TI-MIX News

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North Texas RIX Holds Best Meeting Yet

By Melinda Staud
Business Computer Systems Corp.

DALLAS, TX — The North Texas Regional Information Exchange (RIX) held their most successful meeting to date on Feb. 16 at Texas Instruments in Dallas.

The Feb. 16 meeting of the North Texas RIX attracted the most number of attendees yet.

After a brief business meeting, Bob Grimmer, TI (Austin) Business Systems Products manager, gave a presentation. He began his presentation by reassuring everyone that TI 990 hardware has a very bright future. Bob outlined the current TI marketing organization and the function of each group. He reviewed the Business System 200, 300, 600 and 800 systems. Bob pointed out that the CPUs have been redesigned to comply with the FCC EMI emission regulations. He presented the 1983 development goals for hardware, communications, and software in its transition from the DS990 to the Business Systems products. Bob supported his presentation with a new catalog of the combined products.

Carol Wiley, TI (Austin) DX10 Release manager, followed Bob with a presentation that explained how to get systems to function better and support more devices. Carol described sysgen parameters, buffer management, I/O buffers, the ITC area, powerfailure, auto media recovery, SCI, front panel displays, and disk organization. She emphasized that file size was very important for disk efficiency. Carol also reviewed hardware considerations such as disk and CPU speed, amount of memory, line printer speed, and table governors. She concluded her talk by discussing the differences between DX10 releases 3.4 and 3.5, and plans for the 3.6 release.

Speakers at the North Texas RIX (L to R): Bob Grimmer, Carol Wiley, and Rick Spurgeon.

Rick Spurgeon of Computers for Business, Inc., involved everyone in his presentation by asking what type of peripherals each person in the audience used with their TI 990. He then described peripheral devices for the TI 990 which included printers, memory boards, modems, credit card embossers, plotters, and software emulation boards. Rick suggested that advantages and disadvantages be weighed before a decision is made to use non-TI devices. □

New Staff Member

Ellen Ann Gober began working in the TI-MIX office at the end of January. Her job responsibilities include processing advertising and MIX-TIPs for publication in the *TI-MIX News.* Ellen Ann also collected the written texts of symposium presentations and produced proceedings for each symposium session.

Originally from Monroe, LA, Ellen Ann taught business education at a college in Memphis, TN before moving to Austin. □

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TI-MIX (Texas Instruments Minicomputer Information Exchange) is an organization for users of TI computers and peripherals. The purpose of TI-MIX is to promote the exchange of information between users and TI. Membership in TI-MIX is open to any person with an interest in TI computers and peripherals. No dues are charged. TI-MIX was incorporated as a nonprofit corporation in 1974, TI-MIX Europe in 1977, and TI-MIX Asia in 1982. These three organizations serve a worldwide membership of TI users. Each TI-MIX organization is governed by a General Board elected at large by the general membership. The TI-MIX staff consists of TI personnel who perform the administrative functions of the organization as directed by the General Board.

Florida RIX Covers TI Professional Computer

By Patti Pratt
TI-MIX Staff

HOLLYWOOD, FL – "The Texas Instruments Professional Computer has been judged superior to anything in its class in the marketplace," said Thomas Reich, TI (Ft. Lauderdale) Reseller Channel Sales manager. Tom's presentation on the TI Professional Computer was followed by an actual demonstration given by Charlie Flaitz, TI (Ft. Lauderdale) Systems analyst. More than 60 people attended the reorganizational meeting of the Florida Regional Information Exchange (RIX) held on March 9.

Tom also described the features on the TI Business System Series. He commented on how this product line can reduce costs and increase performance. The meeting continued with a multimedia overview describing Texas Instrument's growth and how TI computers are being used in some of TI's larger applications.

Paul Spiewak of Unilaw Systems, Inc., Miami, FL, gave a preview of the presentation he will be giving at the New Orleans TI-MIX symposium. He said, "Optimization of resources, minimization of costs and risks, and maximization of profits and results are the three major advantages of vertical marketing." Paul described factors in analyzing, locating, and developing unique advantages in the marketplace for the vertical software marketer.

Also attending the meeting were Patti Pratt of the TI-MIX staff and Richard Max of Synkote Paint Co., RIX Support Committee chairman for the TI-MIX General Board. Patti showed slides of the TI-MIX organization and the upcoming symposium. Richard spoke about TI-MIX board activities and the RIX structure in general.

Officers elected were: Paul Spiewak of Unilaw Systems, Inc., as chairman, Doug Mendoza of Computer Brokers as program director, and Joe Hanes of MIS, Inc. as communications secretary. The officers plan to send a questionnaire to members in the Florida RIX area to determine the format and location of future meetings. □

Officers for the Florida RIX are (L to R): Doug Mendoza of Computer Brokers, program director; Paul Spiewak of Unilaw Systems, Inc., chairman; and Joe Hanes of MIS, Inc., communications secretary.

Illinois Attendees Share Problems

By Jerry Heydemann
The Computer Laboratory

ROSEMOUNT, IL – The first 1983 meeting for the Illinois RIX (Regional Information Exchange) was held at Heuer's Restaurant on Feb. 17. The theme of the meeting was "share a problem." Members were asked to present a problem they face or had solved in their use of TI computer systems.

Three major problem areas were discussed: compatibility between various releases of the COBOL compiler and DX10 operating system, methods of backup and recovery for small and large installations, and the degree of satisfaction of end users with the products and services of turnkey OEMs. End user and OEM members presented their views from both sides of the relationship.

This meeting provided topics for future Illinois RIX meetings. □

Attendees Experience Hands-On Demo of TI Professional Computer

By Price Burlington
San Joaquin Systems

MENLO PARK, CA — The new TI Professional Computer, code-named Pegasus while in development, was the topic of interest at the Feb. 8 meeting of the Northern California regional meeting (RIX). John Perry, TI (San Francisco) analyst, gave a slide presentation which outlined TI's marketing plan for the Professional Computer and emphasized the system's key features.

The TI Professional Computer features include high-resolution color graphics, a low-profile keyboard, a broad base of operating systems and application software, and network communications. A basic system includes a monochrome display, keyboard, a system unit with 64K bytes of RAM, and an integral 320K byte floppy disk drive, along with many upgrade options available. Future enhancements to the TI Professional Computer include voice management and natural language capability.

RIX members saw a demonstration of the TI Professional Computer and were able to get hands-on experience with the new style keyboard. The group's reaction was very favorable to the new TI addition. Attendees felt that the new TI Professional Computer would bring increased visibility and public awareness to the corporation.

The meeting was hosted by Jim Ellis at the U.S. Geological Survey Center in Menlo Park. Also present to answer questions was Joe Keller, TI (San Francisco) analyst. The next meeting of the Northern California RIX will be after the TI-MIX New Orleans symposium. □

Software Test Plan Standards Available

Management and Computer Services, Inc. (MACS) has released a portfolio of test plan standards that can be adapted by data processing departments faced with the need to improve software staff productivity and/or implement quality assurance programs. The standards, reflecting a range of operating environments, address the structuring of a test environment and the development of procedures to control the substantial portion of the life cycle effort devoted to testing.

The standards were developed in conjunction with hundreds of clients over the last five years. The company says that firms implementing the techniques are experiencing a 20 percent reduction in life cycle developments and up to an 80 percent reduction in ongoing maintenance costs. The use of the standards does not require any of MACS's software products to gain improvements.

The package may be obtained, at no charge, by calling MACS, (215) 648-0730 or writing to Management and Computer Services, Inc., Great Valley Corporate Center, Valley Forge, PA 19782. □

Call for General Board Nominations

If you are interested in TI-MIX activities and would like to serve on the TI-MIX General Board, now is the time to act. Board meetings are held in the spring, fall, and summer. At these meetings the board makes decisions regarding TI-MIX goals and objectives, and provides direction to the TI-MIX staff. Board members also present the concerns of the TI-MIX membership to Texas Instruments management. The TI-MIX Nominating Committee is looking for interested and hardworking individuals to serve as board members.

To serve on the board you must meet the following requirements:

- Potential board nominees must submit biographies, portraits, statements of intent for running for the board, and nominating petitions no later than May 31, 1983 (60 days before the ballots are mailed). Candidates nominated unanimously by the Nominating Committee will have petition requirements waived. Nominating petitions must contain signatures of at least 25 TI-MIX members of record in good standing, not more than two of which can be from the same company. These petitions must contain a statement from the nominee whereby he or she agrees to serve a two-year term of office if elected.
- To be eligible for nomination, the nominee must have attended a TI-MIX symposium within the past three years, and have been a member of TI-MIX for at least one year prior to submitting his or her nominating petition. Candidates must be active members of TI-MIX. Active participation involves serving on a TI-MIX committee, serving as a RIX or SIIX officer, contributing to the TI-MIX library or *TI-MIX News,* and serving as a symposium session chairman or speaker.
- Two or more nominees for the General Board may not be employed by the same company. In the event that two or more petitions are received from employees of the same company, the earliest received petition shall be the one considered for acceptance.
- All nominees are subject to the approval of the Nominating Committee.

