Chapter 24
Calculator objects and flags

Numbers, lists, vectors, matrices, algebraics, etc., are calculator objects. They are classified according to its nature into 30 different types, which are described below. Flags are variables that can be used to control the calculator properties. Flags were introduced in Chapter 2.

Description of calculator objects

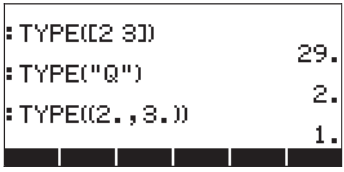
The calculator recognizes the following object types:

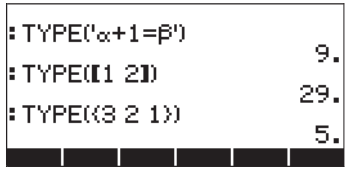
Number	Type	Example
0	Real Number	-1.23E-5
1	Complex Number	(-1.2,2.3)
2	String	"Hello, world "
3	Real Array	[[1 2][3 4]]
4	Complex Array	[[(1 2) (3 4)] [(5 6) (7 8)]]
5	List	{3 1 'PI'}
6	Global Name	X
7	Local Name	y
8	Program	<< → a 'a^2' >>
9	Algebraic object	'a^2+b^2'
10	Binary Integer	# A2F1E h
11	Graphic Object	Graphic 131×64
12	Tagged Object	R: 43.5
13	Unit Object	3_m^2/s
14	XLIB Name	XLIB 342 8
15	Directory	DIR ← END
16	Library	Library 1230"...
17	Backup Object	Backup MYDIR
18	Built-in Function	COS
19	Built-in Command	CLEAR

Number	Type	Example
21	Extended Real Number	Long Real
22	Extended Complex Number	Long Complex
23	Linked Array	Linked Array
24	Character Object	Character
25	Code Object	Code
26	Library Data	Library Data
27	External Object	External
28	Integer	3423142
29	External Object	External
30	External Object	External

Function TYPE

This function, available in the PRG/TYPE () sub-menu, or through the command catalog, is used to determine the type of an object. The function argument is the object of interest. The function returns the object type as indicated by the numbers specified above.





Function VTYPE

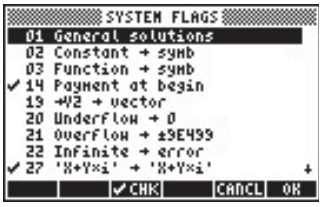
This function operates similar to function TYPE, but it applies to a variable name, returning the type of object stored in the variable.

Calculator flags

A flag is a variable that can either be set or unset. The status of a flag affects the behavior of the calculator, if the flag is a system flag, or of a program, if it is a user flag. They are described in more detail next.

System flags

System flags can be accessed by using MODE **Flags.** Press the down arrow key to see a listing of all the system flags with their number and brief description. The first two screens with system flags are shown below:

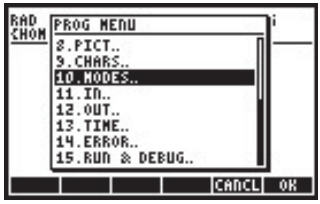


You will recognize many of these flags because they are set or unset in the MODES menu (e.g., flag 95 for Algebraic mode, 103 for Complex mode, etc.). Throughout this user's manual we have emphasized the differences between CHOOSE boxes and SOFT menus, which are selected by setting or un-setting system flag 117. Another example of system flag setting is that of system flags 60 and 61 that relate to the constant library (CONLIB, see Chapter 3). These flags operate in the following manner:

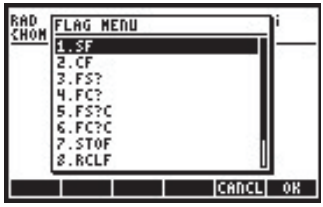
- user flag 60: clear (default):SI units, set: ENGL units
- user flag 61: clear (default):use units, set: value only

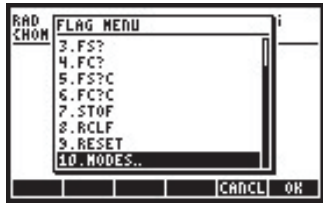
Functions for setting and changing flags

These functions can be used to set, un-set, or check on the status of user flags or system flags. When used with these functions system flags are referred to with negative integer numbers. Thus, system flag 117 will be referred to as flag -117. On the other hand, user flags will be referred to as positive integer numbers when applying these functions. It is important to understand that user flags have applications only in programming to help control the program flow. Functions for manipulating calculator flags are available in the PRG/MODES/FLAG menu. The PRG menu is activated with ↰ PRG . The following screens (with system flag 117 set to CHOOSE boxes) show the sequence of screens to get to the FLAG menu:



The functions contained within the FLAG menu are the following:





The operation of these functions is as follows:

SF	Set a flag
CF	Clear a flag
FS?	Returns 1 if flag is set, 0 if not set
FC?	Returns 1 if flag is clear (not set), 0 if flag is set
FS?C	Tests flag as FS does, then clears it
FC?C	Tests flag as FC does, then clears it
STOF	Stores new system flag settings
RCLF	Recalls existing flag settings
RESET	Resets current field values (could be used to reset a flag)

User flags

For programming purposes, flags 1 through 256 are available to the user. They have no meaning to the calculator operation.