Southwest Ninety-Niners Newsletter

contributed by

- Tom Wills -

SW99ers User Group President of Record

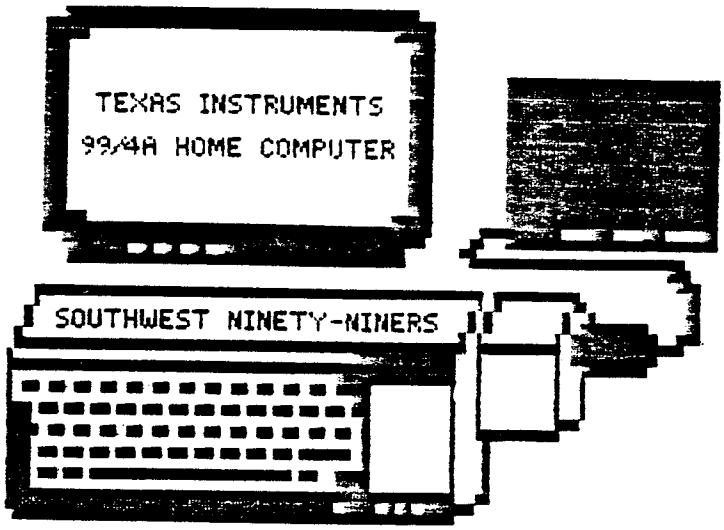
compliments of

TI99ers
On-Line
User Group

www.ti99ers.org

OCTOBER 1986

P.O. Box 17831 Tucson, AZ 85730



ATTENTION MEMBERS

NEXT MEETING: October 7, 1986 at 7:30pm. Location-Tucson Fire Department Training Center on Ajo Way just west of Park.

WORKSHOPS: Basic - 2nd Thursday of each month at 7 pm (October 9th). Ex-Basic - 3rd Tuesday of each month at 7 pm (September 21st).
Both at the Mathis Home - 5941 E. 26th - 747-5046

SPECIAL INTEREST GROUPS: Writer & Multiplan - 3rd Thursday of each month at 7 pm (October 16th). Mathis Home - 5941 E. 26th - 747-5046
Assembly Language & FORTH - 4th Tuesday of each month at 7:30 pm (October 28th).
NOTE CHANGE OF LOCATION: Rod Stallard's Home - 7575 E. Logan - 745-6071

PRESIDENT'S CORNER

On September 2, 1986 we had a special program at our regular meeting time and place. Les Merryman, west coast distributor for MYARC, shared how he got involved with the TI-99/4A when it first appeared on the market and much more. Les managed to crash his hard disc and with a late arrival in Tucson had to improvise his presentation using floppies. He still was able to show us a number of things and filled us in on the many MYARC products and how they can make the TI even more versatile. Although we have had presentations on some of these items, by members who have the products, getting a comprehensive look at everything at one time was great.

If you were unable to attend the meeting and you'd like to hear the presentation we have an audio cassette available. My personal thanks to Les and his family who drove across nearly 500 miles of desert on a day when the temperatures exceeded one hundred degrees just to be with us. They did it without air conditioning, as their unit had quit earlier that week. And a special thanks to all of you who came to the meeting and participated. Your continued involvement is what makes our club one of the strongest in the nation.

Speaking of your participation I'd like to remind you that next month I'll be appointing a nominating committee to select individuals from our membership to run for office in the club for next year. This is the time to begin considering how you may serve the Southwest Ninety-Niners even more next year. A questionaire will be distributed to all active members in the November newsletter for suggestions on

candidates for all the offices. Don't be shy about nominating someone, including yourself, we need your continued active participation. So think about it and in November get involved even more.

Last month I mentioned that the holiday season is fast approaching. Now is the time to get those orders to the club for group purchases from outside vendors. To assure delivery in time for the holidays you need to get your orders in to Jack or BJ by October 17, 1986. That should allow adequate time for delivery. Remember, when you order through the group you're assured of the lowest prices currently available on most items from major suppliers and you aid the club.

John McCleary * 296-8198

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Bytes & Jots

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Les Merryman and his family spent the night with us after his demonstration at the last meeting. We enjoyed visiting with them very much and have an invitation to stay with them next time we travel that direction. A letter from Les is partially reprinted in this newsletter.

