HP Forum Archive 13

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Favorite Calculator

*Message #1 Posted by **Mike** on 30 Sept 2003, 8:07 a.m.*

Just an update on the favorite calculator poll. This did not include every HP calculator but did most of the high power scientific.

What is your favorite HP calculator? You have already voted on this poll.			
HP-15C		31	18.24%
HP-29C		7	4.12%
HP-32sii		12	7.06%
HP-34C		4	2.35%
HP-41 Series		55	32.35%
HP-42S		31	18.24%
HP-48 Series		20	11.76%
HP-67		10	5.88%
Total:		143 votes	100%

Re: Favorite Calculator

*Message #2 Posted by **Thibaut.be** on 30 Sept 2003, 10:00 a.m.,*
in response to message #1 by Mike

I did 2 years ago a similar poll. Results can be accessed http://membres.lycos.fr/hpcalc/hp_calc_poll.htm

Re: Favorite Calculator

*Message #3 Posted by **Erik Ehrling (Sweden)** on 30 Sept 2003, 1:03 p.m.,*

in response to message #2 by Thibaut.be

Looking at both polls definitely supports the theory that a new HP41/42S compatible calc could find its fans...

Re: Favorite Calculator

*Message #4 Posted by **GS Leong** on 30 Sept 2003, 6:19 p.m.,*
in response to message #3 by Erik Ehrling (Sweden)

If only Carly would listen!

Re: Favorite Calculator

*Message #5 Posted by **Ed Look** on 30 Sept 2003, 11:01 p.m.,*
in response to message #1 by Mike

Hey! I did not vote but the message with your chart says that I have already voted! Where can I go to vote anyway?

Re: Favorite Calculator

*Message #6 Posted by **quemazon** on 1 Oct 2003, 9:25 a.m.,*
in response to message #5 by Ed Look

I think this poll talks more about the demographics of the board more than the likeability of any particular calculator. I bet most people that chose the 41/42 series bought and used them in college when they were at the height of their popularity. Or maybe many "classic" users upgraded to them because they were like the classics, but provided many advantages.

I went to school with a 48 series and can't imagine how someone could want anything else. The equation library, powerful unit conversion, graphing capability, constants library, multi-level stack, and much more would be sorely missed if I had to switch to a 41. I doubt that many people who when through school with a 48 series calculator (and learned how to use it) would want anything else.

I think everyone simply likes what they feel comfortable with, which is usually a result of what they used in school or profession.

Re: Favorite Calculator

*Message #7 Posted by **R Lion (España)** on 1 Oct 2003, 9:59 a.m.,*
in response to message #6 by quemazon

The 48GX is the TOP!!

(and the 15c when a shirt pocket calc is needed)

That is why...

*Message #8 Posted by **Mike** on 1 Oct 2003, 11:22 a.m.,*
in response to message #6 by quemazon

I have another poll on the site that allows you to specify your age group. Then, it might be possible to see if age is a factor. If popularity is based on when you used them (as in college), it might show up in the age voting.

Re: That is why...

*Message #9 Posted by **Patrick** on 1 Oct 2003, 3:26 p.m.,*
in response to message #8 by Mike

However, it is difficult to correlate the two since the data is only indirectly linked. We don't even know how many of the same people voted in the two polls, for example.

While I pretty much agree with quemazon, I should point out that I voted for the 15C, having never owned one (or indeed any Voyager model) until earlier this year. I went to school with an SR-10 and then an HP-25 (there was no "C" at the time). In grad school I purchased an HP-41C. I owned no other HP models until my mid-life crisis kicked in this year and I was *forced* to start a collection of familiar and fascinating little gadgets from my youth.

It will come as no surprise, therefore, that I would never consider voting for the 48 series as my favourite calculator, not in a million years. That wonderful little HP-25 has forever biased my notion of what a calculator *ought* to be:

- It should be small.
- It should be keystroke programmable, and
- It should be quickly understandable (for example, by having at least the lion's share of its functions visible on the keyboard).

The 48's have all but three of these characteristics.

I do like the 41 and the 42S, but the size, amazing power, and intelligent keyboard of the 15C is very, very appealing. I wish I had discovered it decades ago when I had my head too deep into 41C synthetics.

Re: That is why...

*Message #10 Posted by **Juan J** on 1 Oct 2003, 6:40 p.m.,*

in response to message #9 by Patrick

I went to school with the 41 and shortly before graduating upgraded to the 48GX. Yes, it can do almost everything, yes, it is powerful, and if you went to school with it surely you wil want nothing else.

But the 41 is perhaps the finest calculator ever made by HP, and you can do many things with it (from how to nuke your neighbor to how to land the space shuttle to balancing your home buidget.) It can also be expanded and programmed in amazing ways and is deservedly regarded as a personal computing system long before PCs were available round the corner to anyone.

The above being said, going from one model to another is like a fighter pilot upgrading to a new fighter model. The new one can do anything and handle superbly, but the old one will always handle nicely and will retain features not exactly preserved or matched or improved in the newer model. (I wrote something like this in a post a few years ago here in the museum.)

I do like the 48s but will always regard with fondness the trusty 41. Probably other forum members feel the way I do about the 41 and other models.

HP-41C the best?

*Message #11 Posted by **Karl Schneider** on 2 Oct 2003, 12:45 a.m.,*
in response to message #10 by Juan J

(Note: Just a few editing improvments for clarity)

> Quote:
>
> But the 41 is perhaps the finest calculator ever made by HP...

Back in the very early '80s, I coveted the HP-41 and would occasionally visit retailers to experiment with it. On two separate occasions, I was "perusing the wares" in the calculator/electronics department at my univerity bookstore while another shopper was disparaging the 41 to the sales manager.