The current board consists of six voting members, one nonvoting member, and the chairman. The one-year terms of three current board members will expire this year. The chairman, as in the past, will be elected by the existing board during the spring board meeting. The TI-MIX Bylaws limit board members to five consecutive years of service.

More details about the election can be obtained by contacting any board member or the TI-MIX office at TI-MIX, M/S 2200, P.O. Box 2909, Austin, Texas 78769 or phone (512) 250-7151. □

Model 20 Meets the Challenge of Non-Stop Student Use

By Ruth van Wagner
Pacific Career College

CAMARILLO, CA — Pacific College in Camarillo, CA was preparing to institute a computer programming course of study in the spring of 1981. One of the major problems encountered was choosing a computer system that would meet the four selection criteria.

1. The equipment had to be from an easily recognizable major computer manufacturer so that prospective employers would have confidence in the graduate's acquired skills.
2. The system had to be flexible to allow for expansion as the number of students increased.
3. Good instructional software had to be available.
4. Most importantly, the equipment had to be reliable.

The college's goal was to have 100 students enrolled in the program within the first year of operation. This meant that the equipment would have an aggregate usage of over 1,000 hours per week. The instructional activities, therefore, could not wait for repairs to be made.

After considerable study, the administration of Pacific Career College decided that the system which met all the criteria was the Texas Instruments DS990. In May 1981, a Model 20 with 576K bytes memory and 16 911s was installed and went right to work. The college's faculty and staff have not been disappointed.

The curriculum that was followed for those first students was based on guidelines set forth in the National Computer Careers program. In both the day and evening programs of 42 and 48 weeks respectively, four languages are taught: BASIC, COBOL, FORTRAN, and Pascal. Additionally, courses in communications, mathematics, problem solving, system analysis and design, file organization, and accounting are taken by all students.

Through attendance at seminars, meetings with employers and membership in data processing societies, the college staff has tried to remain current with industry trends. This has resulted in the addition of courses in program design and construction and in microcomputer programming to the curriculum. Also, an externship program is being implemented among 990 users to give the students some practical experience. It also allows prospective employers first-hand experience with the capabilities of graduates before hiring.

Pacific Career College has found the languages on the 990 system to follow the national standards well and be highly compatible with other equipment. Graduates are successfully functioning not only in businesses using Texas Instruments computers, but in those using other manufacturer's hardware as well. Satisfied employers return to the school's career placements when additional employees are needed.

From its start as a legal arts college, Pacific Career College now includes several fields of study in addition to legal arts and computer programming. These include computer accounting, legal and executive secretarial training, medical assistants and word processing. The computer department itself has grown to 135 students.

As part of this growth the computer usage has also grown. The system however, has proven to be able to meet the original four criteria. It is efficient, able to expand and most of all, reliable. In the past 21 months, the Model 20 has been down for a total of only three days!

Since the college is located in southern California, a favorite vacation spot, the faculty and staff extend an invitation to all TI-MIX members to visit the facilities as part of a trip itinerary. □

For Your Information:

TI Software Solutions Program

AUSTIN, TX — Texas Instruments has implemented an application software program for today's marketplace. Designed to help resellers of TI computer systems, the Software Solutions Program exists to provide an easy access to a wide range of appliation software products. The program consists of four parts designed to provide the level of support needed for various resellers.

Application Distribution Center (ADC)
The ADC provides application software developed and totally supported by third-party software manufacturers. Each product considered for the ADC is evaluated against established criteria that include: functionality, third-party vendor's ability to support the software, market demand, documentation, and reliability. Products selected are stocked by TI, supported by the third-party vendor, and available to all TI resellers.

Third-Party Software Directory
Many specialized third-party software packages are of interest to specific segments of the marketplace. As with the products in the ADC, these software products are evaluated by the Software Solutions Program staff against established criteria, but supported by the third-party vendor. The Third-Party Software Directory identifies and describes these programs and provides TI resellers with the means for contacting the vendor directly.

Software Referral Service
Anyone with software for resale on TI computer systems may list those software products in the Software Referral Service Directory. The directory is maintained as a resource to TI OEMs and Authorized Dealers. Prospective purchasers of these application packages who contact TI are referred to a number of vendors. As with the ADC and the Third-Party Directory, suitability, performance, and support of any software pack-

TI Software Solutions (continued)

ages will be between the purchaser and the software manufacturer.

For information on the Texas Instruments Software Solutions Program contact your local TI sales office or write to Texas Instruments, Software Solutions Program, M/S 2107, P.O. Box 2909, Austin, TX 78769. □

If you're reading this at the New Orleans symposium, welcome to TI-MIX 1983.

If you're not, you are missing a great symposium. See an upcoming issue of the *TI-MIX News* for coverage of the symposium.

Contribution Profile: COBOL Square Root Routines

By Jim Fisher of I.C. System, Inc.
TI-MIX Technical Contributions Committee Chairman

The response to my request for a square root routine for COBOL (see page 14, January 1983 *TI-MIX News*) has been overwhelming and very much appreciated. In this issue, several of the MIX-TIPs deal with a variety of methods to calculate a square root. I even received a copy of a square root routine in BAL (IBM's assembly language) which has been converted to TI assembler and is now in the TI-MIX library, part number 90-038-010. (See Library Updates in this issue.)

The assembly language version simulates the long-hand method of calculating a square root. This particular method lends itself quite nicely to COBOL on TI computers and executes at about the same speed as a typical COBOL divide. It will accept a numeric unsigned data item (PIC 999 . . .) of any legal size and produce an unsigned numeric result. All of the COBOL move and truncation rules are followed properly and a test program is included to demonstrate its operation. The routine has been quite useful in an application where a standard deviation and standard error of measurement had to be calculated (both of which need the square root operation).

The response to the quest for a COBOL square root illustrates how effective TI-MIX can be. The organization was formed to serve as a vehicle for the exchange of information, and in this case, the exchange was not only timely, but extremely valuable. All members are encouraged to use TI-MIX in this manner to help solve problems or to satisfy a particular need. Your chances are good that there is someone out there willing to help. □

MIX-TIPs (Programming Tips)

MIX-TIPs are short technical articles with listings or diagrams describing a procedure or programming tip of interest to readers. The set of MIX-TIPs in this issue can be purchased on computer media for $30. Call the TI-MIX office for information. Submissions of MIX-TIPs should be sent (on media if possible) to the *TI-MIX News* office. All submissions are reviewed by a board of TI-MIX members and their comments are included when the MIX-TIP is published. If you would like to serve on the MIX-TIP Review Board, contact the TI-MIX office.

Handling SCI Input Errors

By Keith T. Clayton
Information Management Technologies, Inc.
Chicago, IL

The simplest SCI procedures merely pass input parameters to a program. The program has various means of indicating a bad parameter. For exampie, a program might generate a message such as "0003 ILLEGAL PARAMETER." While users do not find this sort of error message helpful, it is usually not feasible to add better messages to an existing program. As a result, you end up trying to improve the SCI procedure so that it checks the input parameters for reasonableness. As long as there are only one or two parameters, this is fine. The SCI ".PROMPT" primitive makes it easy to get additional parameters or correct wrong ones. As the number of parameters increases, however, a (formerly) simple SCI procedure expands to several pages.

You can avoid most of this complexity by the use of a simple but little-known feature of SCI, recursion. Any SCI procedure may call itself provided there is some terminating condition. To handle an input error by using recursion, all you need to do is: display an error message, call the procedure you are in, and use the ".EXIT" primitive to escape from the procedure.

The user will see the error message, press return, and see a fresh set of prompts. The user can either answer the prompts again, or press the command key to stop.

The following sample procedure demonstrates this approach:

```
.PROC RECUR (RECURSIVE SCI PROCEDURE),
VALUE = STRING (WRONG)
MSG T="THE VALUE IS &VALUE"
.IF "&VALUE",NE,"CORRECT"
  RECUR
  .EXIT
.ENDIF
MSG T="THE REAL WORK OF THE COMMAND WOULD BE DONE NOW"
.EOP
```

This procedure will keep asking you for the "VALUE" until you type in the word "CORRECT", you hit the command key, or SCI's depth of nesting is exceeded (you get over 20 tries). Error handling can be further improved by using synonyms to remember the values previously input, and by displaying the values of these synonyms as the initial values. For example:

```
.PROC RECUR (RECURSIVE SCI PROCEDURE),
VALUE = STRING (@$VAL)
.SYN $VAL=&VALUE
MSG T="THE VALUE IS @$VAL"
.IF "&VALUE",NE,"CORRECT"
  RECUR
 .EXIT
.ENDIF
MSG T="THE REAL WORK OF THE COMMAND WOULD BE DONE NOW"
.SYN $VAL=""
.EOP
```

Alternately, values can be selectively passed as prompt responses. You must be careful not to pass the bad values if you use this method, as this can create unexpected results. For example:

```
.PROC RECUR (RECURSIVE SCI PROCEDURE),
VALUE = STRING
MSG T="THE VALUE IS &VALUE"
.IF "&VALUE",NE,"CORRECT"
  RECUR VALUE=&VALUE
  .EXIT
.ENDIF
MSG T="THE REAL WORK OF THE COMMAND WOULD BE DONE NOW"
.EOP
```

This appears to be the equivalent of the synonym method above, but actually will not let you correct a value (try it). Passing the prompt "VALUE" satisfies all the required prompts for the procedure, so no prompts are issued.

