PPX EXCHANGE

Vol. 2 Number 1 Copyright 1978 January 1978

HARD ACTS TO FOLLOW — That's Texas Instruments' ever improving array of new and exciting products! Have you heard about the newest form of software, the TI-59 Pakette, now available through PPX-59? Are you interested in acquiring TI-58/59 Custom Modules for your company? Or, have you heard about the newest in professional calculators, the TI-55, the MBA, and the TI Programmer? Curious? See "Texas Instruments Presents" in this issue of the PPX Exchange.

PPX POTPOURRI

1. High demands recently placed on our SR-52 Library inventories have depleted our stock of Math and Basic Libraries. All other SR-52 Libraries are still available through PPX-52.

2. With the addition of PPX-59 to our program exchange family, it becomes **imperative that you use your membership number**. For best service, please get in the habit of including your membership number on all orders and correspondence to PPX.

3. The first PPX-59 Software Catalog includes abstracts of more than 200 individual programs available through PPX-59. To have these programs available for its first members, PPX-59 converted many of the top 200 programs from the highly successful PPX-52. As PPX-59 had to rely on itself for the first Catalog, the Author Index contains only a few names; however, the name of the original PPX-52 program author is shown in the Abstract section of the Catalog. The next Catalog issued by PPX-59 will contain those programs submitted by its membership.

"TO 'BUG' IS HUMAN . . ."

Tim Lee

When a program fails to work it can generally be attributed to a "bug" in the program. The dreaded program "bug" has been known to plague programs written by everyone, from the novice to the professional programmer. "Bug"less programs are achieved through a time consuming process known universally as debugging. It is hoped that the following observations will serve as a help in decreasing time spent exterminating program bugs.

"Bugs" can be separated into two basic categories (or species, if you will), syntax and logic "bugs". A syntax bug results when the programmer fails to follow the conventions of his machine. For example, on either the SR-52 or the TI-59 the sequence, + =, results in an error condition (due to missing operand). This type of "bug" is most vulnerable when attacked through the Owner's Manual and can usually be discovered by carefully checking through the Program Listing.

The logic "bug", by its very nature, is a sly creature that violates none of the machine syntax conventions. In other words, the program runs as programmed, however, the answer hoped for by the programmer is not forthcoming. For example, a short program to square a number in register 01 (not using the x^2 key) and display the answer may be written as follows: RCL 01 x RCL 01 = . However, when the "=" sign in the example is omitted, the value in register 01 is displayed instead of its square. Finding the "bug" in the above example would be a simple matter of checking the listing. Many logic "bugs" can be found this way but the method swiftly breaks down in more complicated programs where the error may not occur until the program is run.

To detect "bugs" which occur during the running of a program or even to check a program listing, the PC-100(A) Print-Cradle is a valuable adjunct to your programmable. By running a program with the printer in Trace mode, the value of the display register, the operations performed, as well as where branches occur are all recorded on tape from the thermal printer. An error condition resulting during program execution is indicated on the tape by "?"s. An example of a PC100(A) Trace printout of the program RCL 01 x RCL 01 ÷ 0 = rtn (with 1 stored in register 01) is as follows:

SR-52

```
0.
RCL
001
:.
:.
x
:.
RCL
001
:.
:.
÷
:.
0.
9.999999999 99?
RTN
```

TI-59

```
0.
RCL
1
:.
:.
x
:.
RCL
1
:.
:.
÷
:.
0.
9.9999999 99?
9.9999999 99? RTN
```

ERROR resulting from division by 0.

When a printer is unavailable, other methods must be used to track down a wily program "bug." For example, suppose an unwanted error condition occurs during the execution of a very lengthy program. Where did the error condition occur? A very useful approach is to set the program counter to the point in the program that you want to test and then, in calculate mode, press the single-step (SST) key to execute the program one step at a time. If a flashing display results, an error condition has occurred. Press the LRN key to determine where the program counter is. By using this clue in conjunction with a program listing, the program "bug" can be located and exterminated.

Other debugging techniques include inserting counters of the sort 1 SUM nn (where nn is a register number) at various points in a program to determine how many times a particular sequence of code is executed. Keeping track of the contents of various key registers in a program may also give clues which will lead to the discovery of a program "bug". And last but certainly not least, the most important way to debug a program is to do it before the program is actually written by following good programming practices. This includes getting a clear statement of the problem to be solved, developing a flowchart to solve the stated problem, and converting the flowchart to keystrokes. **Then**, test and debug the program remembering not to get frustrated. For it is said, "To 'Bug' is Human . . ." or something like that!

