NAME

bas − basic

SYNOPSIS

bas [file]

DESCRIPTION

Bas is a dialect of Basic. If a file argument is provided, the file is used for input before the console is read. *Bas* accepts lines of the form:

statement
integer statement

Integer numbered statements (known as internal statements) are stored for later execution. They are stored in sorted ascending order. Non-numbered statements are immediately executed. The result of an immediate expression statement (that does not have '=' as its highest operator) is printed.

Statements have the following syntax:

expression
The expression is executed for its side effects (assignment or function call) or for printing as described above.

comment
This statement is ignored. It is used to interject commentary in a program.

done
Return to system level.

draw expression expression expression
A line is drawn on the Tektronix 611 display '/dev/vt0' from the current display position to the XY co-ordinates specified by the first two expressions. The scale is zero to one in both X and Y directions. If the third expression is zero, the line is invisible. The current display position is set to the end point.

display list
The list of expressions and strings is concatenated and displayed (i.e. printed) on the 611 starting at the current display position. The current display position is not changed.

dump
The name and current value of every variable is printed.

edit
The UNIX editor, *ed*, is invoked with the *file* argument. After the editor exits, this file is recompiled.

erase
The 611 screen is erased.

for name = expression expression statement
for name = expression expression
next
The *for* statement repetitively executes a statement (first form) or a group of statements (second form) under control of a named variable. The variable takes on the value of the first expression, then is incremented by one on each loop, not to exceed the value of the second expression.

goto expression
The expression is evaluated, truncated to an integer and execution goes to the corresponding integer numbered statment. If executed from immediate mode, the internal statements are compiled first.

if expression statement
if expression
[**else**
fi

The statement (first form) or group of statements (second form) is executed if the expression evaluates to non-zero. In the second form, an optional **else** allows for a group of statements to be executed when the first group is not.

list [expression [expression]]

is used to print out the stored internal statements. If no arguments are given, all internal statements are printed. If one argument is given, only that internal statement is listed. If two arguments are given, all internal statements inclusively between the arguments are printed.

print list

The list of expressions and strings are concatenated and printed. (A string is delimited by " characters.)

prompt list

Prompt is the same as *print* except that no newline character is printed.

return [expression]

The expression is evaluated and the result is passed back as the value of a function call. If no expression is given, zero is returned.

run

The internal statements are compiled. The symbol table is re-initialized. The random number generator is reset. Control is passed to the lowest numbered internal statement.

save [expression [expression]]

Save is like *list* except that the output is written on the *file* argument. If no argument is given on the command, **b.out** is used.

Expressions have the following syntax:

name

A name is used to specify a variable. Names are composed of a letter followed by letters and digits. The first four characters of a name are significant.

number

A number is used to represent a constant value. A number is written in Fortran style, and contains digits, an optional decimal point, and possibly a scale factor consisting of an **e** followed by a possibly signed exponent.

(expression **)**

Parentheses are used to alter normal order of evaluation.

_ expression

The result is the negation of the expression.

expression operator expression

Common functions of two arguments are abbreviated by the two arguments separated by an operator denoting the function. A complete list of operators is given below.

expression **(** [expression [**,** expression] ...] **)**

Functions of an arbitrary number of arguments can be called by an expression followed by the arguments in parentheses separated by commas. The expression evaluates to the line number of the entry of the function in the internally stored statements. This causes the internal statements to be compiled. If the expression evaluates negative, a builtin function is called. The list of builtin functions appears below.

name **[** expression [**,** expression] ... **]**

Each expression is truncated to an integer and used as a specifier for the name. The result is syntactically identical to a name. **a[1,2]** is the same as **a[1][2].** The truncated e xpressions are restricted to values between 0 and 32767.

The following is the list of operators:

=

= is the assignment operator. The left operand must be a name or an array element. The result is the right operand. Assignment binds right to left, all other operators bind left to right.

& |

& (logical and) has result zero if either of its arguments are zero. It has result one if both its arguments are non-zero. | (logical or) has result zero if both of its arguments are zero. It has result one if either of its arguments are non-zero.

< <= > >= == <>

The relational operators (< less than, <= less than or equal, > greater than, >= greater than or equal, == equal to, <> not equal to) return one if their arguments are in the specified relation. They return zero otherwise. Relational operators at the same level extend as follows: a>b>c is the same as a>b&b>c.

+ −

Add and subtract.

* /

Multiply and divide.

^

Exponentiation.

The following is a list of builtin functions:

arg(i)

is the value of the *i* -th actual parameter on the current level of function call.

exp(x)

is the exponential function of *x*.

log(x)

is the natural logarithm of *x*.

sqr(x)

is the square root of *x*.

sin(x)

is the sine of *x* (radians).

cos(x)

is the cosine of *x* (radians).

atn(x)

is the arctangent of *x*. Its value is between $-\pi/2$ and $\pi/2$.

rnd( )

is a uniformly distributed random number between zero and one.

expr( )

is the only form of program input. A line is read from the input and evaluated as an expression. The resultant value is returned.

abs(x)

is the absolute value of *x*.

int(x)

returns *x* truncated (towards 0) to an integer.

FILES

/tmp/btm?	temporary
b.out	save file

DIAGNOSTICS

Syntax errors cause the incorrect line to be typed with an underscore where the parse failed. All other diagnostics are self explanatory.

BUGS

Has been known to give core images.