Reloj Digital (Display Clock)

By Sandor Lenin Bernard
Litografia Zadik, S.A.
Guatemala

This BASIC program displays a digital clock on your CRT with solid numbers approximately 1 × 2 inches large. it also has an alarm.

```
 1 !***************************RELOJ DIGITAL*****************************
 2 ! Este programa fue creado por la mente genial de SANDOR LENIN BERNARD
 3 ! marca el inicio de un genio de las computadoras.
 4 PRINT ERASE ALL
 5 DIM V(6)::DIM C(6)
 6 C(1)=-1::C(2)=-1::C(3)=-1::C(4)=-1::C(5)=-1::C(6)=-1
 8 FOR I=12 TO 16::PRINT AT(I,23);"00                00";::NEXT I
 9 PRINT AT(14,23);"                  ";
10 GOTO 93
12 PRINT AT(10,T+2);RPT$(CHR$(25),3);
13 PRINT AT(11,T+1);RPT$(CHR$(25),4);
14 PRINT AT(12,T);RPT$(CHR$(25),5);
15 FOR I=13 TO 16 ::PRINT AT(I,T+2),RPT$(CHR$(25),3);::NEXT I
16 FOR I=17 TO 18 ::PRINT AT(I,T+1);RPT$(CHR$(25),5);::NEXT I
17 RETURN
19 FOR I=10 TO 11::PRINT AT(I,T);RPT$(CHR$(25),6);::NEXT I
20 FOR I=12 TO 13::PRINT AT(I,T+5);CHR$(25);::NEXT I
21 PRINT AT(14,T);RPT$(CHR$(25),6);
22 FOR I=15 TO 16::PRINT AT(I,T);CHR$(25);::NEXT I
23 FOR I=17 TO 18::PRINT AT(I,T);RPT$(CHR$(25),6);::NEXT I
24 RETURN
26 PRINT AT(10,T);RPT$(CHR$(25),6);
27 PRINT AT(11,T);RPT$(CHR$(25),7);
28 FOR I=12 TO 16::PRINT AT(I,T+6);RPT$(CHR$(25),2);::NEXT I
29 PRINT AT(14,T+4);RPT$(CHR$(25),3)&" ";
30 PRINT AT(17,T);RPT$(CHR$(25),7);
31 PRINT AT(18,T);RPT$(CHR$(25),6);
32 RETURN
34 PRINT AT(10,T+4);RPT$(CHR$(25),3);
35 PRINT AT(11,T+3);RPT$(CHR$(25),4);
36 PRINT AT(12,T+2);RPT$(CHR$(25),2)&" "&RPT$(CHR$(25),2);
37 PRINT AT(13,T+1);RPT$(CHR$(25),2)&"  "&RPT$(CHR$(25),2);
38 PRINT AT(14,T);RPT$(CHR$(25),2)&"   "&RPT$(CHR$(25),2);
39 PRINT AT(15,T);RPT$(CHR$(25),8);
40 FOR I=16 TO 18::PRINT AT (I,T+5);RPT$(CHR$(25),2);::NEXT I
41 RETURN
43 FOR I=10 TO 18::PRINT AT(I,T);RPT$(CHR$(25),6);::NEXT I
44 FOR I=12 TO 13::PRINT AT(I,T);RPT$(CHR$(25),2)&"    ";::NEXT I
45 PRINT AT(16,T);"    "&RPT$(CHR$(25),2);
46 RETURN
48 PRINT AT(10,T+3);RPT$(CHR$(25),4);
49 PRINT AT(11,T+2);RPT$(CHR$(25),2);
50 PRINT AT(12,T+1);RPT$(CHR$(25),2);
51 PRINT AT(13,T);RPT$(CHR$(25),2);
52 FOR I=14 TO 17::PRINT AT(I,T);RPT$(CHR$(25),7);::NEXT I
53 FOR I=15 TO 16::PRINT AT(I,T+2);"   ";::NEXT I
54 PRINT AT(18,T+1);RPT$(CHR$(25),5);
55 RETURN
57 FOR I=10 TO 11::PRINT AT(I,T);RPT$(CHR$(25),7);::NEXT I
58 PRINT AT(12,T+4);RPT$(CHR$(25),3);
59 PRINT AT(13,T+3);RPT$(CHR$(25),3);
60 PRINT AT(14,T+2);RPT$(CHR$(25),3);
61 FOR I=15 TO 18::PRINT AT(I,T+1);RPT$(CHR$(25),3);::NEXT I
62 RETURN
64 PRINT AT(10,T+1);RPT$(CHR$(25),4);
65 PRINT AT(11,T);RPT$(CHR$(25),6);
66 PRINT AT(12,T);RPT$(CHR$(25),2)&"  "&RPT$(CHR$(25),2);
67 PRINT AT(13,T);RPT$(CHR$(25),6);
68 PRINT AT(14,T+1);RPT$(CHR$(25),4);
69 FOR I=15 TO 16::PRINT AT(I,T);RPT$(CHR$(25),2)&"  "&RPT$(CHR$(25),2);
70 NEXT I
71 PRINT AT(17,T);RPT$(CHR$(25),6);
72 PRINT AT(18,T+1);RPT$(CHR$(25),4);
73 RETURN
75 PRINT AT(10,T+1);RPT$(CHR$(25),5);
76 FOR I=11 TO 13::PRINT AT(I,T);RPT$(CHR$(25),2)&"  "&RPT$(CHR$(25),2);
77 NEXT I
78 PRINT AT(14,T+1);RPT$(CHR$(25),6);
79 PRINT AT(15,T+4);RPT$(CHR$(25),3);
80 PRINT AT(16,T+3);RPT$(CHR$(25),3);
81 PRINT AT(17,T);RPT$(CHR$(25),5);
82 PRINT AT(18,T);RPT$(CHR$(25),4);
83 RETURN
85 PRINT AT(10,T+2);RPT$(CHR$(25),4);
86 PRINT AT(11,T+1);RPT$(CHR$(25),6);
87 FOR I=12 TO 16::PRINT AT(I,T);RPT$(CHR$(25),2)&"  "&RPT$(CHR$(25),2);
88 NEXT I
89 PRINT AT(17,T+1);RPT$(CHR$(25),6);
90 PRINT AT(18,T+2);RPT$(CHR$(25),4);
91 V(W)=0
92 RETURN
93 V(1)=VAL(SEG$(TIME$,1,1))::V(2)=VAL(SEG$(TIME$,2,1))
94 V(4)=VAL(SEG$(TIME$,5,1))::V(5)=VAL(SEG$(TIME$,7,1))
95 V(3)=VAL(SEG$(TIME$,4,1))::V(6)=VAL(SEG$(TIME$,8,1))
96 PRINT AT(24,1);TIME$
97 IF V(4)=0 AND V(5)=0 AND V(6)=0 AND V(3)=0 THEN 98 ELSE 99
98 FOR ZX=1 TO 30::PRINT AT(1,1);CHR$(7);::NEXT ZX
99 FOR W=1 TO 6
100 IF V(W)<>C(W)THEN GOSUB 103
101 NEXT W
102 GOTO 93
103 IF W=1 THEN T=3
104 IF W=2 THEN T=14
105 IF W=3 THEN T=28
106 IF W=4 THEN T=39
107 IF W=5 THEN T=53
108 IF W=6 THEN T=64
109 FOR K=10 TO 18::PRINT AT(K,T);"      ";::NEXT K
110 IF V(W)=0 THEN V(W)=10
111 ON V(W) GOSUB 12,19,26,34,43,48,57,64,75,85
112 C(W)=V(W)
113 RETURN
```

Reviewers' Comments:

- *For more on clocks see:* TI-MIX *library part number 90-010-014 "Screen Clock;" "Clock Program in BASIC" page 9, May 1982* TI-MIX *News; and "SCI Prompt Time Display" page 6, September 1981* TI-MIX *News.*

I think there is a bug in the program which causes the numbers to be displayed incorrectly. It may be a typographic error, but after a couple of updates the number 2 is not displayed correctly.