IT'S RENEWAL TIME AT PPX-52!

It's renewal time for many members of PPX-52. As promised in the November issue of PPX Exchange, here is the latest information on renewing PPX-52 memberships.

PPX-52 will issue two Software Catalog Addendums in 1978—February and July. The last Addendum, July, will include all accepted programs received by PPX-52 through May, the final cutoff date for all PPX-52 program submissions. Although the end of May marks the close of submissions, PPX-52 will continue to fill orders indefinitely.

To aid you in making your renewal decision, a table of sliding renewal rates is shown below. This scale describes what you will receive for your renewal dollars. Your membership number corresponds with your original membership date. Check your membership number against the table for a complete picture of your renewal status.

Membership Number	Renewal Rate	Must Be Postmarked By	Benefits Received
100001-102780	$8	February 5	2 Addendums, 5 Newsletters
102781-103780	$4	February 15	1 Addendum, 5 Newsletters
103781-105453	$4	March 15	1 Addendum, 4 Newsletters
105454-107112	$4	April 15	1 Addendum, 4 Newsletters
107113-108094	$4	May 15	1 Addendum, 3 Newsletters
108095-108778	$4	June 15	1 Addendum, 3 Newsletters

This table will be reprinted in future newsletters.

A renewal subscription card and reminder will be sent to each member in ample time to renew. The subscription card should be sent with a check or money order. **Be sure to include your membership number on both your subscription card and check**. Members whose numbers are greater than 108778 need not renew their memberships to receive PPX-52 benefits.

CALCULATOR DOCTOR

This column is intended to answer frequently occurring questions relating to either SR-52 or TI-59 operation and programming. These questions are obtained from TI's Consumer Relations Department. If you are having difficulty with your calculator, contact TI's Consumer Relations Department for assistance. (This month, there are no problems concerning the SR-52, therefore this column will be devoted to the TI-59.)

QUESTION: I downloaded program ML-09 (Evaluation of an Integral) on my TI-59 and listed it. Several places in the program I noticed the instruction sequence "*Program 00 *A'". I have been unable to find any reference to this sequence of steps. Please explain.

ANSWER: Program ML-09 demands that the function of x for which the integration is being evaluated be defined in the main program registers under label *A'. Just as a program in main storage can call a portion of a module program as a subroutine by the sequence *Pgm mn U, program ML-09 can call a program segment from main program storage through the sequence *Pgm 00 U. In this sequence, 00 tells the module the sequence is in main program logic, and U is the label identifying the sequence to be used.

QUESTION: I recorded a program on a magnetic card with my TI-59 while it was running on battery power. The same card would not read on my TI-59 when attached to my PC-100A. Why?

ANSWER: The sensitivity of the calculator read/write mechanism along with the change in power (the printer vs. the battery) may have caused this. Also, if the calculator and printer are not interfaced correctly, a read will not take place. Remove the calculator from the printer and reattach.

COMMENT: Some people are confused about how to use Solid State Software Module programs as subroutines in their own programs. The difficulty arises because they think that it is sufficient to call a subroutine by using a sequence like *Pgm 15 A to access the whole program. **Each** particular part of the program that the person wants to use must be preceded by *Pgm mn U (where U is the label associated with that part).

WHO'S AFRAID OF ABSOLUTE ADDRESSING?

Joe Claborn

Who's afraid of absolute addressing? Many people seem to be. The majority of the programs coming across the analyst's desk rely heavily on label addressing rather than on absolute addressing. The drawback with label addressing is that when the SR-52 performs a branch to an instruction, the calculator searches sequentially for the label starting at location 000. Thus, more time is spent searching then actually performing the branch. When the SR-52 encounters a branch to an absolute address, the calculator branches directly to the specified address. Absolute addressing speeds up the execution of a program by reducing the time spent in the label searching. So, why are people hesitant about utilizing this technique? Maybe they have the misconception that absolute addressing is difficult to use. Although implementing absolute addressing requires some time, it is not difficult. After thoroughly testing and debugging your program, you can easily convert your label addressing over to absolute addressing by following the steps described below.

