Introduction to LXVII.

Thank you for downloading LXVII, (pronounced “67”).

LXVII is a programmable scientific calculator closely patterned after the Hewlett-Packard HP-67, developed in the mid-1970's. Why bother with another calculator program, much less re-implementing mid-20th century technology? Because I realized how much I missed my HP-67 on Mac OS X when I needed an RPN-based calculator on Mac OS X at tax time. I did a quick survey of calculators for Mac OS X and found the landscape lacking for a simple but powerful RPN calculator. Note the word "simple". There are some very good calculators available on OS X, but none has the balance of simplicity and power that I remembered from my days with the HP-67. (The lack was pronounced enough that I ended up finding my venerable calculator gathering dust in a drawer and doing my taxes with it that year.)

I'd also been looking for a project that would get me started on learning Cocoa, and I thought a simple calculator application would be a great place to start. Two years of on-again off-again development, it is ready for beta testing. Using Apple’s Xcode, the initial calculator was relatively straightforward to implement, but adding programmability added a layer of complexity that involved learning a lot more of the Application Toolkit than I had anticipated. But that just made it a better student project.

I hope you will find it as enjoyable to use as I found it educational to program.

Features of LXVII:

- A faithful representation of the HP-67, including its familiar (to me anyway,) keyboard layout.
- All buttons have keyboard equivalents and are self-documenting via tooltips.
- All the programming features of the HP-67 are supported. Program compatibility has been preserved as much as possible so the original HP-67 program libraries can be run.
- LXVII is a document based application, which means you can have multiple calculator instances running at the same time. By extension, you can save the state of the calculator to separate documents, each document essentially becomes a custom calculator suited to a particular task.
- In addition to the calculator state being saved as a document, the program and data memories can also be saved and reloaded as separate documents.
- Enhanced HP-67 features:
  - Better precision: All operations are done using double precision numbers, yielding a range of -10E-320 to 10E+320 (or thereabouts) with 15 digits of precision.
  - Live display of vital registers including: the stack, the lastX register, the current programPC, the memory registers and the program memory. These become very handy when you need to debug a program.
  - Mode settings are always displayed.

- Paper tape output with vertical and tab-delimited mode for importing into a spreadsheet program.
- The five soft keys can be labeled with tooltip help.
- The keys don't stick, (depending on your keyboard).
- A lot faster

To Do:

- Implement help
- Implement import/export of text based program and memory data
- Implement saving the paper tape data to a file.

System Requirements:

LXVII is distributed in 2 versions:

1. *LXVII* is for Power-PC systems running 10.3 (Panther) and later
2. *LXVII Universal* is a Universal Binary built to run natively on any system capable of running 10.4 (Tiger)

Frequently asked questions:

Q: Where is the "=" key?
A: LXVII uses Reverse Polish Notation (RPN) for its operation. An excellent introduction to RPN is available at *http://www.hpmuseum.org/rpn.htm#learn*

Q: How do you set the display to show more than 9 significant bits?
A: Store the number in the indirect register, and then display indirect. For example, to set the display to 12 digits use the following sequence:

It was done this way to preserve program compatibility, as well as to simplify the button parser.

Q: The “CL PRGM” doesn’t always reset the soft key legends of the A-E keys and neither does the “Defaults” button on the pull-down sheet. Why not, and how do I get back the default legends?

A: The soft-key legends are associated with the document, not the program, so the “CL PRGM” and Defaults button will actually reset the legends to what was read when the document was open. This is akin to writing labels on the HP-67 cards: just because you cleared the button from memory, it does not mean the labels on the cards went away. If you want to get a new set of default keys, start a new document.

Q: What are the hot-keys assigned to the buttons?
A::The following tables show the keyboard equivalent for the buttons. The keyboard equivalent is also displayed at the end of the tool-tip message when you hover the mouse pointer over a button. Note that the keys are not case sensitive. This information can also be found under the Common Topics category in the built-in help pages.

A	a	B	b	C	c	D	d	E	e
Σ+	m	GTO	t	DSP	v	(i)	i	SST	n
f	f	g	g	STO	s	RCL	r	h	h

ENTER	return	CHS	j	EEX	k	CLx	z
-	-	7	7	8	8	9	9
+	+	4	4	5	5	6	6
x	*	1	1	2	2	3	3
÷	/	0	0	.	.	R/S	x

Q: Where is the feature set documented?
A: Unfortunately the HP-67 manuals don't seem to be available as a download anywhere on the network. Scanning and posting my copy of the original HP-67 manual doesn't seem practical or legal, in view of copyright restrictions that I'm not prepared to challenge. Give all that, a good introduction to the HP-67, is available at *http://www.hpmuseum.org/hp6797.htm*.

The HP museum *http://www.hpmuseum.com/* is a great place to go for information in general. It has extensive documentation on all HP calculators, including tutorials and program libraries. You can order a complete manual set for all calculators on CD-ROM. It's a great site if you are an HP calculator enthusiast.

Q: I can't cut and paste the display. What good is this if I can't paste my results into my favorite app?
A: The LED display does not represent a valid floating point number, especially when scientific or engineering notation is active. It would not be recognized as a number in other applications. To cut and paste a number, open the register display drawer and cut and paste from the stack display. You can also paste values directly into the stack and memory registers this way.

Q: Feature XYZ is broken? How do I report it?
A: Mail me at *nct@tamburri.net* Try to give the exact key sequences from a cold start if possible. If a document causes the problem, send it as well.

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