We recently received a letter from Tom Wills, a fellow TI enthusiast, in Wisconsin. He and his wife are thinking of moving to Tucson for health reasons. They will be in Tucson either the 16th or 17th of October. If they make it on the 16th they may attend the MULTIplan and Writer Workshop. The Wills want to learn more about Tucson in general as well as find out about our Group. He is am experienced Computer Programmer/Analyst according to his letter and will be looking for a job in that field. Anyone who has a little insight on the possibilities in the local job market please let me know so I can pass on the information.

At the last meeting it was decided to buy a TI system advertised in the newsletter for the last several months for the purpose of adding some things to the Lending Library and selling the rest of the items at a good price to our members. The Lending Library has acquired MULTIplan and several new books. Minimum bids for items we will sell:

$43	TI-99/4A Console (Black/Silver)	$3	Personal Record Keeping
$100	PE Box (Empty)	$3	Tax/Investment RecordKeeping
$53	RS232 Card	$3	Beginning Grammar
$65	32K Memory Card	$8	Video Chess
$100	TI Drive and Controller	$7	Typing Tutor
$17	Widget/Cartridge Expander	$3	Household Budget Management
$20	Extended Basic	$10	TI LOGO II
$17	TI-Writer	$30	DataBaseManagement Module

Bidding is open only to those with up to date membership in the Southwest Ninety-Niners. Bidding will close on 24 October, the highest bidder will be notified shortly after closing the bids. The items can be seen at the October meeting, and at the Workshops and Special Interest Group that meet at our house.

*BJ * 747-5046*

HORIZON RAMDISK 256K EXPANSION PROJECT

by EDWARD A. HALLETT

SOUTHWEST NINETY-NINERS

The HORIZON RAMDISK is available in 90K SSSD (360 SECTOR) and 180K DSSD (720 SECTOR) sizes. This project expands the size to 256K (976 SECTORS) for an increase in storage capacity of 64K (256 SECTORS) or 35.5%.

This increase is accomplished by adding one 74LS154 (4 to 16 DECODER), one 74LS02 (NOR GATE), and eight 8K 6264LP-15 STATIC RAM chips, removing one 74LS138 (3 to 8 DECODER) chip, and modifying the DSR CODE to recognize the existance of the added memory. The original HORIZON RAMDISK CIRCUIT does not fully decode one of the five memory address lines from U9 limiting it to 180K. By fully decoding this line we pick up eight more CHIP SELECT SIGNALS bringing us up to 256K (976 SECTORS). This utilizes the original design to its fullest potential with only a few SIMPLE MODIFICATIONS.

The HORIZON SOURCE CODE VER_03 was used in this project but modifications to other versions should be very similar. (Note: VER_04 arrived as this was going to press. All modifications were identical, except MEMTEST. Use the modified MEMTEST from VER_03 to check the memory added by this EXPANSION PROJECT.

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CAUTION: THIS MODIFICATION IS UNDERTAKEN AT YOUR OWN RISK AND MAY VOID YOUR HORIZON WARRANTY.

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CAUTION: REMOVE THE NICAD BATTERIES FROM THE RAMDISK BEFORE STARTING. USE CARE WHEN HANDLING THE RAM CHIPS TO AVOID DAMAGE FROM STATIC.

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1. Remove U1, the original 3 TO 8 DECODER CHIP, from its socket and DISCARD.

2. Remove the EIGHT PIGGYBACKED PAIRS of 8K RAM CHIPS from their sockets U3-U6 and U12-U16.

3. Remove U2, the original 4 TO 16 DECODER, from its socket.

4. Remove U10, the original NOR GATE, from its socket.

5. Install a THIRD ADDITIONAL 8K RAM CHIP PIGGYBACKED on top of EACH of the removed PIGGYBACKED PAIRS of 8K RAM CHIPS connecting EACH PIN to its CORRESPONDING PIN below with the EXCEPTION of PIN 20 (CHIP SELECT). BEND PIN 20 outward like PIN 20 on the CHIP below it. Reinstall these EIGHT PIGGYBACKED TRIOS into their sockets (U3-U6 and U12-Y13) and RECONNECT the ORIGINAL lines from PIN 20 of the CENTER CHIPS to their ORIGINAL POINTS on the EXPANSION JACK next to U3.

