From The Editor – Issue 30

It is January and a new year is starting. Change is part of most plans for a better 2013. Electronics enthusiasts immediately think of the Consumer Electronics Show and HP is thinking about teachers.

Education is a primary application for computational capability and certainly calculators play an important role as you may read about in the lead article for this issue.

HP Solve will undergo a change in the applications support of calculators with its major emphasizes switching from that of a technical newsletter to that of an educational newsletter. Grades 6 – 20 will be the operational level of content for teachers of science, technology, engineering, and mathematics – STEM. The April issue will reflect this change with a new editor.

Correction for issue 29 – Customer Corner interview with Gary Tenzer. He said that he visited HP in 1972 when they were in Corvallis. Actually, in 1972 they were still in Cupertino and moved to Corvallis a year or so later.

Here is the content of this issue

S01 – Taming Computer chaos in the classroom with HP Classroom Manager   Every teacher dreams of better classroom control and HP has applied its calculator expertise to a program that provides better student attention and performance.

S02 – Continued Fractions: A Step-by-Step Turorial, with User RPL Implementations   by Joseph K. Horn provides a very clear and easily understandable process for converting decimal fractions and simple fractions into continued fractions. You will remember continued fractions as those multiple "one over" fractions that seemingly go on and on.

S03 –QUIZ – How Well Do You Know RPN? by your editor. Here is fun way to remember all those RPN Tips that appeared in every *HP Solve* issue up to issue 20. Take the quiz and count your points to compare to the table at the end of the article.

S04 – HP 39gII Regression: Part I Exploring Statistical Regression with the HP 39gII by Namir Shammas. As the power of calculators increases so do the advanced math problems they conveniently solve. Namir has written a series of four articles related to Regression. These articles include extensive programs for various forms of regression analysis.

S05 – HP 39gII Regression: Part II Linearized Regression by Namir Shammas.

S06 – HP 39gII Regression: Part III The Best Curve Fits in Town! by Namir Shammas. WOW! Look at these.
1. The best regression models for two variables, fitting up to 81 regression models.
2. The best regression models for three variables, fitting up to 729 regression models.
3. The best regression models for four variables fitting up to 6561 regression models.
4. The best polynomial for two variables.

S07 – HP 39gII Regression: Part IV Least-Squares Relative Error Regression by Namir Shammas. A Calculator trick important to this technique is described. As with the previous three parts programs are included.

That is it for my last issue. I hope you enjoy it.

X < > Y,

Richard

Email me at: hpsolve@hp.com   or   rjnelsoncf@cox.net

HP 48 One Minute Marvels No. 17 – DOW Addition

One Minute Marvels, OMMs, are short, efficient, unusual, and fun HP 48 programs that may be entered into your machine in a minute or less. These programs were developed on the HP 48, but they will usually run on the HP 49 and HP 50 as well. Note the HP48 byte count is for the program only.

Day of Week routine text addition

In issue # 26, page 7, OMM No. 13 listed two routines to determine the Day of week, DOW given a date. I was reading about a mathematical "discovery" of Quaterions that occurred on October 16, 1843. The day of the week was also given as Monday. I reached for my calculator to check the DOW with **'dow2'** and I realized that the actual day in text was not provided so I wrote a simple routine to provide it. The news article DOW was correct.

I am reproducing the two routines of OMM No. 13 for reader convenience followed by the conversion routine, **'dow3'**, to convert the output number to a day.

Input a standard date in mm.ddyyyy format and **'dow1'** (system flag –42 clear) returns a three-letter day.

'dow1' << 0 TSTR 1 3 SUB >>

5 commands, 22.5 Bytes, # A8D0h. Timing: 8.211999 ⇒ "SAT" in 26.2_ms.

Joseph K. Horn suggests using DDAYS and a known date to calculate the day of week. The known date is a Sunday (year 3,000) and is selected to have the day and month the same so the system flag –42 setting doesn't matter. He had to "hunt" for a date that met these requirements. Given a date in mm.ddyyyy format, **'dow2'** returns a number between 0 (Sunday) and 6 (Saturday). Example: HHC 2011date 9.242011, **'dow2'** returns 6 (Saturday).

