PPX EXCHANGE

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"Happy Days Are Here Again" as the PPX Exchange is pleased to announce a special offer available only to PPX-52 members. Now through May 15, 3-roll packages of PC-100 thermal paper are available for $5.10. Limit 3 packages per member. To order—simply use the blank PPX-52 order form now in your possession and enclose your check or money order (include taxes and postage and handling). Your order will be filled and a new blank order form forwarded with your shipment. All orders received after March 1 will be filled with two packages of thermal paper for the price of one.

INTRODUCING THE SR-52 IN BUSINESS SCHOOLS

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Since hand-held programmable calculators were first introduced, we have followed their development closely, continually considering their possible use in our business school curriculum. Last year, when designing the courses for the first class in our new Executive MBA program (EMBA), we decided that this program would provide the ideal opportunity to introduce a programmable calculator into the curriculum.

Key Questions To Be Resolved — Before making the decision to use the calculators in the program, we had to answer two important questions:

1) Could a programmable provide the computing power necessary for common analysis techniques used in the EMBA courses? We found by using programs we had developed and library programs already available for the calculator, many time-sharing programs designed to run on the campus computer could be partially or completely displaced. We concluded that a programmable calculator was adequate.

2) Could we teach elementary programming concepts using a programmable calculator? After evaluating the programming concepts and techniques used in the MBA courses (and BBA courses, as well), we concluded that except for alphabetic input/output and matrix commands we could cover the basic programming concepts with the calculator. The SR-52's use of algebraic operating system enhances the similarity between programming on the calculator and FORTRAN on large-scale computers, hence our choice of this particular calculator.

Learning Objectives — Introduction of the SR-52 into the SMU EMBA curriculum enabled our students to satisfy several educational objectives:

- To learn the fundamentals of programming.
- To learn to use various complex analytical techniques.
- To use the analytical techniques in other courses without the need for complex manual calculations or a large-scale computer.
- To use the applications developed in their jobs before and after graduation using their own calculator and programs developed in their classes.
- To make an easy transition to BASIC or FORTRAN and to recognize when the larger computer systems are more effective.

Course Design — Because the EMBA students are all upper-level managers, we wanted them to gain a basic understanding of programming logic, rather than expert programmer skills. Many of the SMU students had non-technical backgrounds so we began the programming classes by reviewing basic arithmetic operations using the SR-52. This enabled the students to reinforce their computational skills and to become familiar with the basic features of the calculator.

We began the programming portion of the course with a compound interest example as the initial programming exercise. By modifying the problem, we were able to introduce data storage/retrieval, algorithm execution, and storage of programs on magnetic cards. Using other selected business applications, we converted transfer instructions, subroutines and indirect instructions. Simultaneously, the management sciences, accounting, and finance courses were reinforcing the use of the programmable calculator as a problem solving and analysis device with programs such as "Cost-Volume-Analysis," "Monte-Carlo Simulation," and "Financial Statement Simulator" which we had written for this purpose.

Experience to Date — By the time the programming classes were concluded, all EMBA students were able to write programs using the basic commands. Many have bought their own calculators and are using the advanced commands and programming techniques with ease. Development of these programming skills required three sessions lasting three and one-half hours each.

Several students have reported that they now better understand the programming applications they work with in their jobs. Furthermore, most of them are using programmables in their job with programs they developed. They have also become more active in both identifying potential calculator and large-scale computer applications in their jobs.

Summary — We believe our use of the SR-52 has helped substantially to demonstrate that the stated learning objectives can be satisfied with hand-held programmables. Preparations are underway to extend the use of programmables to other credited courses in the business school. Also, we are now offering a 3-day course on the SR-52 for managers through the SMU Management Center.

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PPX POTPOURRI

As this issue of the PPX Exchange goes to press, so does our March Software catalog, our second compilation of programs available to PPX-52 members. In only 4 short months, the amount of software in your exchange has more than doubled, with over 80 categories containing submissions. Features added to the March catalog are an author index, and a keyword index to help you find just the program you need. New programs, signified by an asterisk in the catalog, range from the highly technical, such as "Silicon Material Profile", to the entertaining, such as "Learning Nim." These additions bring the catalog offering of programs close to 1,000.

