

DALLAS TI HOME COMPUTER GROUP DECEMBER, 1984

Meetings: 7:00pm, 3rd Friday each month
At Northlake College, Room B-206, Irving, Texas

>>> NEXT MEETING: Friday, 14 December, 1984 <<<

President: Robert Bayne
Vice-President: Keith Alther (STARTEXT: 49530)
Secretary: Richard Roberts (SOURCE: TT3332; STARTEXT: 7772)
Treasurer: Earl Bullock
Editor: Robert Lee Hoffpauer (SOURCE: TT3700; STARTEXT: 51547)

This newsletter is the official publication of the DALLAS TI HOME COMPUTER GROUP, a non-profit organization serving member/users of the Texas Instruments 99/4A HOME COMPUTER. For more information you are invited to attend our next meeting or send a SASE to: DALLAS TI HOME COMPUTER GROUP, ~~1800 W. Northlake Blvd.~~, Irving, Texas 75061.
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NOTICE: A NOMINATING COMMITTEE WAS APPOINTED AT THE NOVEMBER MEETING TO MAKE NOMINATIONS FOR OFFICERS TO BE ELECTED AT THE JANUARY MEETING FOR 1985. If you would be willing to serve as an officer for the next year, please attend the December or January meeting, or contact Keith Alther (270-5347), or Robert Hoffpauer (235-3325), or Richard Roberts (574-7822).

DECEMBER PROGRAM COMING FORTH: Ron Johnson

Robert Hoffpauer has graciously offered to give the program at December's meeting on a subject near and dear to his heart — FORTH. He will expound on the FORTH program he has published recently, and, hopefully, explain how to analyze those confusing listings. He has been reading about FORTH for many months, and has finally tried his hand at actually programming, so we can expect a thorough presentation of all those DUP's, @'s, MYSELF's, and +LOOP's. I hope to contribute my own solution to making his original BASIC change-making program run faster. Bring your thinking caps, your disks, and come out for the fun.

HOME CHANGEMAKING: Robert Lee Hoffpauer

Last month, I printed a listing in BASIC, and a listing in FORTH. Each of these listings calculated the number of ways to make change for a dollar — a pair of particularly useless programs. I also recommended that you run both programs (if you have FORTH) and time how long each takes to complete the calculation.

If you timed them, you found out that it took approximately 29.5 minutes for the BASIC program, and about 2.2 minutes for FORTH to do the same job. Working the relationship out on a calculator, the FORTH version ran just better than 12 and a half times faster than BASIC. But, is this a fair test?

Yes and no. This is a fair test only to the degree that what is being tested is the ability of the two languages to do loops. There are neither extensive calculations nor extensive input/output. However, since the writing of a program is aimed at producing a result, not in doing something the same way someone else does it, the test is not fair. It is biased in favor of BASIC, making FORTH look good, but less than great.

I wrote the FORTH version, partly as a personal exercise, and partly — as a tutorial. In the week following last month's meeting, I rewrote the FORTH CHANGEMAKER program, and have printed CHANGEMAKER2, below. In this program, I am attempting to do the same thing I had done before, but this time I tried to tackle the problem taking into account the particular features of FORTH. In particular, I eliminated most of the variables found in Version 1, and avoided the looping structure in favor of both manipulating values on the stack as well as using recursion. Recursion is when a procedure calls itself before it finishes. There is an example of a recursive routine in chapter 5, page 12, of the TI-FORTH manual.

The new program runs in 15 seconds, 110 times as fast as BASIC! Try that on for size.

SCR #30

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0 ( CHANGEMAKER VER 1.0 14 NOV 84 ) BASE->R DECIMAL
1
2 : CLEAROUT ;
3
4 0 VARIABLE PENNIES 0 VARIABLE NICKLES 0 VARIABLE DIMES
5 0 VARIABLE QUARTERS 0 VARIABLE HALVES 0 VARIABLE COUNTER
6
7 : ADDUP PENNIES @ NICKLES @ DIMES @ QUARTERS @ HALVES @
8   + + + + ;
9
10 : CHANGETEST 100 = ;
11
12 : PRINTIT 5 .R ;
13
14 -->
15

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SCR #31

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0 ( CHANGEMAKER CONTINUED )
1 : CHANGEMAKER 101 0 DO HALVES I SWAP !
2           101 0 DO QUARTERS I SWAP !
3           101 0 DO DIMES I SWAP !
4           101 0 DO NICKLES I SWAP !
5           101 0 DO PENNIES I SWAP !
6           ADDUP CHANGETEST
7           IF COUNTER DUP DUP @ 1+ SWAP ! @ PRINTIT ENDIF
8           5 +LOOP
9           5 +LOOP
10          10 +LOOP
11          25 +LOOP
12          50 +LOOP CR
13          CR ." TOTAL WAYS TO " CR
14          ." MAKE CHANGE FOR #1:" COUNTER @ PRINTIT
15 ; R->BASE CHANGEMAKER FORGET CLEAROUT

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