'dow2' << 2.023 SWAP DDAYS 7 MOD >>

5 commands, 30.5 bytes, #B181h. Timing: 1 ⇒0 in 7.17_ms.

Two different techniques are used to return the day of week given a date. Both use five commands, but one (**'dow2'**) is 3.7 times faster. **'dow3'** adds a day number conversion so you don't have to remember that Sunday is zero. You may simply add it to the end of **'dow2'** Note the **'dow3'** is fast enough that the extreme speed difference between the two DOW routines (**'dow1'** **'dow2'**) is still valid.

'dow3' << 1 + { "SUN" "MON" "TUE" "WED" "THR" "FRI" "SAT" } SWAP GET >>

<div align="right">5 commands, 81 bytes, #44DEh. Timing: 1 ⇒ "MION" in 16.5_ms</div>

How **'dow3'** works. This very straight forward routine assumes a digit 0 to 6 on the stack. It doesn't need to check for valid inputs. **'dow2'** leaves a digit on the stack that has one added to make the input 1 to 7 instead of 0 to 6. The third command is a list containing the abbreviated days of the week – you may make these whatever you wish. The input for the get command is the position number of the item in the list so the stack levels 1 & 2 must be exchanged with SWAP before GET is executed.

Adding **'dow3'** to **'dow2'** makes the program complete and more practical because of infrequent use. When you do need DOW, however, it is very nice because calendars covering the 8,419 years that **'dow2'** covers are usually not conveniently available.

HP User Community News

Calculator Bibliography As described in the HHC 2012 Report in issue # 29, pages 13 & 14 Felix Gross (Germany) is working on the most complete bibliography ever compiled of Calculator articles. If an *HP Solve* reader is looking for any calculator information he should start with Felix's bibliography. Presently it is nearly 300 pages and it covers all worldwide publications. If you have an obscure publication you would like to have added to the bibliography – or check on one – you may contact Felix at: Felix Gross (felix.gross@alumni.ethz.ch)

CES 2013
The Consumer Electronics Show, CES, was January 8-12 this year. CES is the largest show of its kind and some observers feel that it has gotten too big. This was 50th show and I have attended nearly every one since the beginning when there were two shows each year. Some of the largest companies did not exhibit this year because they felt that other venues were more effective in reaching the intended audience. There wasn't a single major calculator exhibitor this year for the first time. The NCTM conference in April in Denver is where calculators will be the star.

Some of HP's loyal users, however, still gathered for dinner during CES as shown in the photo below.

| Jake Schwartz Cherry Hill, NJ | Sam Kim Las Vegas, NV | Brian Walsh Chicago, IL | Richard Nelson Mesa, AZ | Chris Owen Wichita, KS | Jo Vandale Belgium |

Ed note: The article reproduced below was written in early 1999 based on the HP49g introduction of May 21, 1999. Time passes so quickly that even though you were there if you don't make a few notes the historical details are easy to forget.

A Little Bit of HP Calculator History

Jake Schwartz

Roughly in 1993 at the time when the HP48GX was released, the calculator R&D was in the process of being transferred from Corvallis to Singapore. At this point it seemed that the Singapore people wished to include the Corvallis folks in their efforts, and thus they used a combined team of developers from both locations to design the HP38G. An attempt was made to crack the high-school market with this machine, and my understanding was that only a handful of HP individuals were assigned the task of educating the teachers about the merits of the 38. This paled in comparison to the literally hundreds of TI folks who had been doing the same thing for a handful of years. As a result, the 38 seemed to go virtually unnoticed in comparison to the massive TI effort which has succeeded in making their graphing models ubiquitous in the school market. Meanwhile, the HP calculator zealots wrote the HP38G off as a failed attempt to be like the others and we continued playing with our HP48G-series toys.

