Target

In this program, you are firing a weapon from a spaceship in 3-dimensional space. Your ship, the Starship Enterprise, is located at the origin (0,0,0) of a set of x,y,z coordinates. You will be told the approximate location of the target in 3-dimensional rectangular coordinates, the approximate angular deviation from the x and z axes in both radians and degrees, and the approximate distance to the target.

Given this information, you then proceed to shoot at the target. A shot within 20 kilometers of the target destroys it. After each shot, you are given information as to the position of the explosion of your shot and a somewhat improved estimate of the location of the target. Fortunately, this is just practice and the target doesn't shoot back. After you have attained proficiency, you ought to be able to destroy a target in 3 or 4 shots. However, attaining proficiency might take a while!

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                TARGET
CREATIVE COMPUTING  MORRISTOWN, NEW JERSEY


YOU ARE THE WEAPONS OFFICER ON THE STARSHIP ENTERPRISE
AND THIS IS A TEST TO SEE HOW ACCURATE A SHOT YOU
ARE IN A THREE-DIMENSIONAL RANGE.  YOU WILL BE TOLD
THE RADIAN OFFSET FOR THE X AND Z AXES, THE LOCATION
OF THE TARGET IN THREE DIMENSIONAL RECTANGULAR COORDINATES,
THE APPROXIMATE NUMBER OF DEGREES FROM THE X AND Z
AXES, AND THE APPROXIMATE DISTANCE TO THE TARGET.
YOU WILL THEN PROCEEED TO SHOOT AT THE TARGET UNTIL IT IS
DESTROYED!

GOOD LUCK!!

RADIANS FROM X AXIS = 4.46501    FROM Z AXIS = 2.65935
TARGET SIGHTED: APPROX COORDINATES X=-7551.63   Y=-29901.3   Z=-58915.4
     ESTIMATED DISTANCE= 66490
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 230,110,66000

RADIANS FROM X AXIS = 4.01424 FROM Z AXIS = 1.91985
SHOT BEHIND TARGET 32314.7 KILOMETERS.
SHOT TO RIGHT OF TARGET 17608 KILOMETERS.
SHOT ABOVE TARGET 36342.5 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-39866.4    Y=-47509.4    Z=-22572.9
     DISTANCE FROM TARGET = 51721

     ESTIMATED DISTANCE= 66498
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 250,170,66000

RADIANS FROM X AXIS = 4.36331 FROM Z AXIS = 2.96705
SHOT IN FRONT OF TARGET 3631.37 KILOMETERS.
SHOT TO LEFT OF TARGET 19131.1 KILOMETERS.
SHOT BELOW TARGET 6081.76 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-3920.26    Y=-10770.3    Z=-64997.2
     DISTANCE FROM TARGET = 20400.3


     ESTIMATED DISTANCE= 66499
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 260,155,66499

RADIANS FROM X AXIS = 4.53784 FROM Z AXIS = 2.70525
SHOT IN FRONT OF TARGET 2670.88 KILOMETERS.
SHOT TO LEFT OF TARGET 2224.05 KILOMETERS.
SHOT BELOW TARGET 1352.85 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-4880.76    Y=-27677.3    Z=-60268.3
     DISTANCE FROM TARGET = 3729.64


     ESTIMATED DISTANCE= 66499.2
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 255,150,66499.
2

RADIANS FROM X AXIS = 4.45057 FROM Z AXIS = 2.61798
SHOT BEHIND TARGET 1054.7 KILOMETERS.
SHOT TO RIGHT OF TARGET 2215.73 KILOMETERS.
SHOT ABOVE TARGET 1325.75 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-8606.33    Y=-32117.1    Z=-57589.7
     DISTANCE FROM TARGET = 2789.17


     ESTIMATED DISTANCE= 66499.2
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 256,145,66499.
2

RADIANS FROM X AXIS = 4.46803 FROM Z AXIS = 2.53072
SHOT BEHIND TARGET 1676.61 KILOMETERS.
SHOT TO RIGHT OF TARGET 7108.41 KILOMETERS.
SHOT ABOVE TARGET 4442.84 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-9228.24    Y=-37009.7    Z=-54472.6
     DISTANCE FROM TARGET = 8548.64


     ESTIMATED DISTANCE= 66499.2
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 256,147,66499

RADIANS FROM X AXIS = 4.46803 FROM Z AXIS = 2.56562
SHOT BEHIND TARGET 1211.02 KILOMETERS.
SHOT TO RIGHT OF TARGET 5241.18 KILOMETERS.
SHOT ABOVE TARGET 3145.04 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-8762.65    Y=-35142.5    Z=-55770.4
     DISTANCE FROM TARGET = 6231.19


     ESTIMATED DISTANCE= 66499.2
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 256,148,66499