6. Install the ADDITIONAL 4 TO 16 DECODER CHIP (74LS154) PIGGYBACKED on top of the ORIGINAL 4 TO 16 DECODER CHIP, U2. Connect PIN 12 and PINS 20 THRU 24 to their corresponding PINS below. Bend PINS 1 THRU 11 and PINS 13 THRU 19 OUTWARD. Reinstall the PIGGYBACKED PAIR of 4 TO 16 DECODERS in its U2 socket. Connect lines from the UPPER CHIP PINS 1 THRU 8 as follows.

PIN 1 to U1 SOCKET PIN 15.	PIN 2 to U1 SOCKET PIN 14.
PIN 3 to U1 SOCKET PIN 13.	PIN 4 to U1 SOCKET PIN 12.
PIN 5 to U1 SOCKET PIN 11.	PIN 6 to U1 SOCKET PIN 10.
PIN 7 to U1 SOCKET PIN 9.	PIN 8 to U1 SOCKET PIN 7.

These provide the CHIP SELECT SIGNALS to the ORIGINAL (CENTER LAYER) of 8K RAM CHIPS.

Connect lines from the UPPER CHIP PINS 9 THRU 11 and 13 THRU 17 as follows.

PIN 9 to PIN 20 U3 TOP 8K CHIP.	PIN 10 to PIN 20 U4 TOP 8K CHIP.
PIN 11 to PIN 20 U5 TOP 8K CHIP.	PIN 13 to PIN 20 U6 TOP 8K CHIP.
PIN 14 to PIN 20 U12 TOP 8K CHIP.	PIN 15 to PIN 20 U13 TOP 8K CHIP.
PIN 16 to PIN 20 U14 TOP 8K CHIP.	PIN 17 to PIN 20 U15 TOP 8K CHIP.

These provide the CHIP SELECT SIGNALS to the ADDITIONAL EIGHT 8K RAM CHIPS (TOP LAYER)

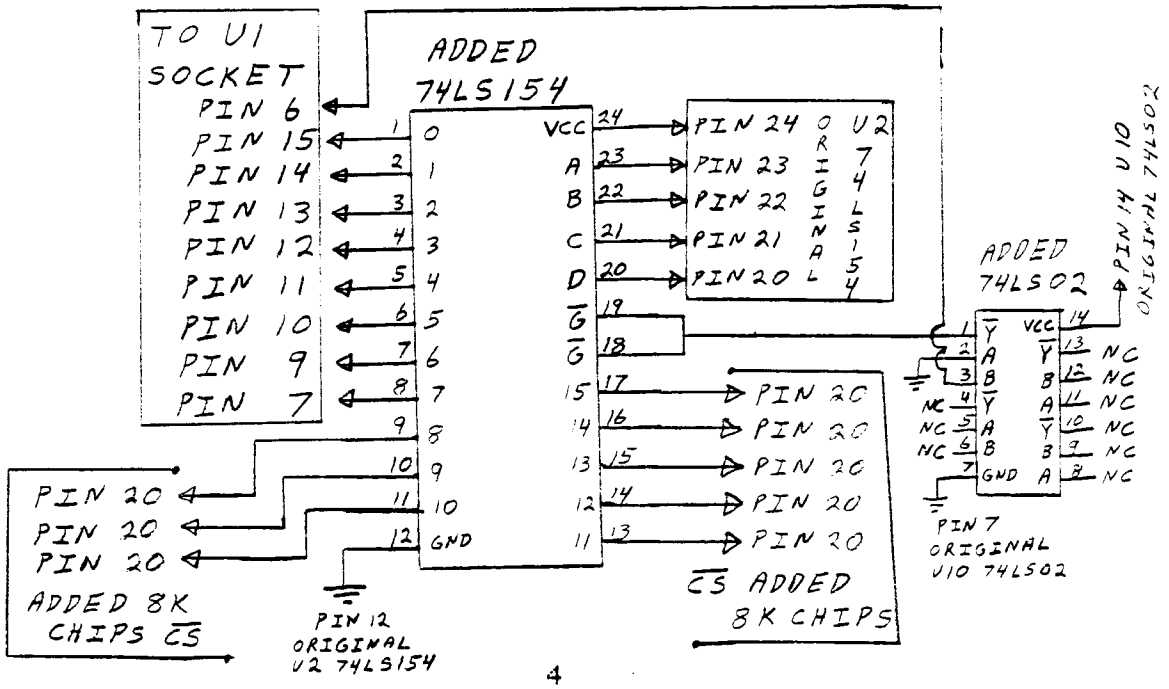
7. Install a new NOR GATE (74LS02) PIGGYBACKED on top of the ORIGINAL NOR GATE, U10. Connect PINS 2, 7, and 14 to the CORRESPONDING PINS below. BEND PINS 1, 3 THRU 6, and 8 THRU 13 outward. Reinstall the PIGGYBACKED PAIR of NOR GATES in its U10 socket. Connect LINES from the UPPER CHIP as follows.