In 1995, the U.S. HP Handheld User's Conference was held in Minneapolis, and HP Singapore's Kheng Joo Khaw (then head of palmtops and calculators) was there to speak on current HP affairs. He mainly was talking about the advent of the Windows CE units, and how HP had decided that they should use a "standard" windowing O.S. in order to make any headway in the growing handheld market (This was despite a successful run with the DOS-based HP 95/100/200LX models). When we asked him about calculators and what would happen next, he indicated that calculators were not their current focus. One year later, at the 1996 HP Handheld Conference in Anaheim, Khaw was there again, speaking on palmtops and we asked again about the destiny of calculators. And again, he said that they felt that calculators didn't need to be updated at this time, and when they did, there would be some activity in that area. He even went as far to say that the HP48G-series was already too complicated and that it intimidated people, so he saw no need to extend the high end. We felt at that time that effectively, calculators were as good as dead at HP. (I shot the videotapes from these conferences if anyone is interested.)

In June of 1997, our Philadelphia Area HP Handheld Club (still going since 1978) hosted HP's Eric Vogel (who worked on handheld products since 1976). He had recently switched from Corvallis to an instrumentation group which developed the handheld Logic Dart. At the end of his enlightening 4-hour presentation, we asked him about his thoughts on whether there might be another top-of-the-line calculator from Hewlett-Packard. Eric was convinced that the calculator world had seen its heyday and it was time to move on, considering what could be done on any PC on anybody's desk these days. It was sort of a bittersweet moment...we understood his point of view but didn't really want to believe it.

The Summer went by and the British HPCC group hosted their Fifteenth Anniversary conference in London in September of 1997, also denoting the 25th birthday of the HP35. Something different happened there...it was announced that a new calculator team would be forming officially on November 1st in Australia. Apparently the Singapore group really *wasn't* going to do anything, so this new band of developers asked and got the go-ahead to take the effort over. It was precisely at this event when the Australians first met the Meta Kernel team and also saw demonstrations of MK, Erable and ALG48 for the very first time. Obviously this weekend made a significant impression. Following these demos, Richard Nelson asked for a show of hands as to how many people would be willing to buy an HP48 which contained these tools built into ROM. Of course, the vast majority voted in the affirmative.

It was realized then that the ACO group would be on their own, having to prove themselves without the benefit of any other related existing products which already represented a stream of income for them.

Back at home, we began to speculate on how the new group (consisting mainly of people who were not from the old Corvallis team) could make their mark. I speculated that a "ready", "set", "go" approach

might allow them to ease their way into the industry. The HP48G+ was their first product - and truly, this could represent ACO's "dipping its toe into the water". Then the HP6S - a completely new but entry-level unit - followed. And now, they have announced their intentions of releasing the HP49G (True, over the past quarter-century HP has always said that they don't talk about unannounced products, so this is a major departure). With all the firmware overhauling which was described in Jean-Yves Avenard's descriptive posting, this is pretty amazing, considering that the team has only been together a year and a half!

Knowing that ACO absolutely MUST generate revenue in order to stay in business, it makes sense that they would chase a larger market in which they previously haven't had a significant presence. In addition, I think that the message which we tried to impose on the ACO people in London - that these calculators still matter very much to professionals as well as students - did sink in. Just like actors who must first work day-to-day jobs to make ends meet at the beginnings of their careers, so too must ACO put cash into its coffers in order to afford the freedom to develop the kind of machines we would prefer to use. Let's hope that the 49G is a stepping stone to The Next Big Thing.

Jake Schwartz

Identifying a Voyager Series Calculator – Part II

In issue # 29 I gave a procedure for identifying the model number of the five original voyager series of calculators if the HP logo was missing. I mentioned that I often had to help people identify the model number while speaking over the telephone.

The procedure I gave was less suitable for a verbal process.

The simplest way to go through the procedure verbally is to answer a series of four questions regarding the upper right corner divide key as shown in Fig. 1. There are gold/yellow and blue notations above and on the sloping surface of the key. The question flow chart asks about the color and text of those notations.
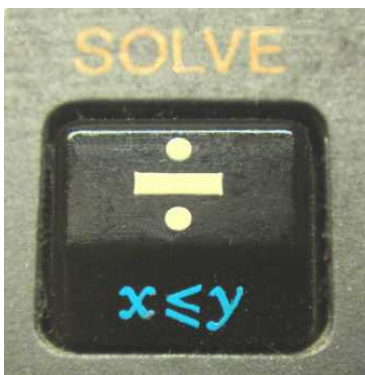