COBOL Square Root

By Jay Ransom
Sawyer College
Ventura, CA

In response to Jim Fisher's request for a COBOL Square Root (see page 14, January 1983 *TI-MIX News),* this will

work. It gives 17-digit accuracy but it is very slow.

```
IDENTIFICATION DIVISION.
PROGRAM-ID.  MATH-FUNCTIONS.

ENVIRONMENT DIVISION.
CONFIGURATION SECTION.
SOURCE-COMPUTER. TI-990.
OBJECT-COMPUTER. TI-990.

DATA DIVISION.
WORKING-STORAGE SECTION.
1 X    PIC 9(8)V9(9).
1 Y    PIC 9(8)V9(9).
1 PRINT-SQRT.
    2 YY  PIC 9(8).9(9).
    2 FILLER  PIC XXX VALUE SPACES.
    2 XX  PIC 9(8).9(9).

PROCEDURE DIVISION.
CYCLE.
    ACCEPT Y PROMPT LINE 5 POSITION 30.
    IF Y = ZERO STOP RUN.
    PERFORM SQRT.
    MOVE Y TO YY.  MOVE X TO XX.
    DISPLAY PRINT-SQRT LINE 10 POSITION 20 ERASE.
    GO TO CYCLE.

SQRT.
    MOVE 1 TO X.
    IF X NOT < 10000                MOVE 100          TO X.
    IF X NOT < 100000000            MOVE 10000        TO X.
    IF X NOT < 1000000000000        MOVE 1000000      TO X.
    IF X NOT < 10000000000000000    MOVE 100000000    TO X.
    IF X NOT > .0001                MOVE .01          TO X.
    IF X NOT > .00000001            MOVE .0001        TO X.
    IF X NOT > .000000000001        MOVE .000001      TO X.
    IF X NOT > .0000000000000001    MOVE .00000001    TO X.
    PERFORM REPEAT-SQRT 15 TIMES.

REPEAT-SQRT.
    COMPUTE X = X * (3 * Y + X * X) / (Y + 3 * X * X).
```

COBOL Square Root Source Listing

By Nigel R. Trewartha
Triumph-Adler
West Germany

```
IDENTIFICATION DIVISION.
************************************************************************
****
****                    COBOL UTILITY ROOTER
************************************************************************

 PROGRAM-ID.                              ROOT.
 AUTHOR.                                  TREWARTHA.
 DATE-WRITTEN.                            7-28-82
 ENVIRONMENT DIVISION.
 CONFIGURATION SECTION.
 SOURCE-COMPUTER.                         990.
 OBJECT-COMPUTER.                         990.
 SPECIAL-NAMES.
     DECIMAL-POINT IS COMMA.
 DATA DIVISION.
****************
 WORKING-STORAGE SECTION.
****************
 77 INPUT-CONVERT                         PIC 99999V9999 COMP-3.
 77 ROOTER                                PIC 9(10)V99999999 COMP-3.
 77 XN                                    PIC 9(10)V99999999 COMP-3.
 77 DIV                                   PIC 9(10)V99999999 COMP-3.
 SCREEN SECTION.
 77 INPUT-NUMBER                          PIC 99999,9999.
 77 DISPLAY-XN                            PIC Z(9)9,99999999.
 77 AGAIN-L                               PIC X.
 PROCEDURE DIVISION.
 MAIN SECTION.
 PROG-START.
     DISPLAY "INPUT NUMBER: " LINE 10 POSITION 1.
 MAIN-LOOP
     ACCEPT INPUT-NUMBER LINE 10 POSITION 15.
     MOVE INPUT-NUMBER TO INPUT-CONVERT.
     DIVIDE 2,00 INTO INPUT-CONVERT GIVING XN.
************************************************************************
***                  START OF ROOT, MODIFY ABOVE AS EITHER
***                     A PERFORM OR A LINKAGE SECTION.
************************************************************************
 INTERATION.
     DIVIDE XN INTO INPUT-CONVERT GIVING DIV.
     ADD DIV TO XN.
     DIVIDE 2,00 INTO XN.
************************************************************
*****       THE SQUARE ROOT FORMULA IS BASED ON THE
*****        STANDARD NEWTON INTERATION METHOD.
*****        X(N+1) = (XN+(N/XN))/2,00
****         WHERE N=THE NUMBER TO BE ROOTED.
****               XN= THE N'TH INTERATION.
****         IF X(N) * X(N) = N -+ ,00000001 THEN
****         INTERATION STOPS.
************************************************************
     MULTIPLY XN BY XN GIVING ROOTER.
     SUBTRACT INPUT-CONVERT FROM ROOTER GIVING DIV.
     IF DIV > 0,000001   GO TO INTERATION.
     MOVE XN TO DISPLAY-XN.
     DISPLAY "ROOT   OF  " LINE 15 POSITION 1
             INPUT-NUMBER  LINE 15 POSITION 12
             " IS  "
             DISPLAY-XN.
 REPEAT-LOOP.
     DISPLAY "AGAIN     (Y/N) ? :" LINE 23 POSITION 1.
     ACCEPT AGAIN-L LINE 23 POSITION 19.
     IF AGAIN-L = "Y" GO TO MAIN-LOOP.
     IF AGAIN-L = "N" STOP RUN.
     GO TO REPEAT-LOOP.
```

DX10 Release 3.5 Assembly Listings

By Robert W. Hirn
National Health Delivery Systems, Inc.
Chicago, IL

To assembly language programmers who were disturbed when TI eliminated the blank line between the title and the first line of code on each page, the following patch to SDSMAC 3.5.0 will add an extra linefeed after the page number. Note: This extra line will not be counted with your "page length" prompt in XMA; therefore, you should decrease this number by one, or your code will be running off the bottom of the page.

```
MODIFY PROGRAM IMAGE
          PROGRAM FILE: .S$SDS$
     OUTPUT ACCESS NAME:
           MODULE TYPE: OV
      MODULE NAME OR ID: >20
                ADDRESS: >2540
      VERIFICATION DATA: >3020
                   DATA: >300A
              CHECKSUM:
   RELOCATION OF DATA?:
```

MAPK (SCI Procedure)

By Nigel R. Trewartha
Triumph-Adler
West Germany

MAPK is a simple procedure combining MD and MKF in order to determine KIF file attributes. A printout can be requested but the results will always appear on the screen.

```
MAPK (MAP KEY FILE),
KEY PATHNAME = *ACNM,
LISTING ACCESS NAME=*ACNM
.SYN $MD$="@&KEY"
.SYN OUT="@$LISTING"
MD PATH=@@$MD$,LIST=.SYS@ME
.DATA .SYS1@ME
*** NOT A KIF FILE ****
.EOD
MKF P=@$KEY,LIST=.SYS1@ME
.SYN $$CC=00000
AF,
INPUT=".SYS1@ME",
OUTPUT=".SYS@ME"
.IF @OUT,GE,"LP01"                ! FOR LP01 AND LP02
.IF @OUT,LT,"LP03"                ! CHANGE LPON+1 IF NEEDED
PF =".SYS@ME",LIST="@OUT"
```

```
.ENDIF
.ENDIF
.SHOW .SYS@ME                    ! IN ALL CASES SHOW RESULTS
 DF P=".SYS1@ME"
 DF P=".SYS@ME"
.SYN   $MD$ = ""
```

Reviewers' Comments:

- *See "Listing Indexed File Statistics" on page 4, in the September 1980* TI-MIX News *and "Update on LKA" on page 8, in the August 1981* TI-MIX News.

Newton Raphson Square Root Computation

By Howard Gerber
Texas Instruments
Cypress, TX

This progam computes square roots in COBOL using the Newton Raphson approximation method. It accepts an unsigned decimal number and produces an unsigned decimal number. The example program reads a 16 digit per line file with an assumed decimal point after the eighth digit. It computes the square roots of the numbers in "INFILE" and produces "OUTFILE" with the roots.

