

Listing 2-5. Space War 7 Program

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100 OPTION BASE 1
110 DIM GL(7,7),SC(7,7),K(3,3),A$(5),D$(9)
120 DEF DT=SQR((K(I,1)-S1)^2+(K(I,2)-S2)^2)
130 DEF DTA(X)=INT(.5+A1+X*COS(CS*CX))
140 DEF DTB(X)=INT(.5+B1+X*SIN(CS*CX))
150 DEF RD=INT(RND*7+1)
160 DEF P2(X)=INT(X*100)/100
170 RANDOMIZE
180 CALL CLEAR
190 PRINT "SPACE WAR 7": :
200 GOSUB 12000
210 INPUT "COMMAND(1-9)->":A
220 IF (A>9)+(A<1)THEN 300
230 IF A=6 THEN 270
240 IF D(A)>=0 THEN 270
250 PRINT D$(A);" DAMAGED"
260 GOTO 210
270 ON A GOSUB 1000,2000,3000,4000,5000,6000,
    7000,8000,9000
280 PRINT
290 GOTO 210
300 PRINT "COMMANDS"
310 FOR I=1 TO 9
320 PRINT I;"=";D$(I)
330 NEXT I
340 GOTO 210
1000 PRINT D$(1)
1010 FOR A=1 TO 7
1020 FOR B=1 TO 7
1030 PRINT " ";A$(SC(A,B)+1);
1040 NEXT B
1050 PRINT
1060 NEXT A
1070 PRINT "SHLDS ";P2(SH);"ENRGY ";P2(EN);"TORP ";
    P2(TP);"STARDATES ";P2(SD-TU)
1080 GOSUB 7540
1090 RETURN
2000 PRINT D$(2)
2010 FOR A=(Q1-1)TO (Q1+1)
2020 FOR B=(Q2-1)TO (Q2+1)
2030 IF (A<1)+(B<1)+(A>7)+(B>7)THEN 2040 ELSE 2060
2040 ST$="***"
2050 GOTO 2090
2060 ST$="..."&STR$(INT(GL(A,B)))
2070 ST$=SEG$(ST$,LEN(ST$)-2,3)
2080 GL(A,B)=INT(GL(A,B))+.5
2090 PRINT " ";ST$;
2100 NEXT B
2110 PRINT
2120 NEXT A
2130 PRINT
2140 GOSUB 7540
2150 RETURN
3000 PRINT D$(3);"(";STR$(TP);")":
3010 IF TP>0 THEN 3040
3020 PRINT "NO TORPEDOES"
3030 RETURN
3040 GOSUB 14000

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Listing 2-5—cont. Space War 7 Program

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3050 TU=TU+.05
3060 IF TU>SD THEN 11050
3070 TP=TP-1
3080 GOSUB 3110
3090 GOSUB 10000
3100 RETURN
3110 A1=7*Q2+S2-8
3120 B1=56-7*Q1-S1
3130 IF CS=90*INT(CS/90) THEN 3550
3140 FOR WP=0.0 TO 10.0 STEP .9
3150 IF WP<>0 THEN 3190
3160 S3=S1
3170 S4=S2
3180 GOTO 3260
3190 IF (Q1=7-INT(DTB(WP)/7)) * (Q2=INT(DTA(WP)/7+1))
    THEN 3210
3200 RETURN
3210 S3=7-DTB(WP)+7*INT(DTB(WP)/7)
3220 S4=DTA(WP)+1-7*INT(DTA(WP)/7)
3230 IF (DTA(WP)=A2) * (DTB(WP)=B2) THEN 3530
3240 A2=DTA(WP)
3250 B2=DTB(WP)
3260 PRINT "(";STR$(S3);",";STR$(S4);") ";
    A$(SC(S3,S4)+1)
3270 ON SC(S3,S4)+1 GOTO 3530,3530,3510,3280,3450
3280 IF RND>=(.04*RK) THEN 3310
3290 PRINT "SHIELDS DEFLECT TORPEDO"
3300 RETURN
3310 PRINT "KRINNG DESTROYED"
3320 SC(S3,S4)=0
3330 GL(Q1,Q2)=GL(Q1,Q2)-100
3340 KS=KS-1
3350 KL=KL-1
3360 IF KL=0 THEN 11100
3370 FOR A=1 TO 3
3380 IF (K(A,1)<>S3)+(K(A,2)<>S4) THEN 3430
3390 K(A,1)=0
3400 K(A,2)=0
3410 K(A,3)=0
3420 RETURN
3430 NEXT A
3440 RETURN
3450 PRINT "STARBASE DESTROYED"
3460 BA=0
3470 BL=BL-1
3480 SC(S3,S4)=0
3490 GL(Q1,Q2)=GL(Q1,Q2)-10
3500 RETURN
3510 PRINT "CANNOT DESTROY STARS"
3520 RETURN
3530 NEXT WP
3540 RETURN
3550 FOR WP=0 TO 7
3560 S3=INT(S1-WP*SIN(CS*CX)+.5)
3570 S4=INT(S2+WP*COS(CS*CX)+.5)
3580 IF (S3>7)+(S4>7)+(S3<1)+(S4<1) THEN 3540 ELSE 3260
3590 NEXT WP
4000 PRINT D$(4)