One was a wheelchair-bound man who basically said, "Oh, I don't like it; it's terrible." The second man, in his unfortunate, very nasal voice, said, "It's the *all-time bad calculator*".

After they had departed, the manager and I just shrugged our shoulders at each other. ("Oh well -- to each his own!")

I bought a 15C in late '83, which would be my only HP until I started revisiting my own youth last year, and started a collection with a 41CV and a 34C, which I had shunned in favor of the newer 15C.

Working with the 41CV, I began to really see what the two critics were talking about. On the 15C, powerful, practical functions were available right on the keyboard with no spelling or menus; however, on the 41CV, many basic functions had to be spelled out letter-by-letter, and some functions were not available without extra-cost Pacs. For those accustomed to the traditional non-alphanumeric HP's, the HP-41 must have seemed as convoluted as the RPL HP-28 and HP-48 models would seem, to an RPN-purist.

> Quote:
>
> ...and is deservedly regarded as a personal computing system long before PCs were available round the corner to anyone.

Bingo! That is the true hallmark of the 41C -- a complete, expandable system with its own family of peripheral devices. There was nothing else like it, and with PC's and other small computing devices, there never will be.

Edited: 2 Oct 2003, 1:16 a.m. after one or more responses were posted

Re: HP-41C the best?

*Message #12 Posted by **Ed Look** on 2 Oct 2003, 12:56 a.m.,*
in response to message #11 by Karl Schneider

Aside from the prohibitive cost to a student, one reason why I chose the 34C over the 41C series calculators was that it was explained to me similarly that one had to either spell out functions or program them in. Considering that I had other things to do for which I needed a rugged HP calculator, I figured that constant reliance on a 41C might have been too time costly. If I had already graduated and needed it on the job, that would have been a different story unless time again is an issue.

Anyhow, just nosy: what do you think of the 34C?

(Me? It's my favorite!... though my first HP; that may have something to do with it...)

34C impressions (Re: HP-41C the best?)

*Message #13 Posted by **Karl Schneider** on 2 Oct 2003, 1:34 a.m.,*
in response to message #12 by Ed Look

> Quote:
>
> Anyhow, just nosy: what do you think of the 34C?

Ed --

My impressions of the HP-34C:

1. Very good-looking; impressive pioneering capabilities.

2. Early models in particular had unacceptable poor quality, due to ill-advised cost-cutting. I own an old-style and a new-style, and they both need repairs.

3. Somewhat awkward to use because of programming-based functions taking many of the unshifted key positions. For example, all of the basic transcedentals (sin/cos/tan, exp/ln, 10^x/log, 1/x, y^x, sqrt, x^2) are shifted, while "GSB" and "GTO" are not.

4. LED display lacks informative annunciators, such as angular mode.

4. No longer having to deal with 1.2V rechargeable cells? Priceless!

Final verdict: As the nice young salesman finally convinced me in late 1983 when I compared them both side-by-side, the 15C was a big improvement over the 34C.

Edited: 2 Oct 2003, 1:41 a.m.

What about the 34C

*Message #14 Posted by **Patrick** on 2 Oct 2003, 3:11 a.m.,*
in response to message #12 by Ed Look

It was only a couple of weeks ago, actually, that I bought my first HP-34C. I had never even touched one before then.

Nevertheless, I have always had a certain attraction for this machine from a historical perspective. It is the first calculator, after all, that offered SOLVE and INTEGRATE type functions, AFAIK. I remember clearly reading those amazing articles by William H. Kahan in the HP Journal about these functions and wishing my (now considered lowly) HP-25 had them. Even the HP-41C I bought in 1980 didn't come equipped with them.

You have to admire the thought and pure engineering that went into these capabilities. It is terribly easy to write a pure secant or Newton's method routine to find roots. It is every bit as easy to lead a user totally astray with such an oversimplification of a very complex subject. HP went out of their way in two ways to mitigate against this. First, they paid a lot of attention to the tiny details of the algorithm itself, buttressing it with a slew of intelligent refinements designed by a numerical expert and implemented by expert coders. Second, they documented the functions extremely well, in particular warning the user quite properly not to expect nirvana, and explaining in detail why. It seems ludicrous that any company today would undertake such a seemingly low yield venture.

Unfortunately, I was put off by the hardware quality of the Spice series. I see a few of our regulars here have been using them for some decades, but statistically it seems they did much worse than many of their predecessors (Woodstocks) or their descendants (Voyagers).

On a purely practical note, my likes and dislikes of the 34C at this early stage are so far like this:

Like: Dedicated A and B buttons that don't try to double as other keys in some sort of User/Custom mode.

Like: The GSB key right next to the keys you hit next, like A and B (the 15C could have learned a lesson from the 34C here ... its GSB is too far away from A..E)

Like: Solve and Integrate.

Like: All functions are on the keyboard.

Like: LEDs are cool.

Like: Great manual.

Dislike: Power hungry. Boy, is it ever easy to get used to batteries that last 18 years. Power that lasts just a couple of hours completely colours the way you use a machine. I think nothing of turning on one of my 15C's to just play around with a program. With the 34C it is like I'm watching the clock trying not to use too much juice. Purely psychological, but there you have it.

Dislike: Too much shifting for routine functions (e.g., RUP/RDN, SST, Sigma+).

Re: HP-41C the best?

*Message #15 Posted by **Ángel Martin** on 2 Oct 2003, 2:14 a.m.,*
in response to message #11 by Karl Schneider

If you think spelling the function names on the 41 is a hassle is because you've never used the 42S with its soft-alpha. That alone made the 42S an undesirable model to me when it came out, never mind its lack of I/O!

