE APPROXIMATE LOCATION OF THE GERMAN BATTLESHIP BISMARK WHICH IS A MENACE TO CARGO SHIPS IN YOUR AREA. ON THE FIRING GRID PRESENTED TO YOU LIES THE BISMARK , HE CANNOT MOVE BEYOND IT. NATURALLY HE WILL BE MOVING CONSTANTLY AT RANDOM SPEED AND DIRECTION BUT THE BISMARK , AS WELL AS YOUR OWN VESSEL , CAN OCCUPY ONLY ONE GRID UNIT AT A TIME. A SHOT ON THIS GRID UNIT WILL BE A MAJOR HIT WHILE A SHOT WITHIN 5 GRID UNITS WILL BE A MINOR HIT. ANY HIT ON THE BISMARK WILL REDUCE ITS SPEEDAND FIRING RANGE , YES HE CAN AND WILL FIRE BACK AT YOU WHEN IN RANGE. YOU TO HAVE A LIMITED FIRING RANGE SO BEFORE YOU CAN EVEN DAMAGE THE BISMARK YOU MUST MOVE WITHIN RANGE. THE BISMARK WILL TAKE EVASIVE MANOUVERS WHEN IT SUFFERS A MINOR HIT OR SENSES YOUR POSITION (IE. HE WILL MOVE IN THE OPPOSITE DIRECTION WHEN WITHIN 5 GRID UNITS FROM YOU OR AFTER A MINOR HIT). YOUR VESSEL HAS A LIMITED FUEL AND POWER SUPPLY , LIMITED AMMUNITION , LIMITED FIRING RANGE AND A LIMITED MAXIMUM SPEED. YOU HAVE A CHOICE OF ONE OF FOUR COMMANDS:

#1: STATUS REPORT

        USES 2 UNITS OF POWER
        TELLS YOUR ;

                POWER LEVEL
                AMMUNITION LEVEL
                GRID POSITION
                MAXIMUM SPEED
                MAXIMUM GUN RANGE
                AND OPTIONAL DAMAGE REPORTS

#2: SONAR

      USES 5 UNITS OF POWER
      GIVES LAST REPORTED DISTANCE OF BISMARK WITH DIRECTION
      (IF YOU ARE WITHIN RANGE BISMARK WILL SENSE YOUR SONAR
      PULSES AND FIRE AT YOU)

#3: COURSE CHANGE

        USES 1 POWER UNIT
        ALLOWS CHANGE OF YOUR HEADING
        INPUT TO BE ENTERED IN THE FOLLOWING
        MANNER;

"COMMAND" COURSE [RETURN]
"NEW HEADING" WEST FULL [RETURN]

        WHERE WEST IS THE DIRECTION YOU WISH TO TRAVEL
        AND FULL IS THE SPEED (IN THIS CASE MAX. BUT YOU
        MAY ENTER AN INTEGER VALUE BETWEEN 1 AND THE
        MAX GRID UNIT SPEED - ATTAINED BY DIVIDING YOUR
        NAUTICAL SPEED GIVEN ON STATUS REPORT BY 5)

    * NOTE: TO STOP YOUR VESSEL REPLY TO "NEW COURSE"
          WITH "FULL STOP" AND YOUR VESSEL WILL REMAIN
          STATIONARY , OTHERWISE YOUR SHIP WILL BE IN
          CONSTANT MOTION WITH DIRECTION AND SPEED
          DETERMINED BY YOUR COURSE HEADING SPECIFIED.
          YOUR POSITION CAN EASILY BE CALCULATED FROM YOUR
          COURSE HEADING SPECIFICATIONS AND YOUR STATUS
          REPORT. YOUR VESSEL MOVES ONE GRID SPACE PER
          GRID UNIT SPEED EVERY COMMAND CYCLE (I.E. EVERY
          TIME "COMMAND" IS PRINTED ON THE TERMINAL)

  E.G.

        IF YOUR COURSE WAS WEST 5 AND YOUR STATUS
        REPORT STATED YOUR WERE AT 30,40 WHEN YOU
        ENTER YOUR NEXT COMMAND YOUR VESSEL WILL
        BE AT 25,40.

#4: SHOOT

     USES 1 UNIT OF POWER
     FIRES ONE SHOT
     INPUT TO BE ENTERED IN THE FOLLOWING MANNER;
          [COMMAND?]SHOOT X,Y
     WHERE X,Y REPRESENT THE COORDINATES OF THE SHOT
     IN A CARTESION GRID WITH YOUR VESSEL AS THE
     ORIGIN . E.G.
          SHOOT 6,-4 WOULD FIRE A SHOT 6 GRID UNITS TO
          THE RIGHT OF YOUR VESSEL AND 4 UNITS BELOW.