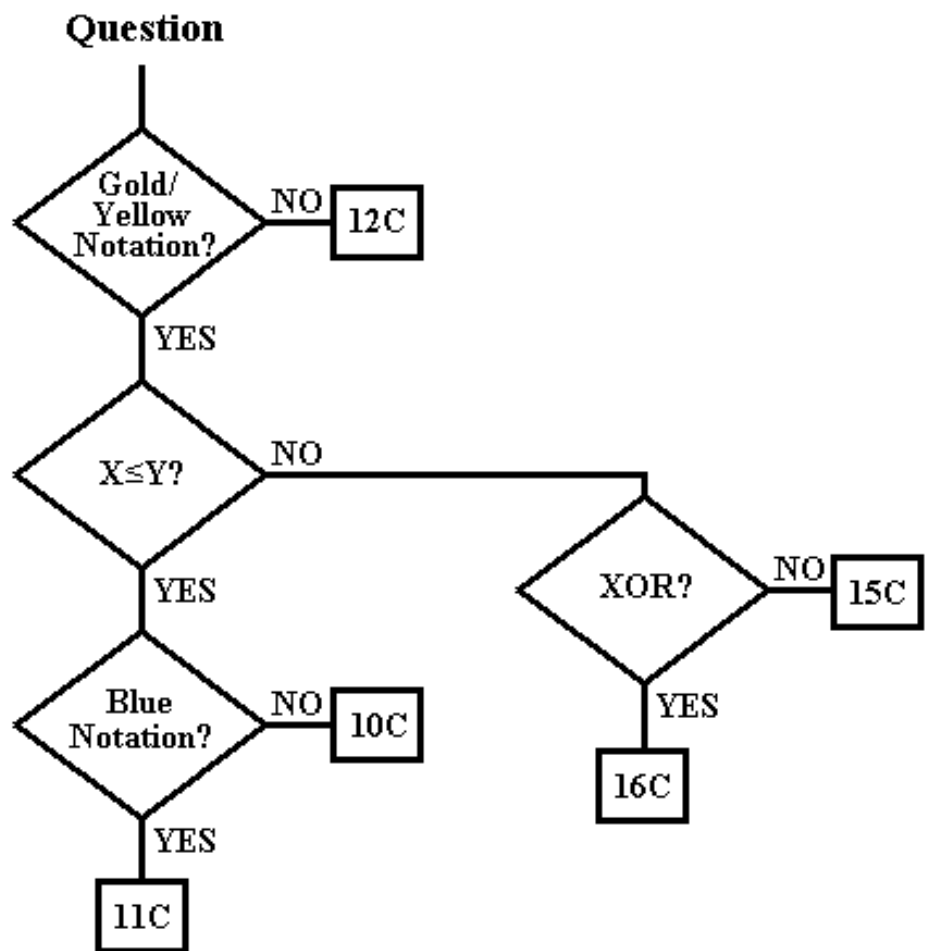*Fig. 1 – Voyager ÷ key, which model is it?*

Fig. 2 – Question flow chart to determine model number if HP logo is missing.

Here is a challenge for the reader. Can you make a simpler flow chart of less than four questions? Refer to the five key notations shown below.
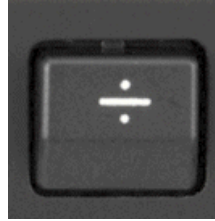
If you are able to visually compare the calculator with the images below you can just ask one question. Which photo matches your calculator divide key? Verbally you could also ask the user to just tell you what the notations are and you pick the correct photo.

| **HP-10C** | **HP-11C** | **HP-12C** | **HP-15C** | **HP-16C** |

About the Editor

Richard J. Nelson, a long time HP Calculator enthusiast, was editor and publisher of *HP-65 Notes*, *The PPC Journal*, *The PPC Calculator Journal,* and the *CHHU Chronicle*. He has also had articles published in *HP65 Key Note* and *HP Key Notes*. As an Electronics Engineer turned technical writer Richard has published hundreds of articles discussing all aspects of HP Calculators. His work may be found on the Internet and the HCC websites at: hhuc.us . He proposed and published the PPC ROM and actively contributed to the UK HPCC book, *RCL 20*. His primary calculator interest is the User Interface. Richard may be reached at: rjnelsoncf@cox.net