Well, I guess that I'm as well on the 41 unconditionals' side, used it in engineering school and post-grad years, tinkered with its seemingly endless expansion and device-control capabilities, and even now use daily.

And yes, I also started a collection last year right at the peak of the mid-life crisis! (I see a theme in here...)

Best, ÁM.

42S "soft alpha"

*Message #16 Posted by **Karl Schneider** on 3 Oct 2003, 2:03 a.m.,*
in response to message #15 by Ángel Martin

Angel stated:

> Quote:
>
> *If you think spelling the function names on the 41 is a hassle is because you've never used the 42S with its soft-alpha.*

Nope, I have a 41CV and and a 42S! True, the two-keystroke alpha entry on the 42S is cumbersome, but it can often be avoided. Any function can be simply chosen from the catalog or oftentimes, group menus.

When writing programs using an alphanumeric external label or variable, one trick is to pre-enter the label within a program, or variable outside the program. It will then available in the menus (STO, RCL, XEQ, GTO), eliminating the need to re-type its name when programming.

While the 41 requires function names to be spelled out (unless on the keyboard or assigned), the menus of the 42S eliminate much of this.

Regards,

Karl S.

Edited: 3 Oct 2003, 2:06 a.m.

Re: That is why...

*Message #17 Posted by **Jeff Barstow** on 4 Oct 2003, 1:19 a.m.,*
in response to message #10 by Juan J

When I entered Michigan Tech in the summer of 71' the first course that you took was the care and feeding of a slide rule. By the time I graduated in 77' most slip sticks were religated to the shelf in the closet. My first calc was a HP35. Before that calcs available just did not do trig so you still had to carry the rule. I have run the gammot of HP's... once you really learn RPN it becomes very difficult to revert to other

calcs with "conventional?" notation. I still can't do more than add on one. I have owned in order: HP35, HP45, HP25, HP11C, HP41CV*, HP28C*, and an HP48G*. Calcs with a "*" I still own and they still work. My favorite of all is the HP28C. Being able to do vector algebra and the solver in a really rugged little case gives this calc my vote. I was initially inclined to agree with someone who said that the calculator you used in school was the one with the fondest memories but I wouldn't give up the ol 28 for a thousand times the price I paid...(traded a very ancient radio for it and later got the radio back also). HP calcs rule!

Re: That is why...

*Message #18 Posted by **Chris(FLA)** on 4 Oct 2003, 12:30 p.m.,*
in response to message #17 by Jeff Barstow

> Quote:
>
> *I have run the gammot of HP's... once you really learn RPN it becomes very difficult to revert to other calcs with "conventional?" notation. I still can't do more than add on one.*

I am the same way and so is the wife. I tought here RPN on my '80 41C. Soon I noticed my 41 was moving by itself or I couldn't find it. She had borrowed my 41 and didn't put it back were I left it.

I went out and got here an 11C and she used it alot for her work. I have asked here if she would give me here 11C and she says no way. :(I even offered to pay here for it. The answer is still NO! Her 11C is an '85 'A' model in MINT condition.

I get very frustrated with AOS calcs.

Chris

15C vs. 41C

*Message #19 Posted by **Karl Schneider** on 2 Oct 2003, 1:04 a.m.,*
in response to message #9 by Patrick

> Quote:
>
> In grad school I purchased an HP-41C. I owned no other HP models until my mid-life crisis kicked in this year and I was forced to start a collection of familiar and fascinating little gadgets from my youth.

Sounds like me. I coveted the 41C in 1980-81, bought the 15C in late 1983, and never felt the need to upgrade/replace it. Last year, I started collecting the ones I "missed out" on -- a 41CV among many others.

> Quote:
>
> I do like the 41 and the 42S, but the size, amazing power, and intelligent keyboard of the 15C is very, very appealing. I wish I had discovered it decades ago when I had my head too deep into 41C synthetics.

Well said. I believe that the HP-15C deserves a place in a personal-electronics "hall of fame" for engineering excellence. For what it is designed to be, the only reasonable improvement would be computational speed.

HP-15C Reasonable Improvements

*Message #20 Posted by **Valentin Albillo** on 2 Oct 2003, 4:35 a.m.,*
in response to message #19 by Karl Schneider

Karl posted: *"I believe that the HP-15C deserves a place in a personal-electronics "hall of fame" for engineering excellence. For what it is designed to be, the only reasonable improvement would be computational speed."*

Nope. There is more than one "reasonable improvement", (and I mean *reasonable*) namely:

- faster speed, as you mentioned

- larger RAM, say up to 999 steps (i.e: matrices up to 12x12). More would be desirable but 999 is reasonable.

- program steps displayed as alphanumerics, not keykodes, even if no further alpha capabilites (no alpha input, no commands to do alpha manipulations). I for once, would *not* desire alpha capabilities built-in, at all, save for the alpha display of keycodes.

- if the complex stack does exist (i.e.: we are in 'complex mode') then STO and RCL should deal with both components of a complex number at once, instead of forcing you to store and recall separately the real and imaginary parts. This would require an implicit redefinition of the registers' boundaries, but the HP-16C does it all the time when the word size changes, so it can be done. This feature alone would save tons of keystrokes and/or program steps, and it would make complex number handling that much more consistent.

and last but not least, one probably *unreasonable* improvement, which nonetheless it happens to be the one I would desire the most:

- a built-in card reader, *a la* HP-67, i.e. a small slit in the side, where you would enter a mag card to read/write your program/data. You would push the card slightly into the slit, a small motor would grab it and enter it into the machine proper, and a couple of seconds later it would be pushed back.