RADIANS FROM X AXIS = 4.46803 FROM Z AXIS = 2.58308
SHOT BEHIND TARGET 974.203 KILOMETERS.
SHOT TO RIGHT OF TARGET 4291.42 KILOMETERS.
SHOT ABOVE TARGET 2521.43 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-8525.84    Y=-34192.8    Z=-56394
     DISTANCE FROM TARGET = 5071.78
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     ESTIMATED DISTANCE= 66499.2
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 256,154,66499

RADIANS FROM X AXIS = 4.46803 FROM Z AXIS = 2.6878
SHOT IN FRONT OF TARGET 498.672 KILOMETERS.
SHOT TO LEFT OF TARGET 1615.52 KILOMETERS.
SHOT BELOW TARGET 853.184 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-7052.96     Y=-28285.8     Z=-59768.6
     DISTANCE FROM TARGET = 1893.81



     ESTIMATED DISTANCE= 66499.2
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 256,153,66499

RADIANS FROM X AXIS = 4.46803 FROM Z AXIS = 2.67034
SHOT IN FRONT OF TARGET 247.38 KILOMETERS.
SHOT TO LEFT OF TARGET 607.723 KILOMETERS.
SHOT BELOW TARGET 335.316 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-7304.25     Y=-29293.6     Z=-59250.7
     DISTANCE FROM TARGET = 736.859



     ESTIMATED DISTANCE= 66499.2
INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE? 256,152,66499

RADIANS FROM X AXIS = 4.46803 FROM Z AXIS = 2.65289
SHOT BEHIND TARGET 1.68652 KILOMETERS.
SHOT TO RIGHT OF TARGET 391.156 KILOMETERS.
SHOT ABOVE TARGET 200.602 KILOMETERS.
APPROX POSITION OF EXPLOSION:  X=-7553.32     Y=-30292.5     Z=-58714.8
     DISTANCE FROM TARGET = 439.599
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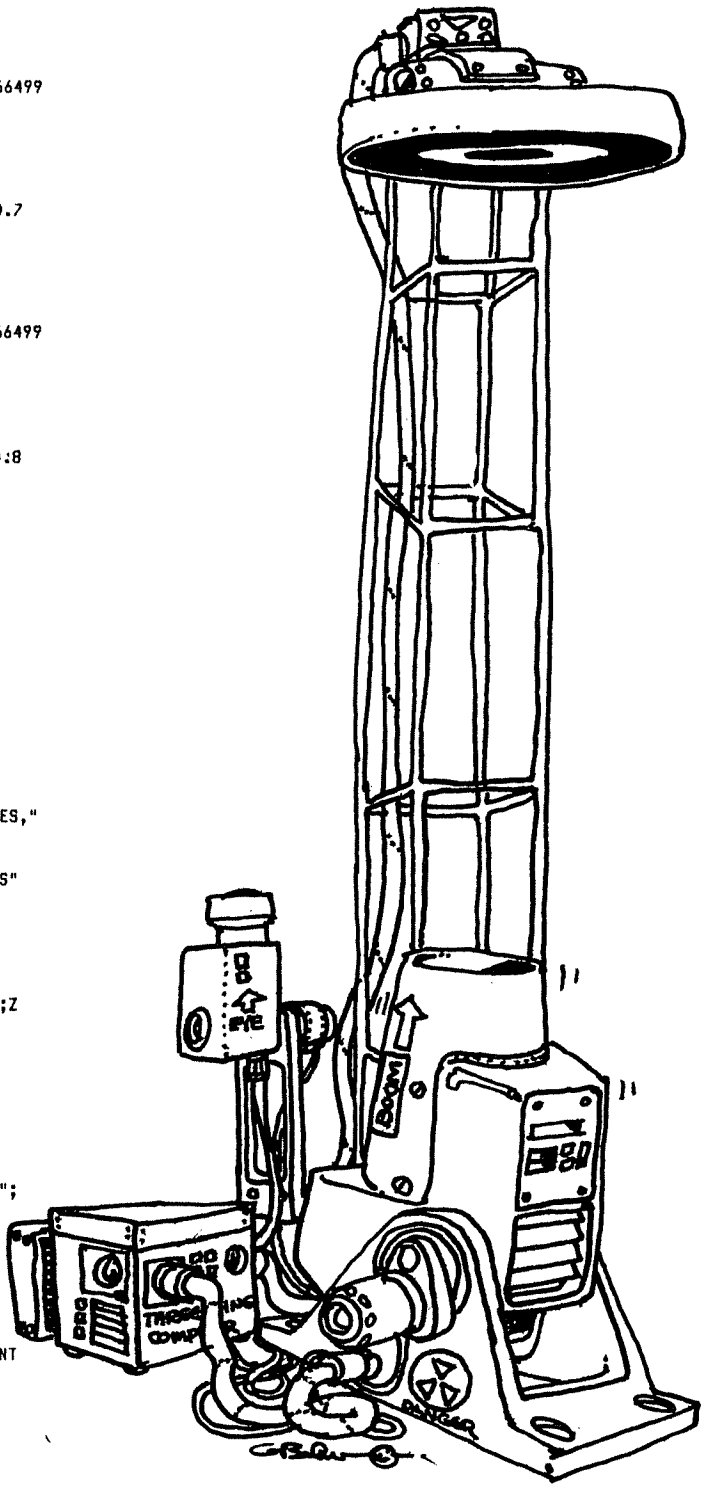