1. If you have a PC-100, make a listing of the program and write the keystrokes next to the locations in which they are stored. If you are using the SR-52 without a printer, single-step through the program in *LRN mode copying the location, op code, and associated key stroke (in pencil).

2A. Go through the listing circling all labels that are not called from the keyboard during execution of the program. For instance, if during the execution of your program, you press A, then do not circle *LBL A.

2B. Next, go through the program and box all references to the labels circled in 2A. (These references often follow a test or branching instruction.)

3. Place 3 zeros after each boxed label.

For example, the sequence:

LOC	CODE	KEY	
033	43	RCL	
034	00	0	
035	01	1	
036	46	LBL	
037	34	tan	
038	75	−	
039	05	5	
040	95	=	
041	90	if zro	
042	34	$\boxed{\text{tan}}$	0 0 0
043	81	HLT	

4. Reassign location numbers to all noncircled steps making certain that the zeros substituted in step 3 are given location numbers. If working with a printed listing, renumber your program steps on the left side. If working without a printed listing, erase all location numbers before renumbering.

After renumbering, our example will appear:

WITH PC-100				WITHOUT PC-100		
LOC		CODE	KEY	LOC	CODE	KEY
033	~~033~~	43	RCL	033	43	RCL
034	~~034~~	00	0	034	00	0

035	~~035~~	01	1		035	01	1	
	~~036~~	46	LBL			46	LBL	
	~~037~~	34	tan			34	tan	
036	~~038~~	75	−		036	75	−	
037	~~039~~	05	5		037	05	5	
038	~~040~~	95	=		038	95	=	
039	~~041~~	90	if zro		039	90	if zro	
040	~~042~~	34	tan	0 0 0	040	34	tan	0 0 0
043	~~043~~	81	HLT		043	81	HLT	

5. For every boxed label find the corresponding circled label. Substitute the first (newly assigned) location number after the circled label for the three zeros that were inserted in step 3.

In our example we would substitute 036 for 000 at location 040.

WITH PC-100					WITHOUT PC-100			
LOC	CODE	KEY			LOC	CODE	KEY	
039	~~041~~	90	if zro		039	90	if zro	
040	~~042~~	34	tan	0 3 6	040	34	tan	0 3 6

6. Now key in the resulting listing deleting any circled labels.

SR-52 — THE LOCOMOTIVE OF CALCULATORS

John F. Gillen

Whenever railroad men congregate, the discussion will soon lead to the belief that no engineer has ever had the courage nor the stamina to allow the steam locomotive to reach its full potential. Is it possible that this applies to the SR-52 as well? The instruction manual gives an indication of the tasks the SR-52 may perform and usually adds a disclaimer (or a motivation) that what is stated is just the beginning. Perhaps no one will ever have the courage, the stamina, the time, nor the expertise to fully appreciate the SR-52. The time has come to appreciate it with nostalgia.

I purchased my SR-52 as a replacement for the SR-10. There wasn't anything wrong with the SR-10, it was just the same feeling one gets when the new autos are released in Detroit. It was soon evident that had the SR-52 been around when I was taking graduate courses in tests and measurements, the Pearson Correlation Study that had taken six weeks to complete would have been finished in just minutes.

The SR-52 first came to my aid as a high school Science teacher. When the end of the marking period came around, I developed a simple program to calculate student averages, taking into account not only test grades but homework — and without having to remember how many grades were inputted. (No doubt the educational purists would say that my students should not receive grades based on such hard data, especially since I have had many courses in tests and measurements.)

Shortly thereafter, I had an opportunity to do some relief pharmacy work during weekends. After a short while, the SR-52 was called upon to calculate prescription prices using my program, "Prescription Pricing Schedule" (PPX-52 #560001). Although you may not believe it when you get your drug bill, these prices are not randomly decided upon.