Although PPX-52 is now entering its 6th month of service, there are still many questions and comments regarding its operation. There have also been various misunderstandings by our members which we would like to clarify at this time.

1. Please remember that PPX-52 has two addresses from which we serve you. Correspondence which includes checks or money orders should be sent to:

   PPX-52
   P. O. Box 85023
   Dallas, TX 75285

   and letters of correspondence or contributed programs to:

   PPX-52
   P. O. Box 22283
   Dallas, TX 75222

2. The categories shown in the PPX-52 Software Catalog are only suggestions of the broad nature of programs which could utilize an SR-52.

   These categories are flexible and may be changed as the need arises. Therefore, if you wish to submit a program, but cannot find an appropriate category, refer to the **Professional Category Table** in the Software Catalog and assign it the last category number within the appropriate area of interest. When a number of related submissions have accumulated within a general category, we will create a new category for them. By the same token, if no programs are received in a category, it may be replaced. Notice that Hydrology, Category 73 in the November Catalog has been replaced by Heating, Ventilation, Air Conditioning in the March Catalog.

3. We would also like to bring to your attention a policy we have concerning program submissions between catalogs. Consulting the latest software catalog to determine if your planned submission will duplicate an available program is a good habit to get into. However, it is possible that a program duplicate was received since issuance of the last catalog. You would have no way of knowing this. Where such a situation exists, a "1 free" order form and replacement magnetic cards will be forwarded to you along with your program (duplicate) in accordance with our normal policy.

AUTOMOBILE INSURANCE CALCULATOR

Jan Van der Veer

The SR-52, with its many special function keys and ten user-defined keys, can be a powerful tool in almost any business or professional environment. But what if more than ten user-defined keys are needed for input/output? The RUN key is an alternative, but one is then restricted to input/output in a fixed order. When this is not acceptable, the business programmer often finds himself up the proverbial tree.

One recent example was in the field of automobile insurance. A special bezel was designed to simplify the entry of codes for:

1. Insurance rating group
2. Car age group
3. Bodily injury and property damage coverage
4. Medical protection coverage
5. Comprehensive coverage
6. Collision coverage

The calculator has proven very easy to use. By simply entering the values and pressing keys specially noted on the bezel, total insurance premiums, as well as a breakdown of all its components, are easily found.

This calculator also allows "what-if-ing" with various combinations of coverages and puts to rest any fears of making mistakes while searching through insurance rate tables.

There are many similar opportunities for use of programmable calculators. Examples include life insurance, securities, real estate, casualty insurance, tariff calculations, and job or equipment quotations. If in your profession you have similar applications for corporate or industrial quantity orders of calculators which require special programs, bezels or other minor SR-52 modifications, please write to TI Special Applications Group, MS 5, P. O. Box 5012, Dallas, TX 75222.

PC-100 PRICE REDUCED

In a move to aid programmers everywhere, TI announced on February 19 a price reduction for the PC-100 from $295.00 to $199.95. This price reduction enables many more SR-52 owners to utilize PC-100's print cradle capabilities which include listing entire programs for easy editing and tracing complex computations while the SR-52 is running a program. The SR-52 can also be programmed to print results on the PC-100 during program execution, eliminating the need to continuously push "run" to display the next answer. The paper-tape provides an extremely valuable printout of both program steps and program execution, thus offering an ideal debugging and record-keeping media. Additionally, the March PPX-52 catalog offers a program enabling you to use the PC-100 as a plotter and another to use the PC-100 to print banners.

ASTROLOGY CATEGORY ATTRACTS LIVELY INTEREST

R. Houghton

The November Software Catalog established an Astrology category which included three Astrology programs. The category has stimulated lively member interest and new program submissions.

Though Astrology is not usually associated with slide-rule computation, its roots are common to Astronomy. Astrologers must perform many complex computations in their work, and the SR-52 and PC-100 open a range of computing power for astrologers, researchers, and students of astrology.