An HP-15 with the above mentioned feature would be indeed a dream come true, don't you agree ? :-)

Best regards from V.

Re: HP-15C Reasonable Improvements

*Message #21 Posted by **Vincent Weber** on 2 Oct 2003, 7:12 a.m.,*
in response to message #20 by Valentin Albillo

Hi Valentin :)

I totally agree with you - and do you know that this calculator actually exists ? If you look at Pocket15C on www.lyria.com... this is a 15C *Simulator*, not emulator, which is fast, with a lot of memory (999 steps + 64 registers per matrix), and will alpha display of key codes. But you need a PocketPC... An Ipaq 1910 will do the job (very small size), but it is expensive; and yes, we would need a way to download programs. Since I have a Palm, I stick to P41CX emulator with Advantage module - overall more complete.

Cheers, Vincent

Alpha keystrokes

*Message #22 Posted by **Thibaut.be** on 2 Oct 2003, 8:58 a.m.,*
in response to message #20 by Valentin Albillo

Valentin wrote :

- program steps displayed as alphanumerics, not keykodes, even if no further alpha capabilites (no alpha input, no commands to do alpha manipulations). I for once, would *not* desire alpha capabilities built-in, at all, save for the alpha display of keycodes.

Of course, this would be better. But once you're used with with the keystrokes code, this becomes a smaller issuer. I used to program my equations with a 11C and then with a 15C, and frankly speaking I could recognize an instruction with its keystroke code without looking at the keyboard. 32 was RDN, 42.21.11 -> f LBL A, 43 32 -> g RTN, 14 -> y^x, 43 11 -> g x², ... which are the functions you most often use when you key in equations.

But I won't deny that I found it easier when I switched to a 41C 2 years later...

Re: Alpha keystrokes

*Message #23 Posted by **Valentin Albillo** on 2 Oct 2003, 9:15 a.m.,*
in response to message #22 by Thibaut.be

Thibaut wrote: *"Of course, this would be better. But once you're used with with the keystrokes code, this becomes a smaller issuer"*

Yes, but if and only if you completely switch from one machine to another altogether. In my case, I am writing programs (and articles) for a number of machines on a regular basis, and having a collection of 5, 6, 7 or more different keycodes for something as simple as, say, GSB A, is a chore ! :-)

Also, many programs will run unchanged in an HP-34C, 11C and 15C, and if you're including them in an article, you would need either 3 separate versions of the article or else you would include 3 different sets of keycodes for the exact same instructions ! Same thing applies to the HP-67/97, HP-19C/29C pairs, among others. My usual approach is to *not* include keycodes at all, just the intructions themselves.

Nevertheless, I agree that if you're focused mainly on a single machine, say the HP-15C, it quickly becomes second nature and stops bothering. But else ...

Best regards from V.

Edited: 2 Oct 2003, 9:18 a.m.

Re: Alpha keystrokes

*Message #24 Posted by **Thibaut.be** on 2 Oct 2003, 10:24 a.m.,*
in response to message #23 by Valentin Albillo

Valentin wrote :

Also, many programs will run unchanged in an HP-34C, 11C and 15C, and if you're including them in an article, you would need either 3 separate versions of the article or else you would include 3 different sets of keycodes for the exact same instructions !

I totally agree with you in that sense. But since most user keep using the calculator for 20 years...

But, yes, of course, I agree, keystroke programming shown like in a calculator as "low" as the 32SII is even better.

Re: Alpha keystrokes

*Message #25 Posted by **bill platt** on 2 Oct 2003, 9:42 a.m.,*
in response to message #22 by Thibaut.be

Even after being away from the 11c for 7 years, when I got the 15c this year, I was astounded to discover that I remembered some of those codes, too! like 43 32 (g RTN).

Regards,

Bill

Re: Alpha keystrokes

*Message #26 Posted by **Paul Brogger** on 2 Oct 2003, 2:32 p.m.,*
in response to message #22 by Thibaut.be

Keep in mind that true alpha display requires something beyond the Voyagers' 7-segment character cells.

The 41c's alpha LCD was an early attempt at a general-purpose display and, while characteristic of that much-loved model, it doen't to my eye render characters or numbers very nicely at all.

The next generation (dot-matrix Pioneers) does a better job of rendering characters, but at the cost of dense, solid segments and crisp contrast.

Adding (many) alpha characters to the 15c display would (have) likely force(d) degredation of one of its chief attributes: that lovely, clear, high-contrast Voyager display.

Re: Alpha keystrokes

*Message #27 Posted by **Nelson M. Sicuro (Brazil)** on 2 Oct 2003, 2:47 p.m.,*
in response to message #26 by Paul Brogger

There is a way to show alpha characters on a 7-segment display (more or less readable, but understandable), I'm working on it (on LEDs yet) on a emulator. My goal is to replace the circuit board of my old HP-11C or 12C and put there a new CPU, mantaining the rest (including the display). And there is plenty of room to put a SD/MMC card inside it... Even a MP3 player!! (but no battery enough ;)

I just love my HP-15C for its functions and style. But I need a calculator that uses Base-N numbers and boolean logic, and some more RAM to use as program storage/matrix space (simplex method).

As I also like to build things using microcontrollers and I pretty near to get the ROM out of my Voyagers, I think that build a "HP-15S" is not impossible (but a good challenge!).

Regards,

Nelson

Re: 7-Segment Alpha

*Message #28 Posted by **Paul Brogger** on 2 Oct 2003, 3:01 p.m.,*
in response to message #27 by Nelson M. Sicuro (Brazil)

Ahh, yes -- the old 7-segment alpha-bet. I remember scrolling (Wall Street style) snide remarks about classmates across the lab's KIM-1 microcomputer training units . . .

