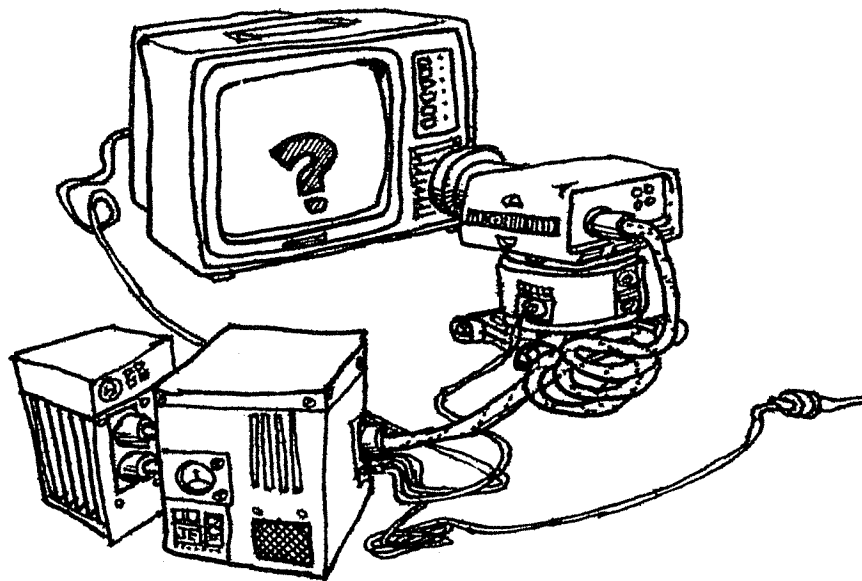# Guess

In Program GUESS, the computer chooses a random integer between 0 and any limit you set. You must then try to guess the number the computer has chosen using the clues provided by the computer.

You should be able to guess the number in one less than the number of digits needed to represent the number in binary notation — i.e., in base 2. This ought to give you a clue as to the optimum search technique.

GUESS converted from the original program in FOCAL which appeared in the book "Computers in the Classroom" by Walt Koetke of Lexington High School, Lexington, Massachusetts.

```
1 PRINT TAB(33);"GUESS"
2 PRINT TAB(15);"CREATIVE COMPUTING  MORRISTOWN, NEW JERSEY"
3 PRINT:PRINT:PRINT
4 PRINT "THIS IS A NUMBER GUESSING GAME.  I'LL THINK"
5 PRINT "OF A NUMBER BETWEEN 1 AND ANY LIMIT YOU WANT."
6 PRINT "THEN YOU HAVE TO GUESS WHAT IT IS."
7 PRINT
8 PRINT "WHAT LIMIT DO YOU WANT";
9 INPUT L
10 PRINT
11 L1=INT(LOG(L)/LOG(2))+1
12 PRINT "I'M THINKING OF A NUMBER BETWEEN 1 AND ";L
13 G=1
14 PRINT "NOW YOU TRY TO GUESS WHAT IT IS."
15 M=INT(L*RND(1)+1)
20 INPUT N
21 IF N>0 THEN 25
22 GOSUB 70
23 GOTO 1
25 IF N=M THEN 50
30 G=G+1
31 IF N>M THEN 40
32 PRINT "TOO LOW.  TRY A BIGGER ANSWER."
33 GOTO 20
40 PRINT "TOO HIGH.  TRY A SMALLER ANSWER."
42 GOTO 20
50 PRINT "THAT'S IT!  YOU GOT IT IN";G;"TRIES."
52 IF G<L1 THEN 58
54 IF G=L1 THEN 60
56 PRINT "YOU SHOULD HAVE BEEN ABLE TO GET IT IN ONLY";L1
57 GOTO 65
58 PRINT "VERY ";
60 PRINT "GOOD."
65 GOSUB 70
66 GOTO 12
70 FOR H=1 TO 5
71 PRINT
72 NEXT H
73 RETURN
99 END
```

```
                    GUESS
CREATIVE COMPUTING  MORRISTOWN, NEW JERSEY

THIS IS A NUMBER GUESSING GAME.  I'LL THINK
OF A NUMBER BETWEEN 1 AND ANY LIMIT YOU WANT.
THEN YOU HAVE TO GUESS WHAT IT IS.

WHAT LIMIT DO YOU WANT? 200

I'M THINKING OF A NUMBER BETWEEN 1 AND  200
NOW YOU TRY TO GUESS WHAT IT IS.
? 100
TOO LOW.  TRY A BIGGER ANSWER.
? 150
TOO HIGH.  TRY A SMALLER ANSWER.
? 125
TOO HIGH.  TRY A SMALLER ANSWER.
? 112
TOO LOW.  TRY A BIGGER ANSWER.
? 118
TOO LOW.  TRY A BIGGER ANSWER.
? 123
THAT'S IT!  YOU GOT IT IN 6 TRIES.
VERY GOOD.

I'M THINKING OF A NUMBER BETWEEN 1 AND  200
NOW YOU TRY TO GUESS WHAT IT IS.
? 100
TOO HIGH.  TRY A SMALLER ANSWER.
? 75
TOO HIGH.  TRY A SMALLER ANSWER.
? 55
TOO HIGH.  TRY A SMALLER ANSWER.
? 45
TOO HIGH.  TRY A SMALLER ANSWER.
? 20
TOO HIGH.  TRY A SMALLER ANSWER.
? 10
TOO LOW.  TRY A BIGGER ANSWER.
? 11
TOO LOW.  TRY A BIGGER ANSWER.
? 13
TOO LOW.  TRY A BIGGER ANSWER.
? 15
TOO LOW.  TRY A BIGGER ANSWER.
? 16
TOO LOW.  TRY A BIGGER ANSWER.
? 17
TOO LOW.  TRY A BIGGER ANSWER.
? 19
TOO HIGH.  TRY A SMALLER ANSWER.
? 18
THAT'S IT!  YOU GOT IT IN 13 TRIES.
YOU SHOULD HAVE BEEN ABLE TO GET IT IN ONLY 8
```