PIN 1 to PINS 18 and 19 U2 UPPER CHIP.
PIN 3 to U1 SOCKET PIN 6.

These provide the CHIP SELECT SIGNAL for U2 UPPER 4 TO 16 DECODER CHIP thus fully decoding the available MEMORY ADDRESS LINES.

PINS 4 THRU 6 and PINS 8 THRU 13 of the UPPER NOR GATE U10 are not used and are left NOT connected. They may be used in future modifications.

This completes the HARDWARE modifications to the RAMDISK CARD. Next the DSR SOFTWARE must be modified so that this ADDITIONAL MEMORY can be accessed.



The original DSR CODE, CALL SUBPROGAMS, ETC. are located in RACKS 90-92 at the top of the RAMDISK MEMORY MAP. The MODIFIED RAMDISK MEMORY MAP now extends to RACK 124 and the DSR must be moved to the new top, in RACKS 122-124.

NOTE: IF THE CODE IS NOT MOVED IT WILL BE ERASED WHEN THE RAMDISK IS INITIALIZED TO MORE THAN 720 SECTORS.

The changes to the CODE, consist of changing ALL REFERENCES for the three upper 2K blocks of memory to a NEW LOCATION, changing the LOADER PROGRAMS to LOAD the NEW CODE at the NEW LOCATION, changing the MEMTEST PROGRAM to check THIRTY-TWO 8K CHIPS, changing the MAX SECTOR CALL, and modifying the FORMAT ROUTINE of the DSR.

Luckily, this is much EASIER than it might appear since the SOURCE CODE for the HORIZON RAMDISK was provided with the KIT and is very well Documented!

The following PROGRAMS will need to be modified and then REASSEMBLED with the EDITOR-ASSEMBLER. CALL/S, CHECK/S, CLEAR/S, CREATE/S, FILL/S, LOADER/S, PARTA, SVXB/S, XB/S, and VERSION/S.

The BASIC program MEMTEST must also be modified. The other ORIGINAL SOURCE programs do not require modifications and are used as is.

1. MEMTEST
   Delete LINES 110, 130 thru 170, 190, 200, 320 thru 340. Change LINE 180 from "LENGTH=24" to "LENGTH=32".

2. CALL/S.
   Change "CI R2,1441" to "CI R2,977" at LABEL MAX02.

3. CHECK/S.
   Change "CI R2,24" to "CI R2,32" (fourth LINE after LABEL CHK1).

4. CLEAR/S.
   Change "LI R2,90" to "LI R2,123" (fourth LINE after LABEL LOOP1).

5. CREATE/S.
   Change "DATA >BB00" to "DATA >FB00" at LABEL LINK1.
   Change "DATA >BD00" to "DATA >FD00" at LABEL LINK2.
   Change "DATA >BF00" to "DATA >FF00" at LABEL LINK3.
   Change "PARTA_03" to "PARTA256" in the TEXT LINE after LABEL PDATA.
   Change "PARTB_03" to "PARTB256" in the TEXT LINE after LABEL LDATA.

6. FILL/S.
   Change "LI R5,93" to "LI R5,125" (one LINE before LABEL FLOOP1).

7. LOADER/S.
   Change "DATA >BB00" to "DATA >FB00" at LABEL LINK.
   Change "BYTE >BB" to "BYTE >FB" at LABEL MXL1.
   Change "BYTE >BD" to "BYTE >FB" at LABEL MXL2.
   Change "BYTE >BF" to "BYTE >FF" at LABEL MXL3.