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40 REM
45 REM
50 REM        THIS PROGRAM WAS WRITTEN FOR THE FIRST CANADIAN
55 REM        COMPUTER STORE LTD. AS AN ENTRY TO THE FIRST
60 REM        CANADIAN COMPUTER CONTEST........
65 REM
70 REM
75 REM        WRITTEN BY :
80 REM            MR. WAYNE HAMMERSCHLAG
85 REM            7 FIELDSTONE RD. ETOBICOKE
90 REM            ONTARIO , CANADA    M9C-2J5
95 REM
100 REM       <<<<<<<<< >>>>>>>>>>
110 REM       <<<<< BATTLE SHIP >>>>>>
120 REM       <<<<<<<<< >>>>>>>>>>
130 REM
140 REM
150 REM           VARIABLE DIRECTORY
160 REM           ==================
170 REM
180 REM       A$ = INPUT COMMAND BUFFER
190 REM       S  = SONAR RANGE (GRID UNITS)
200 REM       S1 = BISMARK'S MAX. SPEED (GRID UNITS)
210 REM       S2 = PLAYER'S MAX. SPEED
220 REM       A1 = BISMARK'S AMMUNITION LEVEL
230 REM       A2 = PLAYER'S AMMUNITION LEVEL
240 REM       D1 = BISMARK'S DAMAGE LEVEL
250 REM       D2 = PLAYER'S DAMAGE LEVEL
260 REM       P  = POWER LEVEL
270 REM       R1 = BISMARK'S MAX. GUNNING RANGE (GRID UNITS)
280 REM       R2 = PLAYER'S MAX. GUNNING RANGE ( GRID UNITS)
290 REM       G1 = BISMARK'S GUNNING ACCURACY (MINOR HIT DIF.)
300 REM       G2 = PLAYER'S GUNNING ACCURACY (MINOR HIT DIF.)
310 REM       B  = GRID SIZE
320 REM       C1 = PLAYER'S COURSE DIRECTION
330 REM       C2 = PLAYER'S COURSE SPEED
340 REM       L1,L2 = BISMARK'S GRID COORDINATES (X,Y)
350 REM       L3,L4 = PLAYER'S GRID COORDINATES (X,Y)
360 REM
370 REM           INITIALIZATION
380 REM           ==============
390 REM
400 DIM A$(72)
410 PRINT "DO YOU WISH BRIEFING";
420 INPUT A$
430 IF SEG$(A$,1,1) = "Y" THEN 490
440 PRINT "DO YOU WISH GRID MAP";
450 INPUT A$
460 IF SEG$(A$,1,1) = "N" THEN 500
470 GOSUB 3710
480 GOTO 500
490 GOSUB 3630
500 RANDOMIZE
510 LET S=15\S1=3\S2=5\A1=50\A2=40\D1=10\D2=10\P=150\R1=8\R2=6
520 LET G1=3\G2=5\B=50\C1=0\C2=0
530 LET X = INT (RND(0)*B+.5)
540 LET Y = INT (RND(0)*B+.5)
550 IF X=25 THEN 530
560 IF Y=25 THEN 540
570 LET L1=X\L3=B-X
580 LET L2=Y\L4=B-Y
590 LET V=SGN(X-(B/2))*-1\H=SGN(Y-(B/2))*-1
600 GOSUB 2230
610 REM
620 REM           COMMAND DECODER
630 REM           ================
640 REM
650 GOSUB 2680
660 GOSUB 3460
670 IF P <= 0 THEN 1470
680 PRINT "COMMAND";
690 INPUT A$
700 IF SEG$(A$,1,6) = "STATUS" THEN 1550
710 IF SEG$(A$,1,5) = "SHOOT" THEN 800
720 IF SEG$(A$,1,5) = "SONAR" THEN 1260
730 IF SEG$(A$,1,6) = "COURSE" THEN 3080
740 PRINT "ILLEGAL COMMAND !"
750 GOTO 680
760 REM
770 REM           FIRING ROUTINE
780 REM           ==============
790 REM
800 IF A2 = 0 THEN 1610
810 LET P =P-1
820 LET X=VAL(SEG$(A$,7,POS(A$,",",5)-1))
830 IF ABS(X) <= R2 THEN 870
840 PRINT "ERROR IN SHOT COORDINATES"
850 PRINT "OUT OF OUR RANGE , CHECK STATUS !!"
860 GOTO 650
870 LET X=X+L3
880 LET Y=VAL(SEG$(A$,POS(A$,",",5)+1,LEN(A$)))
890 IF ABS(Y) <= R2 THEN 910
900 GOTO 840
910 LET Y=Y+L4
920 LET A2=A2-1
930 IF L1 <> X THEN 950
940 IF L2=Y THEN 1090
950 IF ABS(L2-Y) > G2 THEN 1180
960 IF ABS(L1-X) > G2 THEN 1180
970 PRINT "A MINOR HIT ON THE BISMARK!"
980 LET D1=D1-1
990 LET V=SGN(L2-Y)
1000 LET H=SGN(L1-X)
1010 IF S1 = 0 THEN 1040
1020 LET S1 = S1-1
1030 GOSUB 1960
1040 GOSUB 2230
1050 LET X1=S1
1060 LET Y1=S1
1070 GOSUB 2820
1080 GOTO 650
1090 PRINT "A MAJOR HIT ON THE BISMARK !!!"
1100 LET D1 = D1-3
1110 LET S1 = S1-2
1120 IF S1 > 0 THEN 1150
1130 LET S1 = 0
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1140 GOSUB 1960                                        2280 IF X>< 0 THEN 2360
1150 GOSUB 2230                                        2290 IF Y><0 THEN 2360
1160 GOSUB 2680                                        2300 LET D1=D1-2
1170 GOTO 650                                          2310 LET A1=A1-2
1180 PRINT "A MISS !"                                  2320 PRINT "ACCIDENTAL PREMATURE EXPLOSION ON BOARD BISMARK !!"
1190 GOSUB 2230                                        2330 GOSUB 1960
1200 GOSUB 2680                                        2340 GOSUB 2680
1210 GOTO 650                                          2350 RETURN
1220 REM                                               2360 LET X=L1+X
1230 REM            SONAR ROUTINE                      2370 LET A1=A1-1
1240 REM            =============                      2380 LET Y=L2+Y
1250 REM                                               2390 IF X >< L3 THEN 2410
1260 LET P = P-5                                       2400 IF Y= L4 THEN 2520
1270 IF ABS(L1-L3) > S THEN 1450                       2410 IF ABS(L3-X) < G1 THEN 2440
1280 IF ABS(L2-L4) > S THEN 1450                       2420 PRINT "HE MISSED"
1290 IF S1 <= 0 THEN 1420                              2430 RETURN