The basic iterative computation for a square root is: root = (root + x/root)/2, where the "root" on the left side of the equation is the next approximation, and "X" is the source number. The value of "lower-limit" determines the accuracy and speed. The smaller the value of "lower-limit," the more accurate and the slower the computation.

```
 IDENTIFICATION DIVISION.
 PROGRAM-ID. NEWTON-RAPHSON-SQUARE-ROOT-COMPUTATION.
 AUTHOR.  HOWARD GERBER.
 DATE-WRITTEN.  12 JAN 1983.
* * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*   THIS PROGRAM IS AN EXAMPLE OF COMPUTING SQUARE  *
*   ROOTS IN COBOL USING THE NEWTON-RAPHSON         *
*   APPROXIMATION METHOD.                           *
*   THE INTERNAL COMPUTATIONS ARE INTENTIONALLY     *
*   2 DECIMAL PLACES LARGER THAN THE EXTERNAL       *
*   VALUES TO INCREASE ACCURACY.                    *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 ENVIRONMENT DIVISION.
 CONFIGURATION SECTION.
 SOURCE-COMPUTER. TI990-12.
 OBJECT-COMPUTER. TI990-12.
 INPUT-OUTPUT SECTION.
 FILE-CONTROL.
      SELECT SOURCE-NUMBERS
           ASSIGN TO INPUT, "INFILE".
      SELECT OBJECT-NUMBERS
           ASSIGN TO OUTPUT, "OUTFILE".
 DATA DIVISION.
 FILE SECTION.
 FD SOURCE-NUMBERS LABEL RECORDS ARE OMITTED.
 01 SOURCE-NUMBER    PIC 9(8)V9(8).
 FD OBJECT-NUMBERS LABEL RECORDS ARE OMITTED.
 01 SQRT             PIC 9(8)V9(8).
 WORKING-STORAGE SECTION.
 01 ROOT             PIC 9(9)V9(9)  VALUE ZEROS.
 01 X                PIC 9(9)V9(9)  VALUE ZEROS.
 01 Y                PIC 9(9)V9(9)  VALUE ZEROS.
 01 SQUARED          PIC 9(9)V9(9)  VALUE ZEROS.
 01 DELTA            PIC 9(9)V9(9)  VALUE ZEROS.
 01 LOWER-LIMIT      PIC 9(9)V9(9)  VALUE 0.000000002 .
 01 COMPLETION-CODE PIC X.
     88 DONE                    VALUE "T".
/
 PROCEDURE DIVISION.
 INITIALIZATION.
     OPEN INPUT  SOURCE-NUMBERS,
          OUTPUT OBJECT-NUMBERS.
 PROCESS-LOOP.
      READ SOURCE-NUMBERS AT END GO TO CLOSE-FILES.
      PERFORM ROOT-COMPUTATION.
      WRITE SQRT FROM ROOT.
      GO TO PROCESS-LOOP.
* * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*    THE FOLLOWING 2 PROCEDURES PERFORM THE ACTUAL  *
*    SQUARE ROOT COMPUTATION.                       *
*    THESE ROUTINES TAKE "SOURCE-NUMBER", THE INPUT *
*    VALUE, AND "LOWER-LIMIT", THE MAXIMUM ACCURACY *
*    OF COMPUTATION, AND YIELD "ROOT", THE SQUARE   *
*    ROOT OF "SOURCE-NUMBER".                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 ROOT-COMPUTATION.
     MOVE "F" TO COMPLETION-CODE.
     MOVE ZEROS TO X.
     MOVE SOURCE-NUMBER TO X.
     MULTIPLY X BY LOWER-LIMIT GIVING DELTA.
     IF DELTA < LOWER-LIMIT
          MOVE LOWER-LIMIT TO DELTA.
     DIVIDE X BY 2 GIVING ROOT.
     PERFORM ITERATION UNTIL DONE.
 ITERATION.
     MULTIPLY ROOT BY ROOT GIVING SQUARED.
     SUBTRACT SQUARED FROM X GIVING Y.
     IF Y < 0 SUBTRACT Y FROM 0 GIVING Y.
     IF Y < DELTA MOVE "T" TO COMPLETION-CODE
     ELSE COMPUTE ROOT = ( ROOT + X / ROOT ) / 2.
* * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*          END OF SQUARE ROOT COMPUTATION         *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 CLOSE-FILES.
     CLOSE SOURCE-NUMBERS, OBJECT-NUMBERS.
     STOP RUN.
 END PROGRAM.
```

Show Week Day

By Jimmy Plemons
Diamond Rug & Carpet Mills, Inc.
Eton, GA

This program, callable from a COBOL program, will take a specified date and convert it into the weekday for that date. The date must be between 1980 and 1990. If an error should occur, an error code will be returned in the "return-error" field. An error code of "1" means that the date is out of range or invalid.

```
 IDENTIFICATION DIVISION.
 PROGRAM-ID. CONVRT.
 AUTHOR. Jimmy Plemons.
*INSTALLATION. Diamond Rug and Carpet Mills, Inc.
*****************************************************************************
*REMARKS.  Converts any date between 1980-1990 into day of week error code:  *
*          (1) Date out of range or invalid                                   *
*****************************************************************************
*WRITTEN. 01-18-83.
 ENVIRONMENT DIVISION.
 CONFIGURATION SECTION.
 SOURCE-COMPUTER.  TI-990-12.
 OBJECT-COMPUTER.  TI-990-12.
 DATA DIVISION.
 WORKING-STORAGE SECTION.
 01  D-TABLE                    PICTURE X(36) VALUE SPACES.
 01  RED-TABLE REDEFINES D-TABLE.
     03 DDAYS OCCURS 12 TIMES   PICTURE 999.
 01  R-TABLE                    PICTURE X(36) VALUE
       "000031059090120151181212243273304334."
 01  L-TABLE                    PICTURE X(36) VALUE
       "000031060091121152182213244274305335".
 01  DAY-TABLE                  PICTURE X(15) VALUE
              "712345671234567 ".
 01 R-DAY REDEFINES DAY-TABLE.
    03 THE-DAY OCCURS 15 TIMES  PICTURE X.
 01 WEEK                        PICTURE 9(3)V99 VALUE ZEROS.
 01 RED-WEEK REDEFINES WEEK.
    03 FILLER                   PICTURE XXX.
    03 WEEKDAY                  PICTURE 9.
    03 FILLER                   PICTURE X.
 01 SUB                         PICTURE 99 VALUE ZEROS.
 01 DAYS                        PICTURE 999 VALUE ZEROS.
 01 START-DAY                   PICTURE 99 VALUE ZEROS.
 01 WKDAY                       PICTURE 9 VALUE ZEROS.
 01 WORK-DATE.
    03  MM                      PICTURE 99 VALUE ZEROS.
    03  DD                      PICTURE 99 VALUE ZEROS.
    03  YY                      PICTURE 99 VALUE ZEROS.
 LINKAGE SECTION.
 01  PASSING-DATA.
    03 RETURN-DATE             PICTURE X(6).
    03 RETURN-DAY              PICTURE X(9).
    03 RETURN-ERROR            PICTURE X.
```

```
PROCEDURE DIVISION USING PASSING-DATA.
CLEAR-STORAGE.
   MOVE ZEROS TO SUB WEEK DAYS START-DAY WKDAY.
   MOVE R-TABLE TO D-TABLE.
   MOVE SPACES TO RETURN-ERROR RETURN-DAY.

CHECK-DATE.
   MOVE RETURN-DATE TO WORK-DATE.
   IF MM > 12 MOVE "1" TO RETURN-ERROR.
   IF MM < 01 MOVE "1" TO RETURN-ERROR.
   IF DD > 31 MOVE "1" TO RETURN-ERROR.
   IF DD < 01 MOVE "1" TO RETURN-ERROR.
   IF YY > 90 MOVE "1" TO RETURN-ERROR.
   IF YY < 80 MOVE "1" TO RETURN-ERROR.
   IF WORK-DATE NOT NUMERIC MOVE "1" TO RETURN-EROR.
   IF RETURN-ERROR = "1" GO TO EXIT-PROGRAM.

COMPUTE-YEAR.
   IF YY = 80 OR
      YY = 84 OR
      YY = 88 MOVE L-TABLE TO D-TABLE.

DATE-JULIAN.
   MOVE ZEROS TO SUB.
   MOVE MM TO SUB.
   MOVE DDAYS (SUB) TO DAYS.
   ADD DD TO DAYS.
   MOVE ZEROS TO SUB.

MONDAY.
    IF YY = 90 MOVE 1 TO START-DAY GO TO COMPUTE-WEEK.
TUESDAY.
    IF YY = 80 OR
       YY = 85 MOVE 2 TO START-DAY GO TO COMPUTE-WEEK.
WEDNESDAY.
    IF YY = 86 MOVE 3 TO START-DAY GO TO COMPUTE-WEEK.
THURSDAY.
    IF YY = 81 MOVE 4 TO STRAT-DAY GO TO COMPUTE-WEEK.
FRIDAY.
    IF YY = 82 OR
       YY = 88 MOVE 5 TO START-DAY GO TO COMPUTE-WEEK.
SATURDAY.
    IF YY = 83 MOVE 6 TO START-DAY GO TO COMPUTE-WEEK.
SUNDAY.
    IF YY = 84 OR
       YY = 89 MOVE 7 TO START-DAY GO TO COMPUTE-WEEK.

COMPUTE-WEEK.
   COMPUTE WEEK ROUNDED = DAYS / 7.
   IF WEEKDAY = 1 MOVE 1 TO WKDAY GO TO COMPUTE-DAY.
   IF WEEKDAY = 2 MOVE 2 TO WKDAY GO TO COMPUTE-DAY.
   IF WEEKDAY = 4 MOVE 3 TO WKDAY GO TO COMPUTE-DAY.
   IF WEEKDAY = 5 MOVE 4 TO WKDAY GO TO COMPUTE-DAY.
   IF WEEKDAY = 7 MOVE 5 TO WKDAY GO TO COMPUTE-DAY.
   IF WEEKDAY = 8 MOVE 6 TO WKDAY GO TO COMPUTE-DAY.
   IF WEEKDAY = 0 MOVE 7 TO WKDAY GO TO COMPUTE-DAY.

COMPUTE-DAY.
   MOVE ZEROS TO SUB.
   ADD WKDAY TO START-DAY.
   MOVE START-DAY TO SUB.
   IF THE-DAY (SUB) = "1" MOVE "MONDAY   " TO RETURN-DAY.
   IF THE-DAY (SUB) = "2" MOVE "TUESDAY  " TO RETURN-DAY.
   IF THE-DAY (SUB) = "3" MOVE "WEDNESDAY" TO RETURN-DAY.
   IF THE-DAY (SUB) = "4" MOVE "THURSDAY " TO RETURN-DAY.
   IF THE-DAY (SUB) = "5" MOVE "FRIDAY   " TO RETURN-DAY.
   IF THE-DAY (SUB) = "6" MOVE "SATURDAY " TO RETURN-DAY.
   IF THE-DAY (SUB) = "7" MOVE "SUNDAY   " TO RETURN-DAY.
   MOVE SPACE TO RETURN-ERROR.
EXIT-PROGRAM.
   EXIT PROGRAM.
```