In fact, I assume the HP-16C (and other early Base-N-capable calculators) displayed at least AbCdEF with seven segments. Careful choice of operations' names and mnemonics would avoid problem letters (like "K" and "X") and allow a more mnemonic display of program codes in a 7-segment format.

Sounds like a fun project!

Re: HP-15C Reasonable Improvements

*Message #29 Posted by **bill platt** on 2 Oct 2003, 9:38 a.m.,*
in response to message #20 by Valentin Albillo

Hi Valentin,

Your input is, as usual, excellent reading. Having been using the 15c a fair amount lately, and I totally agree about the alphanumerics for the prgram lines. I find the 32sii so much nicer in this respect, that I have been doing "throwaway" programming on the 15c, and "archival quality" on the 32sii, because I can see what is what better in the latter.

I also thing the 15-c manual is a must have--even if you have a 32sii--as it has a lot of info that is directly applicable, and more detailed, than the 32sii manual. I wonder if there is even more in the 34c manual?

But, I am this month trying to force myself to stop doing too much calculator stuff, and instead I am refreshing my mathematics knowledge. I recently needed to curve-fit some data, and realized I was not only rusty, but never really figured out how that FFT (fast Fourier transform) business worked. We'll see how far I get! Hopefully, in the end, I'll figure out how do do something useful with the calculator in this regard.

Regards,

Bill

Re: HP-15C Reasonable Improvements

*Message #30 Posted by **Valentin Albillo** on 2 Oct 2003, 10:50 a.m.,*
in response to message #29 by bill platt

Bill posted: *"Your input is, as usual, excellent reading"*.

Thank you very much, you're too kind ! I must say I also enjoy your postings :-)

"I also thing the 15-c manual is a must have [...] I wonder if there is even more in the 34c manual?"

No. There's nothing in the HP-34C Owner's Handbook on the advanced functionality (i.e.: solve and integrate) that isn't already covered in the HP-15C Owner's Handbook. But even that absolutely pales in comparison to the ultra-excellent material provided in the HP-15C Advanced Functions manual, which is totally unique in its class, a real advanced course on numerical algorithms and accuracy. It should be mandatory text for any numerical algorithms class. If you don't have one, I urge you to get it ASAP. Trust me, you'll be delighted.

"I recently needed to curve-fit some data, and realized I was not only rusty, but never really figured out how that FFT (fast fourier transform) business worked."

The kinds of functions and algorithms to use in data-fitting are mostly dependent on the type of data (i.e: mathematically-obtained data, empirical data of limited precision, periodic data, aperiodic data, etc). The easiest algorithms to program are least-squares polynomial regression and the likes using functions and/or conversions other than polynomials, but IMHO, the best results are always obtained using mini-max approximations, which are guaranteed to minimize the absolute error, which is what one usually wants (not the *square* of the error !).

The price you pay for this is that computing a mini-max approximation is much, much harder to program than a simple least-squares one, but it's certainly worthwhile as you'll only compute the coefficients once. I did write an HP-71B program to compute the Nth-degree minimax polynomial fit to any set of data points (obtained from the keyboard, from a file, or even continuous data generated by some mathematical function or program), but it's unpublished as of yet (I was planning to submit it to Datafile for publication, but there's been some problems with my subscription).

As an example of fitting continuous data you might want to try your hand at, find a 3rd degree polynomial which will fit y=sin(x) over [0, Pi/2] minimizing the absolute error over that interval. My program produces the cubic polynomial:

```
y = -0.00136 + 1.02519 x - 0.07061 x^2 - 0.11253 x^3,
```

which has a maximum error of 0.00136 (approx.) over the whole interval, far better than what you can achieve by any other kind of 3rd-degree polynomial fitting.

Best regards from V.

Thanks, Valentin! (NT)

*Message #31 Posted by **bill platt** on 2 Oct 2003, 1:17 p.m.,*
in response to message #30 by Valentin Albillo

:<}

A polite "rebuttal" to Valentin's HP-15C Reasonable Improvements

*Message #32 Posted by **Karl Schneider** on 3 Oct 2003, 1:59 p.m.,*
in response to message #20 by Valentin Albillo

First, some emphsasis: By, "*For what it is designed to be*", I intended a fairly restrictive definition of the product within the technology of the era: its form factor, display type, features, and design objectives/constraints.

I agree that Valentin's suggestions are not unreasonable, and would certainly make the HP-15C more capable, but several are a bit "out of bounds", in my opinion.

Valentin stated:

> Quote:
>
> *- faster speed, as you mentioned*

No disagreement here...

Certainly HP had the capability at the time to make LCD machines faster than the Voyagers; the antedated 41C* is about twice as fast. However, I'm not sure if the Voyagers' early '80s CMOS technology permitted faster operation. The hardware experts could explain how Voyager technolgy differed from 41 technology. It would be a shame if the Voyagers could have been faster, but were "held back" by a desire for non-competition with the 41C*.

> Quote:

> *- larger RAM, say up to 999 steps (i.e: matrices up to 12x12). More would be desirable but 999 is reasonable.*

Well, 1 kB (1024 bytes) allocatable RAM would give the 999 lines or 12x12 matrix. Maybe that would be the "reasonable" upper limit. The 67x7 = 469 bytes was more than the base 41C, and more than twice as much as the 11C/16C and 34C had.

Certainly, more RAM always offers more flexibility, but, given the limitations (no I/O, alphanumerics or external labels for programming, slow processing), I think that most users would find it difficult to put very much more RAM to practical use. And, how expensive was this constant memory at the time?