1300 PRINT " BISMARK'S SPEED =";(X1+Y1)*3.5;"KNOTS"    2440 IF ABS(L4-Y) > G1 THEN 2420
1310 PRINT "           DISTANCE =";ABS(L1-L3);",";ABS(L2-L4)  2450 PRINT "YOU SUFFERED A MINOR HIT!"
1320 PRINT "            DIRECTION =";                  2460 LET D2=D2-1
1330 IF SGN(H) = -1 THEN 1360                          2470 LET R2=R2-(10-D2)/5
1340 PRINT " NORTH";                                   2480 IF D2>0 THEN 2500
1350 GOTO 1370                                         2490 PRINT "YOU'RE SINKING !!!!" \ GOTO 1880
1360 PRINT "SOUTH";                                    2500 LET S2=S2-1
1370 IF SGN(V) = -1 THEN 1400                          2510 RETURN
1380 PRINT "WEST"                                      2520 PRINT "YOU SUFFERED A MAJOR HIT !"
1390 GOTO 1440                                         2530 LET D2=D2-2.5
1400 PRINT "EAST"                                      2540 LET R2=R2-(10-D2)/5
1410 GOTO 1440                                         2550 LET S2=S2-2
1420 PRINT "BISMARK'S ENGINES OUT"                     2560 IF D2 <= 0 THEN 2490
1430 PRINT "CAN'T LOCATE !!"                           2570 RETURN
1440 GOTO 600                                          2580 IF K = 1 THEN 2570
1450 PRINT "NOTHING IN RANGE"                          2590 LET K=1
1460 GOTO 660                                          2600 PRINT "RADIO INTERCEPT>>>>>BISMARK OUT OF AMMUNITION !!!!"
1470 PRINT "OUT OF FUEL & POWER !!!!"                  2610 RETURN
1480 STOP                                              2620 REM
1490 PRINT "OUT OF AMMUNITION !!!!"                    2630 REM            BISMARK MOVE ROUTINE
1500 STOP                                              2640 REM            ====================
1510 REM                                               2650 REM
1520 REM            STATUS ROUTINE                     2660 REM            RANDOM COURSE ENTRY
1530 REM            ==============                     2670 REM
1540 REM                                               2680 IF ABS(L1-L3) > 5 THEN 2750
1550 LET P=P-2                                         2690 IF ABS(L2-L4) > 5 THEN 2750
1560 IF P=> 0 THEN 1580                                2700 LET X1 = S1
1570 LET P=0                                           2710 LET H = SGN(L1-L3)
1580 PRINT "AMMUNITION LEVEL =";A2;"SHOTS LEFT"        2720 LET Y1 =S1
1590 PRINT "MAXIMUM GUN RANGE =";INT(R2);"UNITS"       2730 LET V = SGN(L2-L4)
1600 PRINT "YOUR POSITION IS ";L3;",";L4               2740 GOTO 2820
1610 PRINT "POWER & FUEL LEVEL =";P;"UNITS"            2750 LET H = SGN(SGN(RND(0)*2-1)+.1)
1620 IF D2 = 10 THEN 1760                              2760 LET X1 = INT(RND(0)*S1+.5)
1630 IF D2 > 9 THEN 1760                               2770 LET V=SGN(SGN(RND(0)*2-1)+.1)
1640 IF D2 < 5 THEN 1710                               2780 LET Y1 = INT(RND(0)*S1+.5)
1650 PRINT "MINOR DAMAGE TO AFT , DECK FIRE UNDER CONTROL"  2790 REM
1660 IF D2 > 8 THEN 1690                               2800 REM            EVASIVE MANOEUVER ENTRY
1670 PRINT "2 MEN KILLED , 7 BADLY INJURED"            2810 REM
1680 GOTO 1760                                         2820 LET L1 = ABS(L1+(X1*H))
1690 PRINT "5 MEN BADLY INJURED"                       2830 LET L2 = ABS(L2+(Y1*V))
1700 GOTO 1760                                         2840 FOR U1 = 1 TO X1
1710 PRINT "HEAVY DAMAGE TO AFT , PORT MAIN GUNS DISABLED"  2850     IF L3 = ABS(L1-(U1*H)) THEN 2880
1720 IF D2 < 3 THEN 1750                               2860     IF L3 = 2*B-(L1-(U1*H)) THEN 2880
1730 PRINT "7 MEN KILLED , 17 BADLY INJURED"           2870 NEXT U1
1740 GOTO 1760                                         2880 GOTO2930
1750 PRINT "12 MEN KILLED ,28 BADLY INJURED"           2890 FOR U1 = 1 TO Y1
1760 IF S2 <3 THEN 1820                                2900     IF L4 = ABS(L2-(U1*V)) THEN 3010
1770 IF S2 < 5 THEN 1800                               2910     IF L4 = 2*B-(L2-(U1*V)) THEN 3010
1780 PRINT "SHIP'S ENGINES IN NORMAL CONDITION,TOP SPEED 35 KNOTS"  2920 NEXT U1
1790 GOTO 1900                                         2930 IF L1<= B THEN 2960
1800 PRINT "SHIP'S ENGINES SUFFERED MINOR DAMAGE,TOP SPEED";S2*7;"KNOTS"  2940 LET L1=2*B-L1
1810 GOTO 1900                                         2950 LET H=H*-1
1820 IF S2< 0 THEN 1850                                2960 IF L2<= B THEN 2990
1830 PRINT "SHIP'S ENGINES DAMAGED BEYOND REPAIR , CAN'T MANOEUVER"  2970 LET L2=2*B-L2
1840 GOTO 1900                                         2980 LET V=V*-1
1850 PRINT "SHIP'S ENGINES SEVERELY DAMAGED , TOP SPEED";S2*7;"KNOTS"  2990 IF L1><L3 THEN 3030
1860 IF P > 0. THEN 1900                               3000 IF L2><L4 THEN 3030