Reviewers' Comments:

- *Refer to* TI-MIX *library part number 90-038-006 "COBOL Utility Package."*

File and Directory Convenience Procs

By Stephen R. Waltman
Liqui-Box Corporation
Worthington, OH

Use this procedure to keep from having to reenter the directory pathname when you have to do many LDs (List Directory) or SFs (Show File).

```
SFLD (SHOW FILE IN @@$LD$),
FILE = *(ACNM)
.SYN  $SF$P = @@$LD$.&FILE
.IF  "&FILE" ,NE, ""
.SHOW @$SF$P
.ENDIF
```

To keep your disk packs clear of unneeded work files, set up a procedure that will delete all work files. NOTE: You must be sure than none of the work files in this procedure are needed each time before execution. It is suggested that this procedure be used before or after the work day when no one is on the machine.

```
DELWORK(DELETE WORK FILES)
DF P=.DDLINF01
DF P=.DDLINF02
DF P=.JUNK
DF P=.TIPE01
DF P=.TIPP01
DDF P=.WORKDIR,L=DUMY,A=Y     (FILES IN WORK DIRECTORIES CAN ALSO BE DELETED
DDF P=SYS001.WORK,L=DUMY,A=Y       SEE PAGE 12, SEPTEMBER 1981 TI-MIX NEWS
DDF P=SYS001.JUNK,L=DUMY,A=Y       AND PAGE 7, NOVEMBER 1981 TI-MIX NEWS)
DDF P=SYS001.PRINT,L=DUMY,A=Y


DDF   (DELETE DIRECTORY FILES),
DIRECTORY PATHNAME=ACNM,
LISTING ACCESS NAME=*ACNM(ME),
ARE YOU SURE?=(ELEMENT(Y=YES,N=NO))
.IF &ARE YOU SURE? ,GE, Y
  .SYN DIR=@&DIRECTORY PATHNAME
  MFP PATH=@DIR, DELETE PROTECT?=Y
     .IF @$$CC ,NE, 00000
        MSC T = " ERROR  @$$MN  IN MFP "
        .SYN DIR=""
        .SYN HOLD=""
        .EXIT
     .ENDIF
** BID TASK DD
  .BID  TASK=022, UTILITY,                    <--(for DX10, change .BID)
  PARMS=(>22,@DIR,@&LISTING ACCESS NAME)
  MFP P=@DIR
  .SYN DIR=""
  .SYN HOLD=""
.ENDIF
```

I often need to list a directory before deleting all the files. If all files can be deleted, use this procedure for convenience. DDF allows the user to do this in one procedure.

```
LDDD (LIST DIRECTORY , DELETE DIRECTORY)
PATHNAME=ACNM
LD P=@&PATHNAME,L=.LDDD@$$ST
.SHOW .LDDD@$$ST
DF P= .LDDD@$$ST
MSG T="DO YOU WANT TO DELETE FILES IN THIS DIRECTORY",R=YESNO
.IF @YESNO ,GE, Y
DDF DP=@$LD$,L=ME,A=Y
.ENDIF
.SYN YESNO=""
```

If you have a number of work directories that you would like to check before deleting, they can be linked together in one procedure (see LDDD).

```
LDDDS (CHECK and DELETE WORK DIRECTORIES)
LDDD D=SYS001.WORK1
LDDD D=SYS001.ABD.WORKDIR
LDDD D=SYS001.JUNK
        .
        .
        .
```

The following procedure allows the system time and date to be saved in a file every time it is executed. This can be helpful when there is a need to know the last time a given job(s) was run. Insert the SETDATE command in the procedure(s) that the last time and date is required.

```
SETDATE
SDT SYN=DATE
.DATA SYS001.DATE, E=N,S=Y,R=Y
@DATE
.EOD
.SYN DATE=""
```

Reviewers Comments

- *In the procedure "SFLD", line 2, the parenthesis should be removed. The proc must be changed to allow a list to be useful here. The DDF procedure duplicates the function of the "Delete All Files from a Directory" (see page 12, September 1981* TI-MIX News*); and "Responses to Deleting All Files from a Directory" (see page 7, November 1981* TI-MIX News*).*
- *The DDF procedure will not work on DX10. Change the .BID to an actual DD command.*
- *Most of these procedures will not work on DX10 without modification.*

Install (Load) Volumes

By Jimmy Plemons
Diamond Rug & Carpet Mills, Inc.
Eton, GA

This procedure gives the user the option to install all disk volumes with one procedure. It is useful when you initialize the system. I found that this is best inserted into the IS (Initialize System) procedure so the user will not have to do the IVs (Install Volume) after the system has been initialized. The errors will be the same as in the IV procedure. The most common error is if the drive does not have the volume the procedure is trying to install.

```
INSTALL (INSTALL VOLUMES --DSO2-DSO3-DSO4--)=0,
INSTALL VOLOO2?= YESNO (YES),
INSTALL VOLOO3?= YESNO (YES),
INSTALL VOLOO4?= YESNO (YES)

.IF "&INSTALL VOLOO2" , EQ , "YES"                    !INSTALL DSO2
.OVLY OVLY=>1B,LUNO=0,PARMS=(21,DSO2,VOLOO2)
.ENDIF

.IF "&INSTALL VOLOO3" , EQ , "YES"                    !INSTALL DSO3
.OVLY OVLY=>1B,LUNO=0,PARMS=(21,DSO3,VOLOO3)
.ENDIF

.IF "&INSTALL VOLOO4" , EQ , "YES"                    !INSTALL DSO4
.OVLY OVLY=>1B,LUNO=0,PARMS=(21,DSO4,VOLOO4)
.ENDIF

***CHANGE VOLUME AND DRIVE NAMES TO YOUR NAMES***
```

Reviewers' Comments:

- *Note that for DNOS, all online volumes are installed by the system during IPL, so this procedure is not necessary.*
- *Change .OVLYs to IV to be compatible with DNOS and future releases of DX10.*

Show Volume Status

By Jimmy Plemons
Diamond Rug & Carpet Mills, Inc.
Eton, GA

This procedure will list and display the volume status of all the volumes. This cuts down on time having to enter the SVS procedure for each volume. This procedure creates a file called ".V@ME" which is the file where the SVS lists will be placed. For each volume done, a list file called ".S@ME" is used to store the information, then an Append File (AF) is done to place the stored information into the list file ".V@ME." After all volumes have been done, the list file ".V@ME" will be displayed.

```
VSTAT(VOLUME'S DSO1-DSO2-DSO3 STATUS REPORT)=0

.DATA  .V@ME,EXT=NO,SUB=YES                    !START DSO1 SVS ROUTINE
VOLUME STATUS FOR DSO1.....................
.EOD

.BID   TASK=>37,LUNO=0,PARMS=(0,,DSO1,.S@ME)   !SVS DSO1
.BID   TASK=>34,CODE=1,                        !AF
           PARMS=((.S@ME),.V@ME,NO,YES,YES,)

.DATA  .V@ME,EXT=YES,SUB=YES                   !START DSO2 SVS ROUTINE

VOLUME STATUS FOR DSO2.....................
.EOD
.BID   TASK=>37,LUNO=0,PARMS=(0,,DSO2,.S@ME)   !SVS DSO2
.BID   TASK=>34,CODE=1,                         !AF
           PARMS=((.S@ME),.V@ME,NO,YES,YES,)

.DATA  .V@ME,EXT=YES,SUB=YES                   !START DSO3 SVS ROUTINE

VOLUME STATUS FOR DSO3.....................
.EOD
.BID   TASK=>37,LUNO=0,PARMS=(0,,DSO3,.S@ME)   !SVS DSO3
.BID   TASK=>34,CODE=1,                        !AF
           PARMS=((.S@ME),.V@ME,NO,YES,YES,)

.SHOW  .V@ME                                   !SHOW SVS'S


EXAMPLE:

   VOLUME STATUS FOR DSO1.....................
    VOLUME NAME: VOL001     ADUS: 65381   # BAD: 0   BYTES/ADU: 2592
   AVAILABLE: 4696   LARGEST AVAILABLE BLOCK: 2702   CONTROLLER ERRORS: 0
   PRIMARY SYSTEM IMAGE: SYSO1       SECONDARY SYSTEM IMAGE:  SYSO2
   NAME INSTALLED:VOL001

   VOLUME STATUS FOR DSO2.....................
    VOLUME NAME: VOL002     ADUS: 65381   # BAD: 0   BYTES/ADU: 2592
   AVAILABLE: 5744   LARGEST AVAILABLE BLOCK: 3783   CONTROLLER ERRORS: 0
   PRIMARY SYSTEM IMAGE:             SECONDARY SYSTEM IMAGE:
   NAME INSTALLED:VOL002

   VOLUME STATUS FOR DSO3.....................
    VOLUME NAME: VOL003     ADUS: 65381   # BAD: 0   BYTES/ADU: 2592
   AVAILABLE: 18392  LARGEST AVAILABLE BLOCK: 16543  CONTROLLER ERRORS: 0
   PRIMARY SYSTEM IMAGE:             SECONDARY SYSTEM IMAGE:
   NAME INSTALLED:VOL003
```

