

2. VARIABLE TYPES

The Advantages of Integers

Advan BASIC can store numbers in either integer or real (floating point) form. Integers have no fractional part, and their values range from a maximum of 32767 to a minimum of -32768. Real numbers vary from 10^{99} to -10^{99} ; 9 or 10 significant digits will be kept, depending on the number.

Speed and space are the reasons to use integers. Calculations using integers are about 3 times faster than those using real numbers. Also each integer uses two memory bytes, while a real number needs 6 bytes. So if you have a big program and want it to fit into the computer and run as fast as possible (and who doesn't), you should use integers wherever you can.

Names of real and integer variables can be as many characters long as you desire. Only capital letters, numbers, and decimal points may be used in the name. Integer variables must end with a % symbol. Here are some examples of valid names:

Integer Variables Real Variables

A%	A
BETA.ALPHA%	BETA.ALPHA
BETA.ALPHA1%	BETA.ALPHA1
C123%	C123
BETA1.GAMMA%	BETA1.GAMMA

Unlike some BASICs, all the characters in Advan BASIC variable names are significant. Thus, BETA.ALPHA1 is not the same variable as BETA.ALPHA or as BETA.ALPHA1%. Numerical constants are set to integer form if they end in a % sign and to real form if they do not:

Integer Constants Real Constants

1%	1.32
-5327%	5
0%	-17E8
31765%	5.27E-3

In Advan BASIC you can use all the standard arithmetic operators (+, -, *, /, ^) with either integer or real variables. In the integer mode the divide operator (/) discards the remainder (it does not round). Thus 9%/5% will yield one. For integer variables there is also a MOD operator. 9% MOD 5% will divide 9 by 5 and return the remainder (in this case, 4).

You can mix integer variables and constants with real variables and constants without causing any errors, but you will reduce execution speed. If a computation must be performed involving a real number and an integer, the integer is converted to a real number before the calculation is carried out.

If an integer variable is set equal to a real number, the real number is first rounded and then converted to an integer. For example in A%=5.7, A%