1870 IF A2 > 0 THEN 1900                               3010 PRINT "THE BISMARK RAMMED YOU !!"
1880 PRINT "WE'RE DONE FOR ! ABANDON SHIP"             3020 GOTO 1880
1890 STOP                                              3030 RETURN
1900 IF D1 > 0 THEN 650                                3040 REM
1910 STOP                                              3050 REM            COURSE CHANGE
1920 REM                                               3060 REM            =============
1930 REM            BISMARK SURVEYED STATUS ROUTINE    3070 REM
1940 REM            ===============================    3080 PRINT "NEW COURSE";
1950 REM                                               3090 LET P = P-1
1960 IF D1 < 3 THEN 2020                               3100 INPUT A$
1970 IF D1 = 10 THEN 2060                              3110 IF SEG$ (A$,1,9) = "FULL STOP" THEN 3340
1980 IF D1 > 6 THEN 2040                               3120 IF SEG$ (A$,1,5) = "NORTH" THEN 3300
1990 PRINT "SEVERE DAMAGE,VISIBLE DECK FIRE"           3130 IF SEG$ (A$,1,5) = "SOUTH" THEN 3260
2000 LET R1= R1-(10-D1)/7                              3140 IF SEG$ (A$,1,4) = "EAST" THEN 3220
2010 GOTO 2060                                         3150 IF SEG$ (A$,1,4) = "WEST" THEN 3180
2020 PRINT "PARTIALLY CRIPPLED, MAIN GUNS OUT ,SIGNALED FOR HELP"  3160 PRINT "ARE YOU NUTS ?????"
2030 GOTO 2000                                         3170 GOTO 650
2040 PRINT "MINOR DAMAGE"                              3180 LET B$ = SEG$(A$,6,LEN(A$))
2050 GOTO 2000                                         3190 GOSUB 3360
2060 IF S1 < 1 THEN 2150                               3200 LET C1=4
2070 IF S1 < 2 THEN 2130                               3210 GOTO 650
2080 IF S1 < 3 THEN 2110                               3220 LET B$ = SEG$(A$,6,LEN(A$))
2090 PRINT "ENGINES IN GOOD CONDITION"                 3230 GOSUB 3360
2100 RETURN                                            3240 LET C1=2
2110 PRINT "MINOR ENGINE DAMAGE"                       3250 GOTO 650
2120 RETURN                                            3260 LET B$ = SEG$(A$,7,LEN(A$))
2130 PRINT "ENGINE'S BADLY DAMAGED"                    3270 GOSUB 3360
2140 RETURN                                            3280 LET C1=3
2150 PRINT "ENGINES OUT , CAN'T MANOEUVER !!"          3290 GOTO 650
2160 IF D1 > 0 THEN 2140                               3300 LET B$ = SEG$(A$,7,LEN(A$))
2170 PRINT "IT'S SINKING!!! -- YOU'VE DONE IT !"       3310 GOSUB 3360
2180 GOTO 1550                                         3320 LET C1=1
2190 REM                                               3330 GOTO 650
2200 REM            BISMARK SHOT ROUTINE               3340 LET C2=0\C1=0
2210 REM            ====================               3350 GOTO 650
2220 REM                                               3360 IF SEG$(B$,1,4)="FULL" THEN 3400
2230 IF A1 <= 0 THEN 2580                              3370 LET C2 = VAL(SEG$(B$,1,LEN(B$)))
2240 IF ABS(L1-L3) > R1+G1 THEN 2350                   3380 IF C2 > S2 THEN 3440
2250 IF ABS(L2-L4) > R1+G1 THEN 2350                   3390 RETURN
2260 LET X = INT(RND(0)*R1+.5)*SGN(L3-L1)              3400 LET C2=S2
2270 LET Y = INT(RND(0)*R1+.5)*SGN(L4-L2)              3410 RETURN
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3420 PRINT "WE COLLIDED WITH THE BISMARK !"
3430 GOTO 1880
3440 PRINT "CHECK STATUS , CAN'T MAKE THAT SPEED !"
3450 GOTO 650
3460 IF C1/2 = INT(C1/2) THEN 3530
3470 LET L4 = L4-(SGN(C1-2.5)*C2)
3480 IF L3>< L1 THEN 3520
3490 FOR U1 = 1 TO C2
3500    IF L2 = L4+(SGN(C1-2.5)*U1) THEN 3420
3510 NEXT U1
3520 RETURN
3530 LET L3 = L3-(SGN(C1-2.5)*C2)
3540 IF L4 >< L2 THEN 3580
3550 FOR U1 = 1 TO C2
3560    IF L1 = L3+(SGN(C1-2.5)*U1) THEN 3420
3570 NEXT U1
3580 RETURN
3590 REM
3600 REM            INSTRUCTION AND MAPPING ROUTINE
3610 REM            ===================================
3620 REM
3630 FILE#1: "BRIEF.LS"
3640 FILEV#2: "LPT: "
3650 INPUT#1: A$
3660 IF END#1 THEN 3690
3670 PRINT#2: A$
3680 GOTO 3650
3690 CLOSE#1
3700 CLOSE#2
3710 FILEV#1: "LPT: "
3720 PRINT#1: \PRINT#1: \PRINT#1:
3730 GOSUB 3960
3740 PRINT#1:
3750 PRINT#1: TAB(7);50;
3760 GOSUB 4000
3770 PRINT#1:50
3780 FOR Y = 49 TO 1 STEP -1
3790    IF Y/5 >< INT(Y/5) THEN 3840
3800 PRINT#1: TAB(7);Y;
3810 GOSUB 4000
3820 PRINT#1:Y
3830 GOTO 3880
3840 FOR X = 11 TO 61 STEP 5
3850    PRINT#1: TAB(X);"+";
3860 NEXT X
3870 PRINT#1:
3880 NEXT Y
3890 PRINT#1: TAB(7);0;
3900 GOSUB 4000
3910 PRINT#1: 0
3920 GOSUB 3960
3930 PRINT#1:
3940 CLOSE#1
3950 RETURN
3960 FOR X = 0 TO 50 STEP 5
3970 PRINT#1: TAB(X+10); X;
3980 NEXT X
3990 RETURN
4000 FOR X = 0 TO 50
4010 PRINT#1: TAB(X+11); "+";
4020 NEXT X
4030 RETURN
4040 END
```