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Listing 2-5—cont. Space War 7 Program

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4010 IF KS>0 THEN 4040
4020 PRINT "SR SENSORS-NO KRINNG"
4030 RETURN
4040 IF D(7)>=0 THEN 4060
4050 PRINT "COMPUTER FAILURE HAMPERS ACCURACY"
4060 PRINT "PHASERS LOCKED": "ENERGY:";P2(EN)
4070 INPUT "UNITS TO FIRE->":X
4080 IF EN-X>0 THEN 4110
4090 PRINT "NOT ENOUGH ENERGY"
4100 RETURN
4110 TU=TU+.05
4120 IF TU>SD THEN 11050
4130 EN=EN-X
4140 IF C$="D" THEN 4160
4150 GOSUB 10000
4160 IF D(7)>=0 THEN 4180
4170 X=X*RND
4180 FOR I=1 TO 3
4190 IF K(I,3)<=0 THEN 4330
4200 H=(X/DT)+SGN(RND-.5)*7*RND
4210 K(I,3)=K(I,3)-H
4220 PRINT P2(H); " HIT ON KRINNG(";STR$(K(I,1));", ";
      STR$(K(I,2));")": "LEAVES ";P2(K(I,3))
4230 IF K(I,3)>0 THEN 4330
4240 PRINT "KRINNG (";STR$(K(I,1));", ";STR$(K(I,2));
      ")": " DESTROYED"
4250 KS=KS-1
4260 KL=KL-1
4270 IF KL=0 THEN 11100
4280 GL(Q1,Q2)=GL(Q1,Q2)-100
4290 SC(K(I,1),K(I,2))=0
4300 K(I,1)=0
4310 K(I,2)=0
4320 K(I,3)=0
4330 NEXT I
4340 RETURN
5000 PRINT "SHIELD ENERGY:";EN+SH:"UNITS TO SHIELDS->";
5010 INPUT X
5020 IF X<0 THEN 5060
5030 IF EN+SH-X<0 THEN 5000
5040 EN=EN+SH-X
5050 SH=X
5060 RETURN
6000 PRINT D$(6)
6010 GOSUB 14000
6020 INPUT "WARP FACTOR->":WP
6030 IF (WP<=0) THEN 6870
6040 IF (D(6)>=0)+(WP<=MAXSP) THEN 6070
6050 PRINT "ENGINES DAMAGED": "MAX SPEED:";MAXSP
6060 GOTO 6010
6070 TC=TC+1
6080 C$=""
6090 IF KS<=0 THEN 6110
6100 GOSUB 10000
6110 IF EN>12*WP THEN 6150
6120 IF SH<1 THEN 12000
6130 PRINT "ONLY ";P2(EN); " UNITS LEFT":
      "MAX WARP:";INT(EN/12)
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Listing 2-5—cont. Space War 7 Program

