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Identification

DC--Desk Calculator

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Purpose

DC performs the functions of a ten-key desk calculator. In addition, it has a small memory and variable radix input/output.

Usage

RESUME DC

initiates the calculator; when ready to accept the first request, DC types "Go". No further responses will be typed by DC unless it is asked to print a result or an illegal request is given. Successive requests are separated by new-line characters. All blanks are ignored. DC maintains one result register, called "A" here. The following requests modify the contents of "A" as shown: ("n" is any integer)

typed request	computation performed
=n	$n \rightarrow A$ initialize "A" with "n"
+n	$A + n \rightarrow A$ add "n" to "A"
-n	$A - n \rightarrow A$ subtract "n" from "A"
*n	$A \times n \rightarrow A$ multiply "A" by "n"
/n	$A / n \rightarrow A$ divide "A" by "n"
%n	$n / A \rightarrow A$ divide "n" by "A"

Eight storage cells, named s, t, u, v, w, x, y, and z, may also be used as

operands in the above requests by replacing the integer "n" with the name of a storage cell. A value may be stored in a storage cell by

x=y

where storage cell "x" receives the value currently in storage cell "y". "x" and "y" may of course be replaced by any of the other six storage cell names. The right hand side ("y") may be omitted to signify that result register "A" contains the value to be assigned. The right hand side may also be replaced by an integer. Storage cell "s" is used as the radix for input/output conversion. It initially contains ten. One sets s > ten or s < two at his own peril.

To print a result,

p x

(if "x" is omitted, "A" is implied) will print the contents of storage cell "x".

There is one additional request:

q

will return the user to CTSS command level.

All computations are done with MAD integers, giving about 10 digit precision when the radix is ten.

Example

Sum two columns of figures, then divide first sum by second.

RESUME DC	command typed
W 2347.1	CTSS response
Go	response from desk calculator
=0	make sure "A" contains zero to start
+214	add first column
+27	..
+818	..
P	request result to be printed
1059	(DC types result)
	(DC types a blank line)
x=	save result in cell "x"
=0	reset "A" to zero for second addition
+14	form second sum
+23	..
+79	..
P	print result
116	..
	..
/x	read "% " as "divide 'A' into"
P	if we had summed second column first, we
9	would have used "/x" instead.
	Note result of division is truncated to
q	next lower integer.
*	* means command finished
R .316+2.616	Back at command level

Syntax

Only a subset of the allowed syntax of the desk calculator has been described above. The full syntax description is given as follows:

$\langle \text{name} \rangle ::= s | t | u | v | w | x | y | z | \left\{ \begin{array}{l} \text{null} \\ \text{field} \end{array} \right\}$
 $\langle \text{integer} \rangle ::= (\text{usual definition})$
 $\langle \text{operand} \rangle ::= \langle \text{name} \rangle | \langle \text{integer} \rangle$
 $\langle \text{operator} \rangle ::= + | - | * | / | \% | p | q | =$
 $\langle \text{request} \rangle ::= \langle \text{name} \rangle \langle \text{operator} \rangle \langle \text{operand} \rangle$