8. PARTA.
   Change "DATA 720" to "DATA 976" at LABEL MAXSEC.
   Change "DATA 720" to "DATA 976" at LABEL FORSEC.
   Change "DATA >BB00" to "DATA >FB00" at LABEL LINK1.
   Change "DATA >BD00" to "DATA >FD00" at LABEL LINK2.
   Change "DATA >BF00" to "DATA >FF00" at LABEL LINK3.
   Add the LINES "C R8,@MAXSEC" and "JEQ FFDONE" after the LINE "INC R8" (fourth LINE after LABEL FMTLP1.
   Add the LINE "FFDONE MOV R8,R3" after the LINE "JNE FMTLP0" (sixth LINE after LABEL FMTLP1.

9. SVXB/S.
   Change "LI R1,>BF00" to "LI R1,>FF00" (fourth LINE after LABEL SVXB.

10. VERSION/S.
   Change "DATA >BB00" to "DATA >FB00" at LABEL LINK1.
   Change "DATA >BD00" to "DATA >FD00" at LABEL LINK2.
   Change "DATA >BF00" to "DATA >FF00" at LABEL LINK3.
   Change "PARTA_03" to "PARTA256" in the TEXT LINE after LABEL PDATA.
   Change "PARTB_03" to "PARTB256" in the TEXT LINE after LABEL LDATA.

11. XB/S.
   Change "CI R2,1441" to "CI R2,977" at LABEL MAX02.

REASSEMBLE these FILES to create the NEW OBJECT FILES. Then REASSEMBLE the FILE "TEST/S" which ASSEMBLES the DSR FILES PARTA thru PARTE. Call this FILE "DSR256". ASSEMBLE the ORIGINAL FILES "CHAR/S" and "DOWNLD/S" from the HORIZON SOURCE DISK.

Next RUN the "LOADER" program assembled from "LOADER/S" to LOAD the following:
   "DSR256" into BLOCK 1.
   "CALL" from the assembled FILE "CALL/S" into BLOCK 2.
   "CHAR" from the assembled FILE "CHAR/S" into BLOCK 3.
   "DOWNLD" form the assembled FILE "DOWNLD/S" into BLOCK 3.

Now RUN this BASIC program.

```
100 CALL INIT
110 CALL LOAD("DSK1.XB")
120 CALL LOAD("DSK1.SVXB")
130 CALL LINK("SVXB")
140 END
```

NOTE: The RAMDISK MUST be set at CRU 1000 for the SVXB program to work as it does NOT search for the HORIZON CARD CRU like the other programs do. If you have another CARD at CRU 1000 (like the MYARC 128K or 512K CARD) you can change the sixth LINE of the "SVXB/S" FILE from "LI R12,1000" to "LI R12,(CRU of your HORIZON CARD)".

The modified DSR CODE, CALL SUBPROGRAMS ETC. are now LOADED in their NEW locations in RACKS 122 THRU 124. Next RUN the program "CREATE" from the assembled FILE "CREATE/S" (PROGRAM NAME "IMAGE"). This will create the FILES "PARTA256" and "PARTB256" on DSK1 for use with the VER256 LOADER from the assembled FILE "VERSION/S"

The SOURCE CODE for the program "UTIL1" (the multiple RAMDISK LOADER) was not provided on the HORIZON SOURCE CODE DISK. It can be modified by DISSASSEMBLING it with "MILLERS GRAPHICS DISkASSEMBLER", finding the four words >02D0, >BB00, >BD00, and >BF00, changing them to >03D0, >FB00, >FD00, >FF00, changing "PARTA_03" and "PARTB_03" to "PARTA256" and "PARTB256", REASSEMBLING the program, and then RUNning the SAVE UTILITY from the EDITOR/ASSEMBLER to change it back to PROGRAM IMAGE FORMAT.

This completes the DSR modifications. All functions of the HORIZON RAMDISK will function as they did originally, but now being able to UTILIZE 976 SECTORS (256K).