```
      0    5   10   15   20   25   30   35   40   45   50
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  5  ++++++++++++++++++++++++++++++++++++++++++++++++++   5
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  0  ++++++++++++++++++++++++++++++++++++++++++++++++++   0
      0    5   10   15   20   25   30   35   40   45   50
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BRANCH	:	FROM LINES
4000	:	3760$, 3810$, 3900$
3960	:	3730$, 3920$
3880	:	3830$
3840	:	3790*
3710	:	470$
3690	:	3660*
3650	:	3680#
3630	:	490$
3580	:	3540*
3530	:	3460*
3520	:	3480*
3460	:	660$
3440	:	3380*
3420	:	3560* , 3500*
3400	:	3360*
3360	:	3190$, 3230$, 3270$, 3310$
3340	:	3110*
3300	:	3120*
3260	:	3130*
3220	:	3140*
3180	:	3150*
3080	:	730*
3030	:	3000* , 2990*
3010	:	2910* , 2900*
2990	:	2960*
2960	:	2930*
2880	:	2860* , 2850*
2820	:	2740# , 1070$
2750	:	2680* , 2690*
2680	:	650* , 1160$, 1200$, 2340$
2580	:	2230*
2570	:	2580*
2520	:	2400*
2500	:	2480*
2490	:	2560*
2440	:	2410*
2420	:	2440*
2410	:	2390*
2360	:	2280* , 2290*
2350	:	2240* , 2250*
2230	:	1040$, 1190$, 600$, 1150$
2150	:	2060*
2140	:	2160*
2130	:	2070*
2110	:	2080*
2060	:	2010# , 1970*
2040	:	1980*
2020	:	1960*
2000	:	2050* , 2030*
1960	:	2330$, 1140$, 1030$
1900	:	1790# , 1810# , 1840# , 1860* , 1870*
1880	:	3430# , 3020# , 2490#
1850	:	1820*
1820	:	1760*
1800	:	1770*
1760	:	1630* , 1680# , 1700# , 1740# , 1620*
1750	:	1720*
1710	:	1640*
1690	:	1660*
1610	:	800*
1580	:	1560*
1550	:	2180# , 700*
1470	:	670*
1450	:	1280* , 1270*
1440	:	1410# , 1390#
1420	:	1290*
1400	:	1370*
1370	:	1350#
1360	:	1330#
1260	:	720*
1180	:	960* , 950*
1150	:	1120*
1090	:	940*
1040	:	1010*
950	:	930*
910	:	890*
870	:	830*
840	:	900*
800	:	710*
680	:	750#
660	:	1460#
650	:	3250# , 1080# , 3290# , 1210# , 3330#
		3350# , 1170# , 3170# , 860# , 3450# , 3210#
		1900*
600	:	1440#
540	:	560*
530	:	550*
500	:	480# , 460*
490	:	430*

```
# = GOTO
* = IF-THEN
$ = GOSUB
```