It seems that the 64x7 = 448 bytes of allocatable RAM was a conscious decision by HP. It was just enough for an 8x8 matrix and solution of a 4-variable complex-valued system with some special techniques, as described in the manual. Would you really want to generate or enter larger ones? The calc is slow, and storing or recalling each element takes two keystrokes (unless a looping program is written). Forget about electronic data exchange...

999 lines of programming, shown in keycodes with no modularization with external labels, cataloguing, or alpha messages? Perish the thought. The 15C is not well-suited for permanent libraries of programs.

I would be nice, however, to have more memory to allow storage of large amounts of data while still being able to access INTEG and other features.

> Quote:
>
> *- program steps displayed as alphanumerics, not keykodes, even if no further alpha capabilites (no alpha input, no commands to do alpha manipulations).*

How would this be done well with the 7-segment LCD characters? This was discussed extensively in the thread.

However, here's an idea: Represent the rows of the keycodes spreadsheet-cell style, using A, b, C, and d, rather than 1-4. That way, multi-digit numbers could be merged onto one line, as on the alphanumeric 41C*, 42S, and 32S/Sii.

> Quote:
>
> *- if the complex stack does exist (i.e.: we are in 'complex mode') then STO and RCL should deal with both components of a complex number at once, instead of forcing you to store and recall separately the real and imaginary parts. This would require an implicit redefinition of the registers' boundaries, but the HP-16C does it all the time when the word size changes, so it can be done.*

This certainly would make some things easier, but I don't think it's a very sound idea. The 42S allows explicit redefinition of the numbered storage registers to allow them to accommodate complex-valued inputs, but you're talking about automatic changes. This is fraught with problems:

If the space allocated to numbered registers were to be automatically doubled each time complex mode was set, the expansion might constrain the pool (even at 1 kB). If there was inadequate pool space for the expansion, complex mode could not even be set. Also, the imaginary parts of complex numbers in numbered registers would be lost each time complex mode was un-set if redefinition were automatic.

If matrix-data allocation remained real-valued in complex mode, then storing the contents of any complex-valued data in numerical registers into matrices would not work the same way as in real mode -- the imaginary portion would fall into the "bit bucket".

BTW, the 16C will cut either the precision of data or number of registers each time the word size is changed, which may cause a loss of user data.

No, until there is Fortran-style data typing, these things should be avoided.

Re: A polite "rebuttal" to Valentin's HP-15C Reasonable Improvements

*Message #33 Posted by **Ed Look** on 3 Oct 2003, 4:58 p.m.,*
in response to message #32 by Karl Schneider

Oooooiiiiyyyyy! (Sorry, I know, this is not so polite!)

FORTRAN?! I loved my HP-34C because it often kept me from having to write FORTRAN code! I used to have to make MANY repetitive calculations; instead of having to write cumbersome program lines, I just keystroke programmed by 34C and ran it. Okay, so both methods required "debugging", but I could be home in my pajamas to solve the equations! Perish the thought, putting FORTRAN style programming formats into calculators! (Although, this might allow one, along with PCs to do FORTRAN in the kitchen in your jammies!)

Data typing

*Message #34 Posted by **Karl Schneider** on 3 Oct 2003, 9:16 p.m.,*
in response to message #33 by Ed Look

Ed --

I didn't really intend to convey that programming requirements of Fortran (or any other language) be introduced within handheld calculators; that would defeat the very purpose and principle of simplicity.

My real point there was that explicit data typing was a better approach to implement what was suggested, rather than automatically changing the size of numbered storage registers in order to accommodate different types of data.

All high-level languages include explicit data typing, and Fortran is one of the few that intrinsically support complex-valued data.

Edited: 3 Oct 2003, 9:18 p.m.

Re: HP-15C Reasonable Improvements

*Message #35 Posted by **Richard Garner** on 3 Oct 2003, 7:13 p.m.,*
in response to message #20 by Valentin Albillo

Here is a thought, why not install a 1 and a 1/2 inch CD-RW that could hold about 100MB and could be removed and placed into a normal CD-RW and read or written to? There are 2 inch drive being used in cameras now, why not calculators?

Re: HP-15C Reasonable Improvements

*Message #36 Posted by **Ed Look** on 3 Oct 2003, 7:57 p.m.,*
in response to message #35 by Richard Garner

Yeah, but now we're getting into being "sorta like PCs". The use of an inbuilt slot for SD cards (and they come nowadays up to, what, about 1GB?) is a much more elegant solution, I think.

Re: 15C vs. 32Sii

*Message #37 Posted by **Britt** on 2 Oct 2003, 12:37 p.m.,*
in response to message #19 by Karl Schneider

I'm curious what other 15C fans think of the 32Sii. I have a 15C, 16C, 32Sii, 41CV, 42S, 48G, etc and find the 32Sii to be the most all around useful. I like the 15C layout and keyboard but the 32Sii seems better for keystroke programming plus it is much faster and does number base conversions which I frequently need. I prefer the 32Sii to the 42S mainly because the display is much more readable and it doesn’t have those annoying menus.

-- Britt

Re: 15C vs. 32Sii

*Message #38 Posted by **bill platt** on 2 Oct 2003, 1:16 p.m.,*
in response to message #37 by Britt

Hi Britt

I have similar: 45, 11C, 15C, 32Sii, 41CV, 48GX

And I agree: for day to day general anything goes computing, and fast, easy keystroke programming, the 32sii is the best. BUT there is so little memory so more of my stuff has been migrating. And, I have written a few very useful tiny little programs in the 48 that take advantage of lists, so that machine is sure enough becoming indispensible.