Reviewers' Comments:

- *In DNOS environments, the supplied SVS command accepts the response ALL to the VOLUME NAME prompt and delivers output similar to the above.*
- *There is a simpler procedure, "Show Status of All Volumes" (see page 8, February 1981* TI-MIX News*). See also "Show Volume Status—All Volumes" (see page 8, November 1981* TI-MIX News*).*
- *All .BID primitives should be replaced with procedure calls for compatibility with DNOS and other releases of DX10.*

Spooler On/Off

By Stephen R. Waltman
Liqui-Box Corporation
Worthington, OH

For DNOS users some jobs may require that the spooler be turned off. An example would be those jobs that create no print file but print directly to the printer. Below is a procedure that will allow the user to turn the spooler off and another that will allow the user to turn the spooler back on.

```
SPOOLOFF (TURN SPOOLER OFF),
PRINTER NAME?=STRING
RLN LN=&PRINTER NAME?
MSD DN=&PRINTER NAME?, ATS=NO
```

```
SPOOLON (TURN SPOOLER ON),
PRINTER NAME?=STRING
ALN LN=&PRINTER NAME?,RT=S, LDOC=&PRINTER NAME?, BANNER=N
MSD DN=&PRINTER NAME?

GL256 (a job that prints directly to the printer)
SPOOLOFF PRINTER NAME=LP01
.SYN PRT=LP01
.BID TASK=GL256,.................
SPOOLON PRINTER NAME=LP01
.SYN PRT=""
```

Reviewers' Comments:

- *These commands are not as necessary with DNOS 1.1 as they were with DNOS 1.0. With DNOS 1.1, if the spooler is set with the MSD command to be REMOTE/SHARED, a task can write directly to the spooler between print requests. The task may have to wait for the printer to be free. Another way to accomplish the goal of getting data from a task to the printer is to have the task write to a spooler logical name. When the task closes its LUNO to the logical name, a temporary file of data from the task is spooled and printed. With either of these approaches, spooling does not need to be disabled.*

Solution to System Operator Problem

By Stephen R. Waltman
Liqui-Box Corporation
Worthington, OH

A problem for DNOS users where there is a need to allow more than one person to become the system operator (XOI) is that one user may become the system operator and forget to quit the system operator (QOI). Below is one solution to the problem.

```
ONLY 1 LINE NEED BE ADDED TO  'XOI' .......

   XOI(EXECUTE OPERATOR INTERFACE)=2
   .IF  @$$MO, EQ, 0
   MSG TEXT="COMMAND IS INVALID IN BATCH MODE"
   .EXIT
   .ENDIF
   *BID TASK XOI
   .RBID TASK=062, UTILITY, PARMS=(1000,1000,4)
   .OPTION PROMPT ="[XOI AT @ME^]"              <---------ADD THIS LINE
   .ENDIF
   .MENU

AND ONLY 1 LINE NEED BE ADDED TO  "QOI"

   QOI(QUIT OPERATOR INTERFACE)=2
   .IF @$$MO, EQ, 0
   MSG TEXT="COMMAND IS INVALID IN BATCH MODE"
   .EXIT
   .ENDIF
   .SYN $XOI$MEN = ""
   *BID TASK XOI
   .RBID TASK=062, UTILITY, PARMS=(1000,1000,5)
   .OPTION PROMPT ="[@ME^]"                     <---------ADD THIS LINE
   .ENDIF
   .IF "@$XOI$MEN", NE, "$XOI$MEN
   .SYN $XOI$MEN = ""
   .MENU
   .ENDIF
```

Reviewers' Comments:

- *XOI and QOI also make entries in the system log, showing who at what station became the operator or quit being operator. Unless the person remains the operator so long that the log files are reused, data in the log files can be used to see who the operator is. (The approach above works fine if the operator heeds the XOI reminder!)*

Convert Julian Date to Gregorian Date

By Richard E. Headley
KPS Software Solutions, Inc.
Westlake Village, CA

This procedure converts the given Julian date into the corresponding Gregorian date. This can be handy after looking at the log files to determine which day the entry was put in the log file. This code can be handily coded into a BASIC, FORTRAN, Pascal, or COBOL program as well.

```
GREGORIAN(CONVERT JULIAN DATE TO GREGORIAN DATE)=0,
YEAR =INT(83),
JULIAN DATE =INT(1)
*-----------------------------------------------------
.IF &JULIAN ,LT, 1                                   !
    MSG T="JULIAN DATE MUST BE GREATER THAN ZERO."   !
    .EXIT                                            !   VERIFY JULIAN DATE
.ELSE                                                !   IS VALID.
    .IF &JULIAN ,GT, 365                             !
        MSG T="JULIAN DATE MUST BE LESS THAN 366."   !
        .EXIT                                        !
     .ENDIF                                          !
.ENDIF                                               !
*-----------------------------------------------------
.SYN  YY=&YEAR,
  JULIAN=&JULIAN,
     INT="0"
      DD="0"
      MM="0"
*-----------------------------------------------------
.EVAL INT = @YY / 4                                  !  DETERMINE IF IT IS A
.EVAL INT = @INT * 4                                 !  LEAP YEAR.
*-----------------------------------------------------
.IF @YY ,EQ, @INT
       .SYN LEAP="1"
   .ELSE
       .SYN LEAP="0"
.ENDIF
.EVAL INT = @YY + 59
.IF @JULIAN ,GT, @INT
        .EVAL DD = @JULIAN + 2 - @LEAP
    .ELSE
        .SYN DD=@JULIAN
.ENDIF
*-----------------------------------------------------
.EVAL  MM  = @DD  + 91                               !  THIS CODE USES THE
.EVAL  MM  = @MM  * 100                              !  FACT THAT 30.55
.EVAL  MM  = @MM  / 3055                             !  (MM+2) - 91 PASSES
.EVAL  DD  = @DD  + 91                               !  THROUGH THE NUMBER
.EVAL  INT = @MM  * 3055                             !  OF DAYS PRECEEDING
.EVAL  INT = @INT / 100                              !  EACH MONTH.
.EVAL  DD  = @DD  - @INT                             !
.EVAL  MM  = @MM  - 2                                !
*-----------------------------------------------------
*-----------------------------------------------------
MSG T="@MM/@DD/@YY"                                  !  DISPLAY GREGORIAN
*-----------------------------------------------------
.SYN MM="", YY="", DD="", INT="", JULIAN="", LEAP=""
```

Reviewers' Comments:

- *Note that the DNOS log files do use Gregorian dates in the 1.1 release, a change from the 1.0 release.*
- *Procedure name should be shortened to "GREG."* □

MIXTURES By Terry Hahn

LIBRARY UPDATES
(Programs and Papers)

Listed below are the newest additions to the TI-MIX Library. Updated library catalogs are distributed to members quarterly and are available through the TI-MIX office. Details concerning orders, submissions, operating policies, and disclaimers are published in every catalog. To order items listed below, send your requests with check (must be payable in U.S. dollars to "TI-MIX") or purchase order (add a 10% handling charge to all purchase orders) to TI-MIX, M/S 2200, P.O. Box 2909, Austin, Texas 78769. Be sure to specify computer media needed. Orders will not be accepted by phone, but if you have questions about ordering, call Ginnie Franklin at (512) 250-7151. NOTE: European members should request ordering information and prices from TI-MIX Europe, P.O. Box 12995, 1100AZ Amsterdam Zuitoost, Netherlands.

93-038-010 COBOL Square Root
SUBMITTOR: James R. Fisher, I.C. System
COMPUTER/SYSTEM/LANGUAGE: 990/DX10/Assembly
SQRT is an assembly language routine which will calculate the square root for any given numeric unsigned display value. The method used is a simulation of the long-hand square root process.
MEDIA AVAILABLE: Double-sided, dual-density diskette; mag tape (specify 800 or 1600 BPI)
1. Complete package: $30 (source, object, documentation)
2. Documentation and listing only: $5

1982 European Symposium Abstracts

200-82 Linking DS990s in a Network with VTERM (Virtual Terminal)
SUBMITTOR: J.L. Chaslain/T.W. Scott, Fabrique National Herstal; Herstal, Belgium
SYMPOSIUM: London 1982 **COST:** $2 per copy
In 1981 we encountered the well-known limit in the number of terminals connectable to a single CPU under DX10. Subsequently, a second CPU was installed in May 1981. Several problems soon became evident: duplication of SCI procedures, data files and applications, transfer of data between the two systems, and the unpleasant prospect of users requiring two terminals to access two CPUs in order to complete their day's work. We needed to link the two systems in an effective way.

Several solutions were analyzed: the 3780 approach, a TILINE link, simple disk/tape transfers, and VTERM. VTERM was chosen since it permits us to connect the two CPUs via a synchronous communication interface and a standard seven-wire cable with V24 connectors. VTERM enables users to log on CPU-2 from CPU-1 (and vice-versa) and to work there normally, and users to transfer complete directories between the two CPUs, including program files and compiled object modules.

