

Notes on the back story of this letter:

This is my second letter to *Michael Tarnowski*, who formerly was interested in the logic used by my program "*52206 A Chess Game*" for the *HP-67* (submitted by me to the *HP Users' Program Library Europe*), so I send him a first letter providing the program's information he asked for, and further I also offered to exchange *UPLE* programs with him.

He promptly sent a list of the *UPLE HP-67* programs he wanted, and in this current 3-page letter I replied by sending him right away some of the programs he wanted and I owned, plus offering replacements with similar functionalities for the ones he wanted but I didn't have, also including useful comments for all of them.

Additionally, I took the opportunity to inform Mr. Tarnowski about *PPC*, including a very detailed primer on *HP-41C* synthetics and their uses, and attaching to my letter photocopies of a number of relevant articles about synthetics. I also included a list with 160 *UPLE HP-67* programs I owned and another list with the ones I wanted (just 8 !).

Last but not least, I told him that I had recently sold my *HP-67* to buy the new *HP-41C*, thus I was far more interested in *HP-41C* programs at the moment, and asked him if he had some and if so, if he could give me the details, for a possible exchange. I also commented on some of the programs I had written or was interested in writing and/or optimizing using synthetics.

All in all, a *very heavy, expensive* letter, just the stamps alone meant a little fortune !

Valentin Albillo, 24-10-2021

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Dear Mr. Tarnowski :

I received your letter last week, and once I made copies of the programs you requested, I set the task of sending you back this letter. Find included also my list I & II . A few comments about the programs included here with : (most unfortunately, I haven't all the programs you asked for)

- ++ 00195 Concentration : A very interesting program indeed. Also included is the version for the 4lc, with alpha comments, etc. Show it to your friends, to see who reach the highest number of correct digits.
- ++ 00210 Game of life : The 9x9 version you requested. How about an HP-4lc version ?
- ++ 51187 Game of life : The 23x31 version. If you liked the 9x9 version, you'll love this one ! It is also a good piece of programming, including many tricks (storing cells as binary numbers, etc)
- ++ 00204 Pinball Wizzard : Very clever program. The comments on the listing make it very readable. Of course, it is quite amusing to play, and I am re-programming it (optimized) for the 4lc.

The rest of the programs you wanted are not available to me. However, I searched for suitable substitutes, and also for programs that you will probably like (i.e, similar to those you already own , or to those you want to have). They are :

- ++ Polynomial solutions: This is a 4lc program. It was developed after I saw the equally named program of the MATH I module: it was so long, so slow, so horrible , that I decided to do it myself. The result is the present program: finds all roots (real or complex) of any polynomial up to degree 5 .Degrees 2,3,4 are solved via the - exact formula, and the real root of the 5th degree polynomial is computed using Newton's method, after which it is reduced to 4th degree. All inputs (degree,coefficients) and outputs (roots) are labeled.It fits onto any 4lc,without memory modules,it's much faster, and almost 50 % shorter. I hope you'll like it
- ++ ESP tester : Another self-developed program for the 4lc. I hope it will be a fair substitute for the 50897 program. In this one you are asked to guess a machine-generated number (1,2,3,4 or 5). You have 10 similar probes. After each one, the machine only says "CORRECT" or "INCORRECT", no clues at all. All operations are fully prompted. After all 10 probes have elapsed, the machine gives you a commentary about your ESP capabilities. This commentary is based in the computed probabilities of being correct 1,2,...,10 times by pure chance. Includes the faster & shorter random-number generator I known of . Fits onto a single card
- ++ Pi to 120 places : computes Pi=3.14159... to 120 places (67/97) +
- ++ SIN or COS to 20 p. : computes SIN or COS of a given angle to 20 places (67/97) + I hope they can substitute the 500761
- ++ SIN or COS to 105 p.: id. to 105 places (67/97) + program, which I haven't
- ++ e to 250 places : computes e=2.718... to 250 places (67/97) +
- ++ 8 queens problem : finds all solutions to the old problem: place 8 queens on a chess board so that no two attack each other. The program listing includes many comments. I find it very interesting.
- ++ Several sorting routines : They are in the pages labeled V6N8 PAGE 30,31,32 . They are 4 sorting routines for the 4lc. The fastest, a shell sort, called SSORTX, is capable of sorting 64 numbers in about 3.5 minutes

Now, a most interesting question: Are you a PPC member ? I suppose you aren't , as I haven't found your name in the member's handbook, but maybe you know someone who is. Assuming you are not, I'll give you some brief explanations: the above programs about multi-precision calculations, as well as the 8-queens program and the sorting routines, are taken from the PPC journal. Also included is an article which I'll explain now:

In your last letter, you said that you've just got the new HP-41c , and I suppose you have no idea of the many,many hidden features that your machine has, isn't it ? (?). If you do already know all this, skip the following. Otherwise, I am sure you'll find it quite exciting. The PPC journal is a publication of the PPC Club, which is a voluntary club for those who own a personal programmable calculator (say,anything from HP-25 to HP-41c).But this is not about the PPC club (I think that if you are interested, you would probably ask me for information about the Club in your next letter), this is only to point out the source of the information I am going to bring you now:

-the HP-41c has 16 "status registers": the well known X,Y,Z,T, and LAST X , and the "new" M,N,O,P,Q,a,b,c,d,e, and "APPEND"
every one is addressable as if it were a "normal" register, so you can perform, say STO M, STO+ N, ISG e, RCL IND a, etc,etc.
all admit STO,RCL,ST+,ST-,STx,ST/,ISG,DSE,VIEW,etc,etc. All these instructions may be programmed, or assigned to keys.
Its functions, quite resumed, are : M,N,O and the 3 last bytes of P are the ALPHA register
Q,the 4 first bytes of P and the 20 last bits of "APPEND" are scratch registers
"APPEND" contains the key bit map of the unshifted keys
a contains part of the stack of return addresses for the subroutines
b has the remaining addresses,plus the address of the program pointer
c has the address of the sigma registers,register 00,final END,plus the"cold start constant"
d contains all the flags 00 thru 55
e contains the key bit map of the shifted keys,the actual line number,plus some other inform.