But I am sure that if I needed to do more matrix or complex number work, then I would be a 48 user or 15 maybe?

But I really like the 15C; it is nifty!

-Bill

15C vs. 32Sii vs. 42S Ramblings

*Message #39 Posted by **Patrick** on 2 Oct 2003, 2:32 p.m.,*
in response to message #37 by Britt

I prefer the 15C to the 32SII for totally personal reasons. The 32SII is clearly a much more capable calculator in many respects. If I had to choose, though, between the 32SII and the 42S, there is no contest. I would pick the 42S every time. I point out that the 32SII does have menus of its own, although I readily admit they are not nearly as pervasive.

In my mind, the two main complaints about the 42S are dealt with this way:

1 - Awful alpha entry

So, don't use it. Yes, you must use it for some things, like program names, but if you limit yourself to doing the absolute minimum, you are no worse off than in using a 32SII or a 15C. Besides, I don't think alpha entry is all that bad. I'm getting pretty good at my two thumb technique.

2 - No I/O.

Same answer as above. If you don't use gobs of memory for programs, it is not an issue to have to re-key programs. Again, you are no worse off than in using one of the other models. It is still useful to have all that room even if you only use it as space for program generated data.

My philosophy is that the 42S provides many advantages over the 15C (such as alpha program codes) even if you choose not to use it to its fullest. Of course it would be wonderful if there was true I/O capability and if the alpha entry capabilities were better ergonomically, but I still like the little guy.

Returning to Valentin's 15C enhancement remarks, I must say that I like many of his suggestions. I disagree with the card reader suggestion, though. The trauma that it would bring to the device's architecture aside (i.e., increased bulk), there are much better solutions in modern technologies for transfer and storage of calculator programs and data. I have said before that a Bluetooth connection would be, for me, absolutely ideal. Imagine being able to hotsync your 15C just by bringing it within a few feet of your PC and pushing the hotsync key? Coupled with an emulator on the PC upon which you could do software development, that would be oh so very, very nice. And no fiddly and destruction/loss prone little cards to deal with. Backup is via your PC disks, floppy, flash disk, or whatever other storage medium is invented for a PC.

Too bad that lygea emulator for the 15C doesn't run on Palm OS. Since you can get a Palm emulator for a PC, you could imagine running your 15C emulator inside your Palm emulator inside your PC! It would probably still run a couple of orders of magnitudes faster than the 15C!! Anyone know if there is a PPC emulator for PC? I really don't want to buy a PPC device. I mean, I *really* don't want to buy one.

Edited: 2 Oct 2003, 2:33 p.m.

Re: 15C vs. 32Sii vs. 42S Ramblings

*Message #40 Posted by **Britt** on 2 Oct 2003, 5:00 p.m.,*
in response to message #39 by Patrick

I appreciate your comments. The only thing that really disappoints me about the 42S is the poor display contrast.

On my Palm M500 I run the MathU Pro RPN calculator (http://www.creativecreek.com/) which has a semi-Voyager style virtual keyboard with either a one or two line display. It has a good selection of functions including TVM and logic. I like it a lot. It will also run on the Palm emulator on a PC or Mac.

-- Britt

Built-in card readere vs. PC link

*Message #41 Posted by **Valentin Albillo** on 3 Oct 2003, 5:14 a.m.,*

in response to message #39 by Patrick

Patrick wrote: *"I disagree with the card reader suggestion, though. The trauma that it would bring to the device's architecture aside (i.e., increased bulk), there are much better solutions in modern technologies for transfer and storage of calculator programs and data."*

Your remarks about "trauma" and "increased bulk" are debatable and I don't agree at all with them. I've seen extremely thin, light, magnetic-stripe readers which could probably be fitted inside the body of a 15C. Micro-mechanical technology has advanced a lot in these last 20+ years and modern card readers have nothing to do with the somewhat bulky designs we are accustomed to, like the HP-41C card reader. May I remind you that even back then, the HP-67 *internal* card reader was indeed *much* smaller than the bulky HP-41C *external* one, right ?

" I have said before that a Bluetooth connection would be, for me, absolutely ideal. Imagine being able to hotsync your 15C just by bringing it within a few feet of your PC and pushing the hotsync key? Coupled with an emulator on the PC upon which you could do software development, that would be oh so very, very nice. And no fiddly and destruction/loss prone little cards to deal with. Backup is via your PC disks, floppy, flash disk, or whatever other storage medium is invented for a PC."

For me, that's exactly the point !! I *do not* want to rely on, depend on, or even be forced to own or carry a PC, portable or not, for such a simple thing as loading and saving programs and data to and from my *pocket calculator*. I relish those wonderful days when you just carried your HP-67 in your pocket, together with a 40-card holder, and you would have all your important programs instantly available, anywhere, be it in the classroom or in a mountain's peek or a crowded subway. Why on earth would anyone want to depend on owning and having a PC available somewhere just to download a particular needed program ? Is that portability ? Is that convenient ?

That may be fine for such bloated "calculators" as the HP-48/49 series and things like that, with their large memories. But for a pure, real, keystroke-programmable pocket calculator (NOT do-it-all, 8000-functions "handheld computer", etc) like the HP-15C, having to depend on a connection to a PC to download programs borders on the utterly ridiculous. Give me my built-in card reader and a 40-card holder and you can take all your PCs, Blueteeth, or whatever your heart desires, thank you. :-)

Best regards from V.