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6140 GOTO 6020
6150 FOR I=1 TO 9
6160 IF D(I)>=0 THEN 6210
6170 D(I)=D(I)+1
6180 IF D(I)<0 THEN 6210
6190 IF D(8)<0 THEN 6210
6200 PRINT D$(I);" REPAIRED"
6210 NEXT I
6220 IF RND>.1 THEN 6280
6230 R1=RD
6240 IF D(R1)>=0 THEN 6280
6250 IF D(8)<0 THEN 6280
6260 D(R1)=0
6270 PRINT :D$(R1);" REPAIRED"
6280 A1=7*Q2+S2-8
6290 B1=56-7*Q1-S1
6300 IF WP>=1 THEN 6320
6310 WP=WP*1.42858
6320 WP=WP*7
6330 EN=EN-2*WP
6340 TU=TU+WP/25
6350 IF TU>SD THEN 11050
6360 A2=DTA(WP)
6370 B2=DTB(WP)
6380 IF (A2<0)+(S2>48)+(B2<0)+(B2>48) THEN 6390
    ELSE 6420
6390 PRINT "STAY IN GALAXY"
6400 TU=TU+WP/24
6410 RETURN
6420 FOR X=0 TO INT(WP)
6430 IF (Q1=7-INT(DTB(X)/7))*(Q2=INT(DTA(X)/7+1))
    THEN 6460
6440 X=WP
6450 GOTO 6700
6460 S3=7-DTB(X)+7*INT(DTB(X)/7)
6470 S4=DTA(X)+1-7*INT(DTA(X)/7)
6480 IF SC(S3,S4)<2 THEN 6700
6490 SC(S1,S2)=0
6500 S1=7-DTB(X-1)+7*INT(DTB(X-1)/7)
6510 S2=DTA(X-1)+1-7*INT(DTA(X-1)/7)
6520 SC(S1,S2)=1
6530 PRINT "STOPPED AT (";STR$(S1);",";STR$(S2);")"
6540 TU=TU+WP/24
6550 PRINT "LOST ";P2(WP/24);" STARDATES"
6560 IF SC(S3,S4)<>4 THEN 6690
6570 PRINT "DOCKED."
6580 SH=2000
6590 TP=10
6600 C$="D"
6610 EN=3100-XA
6620 GOSUB 10000
6630 FOR I=1 TO 9
6640 IF D(I)>=0 THEN 6680
6650 D(I)=D(I)+(11*RND/RF)
6660 IF D(I)<0 THEN 6680
6670 D(I)=0
6680 NEXT I
6690 RETURN

```

Listing 2-5—cont. Space War 7 Program

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6700 NEXT X
6710 SC(S1,S2)=0
6720 S1=7-B2+7*INT(B2/7)
6730 S2=A2+1-7*INT(A2/7)
6740 F1=7-INT(B2/7)
6750 F2=INT(A2/7)+1
6760 IF (Q1=F1)*(Q2=F2)THEN 6800
6770 Q1=F1
6780 Q2=F2
6790 GOSUB 13000
6800 SC(S1,S2)=1
6810 FOR A=S1-1 TO S1+1
6820 FOR B=S2-1 TO S2+1
6830 IF (A>7)+(B>7)+(A<1)+(B<1)THEN 6850
6840 IF SC(A,B)=4 THEN 6570
6850 NEXT B
6860 NEXT A
6870 RETURN
7000 INPUT "COMPUTER(1-6)->":A
7010 IF A=6 THEN 7070
7020 IF (A<6)*(A>0)THEN 7050
7030 PRINT "COMMANDS ":"1=CHART":"2=STATUS":
      "3=TORPEDO COURSE ":"4=POSITION":
      "5=DESTRUCT ":"6=EXIT"
7040 GOTO 7000
7050 ON A GOSUB 7080,7220,7260,7540,7600
7060 IF A<>3 THEN 7000
7070 RETURN
7080 CALL CLEAR
7090 PRINT "GALAXY"
7100 FOR A=1 TO 7
7110 FOR B=1 TO 7
7120 IF GL(A,B)<>INT(GL(A,B))THEN 7150
7130 PRINT " . . .";
7140 GOTO 7170
7150 ST$=" . . ."&STR$(INT(GL(A,B)))
7160 PRINT " ";SEG$(ST$,LEN(ST$)-2,3);
7170 NEXT B
7180 PRINT : :
7190 NEXT A
7200 GOSUB 7540
7210 RETURN
7220 PRINT "STATUS ":"KRINNG=";KL:"STARDATES=";
      P2(SD-TU):"BASES=";BL
7230 IF D(7)>=0 THEN 7250
7240 PRINT "NO ";D$(7)
7250 RETURN
7260 PRINT "COURSE":
7270 IF KS>0 THEN 7300
7280 PRINT "NO KRINNG"
7290 RETURN
7300 IF D(3)>=0 THEN 7330
7310 PRINT D$(3);" OUT"
7320 RETURN
7330 PRINT "COORD";" COURSE";" DIST"
7340 FOR I=1 TO 3
7350 IF (K(I,3)<=0)THEN 7520
7360 F1=S1-K(I,1)

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Listing 2-5—cont. Space War 7 Program

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7370 F2=S2-K(I,2)
7380 WP=SQR(F1*F1+F2*F2)
7390 IF F1<=0 THEN 7420
7400 CS=ATN(F2/F1)
7410 GOTO 7460
7420 IF F1=0 THEN 7450
7430 CS=SGN(F2)*(3.14159-ATN(ABS(F2/F1)))
7440 GOTO 7460
7450 CS=SGN(F2)*3.14159/2
7460 CS=12-CS*1.9098593
7470 IF (F2<>0)+(F1>=0) THEN 7490
7480 CS=6
7490 IF CS<=12 THEN 7510
7500 CS=CS-12
7510 PRINT "(";STR$(K(I,1));",";STR$(K(I,2));")";
      TAB(7);P2(CS);TAB(14);P2(WP)
7520 NEXT I
7530 RETURN
7540 PRINT "QUADRANT (";STR$(Q1);",";STR$(Q2);")":
      "SECTOR (";STR$(S1);",";STR$(S2);")"
7550 IF SH>200*KS THEN 7590
7560 PRINT "SHIELD ENERGY LOW"
7570 IF D(6)>=0 THEN 7590
7580 PRINT "NO ";D$(6)
7590 RETURN
7600 INPUT "ENTER CODE ":ST$
7610 IF ST$=SC$ THEN 7640
7620 PRINT "ABORTED"
7630 RETURN
7640 PRINT "COUNTDOWN BEGUN":"5":"4":"3":"2":"1"
      : "DEstroyED!"
7650 STOP
8000 PRINT "DAMAGE REPORT":"DEVICE ";TAB(20);"STATE "
8010 FOR I=1 TO 9
8020 PRINT D$(I);TAB(20);P2(D(I))
8030 NEXT I
8040 RETURN
9000 PRINT "DAMAGE REPAIR"
9010 AV=INT(RK/2)
9020 IF TC>=AV THEN 9050
9030 PRINT "REPAIR INACTIVE":"NEEDS";AV-TC;"MORE UNITS"
9040 RETURN
9050 IF C$="D" THEN 9080
9060 PRINT ":"MUST BE DOCKED FOR REPAIRS"
9070 RETURN
9080 DM=0
9090 FOR A=1 TO 9
9100 IF D(A)>=0 THEN 9130
9110 DM=1
9120 PRINT A;" ";D$(A);" DAMAGED"
9130 NEXT A
9140 IF DM=0 THEN 9240
9150 INPUT "REPAIR WHICH? ":A
9160 IF (A<1)+(A>9) THEN 9150
9170 IF D(A)<0 THEN 9200
9180 PRINT D$(A);" OK"
9190 GOTO 9150
9200 PRINT D$(A);" WORKING"