When formatting the 976 SECTOR RAMDISK select DSDD format. The DISKMANAGER will show "974 SECTORS FREE" and "466 SECTORS USED". This is because the DISKMANAGER is trying to format 1440 SECTORS and reads 466 USED during SECTOR VERIFICATION. This does not affect RAMDISK OPERATION in any way but it can be corrected to show "974 SECTORS FREE" and "2 SECTORS USED" by changing BYTES 10 and 11 of SECTOR 0 from >05A0 to >03D0. The following program is used to correct the SECTORS FORMATTED number.

```
       DEF  START
SECTOR DATA >03D0
START  LI   R12,>1200 CRU OF YOUR CARD
       LI   R1,7
       SWPB R1
       LDCR R1,8
       MOV  SECTOR,@>580A
       SBZ  0
       RT
       END  START
```

This completes the HORIZON RAMDISK 256K EXPANSION PROJECT.

Questions concerning this EXPANSION PROJECT should be sent to:
EDWARD A. HALLETT, 5600 S. COUNTRYCLUB #64, TUCSON AZ 85706. Phone (602)889-6930.

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FROM LES
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Thank you for letting me demonstrate the MYARC products. Just wish my hard disk system didn't crash, I wasn't quite prepared for an ad-lib demo. Even more important I hope you will all fogive me. I would like to make a trip out that way again with the new computer some day and show it to all of you.

I will provide to the group and to those who purchase products from me all future updates to hardware or software at no cost other than shipping. If a customer has a problem with a piece of hardware and it is in warranty I will replace the hardware instead of the customer having to send it to MYARC for a replacement. If the product is out of warranty we will also repair the product for a nominal fee plus parts.

Thanks again,
Les Merryman
MYARC Western Rep.

BUYER"S GUIDE

The following information is provided as a service to our members. The items listed are for sale by the individuals indicated and are subject to prior sale. The group assumes no responsibility for items listed and makes no claims as to their condition or interface capability with the TI-994A computer. Only computer related items will be accepted for publication in this newsletter.

TI-99/4A Console $50; PE Box (empty) $150; Extended Basic $30; TI LOGO $15; (plus the following cartridges) Tax/Investment Record Keeping; Attack; Number Magic; Car Wars; Tombstone City; and TI Invaders. Documentation and cables included. Call and make an offer John 296-8198.

Hunt the Wumpus command module $3. TI Program Cassette Recorder w/cable $25. Call Mike 722-8620 evenings and weekends.

TI 99/4A Console, PE Box, RS232, 32K Memory Expansion, Disk Drive and Controller, Speech Synthesizer, External Disk Drive with room for one more, original TI-99/4 Color Monitor (13"), Centronics printer, Super Sketch. Software: TI-Writer, Extended Basic, Multiplan, Editor/Assembler, Forth, Disk Fixer, Adventure, Parsec, Munchman, Moonmine, TI Invaders, Car Wars, Music Maker, and many more. Books: Compute's Guide to the TI-99/4A, Introduction to Assembly Language, Starting Forth and many more. Entire setup: $600. Call Tom Alquist 747-7628.

Sakata SG1000 high resolution green monitor composite video w/video cable $60. Call George 742-3091.

Parsec $3, Terminal Emulator II $6. All documentation included. Call BJ 747-5046.

TI-99/4A Console, PE Box w/CorComp DSDD Disk Controller Card, RS232 Card, and 32K Card. One SSSD Internal Disk Drive, one DSDD External Disk Drive, 13" Color TV, TI-Writer, MULTIplan, Editor/Assembler, Personal Record Keeping, Personal Report Generator, Personal Real Estate, Securities Analysis, Household Budget Management, Tax/Investment Recordkeeping, one year of Home Computer Magazines, over 50 disks with several programs including TI-Artist. Instruction manuals and documentation included. Selling as a unit for $600. Call Art Galvan at 748-8930 after 4pm.

TI-99/4A Console, TI Joysticks, Thermal printer, Cassette Recorder, 12" TV(BW), Selling all for $125 or best offer. Call Paul Garrison 747-3884 (Days) or 573-0572(Evenings).

From the SOUTHWEST NINETY-NINERS - Personal Real Estate $3, Household Budget Management $2, Home Financial Decisions $3. Call BJ 747-5046.