Re: Built-in card readere vs. PC link

*Message #42 Posted by **Nelson M. Sicuro (Brazil)** on 3 Oct 2003, 7:57 a.m.,*
in response to message #41 by Valentin Albillo

I think that the best option to store information in a calculator of the size of the HP-15C is SD/MMC cards. They are small and simple to handle, and fit perfectly inside the body of the 15C (and runs on low voltage, 2.7~3.3V).

Regards,

Nelson

Re: Built-in card readere vs. PC link

*Message #43 Posted by **Ed Look** on 3 Oct 2003, 5:09 p.m.,*
in response to message #42 by Nelson M. Sicuro (Brazil)

This may not exactly fit you guys' discussion exactly, but the new member of those "bloated calculators", the HP-49G+ DOES use SD cards for expansion memory. I'll agree these beasties are not exactly pocket calculators; rather, they hearken back to the days of what, the 45s? 67s? Even so, I just wanted to mention that the use of such small and (marginally) affordable technology is a step in the right direction, even if form factor is not.

SD cards vs. Wireless Connection

*Message #44 Posted by **Patrick** on 4 Oct 2003, 7:54 p.m.,*
in response to message #42 by Nelson M. Sicuro (Brazil)

I like SD card technology. I own a Tungsten|T which uses them and find them very convenient and stable. If you could get an SD drive into the body of a 15C that would be great, but for me this is not essential if there is the wireless PC connection that I wished for.

I rarely find myself far from a PC anymore, either in business or personal life, so I don't share Valentin's desire to be independent of the PC. Having SD cards (or whatever) would be fine, provided it did not unduly increase the machine's bulk. I like devices which are small and light. A wireless Bluetooth connection capability would require very little extra space, from what I understand of the technology. I see that HP has gone to SD for some of its new models, but none of the new models are small, and certainly not the ones with SD technology.

Re: SD cards vs. Wireless Connection

*Message #45 Posted by **Nelson M. Sicuro (Brazil)** on 4 Oct 2003, 8:04 p.m.,*
in response to message #44 by Patrick

I think that the advantage of the SD/MMC card is that they are very simple to implement (serial I/O) and most of the new microcontrollers have this serial I/O already implemented. The wireless communication is more complicated (hardware & software) and to a small project like mine is a very difficult task. Maybe in the near future a new single-chip with wireless capability come up and make it simple to develop.

Regards,

Nelson

Re: SD cards vs. Wireless Connection

*Message #46 Posted by **Ed Look** on 5 Oct 2003, 1:00 a.m.,*
in response to message #45 by Nelson M. Sicuro (Brazil)

Wireless is good, too! I have a homemade 48G to PC cable; the PC end is a serial connector and very nice. The 48G end is the connector I bought separately when Samson Cables still carried them and while it fits perfectly, it falls off if I just frown at it. (Yes, yes, I could have BOUGHT a very nice fitting cable, but I wanted to recapture my youth when the people I worked for wouldn't buy the cables we needed and we had to make them; some of them had about 20 pins on each end! I think I did a better job back then!!)

But I have one serious poor man's concern- the power drain increase if wireless technologies were built onto the "motherboard" of the calculator. Right now, even the mighty HP-48G's use only three AAA batteries, even the cheapest C-Zn types! I'd hate to see these marvels require a few of the more expensive dry cells, though if rechargeable, Ni-metal-H cells these days are a far cry from the easily depleted and worn out Ni-Cds.

Re: 15C vs. 32Sii

*Message #47 Posted by **Tizedes Csaba** on 2 Oct 2003, 5:22 p.m.,*
in response to message #37 by Britt

I've got this calcs too, and I use usally the 32SII. But I think the 32's got a big deficiency: On this calc haven't got 'GTO i' command.

Many weeks ago I wrote to this forum (the title was 'Nested loops'). I wrote an algorithm, about how I maked nested loops on 15C. I wanted other solutions to this problem, but nobody was answered.

This nesting-method can't adaptable to 32SII, because on this calc haven't got 'GTO i'.

Csaba

PS.: Hmm... Sometimes I think that is no difference between 'GTO i' and 'GTO (i)', but it's not really true...!

Re: 15C vs. 32Sii

*Message #48 Posted by **Karl Schneider** on 3 Oct 2003, 2:44 a.m.,*
in response to message #37 by Britt

Britt stated:

> Quote:
>
> *I'm curious what other 15C fans think of the 32Sii. I have a 15C, 16C, 32Sii, 41CV, 42S, 48G, etc and find the 32Sii to be the most all around useful.*

Sounds familiar! I have all those RPN scientific models, plus the 49G and 34C, as well as business and AOS models.

> Quote:
>
> *I like the 15C layout and keyboard but the 32Sii seems better for keystroke programming plus it is much faster and does number base conversions which I frequently need.*

I agree completely -- the 15C layout is a marvel of thorough planning, while the 32Sii's is a bit helter-skelter in places.

The 32Sii is better for programming because of alphanumeric display, cataloguing and deleteion of program blocks, prompted input, equations, etc. The 4x speed is also a boon for execution of programs.

I use the 32Sii at work, where I have a PC with Matlab on my desk for any matrix or complex-valued calculations. Also, I can sit away from the desk and use the 32Sii as a handheld.

However, if I were told that I could keep and use only one or the other, it would be the 15C, because of the important functionality for matrices and complete complex-domain functionality that the 32S/Sii lacks.

I've read that the 32S was marketed as a replacement/upgrade for the 11C, and the 42S was the replacement/upgrade for the 15C. I can accept this, although I belive that the 11C/15C are much closer to each other than the 32S/42S are. I don't believe that the 11C has anything that the 32S/Sii doesn't; the 32S/Sii has plenty that the 11C doesn't.