It was then time to bring the SR-52 home, out of the class, and out of the pharmacy to have some fun. As an amateur radio operator, the first question asked after exchange of name and call signs is the location of the distant signal. By using Robert Bailey's program, "Latitude/Longitude Conversion to Miles" (PPX-52 #940015), as a base, along with an atlas, almanac, and some modification, it was possible to calculate the radio distance in statute miles without entering the latitude and longitude of my own location. Why was it possible to contact that station? As most of my operating is done in the 146 M Hz band, any contact is usually a function of a line of sight transmission. Antenna height of both stations becomes important. Texas Instruments program, "Distance Short of, Beyond, or to Horizon" (PPX-52 #949002), will show whether this contact was to be expected as line of sight or whether "ducting" took place because of abnormal atmospheric conditions. As far as abnormal weather is concerned, the wind-chill factor is important if you have to climb a tower to make an adjustment. "Wind Chill Temperature" (PPX-52 #490001) by L. R. Flink takes care of that. Finally, if you wish to set up a schedule for another contact, "Time Zone Conversions" (PPX-52 #909003) is very useful.

My enthusiasm for the SR-52 comes from neither technical or mathematical skills but rather from the realization that it is very useful to those lacking those skills. Accept the fact that no one will ever be able to use the SR-52 to its fullest. Enjoy it for what you can make it do for you, and what your family members can make it do for them. Although a locomotive is glamorous at the front end of the Super Chief, it is still useful shunting cattle cars in stockyards. And so it is with the utility of the SR-52.

A NEW, FLEXIBLE COURSE PACKAGE FOR STUDENTS AND TEACHERS: FUNDAMENTAL PROGRAMMING USING HANDHELD CALCULATORS

Ralph A. Oliva

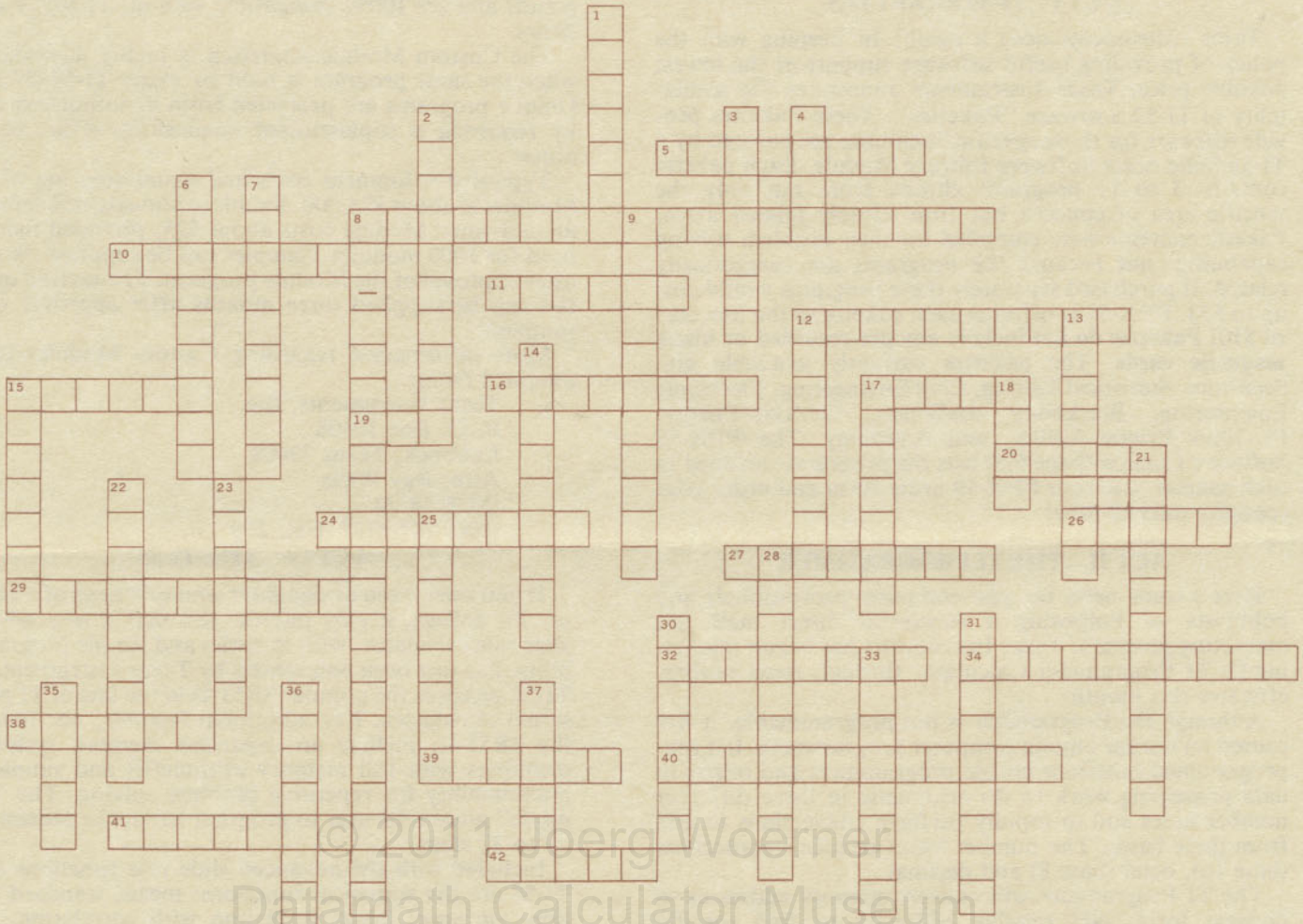
High school students can soon be taught computer programming with a hand-held programmable calculator through a course offered by Texas Instruments. The course, developed jointly by the University of Denver Mathematics Laboratory and the TI Learning Center, will be available through authorized TI Educational Products Dealers beginning in March. Course materials are designed for ease of classroom use, and especially for students with no prior knowledge of programming or calculators. Through carefully sequenced series of engaging lessons the student learns programming concepts from the ground up. The "natural side" of programming (the side of programming that is "common sense problem solving" faced in everyday life) is stressed throughout the course. Materials have been carefully written so that they may be introduced at the junior high or high school level, or implemented as part of basic courses in junior colleges or universities.