```

Listing 2-5—cont. Space War 7 Program

```

9210 D(A)=0
9220 TC=TC-1
9230 RETURN
9240 PRINT "NO DAMAGE"
9250 RETURN
10000 IF KS=0 THEN 10040
10010 PRINT "KRINNG HITS SHIP"
10020 IF C$<>"D" THEN 10050
10030 PRINT "BASE PROTECTS SHIP"
10040 RETURN
10050 FOR I=1 TO 3
10060 IF K(I,3)<=0 THEN 10200
10070 H=K(I,3)/DT+SGN(RND-.5)*RND*7
10080 SH=SH-H
10090 PRINT P2(H);" HIT FROM (";STR$(K(I,1));",";
STR$(K(I,2));")":"LEAVES ";P2(SH)
10100 IF SH<0 THEN 11070
10110 GOSUB 10220
10120 IF RND>RF/15 THEN 10200
10130 R1=RD
10140 R2=RD
10150 IF SC(R1,R2)<>0 THEN 10130
10160 SC(R1,R2)=3
10170 SC(K(I,1),K(I,2))=0
10180 K(I,1)=R1
10190 K(I,2)=R2
10200 NEXT I
10210 RETURN
10220 IF RND>RF/23 THEN 10280
10230 R1=INT(RND*9+1)
10240 IF D(R1)<0 THEN 10280
10250 D(R1)=D(R1)-10*RND-1
10260 IF D(8)<0 THEN 10280
10270 PRINT D$(R1);" OUT"
10280 RETURN
11000 PRINT "ENTERPRISE DEAD IN SPACE"
11010 GOTO 11080
11020 IF KS<=0 THEN 11080
11030 GOSUB 10000
11040 GOTO 11020
11050 PRINT "IT IS STARDATE ";P2(TU)
11060 GOTO 11080
11070 PRINT "ENTERPRISE DISABLED"
11080 PRINT KL;" KRINNG REMAIN": "YOU HAVE FAILED!"
11090 GOTO 11110
11100 PRINT "FEDERATION IS SAVED"
11110 L=(U-KL)*10+((U-KL)*500/TU)-100*(Y-BL)
11120 IF (EN+SH)>0 THEN 11140
11130 L=L-200
11140 IF KL<>0 THEN 11160
11150 L=L+(RF*100)
11160 PRINT "RATING:";P2(L)
11170 STOP
12000 INPUT "ENTER SECURITY CODE:";SC$
12010 INPUT "ENTER RANK(1-12):";RF
12020 I=RF*20
12030 RK=RF
12040 RF=RF+.0001

