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A VERY IN-DEPTH ANALYSIS OF THE SPECIAL ASPECTS OF THE TI 59 PROGRAMMABLE:

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@@@ THE CONNECTION BETWEEN PROGRAM-MEMORY-LOCATIONS AND DATA-MEMORY-REGISTERS:

PERSONAL PROGRAMMING GIVES US THE NEXT SCHEDULE:

PROGRAM-LOCATIONS		DATA-REGISTERS
000 – 159	BANK 1, CARD 1 SIDE 1	
160 – 239		99 – 90
240 – 479	BANK 2, CARD 1 SIDE 2	89 – 60
480 – 719	BANK 3, CARD 2 SIDE 1	59 – 30
720 – 959	BANK 4, CARD 2 SIDE 2	29 – 00

BECAUSE OF THE FACT THAT ONE BANK CAN CONTAIN 240 PROGRAM-MEMORY-LOCATIONS OR 30 DATA-MEMORY-REGISTERS, WE MUST ACCEPT THAT EACH DATAREGISTER NEEDS 8 PROGRAM-LOCATIONS.
SUPPOSE THAT YOU STORE IN DATA-REGISTER 45 100 x PI x -1 = -314.1592654, THEN YOU WILL SEE (IF YOU PRESS 0 OP17 GTO 592 LIST):

			IN GENERAL YOU WILL FIND THE KEY-CODES
592	22	INV	... PQ ...
593	00	0	... MN ...
594	59	INT	... KL ...
595	53	(	... IJ ...
596	26	2ND	... GH ...
597	59	INT	... EF ...
598	41	SST	... CD ...
599	31	LRN	... AB ...

IN THE GENERAL CODE:

- A,BCDEFGHIJKLM x 10^{NP} IF Q = 0 OR 1
- \- A,BCDEFGHIJKLM x 10^{NP} IF Q = 2 OR 3
- A,BCDEFGHIJKLM x 10^{-NP} IF Q = 4 OR 5
- \- A,BCDEFGHIJKLM x 10^{-NP} IF Q = 6 OR 7
- A FLASHING DISPLAY IF Q = 8 OR 9

SO NOW YOU CAN SEE THAT 314.1592654 IS REWRITTEN TO THE NUMBER (AS STORED IN PROGRAM-LOCATIONS 592 TILL 599) $-3.141592653590 \times 10^2$
WHERE THE MANTISSA IS NEGATIVE SO THAT Q = 2.

NOTE 1: NORMALLY IS ONLY A,BCDEFGHIJ DISPLAYED, BUT THE TI 59 CALCULATES WITH THIRTEEN DIGITS, WHICH ALSO ARE STORED IN THE DATA-REGISTERS.
NOTE 2: THE CONTENTS OF DATA-REGISTER Z ONE CAN FIND IN PROGRAM-LOCATIONS 952 - 8xZ UP TO AND INCLUSIVE 959 - 8xZ.
HERE 952 - 8x45 = 592 UP TO AND INCLUSIVE PROGRAMLOCATION 599.

@@@ THE ALPHANUMERIC PRINTING LIST:

THE ALPHANUMERIC PRINTING LIST SUGGESTS THAT WE ONLY HAVE THE CODES FROM 0 TO 7 IN A MATRIX BY 70 TO 77. BUT NUMBERS AS 08,18,80 AND EVEN 99 HAVE A CODE.
SEE COMPLETE PRINTING INSTRUCTION BESIDES.

THIS IS VERY USEFUL WHEN YOU ONLY NEED THE DIGITS UP TO AND INCLUSIVE 8, BECAUSE THEN YOU DON'T HAVE TO SWITCH FOR 7 AS PRINTCODE 10.

THE COMPLETE PRINTINSTRUCTION: (UNITS DIGITS across, TEN DIGITS down)

TEN DIGITS	0123456789
0	012345678
1	789ABCDE78
2	-FGHIJKLMN
3	MNOPQRSTMN
4	.UVWXYZ+×*
5	×*Γπe(),×*
6	↑%!/='×x̄²?
7	²?÷√Π▲ΠΣ²?
8	012345678
9	789ABCDE78

@@@ DSZ X,N OR nnn AS DECREMENT AND SKIP TO ZERO:

IF YOU HAVE THE PROGRAM "LBL A RCL 01 PRT DSZ 1 A R/S" AND YOU STORE 5,3 IN DATA-REGISTER 01 YOU WILL SEE ON THE PAPER 5,3 4,3 3,3 2,3 1,3 0,3 WHICH MEANS 6 TIMES THE LOOP, WHILE BY 5 IN DATA-REGISTER 01 ONLY 5 4 3 2 1 IS PRINTED, WHICH MEANS ONLY 5 TIMES THE LOOP.