Flexibility has been carefully built into all parts of the course package. A modular, self pacing lesson format allows students to progress in individual study, with small groups, or together with an entire class. Teachers can use the course materials to enhance existing math or science classes, or as a stand alone separate mini course in programming.

Course materials will include a TI Programmable 57 with a comprehensive teachers guide (including objectives, answers to problems, classroom management tips, etc.), and student materials (including student guides, calculator owner's manuals and coding forms). The course is configured so that students can learn and explore on the TI-57, and easily "move up" to the TI-59 for recording programs, obtaining printouts and plots on the PC-100A, and allowing teachers to get a "hard copy" for student evaluation and discussion.

The student guide begins with a general calculator introduction, followed by computer literacy segments aimed at bringing students quickly to a deeper understanding of

THE TI-59 CHALLENGE



ACROSS

5. 2nd Op 11
8. Owner's Manual
10. _____cards
11. RCL, STO, CMs, Exc, are _____keys
12. 1/x
15. Ins
16. TI-59 has a _____decimal display
17. _____addressing
19. Calculator system using algebraic hierarchy (abbreviation)
20. _____State Software
24. Supports programmable calculator hardware
26. Printed program operation (PC-100A mode)
27. Value that varies
29. P→R: Polar to _____
32. Eng: Engineering _____
34. Linear _____
38. RCL
39. INV SBR
40. RST 2nd Op 08 (2 words)
41. SBR
42. LRN

DOWN

1. Fix provides _____control
2. Op 05 and Op 06 print _____
3. List of precise instructions to solve a problem
4. Input values
6. Method of solution
7. Algebraic _____System
8. Obtained from RST 2nd List (3 words)
9. Controls AOS operational order
12. The display _____retains 13 digits
13. _____addressing
14. Parentheses are associated with _____hierarchy
15. Int
17. Programming is _____thinking
18. Provides a paper copy of the program, 2nd _____
21. Master Library Program ML-01
22. x!
23. tan
25. Conditional and unconditional are _____instructions
28. Moves paper (2 words)
30. Deg, Rad, Grad: _____mode keys
31. Comparisons are done in the _____(2 words)
33. To make a program more efficient
35. RST
36. TI-59 Programmable _____
37. $\sqrt{x}$ _____root key

— Detach Here —

HOW WELL DO YOU KNOW YOUR SR-52?

