Tiny Basic

Tiny Basic was a series of BASIC dialects designed to fit into 4 or less kilobytes of memory as a free alternative to other BASICS of the mid- to late 1970's. The small size meant there were several limitations: numeric operations were integer only, only 26 integer variables available (A-Z), limited statement vocabulary and function library. Tiny Basic was available for the Intel 8080, Motorola 6800 and MOS Technology 6502. The design also included a specification for a virtual machine to execute the interpreter for Tiny Basic. The Tiny Basic for NBASIC program implements the virtual machine that runs Tiny Basic and was adapted from Tom Pittman's IttyBitty interpreter written in C and published in the January 2006 issue of *Dr. Dobb's Journal*, p.24.

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The Tiny Basic program will run on any version of NBASIC including the shareware versions. What is interesting is that a running Tiny Basic program is being interpreted by the Tiny Basic interpreter, which is written for a virtual machine that is being interpreted by the Tiny Basic NBASIC program, which is being interpreted by NBASIC, which is running on Windows (3 levels of interpretation).

The Backspace key deletes the previous character, the Esc key cancels the current line and restarts input. The Enter key completes the input tells Tiny Basic to execute the command.

Enter a program by typing the line number followed by a space and the Tiny Basic statement. To reenter the line retype the line number and the corrected statement. To delete a line, type the line number followed by the Enter key. To list the program type LIST, to run the program type RUN or to delete the program type CLEAR. All Tiny Basic programs must include the END statement.

Tiny Basic statements:
CLEAR
END
GOSUB expression
GOTO expression
IF expression relop expression THEN statement
INPUT variable[,variable]…
[LET] variable=expression
LIST [line[,line]]
PR[INT] {"string" | expression}[{, | ;}[{"string" | expression}]]…
RETURN
RUN

Variables are only A-Z. Expressions can contain addition (+), subtraction (-), multiplication (*) and division (/) as well as a sub-expression in ()s. Relative operators in the IF statement include equal (=), not equal (<>), less than (<), less than or equal (<=), greater than (>) and greater than or equal (>=). Strings are enclosed in double quotes. Integer arithmetic is signed 16-bit. Functions include RND(n) which returns a random number from 0 to n-1 and USR(addr[,x[,a]]) which calls a machine language subroutine.

To load a program into Tiny Basic, create the Tiny Basic program as a text file on a NBASIC volume and set the defaultinputfile$ variable in line 7 to this filename. Make sure the last line includes a carriage return. An output file can be set in the defaultoutputfile$ variable which copies screen output to the file.

To exit the Tiny Basic interpreter program enter A=USR(-1) and press the Enter key.

For more information on Tiny Basic see http://www.ittybittycomputers.com/IttyBitty/TinyBasic/ and https://en.wikipedia.org/wiki/Tiny_BASIC

Save the program to a file in a folder mapped to a NBASIC volume. Include a carriage return on the last line or a blank line as the last line (this ensures the last line is executed during input). Edit line 7 of tinybasic.nba and set the variable defaultinputfile$ to the name of the file (include the volume if needed) and run Tiny Basic. The program will be input and displayed. At the : prompt, type run and press enter.

Tiny Basic Hi-Lo Game

```
10 PRINT "TINY HI-LO GAME"
20 PRINT
30 PRINT "YOU HAVE 6 TRIES TO GUESS A NUMBER FROM 1 TO 100"
40 LET N=RND(100)+1
50 LET T=0
60 PRINT
70 PRINT "YOUR GUESS?"
80 INPUT G
90 LET T=T+1
100 IF G=N THEN GOTO 130
110 IF G<N THEN GOTO 150
120 GOTO  170
130 PRINT "YOU GUESSED IT IN ";T;" TRIES!"
140 GOTO 200
150 PRINT "TOO LOW"
160 GOTO 180
170 PRINT "TOO HIGH"
180 IF T<6 THEN GOTO 70
190 PRINT "YOU DID NOT GUESS THE NUMBER, IT WAS ";N
200 PRINT
210 PRINT "PRESS Y TO PLAY AGAIN OR ANY OTHER KEY TO QUIT"
220 LET A=USR(262)
230 PRINT
240 IF A=89 THEN GOTO 20
250 IF A=121 THEN GOTO 20
260 PRINT
270 PRINT "BYE"
280 END
```