MASTER MIND

```
10 PRINT"          MASTER MIND"
20 REM DUNCAN ELLIOTT IF MAY 10
30 DIM C(30),D(30),E(30)
40 DIM P$(1)
50 PRINT "HOW MANY CHARACTERS";
60 INPUT A
70 PRINT "HOW MANY VALUES PER CHARACTER";
80 INPUT B
90 PRINT "BY HOW MUCH CAN THE CHARACTERS INCREASE";
100 INPUT R
110 PRINT
120 FOR F=1 TO A
130 RANDOMIZE
140 LET C(F)=INT(RND(F)*B+1)
150 NEXT F
160 LET Q=INT(RND(0)*R)
170 FOR H=1 TO 50
180 FOR G=1 TO A
190 LET D(G)=C(G)+H*Q
200 NEXT G
210 PRINT
220 PRINT "ENTER YOUR GUESS"
230 FOR I=1 TO A
240 INPUT E(I)
250 NEXT I
260 LET J=0
270 PRINT
280 FOR K=1 TO A
290 IF D(K)<>E(K) GOTO 330
300 LET J=J+1
310 LET D(K)=-1
320 LET E(K)=-2
330 NEXT K
340 LET L=0
350 FOR M=1 TO A
360 FOR N=1 TO A
370 IF D(M)<>E(N) GOTO 410
380 LET L=L+1
390 LET D(M)=-1
400 LET E(N)=-2
410 NEXT N
420 NEXT M
430 PRINT J;"HITS",
440 PRINT L;"ARE CLOSE"
450 IF J=A GOTO 470
460 NEXT H
470 PRINT "YOU'RE FINISHED IN";H;"MOVES"
480 PRINT "ANOTHER GAME (Y,N)";
490 INPUT P$
500 IF P$="Y" THEN 110
510 END
```