The paper covers our experience in installing and using VTERM, costs and benefits, advantages and problems, future plans to expand our VTERM network, and ideas for other uses of this product. (11 pages)

201-82 Organization of a Network of Point-of-Sales Terminals at Credit Europeen
SUBMITTOR: Carlo Hensgen, EPOS S.A.; Paris, France
SYMPOSIUM: London 1982 **COST:** $2 per copy
Credit Europeen is a bank located in Luxembourg, using two TI DS990 Model 30 computers with dual-access disk drives for the supervision of a network of various point-of-sales terminals:

- TPE from CGA in petrol-service stations, directly connected to pumps
- TPI from CGA in stores
- C71 cash registers from PRODATA in stores

All these terminals use automatic dialing on the switched network. They allow online transactions using VISA or Telecash credit card. The TI DS990 Model 30s are further connected to the bank's CII-HB Model 64. This presentation includes: the general description of the network, the problems met while implementing new protocols under DX10, and the present developments. (12 pages)

202-82 Local Area Networks
SUBMITTOR: Herman Dierks, Texas Instruments; Austin, Texas
SYMPOSIUM: London 1982 **COST:** $2 per copy
This paper is an overview of current Local Area Network (LAN) technology and its future uses. LANs will change the way all new computer systems will be built. The special features of LANs are presented. The major types of LANs are described, including current vendors, advantages, and disadvantages. The concepts of shared access to expensive resources such as disks, printers and remote networks are included. (15 pages)

203-82 Distributed Information Processing (Retail Environment)
SUBMITTOR: Jan Kapers, Ahold, N.V.; Zaandam, Netherlands
SYMPOSIUM: London 1982 **COST:** $2 per copy
This paper consists of an overview of all the information systems used in the past, present, and future that correspond with our authorized list of suppliers. One of the items on that list is the supplier of micro- and minicomputers. Ahold selected TI DS990 commercial systems mainly based on the offered flexibility and user-friendliness. Also important was the availability of the programming language Pascal. This paper focuses on one application from our organization, including the distributed information network, based on our information processing strategy and the corresponding infrastructures. (7 pages)

204-82 EEC Hazard Labeling System
SUBMITTOR: Tony Sinclair, Radius SBA; London, England
SYMPOSIUM: London 1982 **COST:** $2 per copy
EEC directives make it mandatory to warn users of paints, inks, varnishes, resins, adhesives, etc., any risks inherent in their products and the safety precautions to be taken. This is now law in many countries and soon will be law in the remainder.

Paints and allied products are complicated chemical mixtures. To determine the risks, rules have been enacted requiring complex and time-consuming calculations. Thirty to forty-five minutes per formula can be avoided using a computer to assist in the presentation of the decision-making data.

Written in BASIC as a laboratory tool, specially designed to deal with the problem, it can stand alone or be linked to any formulation files the user may have. Central to the system is the expandable data base of chemical information on those substances the EEC has decreed to be hazardous. The data base contains a library of approved phrases describing the risks and safety measures.

With minimal involvement of the user, the system examines the formula breaking it back to base chemical elements and performing a complicated series of analyses and calculations to determine, under three different sets of rules (laid down in three EEC directives), the nature and degree of the hazards attached to the product and to recommend items for inclusion with the product's label. (6 pages)

205-82 Using Barcode in Several Business Applications
SUBMITTOR: Jan Mattelaer, ORDA-B; Korbeek-Lo, Belgium
SYMPOSIUM: London 1982 **COST:** $2 per copy
This paper is an introduction to the use of barcode. It covers the following topics: what is barcode, the codification of barcode, barcode readers and printers, where can we use barcode, and connection of barcode readers to minicomputers. (12 pages)

206-82 The DX10-Based Operating Systems – Compatible but Different
SUBMITTOR: George Barilla, Texas Instruments; Austin, Texas
SYMPOSIUM: London 1982 **COST:** $2 per copy
The DX10-based operating systems originated in 1976 with the introduction of DX10 on the 990 minicomputer. Since that time we have seen the introduction of DX5 (on the DS990 Models 1 and 2), DX7 (on the DS990 Model 3), and most recently DX10 MICRO (on the Business System 200), a "family" of 990-based computer products.

This paper reviews the major features of these DX10-based operating systems, describing exactly what is compatible among them, and highlighting those differences and/or restrictions that make each operating system unique. (39 pages)

207-82 A New Way of Solving DX10 CRASH 30 Code
SUBMITTOR: Andre Colin, Centre D'Informatique Generale; Brussels, Belgium
SYMPOSIUM: London 1982 **COST:** $4 per copy
Under DX10 as the number of attached terminals and executing tasks increases, the systems manager is faced with the well-known problem of CRASH 30 codes.

Classical software techniques to solve that problem are reviewed in this paper. However, CIG has developed a new software product giving increased benefits by distributing the terminals and their tasks over two or more CPUs and concentrating the common data files and their management on a single CPU. The processors are connected using a TILINE coupler interface and shared memory techniques.

Various running configurations are detailed with more than 60 terminals running in parallel in a business environment using COBOL programs. (33 pages)

208-82 General Purpose Multiprocessor System
SUBMITTOR: D.J. Evans/I.A. Newman/M.C. Woodward, Loughborough University; Loughborough, England
SYMPOSIUM: London 1982 **COST:** $2 per copy
This paper describes the configuration and use of a system comprised of four 990/10 processors, each with 128K bytes of private memory and all linked to a shared 64K bytes of memory and a 50MB disk drive. Each individual machine runs under the DX10 operating system but there are additional facilities to enable users to develop and execute programs which run on two or more machines simultaneously.

The development of the system is outlined and the extra facilities are described. Some examples of programs which use the parallel system will be given to indicate the speed-up that can be achieved when compared with single processor operation. The ability of the system to be used to process general purpose workloads more effectively than a single larger processor is discussed. (5 pages)

209-82 A Distributed Decision Support System for Forestry Production Control
SUBMITTOR: Torsten Lundquist, Infologigruppen A.B.; Stockholm, Sweden
SYMPOSIUM: London 1982 **COST:** $4 per copy
The timber production at the Swedish State Forestry Commission (Domanverket) is an operative production which, because of geographical reasons, is both extensive and distributed. Control of this production requires a good knowledge of the state of the local forests and for that reason control is decentralized to a large number of persons. Therefore, a decentralized decision support system (DSS) was developed.

The application is installed on a number of DS990 systems equipped with CRTs, both local and remote. Each system is independent but can establish communication sessions with each other using dial-up lines or the public data network (DATEX). At the same time a system can act as a 3274 controller with interactive access to a host for central applications. The programs are written in TI Pascal, TIFORM, and DBMS-990.

The philosophy guiding development of the system was to build up not only an application system, but also a knowledge among the people who are participants in the information system so that the system can continuously develop under their control. The system makes an attempt to be evolutionary. QUERY and DBMS played an important role in this attempt. (27 pages)

210-82 System for Weighing, Pricing and Billing of Bulk Material
SUBMITTOR: Carl-Erik Brohn, Skanska Cementgjuteriet; Danderyd, Sweden
SYMPOSIUM: London 1982 **COST:** $2 per copy
Skanska, a building construction company, has developed a system for handling orders, weighing trucks, producing weigh bills outdoors, pricing and billing of materials and transports, and producing sales statistics. The hardware is a TI 990 Model 4 with displays, OMNI printer, disks, and communication with user terminals for ID keys, weigh bill printer, and weigh bridge.

The system is implemented in two places for weighing asphalt, concrete, gravel, etc., but can be used for other applications where bulk material is handled. (13 pages)

211-82 Providing TI 990 Transactions Real-Time to an IBM Host
SUBMITTOR; Mark Rissmiller, MFA Incorporated; Columbia, MO
SYMPOSIUM: London 1982 **COST:** $4 per copy
This paper consists of two strategies in providing real-time information (or near real-time) from a series of TI 990 systems to an IBM 4341 computer system. Each strategy has been tested and evaluated for possible full implementation on eight TI Model 20 systems all located at this agri-business home office computer center. These TI systems provide remote service for nearly 80 locations within a 300-mile radius from the home office.

The investigation and need for transmission of the transactions to the IBM host was brought about by a company requirement for up-to-the-minute consolidated information. With data needed for reports and consolidated inquiries spanning multiple TI 990 systems, logistical problems became immediately apparent.

This paper begins with an overview of the computer equipment setting and the system software involved both on the TI systems and the IBM system. Included is a look at TI's 3270 ICS software package and, in particular, the powerful PSC (Programmed Station Control) feature which is the basis for the communication of the transactions. Also covered are the application software functions, which are written in COBOL, and the changes that were required to the application to provide the data transmission to the IBM host. The "remote disk I/O" strategy and the "single-thread queueing" strategy is included because of their effect on system utilization and system performance. (19 pages). □

EXCHANGE

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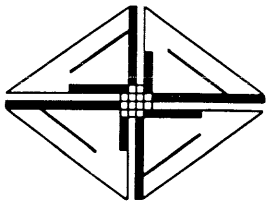

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