The following quiz will check to see how well you really know your SR-52:

1. A powerful instruction, especially useful in programming iterative routines is _____.
2. The program counter will be at_____immediately after the execution of 110 STO 14 220 STO 10 IND GTO 14.
3. The display will read _____after the execution of 110 STO 14 220 STO 10 IND RCL 14.
4. Internal processing registers are registers_____and are referred to as the _____registers.
5. Register _____is used in polar-rectangular conversion and dsz execution.
6. The three methods for calling the following subroutine beginning at location 110:

   LBL
   A
   RCL
   0
   1
   rtn

   are_____, _____, and_____.
7. _____operands with _____pending operations can be accomodated by registers 60-69.
8. _____clears the subroutine return-pointer register.
9. _____, _____, and_____are the operating modes of the SR-52.
10. The nonclearing memories are registers _____.
11. The two most common error conditions encountered which result in a flashing display during computations are_____and _____.
12. Keys A through E' are called_____ _____ _____.
13. When you press CLR, 2nd, read, HLT, 2nd, read, followed by insertion of a card, you are reading a program segment into the _____ _____of _____memory.
14. Calculations are performed by step-by-step control from the keyboard in _____mode.
15. The _____key reverses the effect of an operation.
16. BA1-10 denotes a program in the_____ _____.
17. 2nd PROD, nn is an example of using_____ _____ _____.
18. PPX is an abbreviation for_____ _____ _____.
19. While a program is running, your calculator is under _____control.
20. If you wanted to look up a program in your PPX-52 Software Catalog that had to do with temperature, you would look at the _____ _____.

SEE "FROM THE ANALYST'S DESK" FOR THE ANSWERS TO THE TI-59 CHALLENGE AND HOW WELL DO YOU KNOW YOUR SR-52

TEXAS INSTRUMENTS PRESENTS

ACT I TI-59 PAKETTES

Texas Instruments does it again! In keeping with the policy of providing useful software support at the lowest possible price, Texas Instruments announces the availability of TI-59 Software "Pakettes". These Pakettes provide software for those specific disciplines not covered by a TI-59 Solid State Software Library Module. Each pakette contains 5 to 11 programs chosen from not only the specific area of concern but from closely related areas. Pakette contents were compiled for their problem solving capabilities **not** because the programs are categorically related. If purchased separately these programs would cost up to $33. PPX-59 is offering each pakette at the low cost of $10! **Pakettes do not include any pre-recorded or blank magnetic cards**. The pakettes currently available are: Securities, Statistical Testing, Civil Engineering, Electronic Engineering, Blackbody Radiation, Oil/Gas/Energy, PC-100A Printer Utility, and Astrology. The PPX-59 Software Catalog (page 6-3) lists the programs included in each pakette. Use your PPX-59 order form and order your specialty pakette now!

ACT II THE TI PROGRAMMER

Here's some news for you computer professionals and hobbyists — Following a successful direct mail test marketing program, Texas Instruments has begun marketing its TI Programmer Calculator through retail outlets, effective this month.

Although the Programmer is not programmable, it has caused an uproar among computer programmers. It's preprogrammed functions enable programmers and others in data processing work to do arithmetic in three different number bases and to rapidly perform conversions to and from these bases. The number bases include hexadecimal (base 16), octal (base 8) and decimal.

The TI Programmer will convert memory addresses to decimal form, add relative addresses to find specific computer memory locations, or determine if there is enough space in the computer's memory to hold a new block of data. Also, the arithmetic and logical functions of the calculator can emulate internal computer operations and perform bit by bit logical operations on numbers in hexadecimal or octal. Included are AND, OR, Exclusive OR and SHIFT operations.

In addition to all this, the calculator features parentheses keys which specify the sequence in which operations are executed. This enables complex expressions to be evaluated without storing or writing down intermediate results. Up to four operations can be pending at one time. These operations can be a mixture of arithmetic or logical operations in any combination of the three number bases.

The calculator has an eight digit LED display, rechargeable battery, vinyl carrying case, and AC adapter/charger. With all of these features plus 3 key memory, the Programmer has the ability to perform four function arithmetic. The TI Programmer offers quite a handful of power to programming professionals. The Programmer can be found at your local TI calculator retailer. Suggested retail price is $60.

ACT III THE CUSTOMIZED MODULE FOR THE TI-58 AND TI-59

Now Texas Instruments can customize a Solid State Software Module for your company. One small Custom Module contains 5,000 programming steps or the equivalent of ten TI-59 magnetic cards. (The Module is the same size as a TI-58/59 Library Module.)