THE SECOND THING IS THAT PERSONAL PROGRAMMING SAYS IN DSZ X,N OR nnn X CAN ONLY BE 0 UP TO AND INCLUSIVE 9. THIS IS NOT COMPLEET. X CAN BE ANY DATA-REGISTER YOU WANT (IN THE PRESENT PARTITIONING). THERE IS JUST ONE PROBLEM "HOW DO YOU GET LET'S SAY DSZ 55, 219 IN YOUR PROGRAM.
WELL THE ANSWER IS, KEY IN DSZ ÷ 2 D'. (TRY IT) YOU SEE, DSZ IS MORE POWERFUL THEN TI SUGGEST.

@@@ THE FLAG-INSTRUCTION:

DOES THE SAME APPEAR BY THE FLAG-INSTRUCTIONS, SO THAT WE HAVE 99 FLAGS? WELL THE ANSWER IS NO!! IF YOU PUT IN A PROGRAM IF FLG 26, A THEN THE SAME TRANSFER WILL BE MADE IF THERE STOOD IF FLG 6, A.

@@@ IS MY CALCULATOR DEFECT?

IF YOU KEY THE NEXT IN YOUR MACHINE "5151515151 OP01 OP02 OP03 OP04 OP05 P/R OP05" THEN YOU WILL SEE AT FIRST ******************** AND BY THE SECOND PRINTING ********** CCC7 , AND YOU WILL INDEED THINK "IS MY CALCULATOR DEFECT, WELL IT IS NOT DEFECT, READ THE NEXT EXCITING STORY OF THE HIERARCHICAL INTERNAL REGISTERS.

THE HIERARCHICAL INTERNAL REGISTERS:

THE ONLY EXPLANATION I COULD FIND FOR THE FACT THAT OUR TI 59 PROGRAMMABLE HAS 8 INTERNAL REGISTERS IS, THAT THE MACHINE CAN HOLD 8 PENDING OPERATIONS AND THEREFORE NEED TO HAVE 8 REGISTERS TO SAVE THE NUMBERS OF THE PENDING OPERATIONS. I SHALL GIVE YOU SOME EXAMPLES OF THE CONTENTS YOU CAN FIND AND IN WHICH INTERNAL REGISTER BY USE OF THE NORMAL AND SIMPLE FUNCTIONS:

WHEN YOU SWITCH ON YOUR CALCULATOR AND KEY-IN THE NEXT.....	YOU WILL FIND IN INTERNAL REGISTER: 1	2	3	4	5	6	7	8	
9									THERE IS NOTHING AFFECTED
8+/8x/8-/8:	8								
7x9	7								
6x8+	48								
5x7+9	36								
6:3+8x	2	8							
(((((((((4									THERE IS NOTHING AFFECTED
2+5x	2	5							
1+4x(((((3+2x(9+7:(5-8x(	1	4	3	2	9	7	5	8	

IN THE LAST EXAMPLE YOU CAN SEE THAT THERE ARE 8 PENDING (NOT FINISHED) OPERATIONS. THERE ARE ALSO 9 PARANTHESES OPENED BUT THAT DOES NOT AFFECT THE NUMBER OF PENDING OPERATIONS. (SEE SEVENTH EXAMPLE WITH (((((((((4 WHERE AT THIS POINT STILL ROOM IS FOR 8 PENDING OPERATIONS, BECAUSE NO INTERNAL REGISTER IS USED.).

HIR-FUNCTION:

HIR XY (82 XY) IS THE COMPLETE HIR FUNCTION, WHEREBY Y IS THE NUMBER FOR THE SPECIFIC INTERNAL REGISTER (1-8), AND X GIVES THE OPERATION WITH THAT SPECIFIC INTERNAL REGISTER:

HIR 0Y STORES THE DISPLAYNUMBER INTO INTERNAL REGISTER Y WITHOUT AFFECTING THE DISPLAY-VALUE.