The Astro I, II, and III Programs were submitted to the PPX in anticipation of a package of programs developing through other submissions. Following is a list of Astrology functions and status. In addition to these, PPX members have suggested programs for Siderial and Heliocentric Astrology, progressions, and primary directions.

Astrology Functions	Status
Zodiac/Right Ascension Conversions	Astro I (970001)
Interpolation (Midpoints, Planetary Positions)	Astro I & III
Matrix (Aspects, Capability)	Astro II (970002)
Planetary Positions	Contributed program(s) needed
Solar and Lunar Returns	Astro I & III
Arabian Parts	Contributed program(s) needed
Houses	Placidus Houses (970011)
Keyword Interpretation	Contributed program(s) needed
Client File	Astro I-III and Data I/O (I) (970001, 970002, 970003 and 900006)

One especially useful concept is that of a "client file." The 12 key points (and up to 20) of an individual's Astrological chart may be copied from registers to a magnetic card, and later restored from the magnetic card to the registers. This permits programs to be written that scan individual charts and groups of charts from a magnetic card file for repetitive processing and research.

The programs in PPX, plus those just received or promised, set the foundation for an Astrology package. With these programs, the astrologer may replace both Tables of Houses and midpoint calculators and may establish a convenient magnetic card client file. Additionally, the time required to compute an accurate chart with aspects may be reduced to less than a half hour, and the time to compare charts for mutual aspects reduced to minutes.

What's next? The items most needed to round out a package are:

a) A Planetary Positions program to reduce the need for ephemerides

b) A Keyword program to facilitate chart interpretation.

With the recent response to the Astrology category, these should come in a matter of time.

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The first step toward solving a problem is to see it clearly.

CALCULATOR DOCTOR

This column is intended to answer frequently occurring questions relating to either SR-52 operation or programming. These questions are obtained from TI's Consumer Relations Department. If you are having difficulty with your calculator or with programming, please contact TI's Consumer Relations Department for assistance.

Question: My SR-52 will accept the prerecorded cards but will not accept cards which I have programmed. The cards evidently were recorded properly, as I got a steady zero in the display after recording each side of the card. What is wrong?

Answer: The most probable cause of your problem is an inconsistent operating procedure which results in the information getting "out of synchronization" with the calculator. I have found the following to be a good procedure to follow whenever you are either reading or writing a card: First, press the appropriate keys; (CLR, INV, 2nd, READ for writing side A). Second, insert the card into the calculator just up to the point that the drive motor turns on—at this point, completely let go of the card. Third, after the motor has run for approximately one-half to one second, put one finger on the right-hand edge of the card and gently push it into the machine until it is gripped by the drive mechanism.

Question: My calculator works perfectly when used with the battery pack. When mounted on my PC-100A printer, the calculator continues to operate until a print or paper advance command is encountered, either from the keyboard or at a program step; at this point the display goes blank and remains so until I turn either the calculator or the printer OFF, then ON again. Of course, this results in losing my program. What's happening?

Answer: The symptoms you describe are directly attributable to a problem in the interface contact between the printer and the calculator. Carefully clean the gold-plated contacts on the printer and in the calculator with a cotton swab moistened with alcohol. Also, carefully check the contacts on the printer and gently straighten any that appear bent or out of alignment.

Question: My first SR-52 failed shortly after I purchased it. It was replaced by my dealer, who said it appeared to have been damaged by static electricity (the display would show a zero but no key had any effect on the calculator). Is

this possible and, if so, how can I avoid future problems of this type?

Answer: While unlikely, the SR-52 can be damaged by static electricity. A spark which is too small to do more than tingle slightly can pack in excess of one kilovolt and a voltage spike of this magnitude can play havoc with the IC's inside the calculator. When using an SR-52 in a dry heated environment, especially with carpeting on the floor, you should make it a practice to always discharge the static charge you may be carrying by touching the object the calculator is sitting on before touching the calculator itself. In a severe environment, resting the calculator on a grounded metal plate, and touching the plate before touching the calculator is recommended.

