

Bagels

In this game, the computer picks a 3-digit secret number using the digits 0 to 9 and you attempt to guess what it is. You are allowed up to twenty guesses. No digit is repeated. After each guess the computer will give you clues about your guess as follows:

PICO One digit is correct, but in the wrong place
 FERMI One digit is in the correct place
 BAGELS No digit is correct

You will learn to draw inferences from the clues and, with practice, you'll learn to improve your score. There are several good strategies for playing Bagels. After you have found a good strategy, see if you can improve it. Or try a different strategy altogether and see if it is any better. While the program allows up to twenty guesses, if you use a good strategy it should not take more than eight guesses to get any number.

The original authors of this program are D. Resek and P. Rowe of the Lawrence Hall of Science, Berkeley, California.

BAGELS
 CREATIVE COMPUTING MORRISTOWN, NEW JERSEY
 WOULD YOU LIKE THE RULES (YES OR NO)? YES

I AM THINKING OF A THREE-DIGIT NUMBER. TRY TO GUESS
 MY NUMBER AND I WILL GIVE YOU CLUES AS FOLLOWS:
 PICO - ONE DIGIT CORRECT BUT IN THE WRONG POSITION
 FERMI - ONE DIGIT CORRECT AND IN THE RIGHT POSITION
 BAGELS - NO DIGITS CORRECT

| | | |
|-------------------------------|-------------------------------|-----------------------------|
| O.K. I HAVE A NUMBER IN MIND. | GUESS # 1 ? 123 | GUESS # 1 ? 456 |
| FERMI | | PICO |
| GUESS # 2 ? 724 | GUESS # 2 ? 123 | |
| PICO FERMI | | FERMI |
| GUESS # 3 ? 827 | GUESS # 3 ? 167 | |
| FERMI FERMI | YOU GOT IT!!! | |
| GUESS # 4 ? 927 | | PLAY AGAIN (YES OR NO)? YES |
| FERMI FERMI | | |
| GUESS # 5 ? 627 | O.K. I HAVE A NUMBER IN MIND. | |
| YOU GOT IT!!! | GUESS # 1 ? 159 | |
| | BAGELS | |
| PLAY AGAIN (YES OR NO)? YES | GUESS # 2 ? 247 | |
| | PICO | |
| O.K. I HAVE A NUMBER IN MIND. | GUESS # 3 ? 328 | |
| GUESS # 1 ? 987 | BAGELS | |
| BAGELS | GUESS # 4 ? 476 | |
| GUESS # 2 ? 654 | PICO FERMI | |
| PICO | GUESS # 5 ? 407 | |
| GUESS # 3 ? 236 | PICO FERMI | |
| PICO PICO | GUESS # 6 ? 740 | |
| GUESS # 4 ? 613 | PICO FERMI | |
| PICO | GUESS # 7 ? 704 | |
| GUESS # 5 ? 327 | PICO PICO | |
| FERMI FERMI | GUESS # 8 ? 406 | |
| GUESS # 6 ? 328 | PICO PICO FERMI | |
| FERMI FERMI | GUESS # 9 ? 604 | |
| GUESS # 7 ? 329 | PICO PICO PICO | |
| FERMI FERMI | GUESS # 10 ? 460 | |
| GUESS # 8 ? 325 | YOU GOT IT!!! | |
| YOU GOT IT!!! | | PLAY AGAIN (YES OR NO)? NO |

PLAY AGAIN (YES OR NO)? YES
 O.K. I HAVE A NUMBER IN MIND.

A 4 POINT BAGELS BUFF!!
 HOPE YOU HAD FUN. BYE.

```

5 PRINT TAB(33);"BAGELS"
10 PRINT TAB(15);"CREATIVE COMPUTING MORRISTOWN, NEW JERSEY"
15 REM *** BAGLES NUMBER GUESSING GAME
20 REM *** ORIGINAL SOURCE UNKNOWN BUT SUSPECTED TO BE
25 REM *** LAWRENCE HALL OF SCIENCE, U.C. BERKELEY
30 DIM A(6),A(3),B(3)
40 Y=0:T=255
50 PRINT:PRINT:PRINT
70 INPUT "WOULD YOU LIKE THE RULES (YES OR NO)";A$
90 IF LEFT$(A$,1)!="N" THEN 150
100 PRINT:PRINT "I AM THINKING OF A THREE-DIGIT NUMBER. TRY TO GUESS"
110 PRINT "MY NUMBER AND I WILL GIVE YOU CLUES AS FOLLOWS:"
120 PRINT " PICO - ONE DIGIT CORRECT BUT IN THE WRONG POSITION"
130 PRINT " FERMI - ONE DIGIT CORRECT AND IN THE RIGHT POSITION"
140 PRINT " BAGELS - NO DIGITS CORRECT"
150 FOR I=1 TO 3
160 A(I)=INT(10*RNDR(1))
165 IF I=1 THEN 200
170 FOR J=1 TO I-1
180 IF A(I)=A(J) THEN 160
190 NEXT J
200 NEXT I
210 PRINT:PRINT "O.K. I HAVE A NUMBER IN MIND."
220 FOR I=1 TO 20
230 PRINT "GUESS #";I,
240 INPUT A$
245 IF LEN(A$)<>3 THEN 630
250 FOR Z=1 TO 3:A1(Z)=ASC(MID$(A$,Z,1)):NEXT Z
260 FOR J=1 TO 3
270 IF A1(J)<48 THEN 300
280 IF A1(J)>57 THEN 300
285 B(J)=A1(J)-48
290 NEXT J
295 GOTO 320
300 PRINT "WHAT?"
310 GOTO 230
320 IF B(1)=B(2) THEN 650
330 IF B(2)=B(3) THEN 650
340 IF B(3)=B(1) THEN 650
350 C=0:D=0
360 FOR J=1 TO 2
370 IF A(J)<>B(J+1) THEN 390
380 C=C+1
390 IF A(J+1)<>B(J) THEN 410
400 C=C+1
410 NEXT J
420 IF A(1)<>B(3) THEN 440
430 C=C+1
440 IF A(3)<>B(1) THEN 460
450 C=C+1
460 FOR J=1 TO 3
470 IF A(J)<>B(J) THEN 490
480 D=D+1
490 NEXT J
500 IF D=3 THEN 680
505 IF C=0 THEN 545
520 FOR J=1 TO C
530 PRINT "PICO ";
540 NEXT J
545 IF D=0 THEN 580
550 FOR J=1 TO D
560 PRINT "FERMI ";
570 NEXT J
580 IF C+D<>0 THEN 600
590 PRINT "BAGELS";
600 PRINT
605 NEXT I
610 PRINT "OH WELL"
615 PRINT "THAT'S TWENTY GUESSES. MY NUMBER WAS";100*A(1)+10*A(2)+A(3)
620 GOTO 700
630 PRINT "TRY GUESSING A THREE-DIGIT NUMBER.":GOTO 230
650 PRINT "OH, I FORGOT TO TELL YOU THAT THE NUMBER I HAVE IN MIND"
660 PRINT "HAS NO TWO DIGITS THE SAME.":GOTO 230
680 PRINT "YOU GOT IT!!!":PRINT
690 Y=Y+1
700 INPUT "PLAY AGAIN (YES OR NO)";A$
720 IF A$="YES" THEN 150
730 IF Y=0 THEN 750
740 PRINT:PRINT "A";Y;"POINT BAGELS BUFF!!"
750 PRINT "HOPE YOU HAD FUN. BYE."
999 END
  
```