This program is a variation of MASTERMIND (TM).

For each game, the player indicates how many characters (pins) he wishes to play with, and the number of values which each character may have. All characters will have the same number of values, but each will have its own value !!!

In addition, the player may give a value, based on which the computer selects a random number (integer, between zero and the value given) and will use this to increment the character values on each step. For any game, the chosen number remains constant and is added to all characters on every turn.

FIRST CANADIAN CAR RACE

```
10 PRINT CHR(16),CHR(22)
20 PRINT "THE FIRST CANADIAN CAR RACE"
30 PRINT
40 PRINT
50 PRINT "IF YOU WANT INSTRUCTIONS ENTER '0'"
60 PRINT "TO START THE RACE ENTER '1'"
70 INPUT A
80 IF A=0 GOSUB 650
90 DATA 900,80,1100,50,500,40
100 DATA 600,45,1000,70,1700,0
110 READ A1, A2
120 A3=3*A1
130 IF A3<0 THEN A3=0
140 PRINT INT(A3/3);"YDS   ";INT(V*15/22);" MPH<";A2;" ";R;"RPM"
150 INPUT G
160 T=T+2
170 IF G=9 GOTO 220
180 IF G*G>25 GOTO 150
190 IF G>0 GOTO 270
200 IF G<0 GOTO 300
210 IF G=0 GOTO 240
220 T=T-2
230 GOTO 130
240 S=V*2
250 G=G0
260 GOTO 360
270 A=18-3*G
280 G0=G
290 GOTO 320
300 A=3*G
310 G0=G0-G/2
320 G1=G0-1
330 U=V
340 V=U+A+A
350 S=(V*V-U*U)/2/A
360 IF S<=0 GOTO 520
370 IF S<A3 GOTO 450
380 W=INT(V*15/22)
390 IF W>A2 GOTO 550
400 N=N+1
410 IF N=5 GOTO 620
420 IF N<6 GOTO 110
430 PRINT T;" SECS"
440 END
450 A3=A3-S
460 R=80*V
470 FOR I=1 TO G1
480 R=INT(R*.75)
490 NEXT I
500 IF R>6000 GOTO 590
510 GOTO 130
520 PRINT "THIS IS A PIT STOP !!"
530 V=0
540 GOTO 130
550 IF A2=0 GOTO 430
560 PRINT "CRASHED !!! LOSE 10 SECS"
570 T=T+10
580 GOTO 450
590 PRINT "WATCH THOSE REVS !! LOSE 3 SECS"
600 T=T+3
610 GOTO 130
620 PRINT CHR(16),CHR(22)
630 PRINT "LAST STRETCH... MOVE IT !!"
640 GOTO 110
650 PRINT CHR(16),CHR(22)
660 PRINT"THE FIRST CANADIAN CAR RACE"
670 PRINT"EVERY 2 SECS (CAR TIME), YOU WILL"
680 PRINT"BE SHOWN DISTANCE TO NEXT CURVE,"
690 PRINT"YOUR PRESENT SPEED, MAXIMUM"
700 PRINT"CURVE SPEED AHEAD, YOUR PRESENT"
710 PRINT"RPM (MEASURES ENGINE SPEED, A"
720 PRINT"FUNCTION OF CAR SPEED + GEAR)."
730 PRINT"  1(MOST) TO 5 ACCELERATES CAR"
740 PRINT"  -1 TO-5(MOST) SLOWS CAR"
750 PRINT"0 MAINTAINS STEADY CAR SPEED"
760 PRINT"  9 RE-DISPLAYS CURRENT STATUS"
770 PRINT"YOU WILL BE PENALISED IF CURVE"
780 PRINT"SPEED IS TOO HIGH OR IF RPM"
790 PRINT"IS OVER 6000. WHEN READY HIT '1'"
800 INPUT A
810 RETURN"
```

?OO Multitasking.

...MR is a multitasking system by Microware Systems Corporation,
... direct replacement for Mikbug(TM) in 6800 systems.

...f operation are provided in RT/68MR :

...Mode provides ten command functions for entering,
...ng memory and register contents, plus executing
...kpoints.

...ows execution of programs that were written for
...annot run as tasks.

...s CPU time to be shared by up to 16 tasks
(programs), thus allowing concurrent operation of several programs.
Tasks may be dependent or independent, and may control execution of
each other, and may communicate by means of flags or common data
areas. In addition, real time processing allows tasks to be time
dependent or to respond to external interrupts.

The RT/68MR is provided in an MCM6830D mask-programmed ROM, and is
available from stock, priced at $55.00 postpaid.

6800 Disk System

The MSI FD-8 Floppy Disk Memory System interfaces to any microcomputer system via a single PIA chip. The FD-8 uses GSI disk drives with each drive housed in its own cabinet complete with power supply. The disk controller board is contained in the same cabinet as the No. 1 drive and communicates to the microcomputer system by means of a small ribbon cable. Up to four disk drives connect to the No. 1 drive by means of a parallel cable. Each additional drive is contained in its own matching cabinet with power supply.