The tough, durable Module can be quickly accessed with few keystrokes, cannot be erased and is not vulnerable to accidental erasures or scratches. All Custom Module programs are directly accessible to keyboard/program commands and are 100% campatible with all TI-58/59 calculators.

The Custom Module approach is highly advantageous when the same program is used by many TI-58/59 users. Unique programs are protected from unauthorized access by requiring a sophisticated engineering effort to gain access.

Typical development costs and manufacturing of 1000 Modules is about $25,000. Simple arithmetic will show that an individual Module costs about $25, provided there is a need for 1000 modules. Samples can be supplied six weeks after approval of the Module program. Production quantities can be supplied three months after approval of the samples.

More information regarding Custom Modules can be obtained from:

Texas Instruments, Inc.
P. O. Box 10508
Lubbock, Texas 79408
Attn: Ray Wells
(M/S 5873)
(806) 747-3737 Ext: 208

ACT IV THE TI-55

If you have a son or daughter who is in need of a calculator for college, it may interest you that a new advanced slide rule calculator, with statistics and simple programmability, has just been announced by Texas Instruments. The TI-55 succeeds the popular SR51-II in the line of TI professional calculators. Key additional features, not found on the SR51-II, include an expanded memory system (10 memories with full memory arithmetic) and simple programmability for repetitive problem solving. The "learn mode" allows the user to program keystroke sequences of up to 32 steps.

Included with the advanced slide rule functions on the TI-55 are the statistical functions: mean, standard deviation, variance, linear regression with correlation. These features plus TI's unique Algebraic Operating System make the TI-55 a powerful tool, whatever your field of endeavor.

A 175 page text, "Calculator Decision Making Sourcebook", is included with the calculator to help the owner use the power of statistics, math, and simple programmability for making faster, better decisions. The TI-55 can be found at your local TI calculator dealer. Suggested retail price is $60.

ACT V THE MBA

Even though you own a programmable calculator, the MBA calculator may be able to come to your aid. The MBA is a powerful, yet inexpensive, business calculator featuring preprogrammed financial and statistical functions and key programmability which allows the user to store up to 32 program steps. It enables you to write specialized financial or statistical programs even more quickly than on the TI-59.

TI has just announced a new applications book called "Calculator Analysis For Business and Finance" which will be part of the MBA package. This softcovered book is one of the most comprehensive applications sources yet available for a specific calculator (it's written around the MBA's features and functions). Chapters and topics of this book include: money at work; general annuities; accounting; personal and business finance; bond analysis; real estate; marketing and forecasting; quantitative methods.

The book/calculator combination should prove a tremendous asset to both the business professional and advanced business student alike as it covers the spectrum from simple interest to advanced financial analysis. The MBA can be found at your local TI calculator retail store. Suggested retail price is $80.

how computers and programming are already a part of life today, as well as introducing and clarifying some of the terminology involved in the field. The guide then moves on to a carefully sequenced set of activity lessons that cover such topics as: Basic "Straight-Line" Programs; Unconditional Transfers; Conditional Transfers; Labeled Program and Program Segments; Subroutines; Editing and Debugging; Documentation; and Applications/Techniques from a wide variety of basic course areas. Each learning activity takes full advantage of the fact that the student can actually explore programming on the calculator in an "on line" interactive way. Trial and error techniques, open ended explorations, and extended projects are possible with no real machine time limitations to the students.

Since the essential concepts and techniques used in programming calculators like the TI-57, 58 and 59 are directly related to those used with large computer systems, the course will help prepare students in high school and beyond who are interested in careers involving computers and programming. The hand-held calculator is a powerful new learning tool for programming because it's immediately available to teachers and students who otherwise would have to wait for access to keypunches, terminals and larger computers. Real news for schools is that costs for implementing calculator based programming courses, both initial and continuing, can be **orders** of magnitude less than those involving larger machines or terminals. Calculators are inexpensive, rugged, and accessible, yet powerful enough to allow instruction of all the programming basics.