Question: I plan on taking my SR-52 to Japan, where I will be located for several weeks. Do I need a new adapter charger for use in Japan, where the voltage is 100 volts AC. If so where do I get one suitable for this use?

Answer: The AC9130A adapter/charger furnished with your calculator is suitable for use in Japan. However, due to the lower input voltage, the AC9130A will not provide sufficient input to both operate the SR-52 **and** recharge the battery pack at the same time. For extended period usage, therefore, the calculator should be operated with the adapter/charger connected at all times. Also, approximately 10-14 hours will be needed to recharge the calculator with the switch in the OFF position.

Question: Is it possible to have my PC-100 printer modified by the factory to provide battery pack recharging capability, like the PC-100A?

Answer: The power supply of the PC-100 is not compatible with the requirements of a battery-pack charging circuit, therefore such a modification is not feasible.

FROM THE ANALYSTS' DESKS

1. With the publication of the March Software Catalog, not only has the quantity of programs doubled, but also the diversity and quality. For example, a new program, "Banner for the PC-100" by Jonathan Rotenburg (PPX #900052) will print block letters using the SR-52 and the PC-100. We have used this program numerous times to produce banners for our programs and to print out thought provoking messages. We have also received a couple of eye-catchers which make use of fractured displays. Program #900037, "Degrees, Minutes, and Seconds Display," by Paul Peterson will convert a number in decimal degrees to degrees, minutes and seconds, then display the number with the degree sign (the upper half of an 8) and the minute sign (upper half of a 1) in the appropriate positions. Another program, #910013, "Yahtzee," by Alan Charbonneau, will "roll" five dice and display all five numbers at once, separated by minus signs. Heuristic (or "learning") programs, such as "Learning Nim," #910046, by Joshua Friedman, and "Hexpawn," #910012, by B. R. Kelso, also add an interesting dimension to the programs offered in the March catalog.

2. We have received several programs which are major improvements of TI Library programs. In the new catalog is a Simpson's Approximation program which more than doubles the space for f(x) available in a similar TI Library program. Another example is a Traverse program which performs the same functions as four TI Surveying programs, all on one card. If you have a version of a TI program which is easier to use, does more, or runs significantly faster, do not hesitate to submit it.

3. While checking out a program recently, the sample seemed to be running for an extremely long period of time. After taking advantage of this rare chance for a coffee break, we returned to discover that the sample was still running! Since there was no mention of a long run time anywhere in the documentation, we subsequently returned the program to the author for correction. It was resubmitted with a note that the average computation ran approximately 2 hours. The moral of the story is—if your program takes over a minute to display an answer, it would be most helpful to us and other users if you would document the run time for the sample.

4. Quite a few interesting subroutines have crossed our desks ranging from a truncation routine to a R/D switch checker. The routine: INV *D.MS INV *D.MS *fix 0 *D.MS INV *fix will truncate the decimal portion of the number in the display. The following routine will check the angular mode of the calculator for those programs requiring a radian input: *pi sin *if zero *3' CLR *1/x O HLT LBL *3'. If the R/D switch is set to degrees, a flashing 0 will appear in the display when this routine is executed. A similar test can be made to insure a degree setting of the R/D switch by changing the "*if zero" to "INV *if zero." When the appropriate routine is placed in the initialization sequence of a program requiring a specific angular mode, the correct inputs for calculations are virtually guaranteed.

5. As you are probably aware, the PPX catalog is prepared and maintained on a computer. Much as we dislike it, we often must reword your abstract or edit it in order to fit it into the allotted number of lines. The easiest way to avoid problems with editing is to make the abstract short, perhaps 50 words or less. State what inputs are required and describe the outputs. The details of how the program gets from A to B should be reserved for the program description page on the back of the abstract. Also, limit the title to 40 characters, and no special characters, Greek letters, math symbols, etc.

The PPX Exc hange is published every other month and is the only newsletter published by Texas Instruments for SR-52 owners. You are invited to submit items you feel are of general interest to other SR-52 users. Inputs should be limited to 3 doublespaced typed pages. Please forward your newsletter inputs and any questions to:

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