HIR 1Y RECALLS THE NUMBER OF THE Y-TH INTERNAL REGISTER INTO THE DISPLAYREGISTER.

HIR 3Y ADDS THAT WHAT IS IN THE DISPLAYREGISTER TO THAT WHAT IS IN INTERNAL REGISTER Y WITHOUT AFFECTING THE DISPLAYREGISTER.

HIR 4Y MULTIPLIES THAT WHAT IS IN THE DISPLAYREGISTER WITH THE VALUE IN INTERNAL REGISTER Y AND STORES THE PRODUCT INTO REGISTER Y WITHOUT AFFECTING THE DISPLAYREGISTER.

HIR 5Y SUBTRACTS THAT WHAT IS IN THE DISPLAY FROM THAT WHAT IS IN INTERNAL REGISTER Y AND STORES THE DIFFERENCE INTO INTERNALREGISTER Y.

HIR 6Y DIVIDES THE CONTENTS OF INTERNAL REGISTER Y BY THE CONTENTS OF THE DISPLAY AND STORES THE QUOTIENT INTO INTERNAL REGISTER Y, AGAIN WITHOUT DISTURBING THE DISPLAY REGISTER.

HIR 2Y LET ME SAY "SEEMS" TO HAVE NO FUNCTION (LEAVES EVERYTHING UNAFFECTED).

HIR 7Y HAS THE SAME FUNCTION AS HIR 6Y.

HIR 8Y HAS THE SAME FUNCTION AS HIR 6Y.

HIR 9Y HAS THE SAME FUNCTION AS HIR 6Y.

INV HIR 3Y HAS THE SAME FUNCTION AS HIR 5Y.

INV HIR 4Y HAS THE SAME FUNCTION AS HIR 6Y, HIR 7Y, HIR 8Y AND HIR 9Y.

SO, WITHIN INTERNAL REGISTER 6 THE NUMBER 100, "67 HIR 56", MEANS SUBTRACT 67 FROM 100 IS 33 IN INTERNAL REGISTER 6 AND LEAVES 67 IN THE DISPLAYREGISTER (UNAFFECTED).

HOW TO GET A HIR-FUNCTION IN YOUR MACHINE?
SUPPOSE YOU WANT TO HAVE HIR 55 (DIVIDES INTERNAL REGISTER 5 BY THE DISPLAY-VALUE) IN A PROGRAM. THEN PRESS SUM 8 2 SUM 5 5 BST BST DEL BST BST DEL. ANOTHER WAY HERE IS: SUM 8 2 : BST BST BST DEL, BECAUSE THE KEY-CODE OF KEY ":" IS 55.

ON THE SECOND PAGE OF THIS STORY YOU WILL FIND THE INFLUENCE OF THE STATISTIC FUNCTIONS, WHICH USE MORE THAN ONE PENDING OPERATION AND THEY ARE:

INV $\Sigma+$ ($\Sigma-$)
INV $\bar{x}$
OP 11
OP 12
OP 13
OP 14
OP 15

ON THE THIRD AND LAST PAGE THE OTHER FUNCTIONS WHICH USE MORE THAN ONE INTERNAL REGISTER AND THEY ARE:

INV Y^x
DMS
INV DMS
P/R
INV P/R
OP 00
OP 01
OP 02
OP 03
OP 04

THE STATISTIC FUNCTIONS AND THEIR USE OF THE HIERARCHICAL INTERNAL REGISTERS:

STATISTIC SUM (Σ_+) AND STATISTIC DELAY (INV Σ_+) OR Σ_-):

STATISTIC SUM ASSIMULATES EACH PAIR OF VARIABLES INTO THE SIX DATAREGISTERS (01-06) AND GIVES US THE NUMBER OF PAIRS ENTERED IN THE DISPLAY IN RETURN TOGETHER WITH AN INCREASING OF "1" OF THE TESTREGISTER AND THEREBY USING HIR 7 AND HIR 8.
STATISTIC DELAY REMOVES IN THE SAME WAY THE UNWANTED PAIRS.