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10 PRINT TAB(33);"TARGET"
20 PRINT TAB(15);"CREATIVE COMPUTING  MORRISTOWN, NEW JERSEY"
30 PRINT: PRINT: PRINT
100 R=1: R1=57.296: P=3.141592
110 PRINT "YOU ARE THE WEAPONS OFFICER ON THE STARSHIP ENTERPRISE"
120 PRINT "AND THIS IS A TEST TO SEE HOW ACCURATE A SHOT YOU"
130 PRINT "ARE IN A THREE-DIMENSIONAL RANGE.  YOU WILL BE TOLD"
140 PRINT "THE RADIAN OFFSET FOR THE X AND Z AXES, THE LOCATION"
150 PRINT "OF THE TARGET IN THREE DIMENSIONAL RECTANGULAR COORDINATES,"
160 PRINT "THE APPROXIMATE NUMBER OF DEGREES FROM THE X AND Z"
170 PRINT "AXES, AND THE APPROXIMATE DISTANCE TO THE TARGET."
180 PRINT "YOU WILL THEN PROCEEED TO SHOOT AT THE TARGET UNTIL IT IS"
190 PRINT "DESTROYED!": PRINT: PRINT "GOOD LUCK!!": PRINT: PRINT
220 A=RND(1)*2*P: B=RND(1)*2*P: Q=INT(A*R1): W=INT(B*R1)
260 PRINT "RADIANS FROM X AXIS =";A;"   FROM Z AXIS =";B
280 P1=100000*RND(1)+RND(1): X=SIN(B)*COS(A)*P1: Y=SIN(B)*SIN(A)*P1
290 Z=COS(B)*P1
340 PRINT "TARGET SIGHTED: APPROX COORDINATES X=";X;"  Y=";Y;"  Z=";Z
345 R=R+1: IF R>5 THEN 390
350 ON R GOTO 355,360,365,370,375
355 P3=INT(P1*.05)*20: GOTO 390
360 P3=INT(P1*.1)*10: GOTO 390
365 P3=INT(P1*.5)*2: GOTO 390
370 P3=INT(P1): GOTO 390
375 P3=P1
390 PRINT "     ESTIMATED DISTANCE=";P3
400 PRINT "INPUT ANGLE DEVIATION FROM X, DEVIATION FROM Z, DISTANCE";
405 INPUT A1,B1,P2
410 PRINT: IF P2<20 THEN PRINT "YOU BLEW YOURSELF UP!!": GOTO 580
420 A1=A1/R1: B1=B1/R1: PRINT "RADIANS FROM X AXIS =";A1;
425 PRINT "FROM Z AXIS =";B1
480 X1=P2*SIN(B1)*COS(A1): Y1=P2*SIN(B1)*SIN(A1): Z1=P2*COS(B1)
510 D=((X1-X)^2+(Y1-Y)^2+(Z1-Z)^2)^(1/2)
520 IF D>20 THEN 670
530 PRINT: PRINT " * * * HIT * * *   TARGET IS NON-FUNCTIONAL": PRINT
550 PRINT "DISTANCE OF EXPLOSION FROM TARGET WAS";D;"KILOMETERS"
570 PRINT: PRINT "MISSION ACCOMPLISHED IN ";R;" SHOTS."
580 R=0: FOR I=1 TO 5: PRINT: NEXT I: PRINT "NEXT TARGET...": PRINT
590 GOTO 220
670 X2=X1-X: Y2=Y1-Y: Z2=Z1-Z: IF X2<0 THEN 730
710 PRINT "SHOT IN FRONT OF TARGET";X2;"KILOMETERS.": GOTO 740
730 PRINT "SHOT BEHIND TARGET";-X2;"KILOMETERS."
740 IF Y2<0 THEN 770
750 PRINT "SHOT TO LEFT OF TARGET";Y2;"KILOMETERS.": GOTO 780
770 PRINT "SHOT TO RIGHT OF TARGET";-Y2;"KILOMETERS."
780 IF Z2<0 THEN 810
790 PRINT "SHOT ABOVE TARGET";Z2;"KILOMETERS.": GOTO 820
810 PRINT "SHOT BELOW TARGET";-Z2;"KILOMETERS."
820 PRINT "APPROX POSITION OF EXPLOSION:  X=";X1;"   Y=";Y1;"   Z=";Z1
830 PRINT "     DISTANCE FROM TARGET =";D: PRINT: PRINT: PRINT: GOTO345
999 END
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