For further information write:

Texas Instruments Incorporated
Educational Products Marketing
P. O. Box 5012, M/S 45
Dallas, Texas 75222

FROM THE ANALYST'S DESK

- Congratulations to **Mr. Sam Block Jr.** (Chicago, Illinois) whose program, "Oscillators; Two Variable Moving Average", was the first PPX-59 outside program submission to be accepted for inclusion in the next PPX-59 Software Catalog.
- The Challenge and Exploitation of Optimizing (November, PPX Exchange) contains an error in the random number routine. The insertion of 1 SUM 67 in the routine should be between x and RCL (not *π and x). Sorry about that!
- The program "Regression X'X,Y/Multiple Linear Regression (PPX-59 #208002) and "Cholesky Decomposition 5x5" (PPX-59 #208006) have been combined into one program, "Multiple Linear Regression-5 Independent Variables (PPX-59 #208007). Therefore, if either program #208002 or #208006 is ordered, program #208007 will be sent.
- The program "SR-52 Program Listing" (PPX-59 #908010) is inaccurately described in the PPX-59 Software Catalog. The description should read, "Alphanumeric keycode descriptors are added to an SR-52 program listing using a TI-59/PC-100A. Documentation aid for the SR-52 program writer." This program is often used by PPX analysts, but would probably be of low utility to most TI-59 owners.
- Keeping in mind the large amount of effort required to correctly document a program, we would like to remind our members of a few key items to help insure program acceptance.

1. All submissions should be typed or neatly printed in **black** ink. BLUE INK OR PENCIL DOES NOT REPRODUCE LEGIBLY. Many programs submitted in blue have been found unacceptable for inclusion in the catalog because of inability to be reproduced.
2. PPX-52 and PPX-59 submission forms are specially designed for submitting programs to PPX-52 and PPX-59. Please do not use the programming forms that came with your calculator for submissions. Also, please use original forms, not photocopies of PPX-52/PPX-59 forms. Additional sets of these forms are available free of charge upon request.
3. Magnetic cards should not be stapled, taped, or paper clipped to submissions. Please enclose magnetic cards in a small envelope or plastic bag. Paper clips tend to bend cards. Glue residues from tape remain on the card after the tape has been removed and may jam the card reader. Holes left from staples often cause read errors.
4. The use of special characters (e.g. Greek letters) in the title and the Submission Abstract portions of your submissions should be avoided. Please limit your title to 50 characters and your abstract to a minimum.

ANSWERS TO THE TI-59 CHALLENGE

1. dsz (98)	11. overflow; underflow (28)	
2. 110 (127)	12. user defined keys (72)	
3. 220 (116, Programming Workbook: 86)	13. second half; program (63)	
4. 60-69; stack (Programming Workbook: 86)	14. calculate (4)	
5. 00 (44, 98)	15. INV (26)	
6. A; SBR A; SBR 110 or SBR 112 (101, 105)	16. Basic Library (8)	
7. 11; 10 (33)	17. direct register arithmetic (55)	
8. rset (97)	18. Professional Program	
9. run; calculate; learn (4)	19. program	
10. 98 and 99 (Programming Workbook: 86)	20. Keyword Index	

ANSWERS TO HOW WELL DO YOU KNOW YOUR SR-52

ACROSS	34. regression	13. absolute
5. variance	38. recall	14. algebraic
8. personal	39. return	15. integer
10. magnetic programming	40. label listing	17. logical
11. memory	41. subroutine	18. list
12. reciprocal	42. learn	21. diagnostics
15. insert	**DOWN**	22. factorial
16. floating	1. decimal	23. tangent
17. label	2. characters	25. transfer
19. AOS	3. program	28. advance key
20. solid	4. data	30. angular
24. software	6. algorithm	31. t register
26. trace	7. operating	33. optimize
27. variable	8. PC-100A program listing	35. reset
29. rectangular	9. parentheses	36. calculator
32. notation	12. register	37. square

The page number on which the answer can be found in the Owner's Manual (unless otherwise noted) is enclosed in parentheses.

Rate yourself according to the following chart:

Number Correct	Relationship
18-20	Intimate Companions
15-17	Blood Brothers
7-14	Friends
1-6	Acquaintances
0	(still in the carton)

The PPX Exchange is published every other month and is the only newsletter published by Texas Instruments for SR-52 and TI-59 owners. You are invited to submit items you feel are of general interest to other SR-52 or TI-59 users. Inputs should be limited to 3 double-spaced typed pages. Please forward your newsletter inputs and any questions to:

TEXAS INSTRUMENTS PPX
P. O. Box 53
Lubbock, TX 79408