WITH:	IN:	Σ_+ GIVES:	Σ_- GIVES:
d	DISPLAY	C + 1	C - 1
t	TESTREGISTER	t + 1	t - 1
ANYTHING	HIR 7	t + 1	t - 1
ANYTHING	HIR 8	td (=txd)	-td
A	DATAREGISTER 01	A + d	A - d
B	DATAREGISTER 02	B + d^2	B - d^2
C	DATAREGISTER 03	C + 1	C - 1
D	DATAREGISTER 04	D + t	D - t
E	DATAREGISTER 05	E + t^2	E - t^2
F	DATAREGISTER 06	F + td	F - td

SO WE SEE:

DATAREGISTER 01 SUMS DISPLAYVALUES..... Σd
DATAREGISTER 02 SUMS QUADRATIC DISPLAYVALUES..... Σd^2
DATAREGISTER 03 SUMS NUMBER OF ENTERED PAIRS..... N
DATAREGISTER 04 SUMS TESTREGISTERVALUES..... Σt
DATAREGISTER 05 SUMS QUADRATIC TESTREGISTERVALUES..... Σt^2
DATAREGISTER 06 SUMS PRODUCTS OF TEST- AND DISPLAYVALUES..... Σtd

THE MEAN ($\bar{x}$):

THE MEAN COMPUTES THE MEAN OF THE TESTREGISTERVALUES ENTERED AND THE MEAN OF THE DISPLAYVALUES ENTERED AND GIVES THEM TO US IN RESPECTIVELY TESTREGISTER AND DISPLAYREGISTER, WHILE IT IS USING THE FIRST AVAILABLE HIR. WITH "FIRST AVAILABLE HIR" IS MEANT, NORMALLY HIR 1, BUT WHEN YOU PRESS 5 + $\bar{x}$, YOU WILL FIND 5 IN HIR 1 AND $\bar{x}$ USES NOW THE SECOND HIR.

WITH:	IN:	GIVES THE OUTPUT:
ANYTHING	DISPLAY	$\bar{d} = \frac{\Sigma d}{N} = \frac{D1}{D3}$
ANYTHING	TESTREGISTER	$\bar{t} = \frac{\Sigma t}{N} = \frac{D4}{D3}$
ANYTHING	HIR 1 (FA)	$\Sigma d = D1$

THE STANDARDDEVIATION ($I\bar{x}$):

$I\bar{x}$ COMPUTES THE STANDARDDEVIATION WITH A WEIGHT OF (N-1) OF THE DISPLAYVALUES IN THE DISPLAY AND OF THE TESTREGISTERVALUES IN THE TESTREGISTER, WHILE $I\bar{x}$ IS USING THE FIRST TWO AVAILABLE HIRS TOGETHER WITH HIR 8 (SEE NOTE).

WITH:	IN:	GIVES THE OUTPUT:
ANYTHING	DISPLAY	$\sigma_d = \sqrt{\frac{\Sigma d^2 - \frac{(\Sigma d)^2}{N}}{N-1}} = \sqrt{\frac{D2 - \frac{D1^2}{D3}}{D3-1}}$
ANYTHING	TESTREGISTER	$\sigma_t = \sqrt{\frac{\Sigma t^2 - \frac{(\Sigma t)^2}{N}}{N-1}} = \sqrt{\frac{D5 - \frac{D4^2}{D3}}{D3-1}}$
ANYTHING	HIR 1 (FA)	$\Sigma d^2 - \frac{(\Sigma d)^2}{N} = D2 - \frac{D1^2}{D3}$
ANYTHING	HIR 2 (SA)	$(\Sigma d)^2 = D1^2$
ANYTHING	HIR 8	$\Sigma t^2 = D5$

THE VARIANCE OP 11:

OP 11 CALCULATES THE VARIANCE WITH A WEIGHT OF (N) OF THE DISPLAYVALUES AND OF THE TESTREGISTERVALUES RESP. IN DISPLAY AND TESTREGISTER AND USES THE FIRST TWO AVAILABLE HIRS (SEE NOTE).