The FD-8 controller board contains a sector buffer. Approximately 3K of RAM is contained on the controller board itself, which allows information to be transferred from controller to disk completely independently from processor speed. In order to execute a transfer, information is first transferred from the main computer memory to the sector buffer RAM, the desired track and sector is then found, and a control bit is used to start the transfer of information. Approximately 512 bytes of memory in the microcomputer system are necessary to house the disk driver and FDOS bootstrap routine. The complete disk driver subroutines occupy approximately 1K of memory and are loaded by the bootstrap.

The interface to the microcomputer system is by means of a single PIA chip. One half of the chip is utilized as an eight bit bi-directional port for data flow and status information. The second half of the PIA is used as an output control port. The MSI PIA-1 parallel interface card is all that is needed for SWTP 6800 systems. An 88-4PIO or 3P+S interface card will handle the interfacing job for Altair and IMSAI 8080 systems.

The FD-8 uses hard sectoring and writes 256 data bytes per sector. Available software includes all of the driver subroutines and MINI-DOS routines which allow the user to read or write any desired number of sectors to and from a desired starting location on the disk and any desired location in computer memory. On write operations, we read back after write to check for errors in order to insure correct transfer of the information. Error routines are part of the software and indicate to the user the nature of the error, should one occur. Error messages include "Disk Not Ready," "Fault," "Write Protect," "Track or Sector Identification," and "Checksum." The FD-8 writes preambles, postambles, track and sector identification, and checksum on each sector of the disk.

The MSI FDOS Floppy Disk Operating System is available for 6800 based systems. A complete description of the features of our operating system is given in this catalogue. (See page 8) For 8080 based systems, our disk driver routines and MINI-DOS may be integrated with BASIC via user-defined subroutines.

The FD-8 System is furnished with complete manuals and documentation including schematics, assembly manual, trouble-shooting and waveform analysis guide, operating instructions, complete source listings of disk driver, diagnostics, and MINI-DOS software routines. The FD-8 System includes disk drive, controller board, power supply, and cabinet. Driver routines, diagnostics, and MINI-DOS are furnished on tape cassette with the system.

Midwest Scientific Instruments

Prices :	Kit	Ass'd
Single Drive FD-8 Floppy Drive System	$1375.	$1625.
Dual Drive " " " "	2325.	2675.
MSI Disk Basic (contains FDOS with named files)	-	80.
I.C. Socket Kit	40.	-
Additional FD-8 Disk Drive	-	1075.

Prices F.O.B. Toronto.   Delivery from stock to 30 days.

GraphicAdd

FOR

Sol AND VDM

GraphicAdd will give your Sol computer or VDM-1 Video Display Module graphic capability - with a matrix resolution of 128H x 48V.

It's ideal for: plotting graphs in BASIC
video games and animation
mixing text and graphics

Sol ready-to-load software package (on Sol cassette and PT) includes:
Graphics Driver
BASIC 5 links
LIFE animation program
...all with commented 8080 source and sample programs.

✱ HARDWARE SPECIFICATIONS

GraphicAdd is a piggyback PC board which mounts directly on to the VDM and Sol boards (so it doesn't occupy valuable S-100 bus space). No modifications that affect normal circuit operation are necessary. GraphicAdd works by replacing half of the inverse video character set by bit-mapped graphic cells. Options for enabling of graphics mode include fixed graphics, switch-selectable graphics, and even programmable graphics mode!

✱ SOFTWARE SPECIFICATIONS

Graphics Driver: A utility routine which accepts H and V coordinates of any cell and modifies or examines the specified cell. Subroutines can set cells to WHITE, reset cells to BLACK, toggle cell states, or set graphics mode. Resides in Sol at CB00 - CB7A.

BASIC 5 links: Provide linkage from BASIC 5 (or any BASIC with machine language CALL and parameter passing in D,E registers) to Graphics Driver. This allows X,Y plotting on to the screen display directly from BASIC.

LIFE: A full-blown animation program using Conway's rules of Life complete with generation and population readout. LIFE starts up with user instructions and enters to a Super-Doodle Inoculator that can draw points, lines (including diagonals), and zoom repeat as well. Inoculate the display with cell cultures, then GO LIFE! LIFE is assembled at 0 - 68B.

Demonstration programs include plotting of spirals, flowers, etc. for BASIC, and a machine language screen 'painter'.

✱ PRICING

GraphicAdd Kit with hi-quality, plated-thru, solder-masked PC board, and all parts, including sockets and factory-prime ICs.
Documentation includes manual and fully commented source listings for all software described above - on Sol cassette (CUTS), and paper tape.....
Introductory price $50.

DELIVERY: stock to 30 days

*Sol and VDM are registered trademarks of Processor Technology Corp., Emeryville, Calif.

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