TI-BASIC

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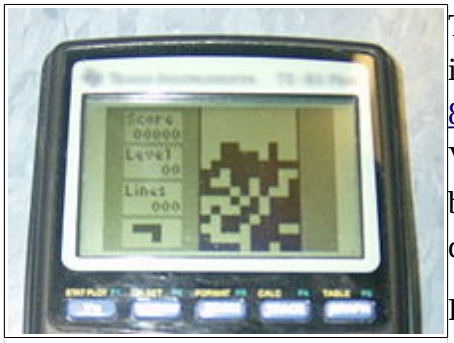

Illustration 1: Graphing calculators are sometimes used for gaming.

TI-BASIC is the unofficial name of a BASIC-like language built into Texas Instruments (TI)'s graphing calculators, including the TI-83 series, TI-84 Plus series, TI-89 series, TI-92 series (including Voyage 200), TI-73, and TI-Nspire. TI rarely refers to the language by name, but the name TI-BASIC has been used in some developer documentation.[1][2]

For many applications, it is the most convenient way to program any TI calculator, since the capability to write programs in TI-BASIC is built-in. Assembly language (often referred to as "asm") can also be used, and C compilers exist for translation into assembly: TIGCC for Motorola 68000(68k) based calculators, and SDCC for Zilog Z80 based calculators. However, both of them are cross-compilers, not allowing on-calculator programming. TI-BASIC is considerably slower than the assembly language (because it has to be interpreted), making it better suited to writing programs to quickly solve math problems or perform repetitive tasks, rather than programming games or graphics-intensive applications. Some math instruction books even provide programs in TI-BASIC (usually for the widespread variant used by the TI-82/83/84 series).

Although it is somewhat minimalist compared to programming languages used on computers, TI-BASIC is nonetheless an important factor in the programming community. Because TI graphing calculators are required for advanced mathematics classes in many high schools and universities, TI-BASIC often provides the first glimpse many students have into the world of programming.

Syntax

Expressions use infix notation, with standard operator precedence. Many statements include their arguments in parentheses, similar to the syntax used for mathematical functions. The assignment syntax is unusual; rather than using a let statement or an equals sign, TI-BASIC uses a right-arrow "STO" operator with the syntax: source → destination.

Control flow

Control flow statements include if-then-else blocks, for loops, while loops, and repeat loops, though no switch statements. Unusual for a high level language, TI-BASIC implementations include IS> (Increment and Skip if Greater Than) and DS< (Decrement and Skip if Less Than) statements, constructs generally associated with assembly languages. Sections of programs can be labeled; however, particularly on the Z80 models, the labels function primarily as destinations for GOTO

statements rather than as program or block labels.

Examples

Hello world

The following program, when executed, will display the phrase "HELLO, WORLD!":

```
hellowld()
:Prgm
:  ClrIO
:  Disp "HELLO, WORLD!"
:EndPrgm
```

TI-Nspire

```
text"HELLO, WORLD!"
:EndPrgm
```

TIBASIC Games

TIBASIC is also commonly used to create games on their calculator. Following is an example of a simple flappy-bird game in TIBASIC.

```
:1→Y
:16→A
:1→B
:5→E
:0→Z
:Lbl G
:getKey→K
:A-1→A
:randInt(2,7)→D
:ClrHome
:If A=0:16→A
:If not(A=16):0→B
:If A=16:1→B
:If B=1:D→E
:If K=25:Y-1→Y
:If not(K=25):Y+1→Y
:Output(Y,3,"0")
:For(W,1,8)
:Output(W,A,"H")
:End
:Output(E,A," ")
:Output(E+1,A," ")
:If A=3
:Then
:If not(Y=E) and not(Y=E+1)
:Output(100,100,"P")
:Output(1,8,Z)
:Z+1→Z
:End
:Goto G
```