WITH:	IN:	GIVES THE OUTPUT:
ANYTHING	DISPLAY	$\sigma_d^2 = \frac{\Sigma d^2}{N} - \left(\frac{\Sigma d}{N}\right)^2 = \frac{D2}{D3} - \left(\frac{D1}{D3}\right)^2$
ANYTHING	TESTREGISTER	$\sigma_t^2 = \frac{\Sigma t^2}{N} - \left(\frac{\Sigma t}{N}\right)^2 = \frac{D5}{D3} - \left(\frac{D4}{D3}\right)^2$
ANYTHING	HIR 1 (FA)	$-\frac{\Sigma t^2}{N} = -\frac{D4^2}{D3}$
ANYTHING	HIR 2 (SA)	$\Sigma t^2 = D5$

NOTE BY STANDARDDEVIATION AND VARIANCE:

STANDARDDEVIATION AND VARIANCE ARE CONNECTED BY THE SIMPLE FORMULA THAT THE VARIANCE IS THE QUADRATIC VALUE OF THE VARIANCE. THE ONLY THING THAT DIFFERS IS THE WEIGHT N OR N-1:

		WEIGHT:	PRESS KEYS:	NOTE:
FOR A STANDARDDEVIATION	WITH	N-1	INV $\bar{x}$	
FOR A STANDARDDEVIATION	WITH	N	OP 11 V$\bar{x}$	SQUARE ROOT OF VARIANCE OP 11
FOR A VARIANCE	WITH	N-1	INV $\bar{x}$ x^2	QUADRATIC STANDARDDEVIATION INV $\bar{x}$
FOR A VARIANCE	WITH	N	OP 11	

OP 12 FOR b-INTERCEPT AND SLOPE m:

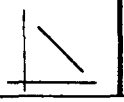
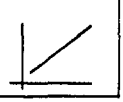
OP 12 GIVES IN DISPLAY THE b-INTERCEPT OF THE LINE THAT FITTED TO THE DATAPOINTS (t,d) AND THE D-AXIS, AND IN THE TESTREGISTER YOU SEE THE SLOPE m OF THE LINE MENTIONED. (THE SLOPE m EQUALS THE TANGENT OF THE ANGLE BETWEEN THE LINE BEST FITTED TO THE DATA-POINTS AND THE T-AXIS). OP 12 USES THE FIRST THREE AVAILABLE HIRS TOGETHER WITH HIR 8, WHERE ONE CAN FIND AN EXACT COPY OF THE DISPLAYREGISTER BEFORE PRESSING OP12.

WITH:	IN:	GIVES THE OUTPUT:	
ABCDE,FGH	DISPLAY	$b = \frac{\Sigma d - m \times \Sigma t}{N}$	$= \frac{D1 - m \times D4}{D3}$
ANYTHING	TESTREGISTER	$m = \frac{\Sigma td - \frac{\Sigma t \times \Sigma d}{N}}{\Sigma t^2 - \frac{(\Sigma t)^2}{N}}$	$= \frac{D6 - \frac{D4 \times D1}{D3}}{D5 - \frac{(D4)^2}{D3}}$
ANYTHING	HIR 1 (FA)	$\frac{\Sigma d - m \times \Sigma t}{N}$	$= \frac{D1 - m \times D4}{D3}$
ANYTHING	HIR 2 (SA)	Σt^2	$= D5$
ANYTHING	HIR 3 (TA)	$(\Sigma t)^2$	$= (D4)^2$
ANYTHING	HIR 8	ABCDE,FGH	IS DISPLAY-COPY

OP 13 FOR THE CORRELATIONCOEFFICIENT:

OP 13 COMPUTES THE CORRELATIONCOEFFICIENT R OF THE INDIVIDUAL DATAPOINTS IN RELATION TO THE LINE FITTED TO THESE POINTS. THE MACHINE USES HERE THE FIRST FOUR AVAILABLE HIRS.