Utility of all this ? Incredible ! . For instance, change the status of any flag, store the status of all flags with a single instruction, create as many as 21 non-standard characters on the display (including &, ; , parentheses, ",text,greek letter mu,etc), go to any line number,change the assignments of keys, assign everything (including SHIFT,PRGM,even things like STO 03,etc), create new functions, go to the part of memory where the assignments are, recall program as if it were registers, etc; etc, etc...

-the HP-41c has as many as 128 tones (not just the 10 "standard" tones): there are 16 different frequencies with 8 different durations for each frequency. All tones are assignable, programmable, etc. Have you ever seen something like TONE A ? It exists !
there are TONE A,B,C,D,E,F,G,H,I,J,L,M,N,O,P,Q,T,X,Y,Z,a,b,c,d,e,"APPEND",etc,etc. Durations : from 0.02 to 5 seconds

-there are thousands of new functions. Examples : local labels thru Z (not just A,...,J,a,...,e), LBL IND , SF (any letter),etc...
-all functions are programmable and assignable , even those of the card reader or printer which aren't supposed to be.
-registers 100 thru 111 (if you have memory modules) are accessed directly, (not just indirectly): in fact, they are "0","1",A,B,C,D,E,...,J. You can create lines as : 123 STO+A , and the like. All STO,RCL, etc are possible with them.
-some 41c has "bugs". Here included is a program (and an PPC J article) about bugs, and how to detect them. You will be happy if you have bugs 2 & 3, as they are the better ones. Bug 2 allows you to access indirectly program memory, so you can create your own instructions in hexadecimal code, and store them into program memory, getting almost any instruction you may think of. Bug 3 allows you to indirectly set or clear any flag, even flags 30 thru 55. Read carefully the article: you'll find it invaluable.

Also included is another article about status register, and two programs which allows the user to code & decode any 7-byte non-normalized number. Those programs transform any 41c (even without bugs 2 & 3) into a machine with all capabilities. In other words, the 41c may be programmed at hexadecimal level, has about 80 different alphanumeric symbols, etc.

That's enough. I hope you will feel interested by all this information. If you already knew about it, sorry. If not, take into account this was a very brief resumé. Please send me the programs I request from you on list II, and if you can, a copy of HP-Key Notes Vol. 2 , nº 3 (a photocopy will do). It was never forwarded to me. Hoping to hear soon from you, yours sincerely:

ST I (I HAVE)

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020	00021	00022	00023	00024	00025	00026	00027	00028	00029	00030	00031	00032	00033	00034	00035	00036	00037	00174	00175
076	00177	00178	00179	00180	00181	00182	00183	00184	00185	00186	00187	00188	00189	00190	00191	00195	00201	00204	00205
206	00210	00222	00250	00252	00297	00301	00315	50003	50024	50029	50033	50036	50082	50088	50089	50116	50138	50145	50146
165	50188	50231	50232	50256	50313	50324	50386	50477	50495	50498	50499	50500	50520	50536	50555	50653	50657	50683	50685
387	50688	50696	50784	50812	50813	50846	50925	51061	51094	51114	51130	51143	51187	51191	51193	51256	51262	51263	51352
385	51403	51504	51571	51657	51658	51660	51662	51702	51772	51824	51877	51881	51892	52046	52058	52112	52165	52177	52180
204	52205	52206	52207	52208	52229	52230	52257	52284	52323	52375	52426	52427	52429	52435	52452	- - -	52055	52056	-----
376	60377	60378	60379	60380	60453	60454	60521	60522	60534	60535	60570	60582	60734	60735	80000	80001	80003	80004	80006

art from these UPLE programs, I have: -Math Pac I (67/97) ; - Statistics Pac (67/97) ; - Bussines decisions Pac (67/97)
-Math I module (4lc) ; - Statistics Module (4lc) ; - Financial decisions module (4lc)

l many self-developed unpublished programs for the 67/97: -interpolating polynomial thru non-equally spaced points, degree 2,3,4
-prime factor finders
-Polynomial solutions, degrees 2,3,4,5
-many games (including Bridg-it, Domino, etc)

ay programs from the PPC J , for any HP calculator, mostly 67/97/29c/19c/25/4lc , etc, and seven Solutions Books for the 4lc

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ST II (I WANT)

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112 - 51 dies ; 50637 - Classical conditioning simulator ; 50699 - 4 agaisnt 1 ; 50833 - Trend curves ; 50877 - Hp marriage-broker
033 - Billiard ; 51115 - Nim learning program ; 60490 - calculus of e

Thank you for your kind cooperation

Post-script .- Of course, I am now more interested on 4lc programs than 67/97 programs. If you have programs for the 4lc from the UPLE or any other source, give me details. The solution Books for the 4lc are not very good, and the same applies for the modules: its programs are not optimised at all. Only the Financial decissions module seems to be slightly better: at least, it is very friendly to operate with. Have you any game programmed for the 4lc ? It doesn't matter if it is quite long , since I own 4 memory modules. I am trying to program a version of "Star Trek" on the 4lc, making use of at least 3 modules and as many programming tricks as I can , to make a really optimised version. (for instance, making use of STO M,etc, a register of program memory is saved for other purposes).I am also very interested about the possibility of programming a BASIC compiler-executer for the 4lc, similar to the PIAL programs in the UPLE. Any idea ? By the way, keep the stamps : they are worth a little fortune !