```

Listing 2-5—cont. Space War 7 Program

```

12050 PRINT "RISK RATE ";I: : "SETTING UP GALAXY"
12060 CX=.0174532925
12070 XA=INT(RK*50)
12080 MAXSP=P2(10/(RK+.1))
12090 EN=3100-XA
12100 SH=2000
12110 TP=10
12120 Q1=RD
12130 Q2=RD
12140 S1=RD
12150 S2=RD
12160 FOR I=1 TO 9
12170 READ D$(I)
12180 NEXT I
12190 A$(1)="."
12200 A$(2)="E"
12210 A$(3)="*"
12220 A$(4)="K"
12230 A$(5)="B"
12240 F1=.86
12250 F2=.01
12260 F3=.95
12270 F4=.99
12280 KL=0
12290 BL=0
12300 FOR I=1 TO 7
12310 FOR J=1 TO 7
12320 R1=RND
12330 R2=RND
12340 KS=-(R1>F1-F2*RF)-(R1>F3-F2*RF)-(R1>F4-F2*RF)
12350 KL=KL+KS
12360 BA=-(R2>F3)
12370 BL=BL+BA
12380 GL(I,J)=100*KS+10*BA+RD
12390 IF BA=0 THEN 12410
12400 GL(I,J)=GL(I,J)+.5
12410 NEXT J
12420 NEXT I
12430 IF (BL<1)+(KL<1) THEN 12280
12440 PRINT "KRINNG ";KL;" BASES ";BL
12450 U=KL
12460 Y=BL
12470 SD=KL+RND*KL/RF+10-RF
12480 PRINT "STARDATES ";P2(SD)
13000 S3=0
13010 BA=S3
13020 KS=BA
13030 FOR I=1 TO 7
13040 FOR J=1 TO 7
13050 SC(I,J)=0
13060 NEXT J
13070 NEXT I
13080 FOR I=1 TO 3
13090 FOR J=1 TO 3
13100 K(I,J)=0
13110 NEXT J
13120 NEXT I
13130 SC(S1,S2)=1

```

Listing 2-5—cont. Space War 7 Program

```
13140 X=.01*GL(Q1,Q2)
13150 KS=INT(X)
13160 Y=(X-KS)*10
13170 BA=INT(Y)
13180 S3=GL(Q1,Q2)-100*KS-10*BA
13190 IF KS<>0 THEN 13260
13200 FOR I=1 TO 3
13210 FOR J=1 TO 3
13220 K(I,J)=0
13230 NEXT J
13240 NEXT I
13250 GOTO 13360
13260 PRINT "CONDITION RED!!!!"
13270 FOR I=1 TO KS
13280 R1=RD
13290 R2=RD
13300 IF SC(R1,R2)<>0 THEN 13280
13310 SC(R1,R2)=3
13320 K(I,1)=R1
13330 K(I,2)=R2
13340 K(I,3)=200
13350 NEXT I
13360 IF BA=0 THEN 13410
13370 R1=RD
13380 R2=RD
13390 IF SC(R1,R2)<>0 THEN 13370
13400 SC(R1,R2)=4
13410 IF S3=0 THEN 13480
13420 FOR I=1 TO S3
13430 R1=RD
13440 R2=RD
13450 IF SC(R1,R2)<>0 THEN 13430
13460 SC(R1,R2)=2
13470 NEXT I
13480 GL(Q1,Q2)=INT(GL(Q1,Q2))+.5
13490 GOSUB 7540
13500 RETURN
14000 INPUT "DIRECTION(0-12)->":CS
14010 IF (CS<0)+(CS>12) THEN 14000
14020 IF CS>0 THEN 14040
14030 CS=12
14040 CS=(12-CS)*30+90
14050 IF CS<360 THEN 14070
14060 CS=CS-360
14070 RETURN
25000 DATA SHORT RANGE SCAN, LONG RANGE SCAN
25010 DATA TORPEDOES, PHASERS, SHIELDS, WARP DRIVE
25020 DATA COMPUTER, DAMAGE REPORT, DAMAGE CONTROL
```

TIC-TAC-TOE PROGRAM

What it does:

Tic-Tac-Toe is an amusing game, especially for children. The Tic-Tac-Toe game program makes liberal use of the graphics capability of the TI-99/4A.