R WILL BE BETWEEN -1 AND +1 AND WELL

-1 FOR PERFECT NEGATIVE CORR:	+1 FOR PERFECT POSITIVE CORR:
	

WITH:	IN:	GIVES THE OUTPUT:	
	$R = m \times \frac{\sigma_t}{\sigma_d}$		
ANYTHING	DISPLAY	$\frac{\Sigma td - \frac{\Sigma t \times \Sigma d}{N}}{\Sigma t^2 - \frac{(\Sigma t)^2}{N}} \times \frac{\sqrt{\Sigma t^2 - \frac{(\Sigma t)^2}{N-1}}}{\sqrt{\Sigma d^2 - \frac{(\Sigma d)^2}{N-1}}}$	$= \frac{D6 - \frac{D4 \times D1}{D3}}{\sqrt{D5 - \frac{(D4)^2}{D3} \times D2 - \frac{(D1)^2}{D3}}}$
ANYTHING	HIR 1 (FA)	$\Sigma td - \frac{\Sigma t \times \Sigma d}{N}$	$= D6 - \frac{D4 \times D1}{D3}$
ANYTHING	HIR 2 (SA)	$\Sigma t^2 - \frac{(\Sigma t)^2}{N}$	$= D5 - \frac{(D4)^2}{D3}$
ANYTHING	HIR 3 (TA)	Σd^2	$= D2$
ANYTHING	HIR 4 (FA)	$(\Sigma d)^2$	$= (D1)^2$

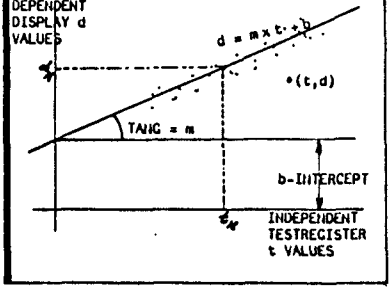
OP 14 THE ESTIMATION FOR d FOR A GIVEN t:

COMPUTES AND DISPLAYS A LINEAR ESTIMATE OF d ON THE LINEAR REGRESSION LINE CORRESPONDING TO AN t-ENTRY FROM THE KEYBOARD (VIA DISPLAY) AND USING TESTREGISTER, FIRST THREE AVAILABLE HIRS AND HIR 8 (AGAIN FOR A DISPLAYVALUE-DUPLICATION).

WITH:	IN:	GIVES THE OUTPUT:	
t_{new}	DISPLAY SO:	$d_{new} = m \times t_{new} + b$	
t_{new}		$\frac{\Sigma td - \frac{\Sigma t \times \Sigma d}{N}}{\Sigma t^2 - \frac{(\Sigma t)^2}{N}} \times (t_{new} - \frac{\Sigma t}{N}) + \frac{\Sigma d}{N}$	$= \frac{D6 - \frac{D4 \times D1}{D3}}{D5 - \frac{(D4)^2}{D3}} \times (t_n - \frac{D4}{D3}) + \frac{D1}{D3}$
ANYTHING	TESTREGISTER & HIR 1 (FA)	$\frac{\Sigma td - \frac{\Sigma t \times \Sigma d}{N}}{\Sigma t^2 - \frac{(\Sigma t)^2}{N}} \times t_{new}$	$= \frac{D6 - \frac{D4 \times D1}{D3}}{D5 - \frac{(D4)^2}{D3}} \times t_{new}$
ANYTHING	HIR 2 (SA)	Σt^2	$= D5$
ANYTHING	HIR 3 (TA)	$(\Sigma t)^2$	$= (D4)^2$
ANYTHING	HIR 8	t_{new}	IS DISPLAY-COPY

OP 15 THE ESTIMATION FOR t FOR A GIVEN d:

COMPUTES AND DISPLAYS A LINEAR ESTIMATE OF t ON THE LINEAR REGRESSION LINE CORRESPONDING TO AN d-ENTRY FROM THE KEYBOARD (VIA DISPLAY) AND USING AGAIN THE TESTREGISTER, THE FIRST THREE AVAILABLE HIRS AND HIR 8.



WITH:	IN:	GIVES AN OUTPUT:	
d_{new}	DISPLAY SO:	$t_{new} = \frac{d_{new} - b}{m}$	
d_{new}		$\frac{\Sigma t^2 - \frac{(\Sigma t)^2}{N}}{\Sigma td - \frac{\Sigma t \times \Sigma d}{N}} \times (d_{new} - \frac{\Sigma d}{N}) - \frac{\Sigma t}{N}$	$= \frac{D5 - \frac{(D4)^2}{D3}}{D6 - \frac{D4 \times D1}{D3}} \times (d_n - \frac{D1}{D3}) - \frac{D4}{D3}$
ANYTHING	TESTREGISTER & HIR 1 (FA)	$d_{new} - \frac{\Sigma d - m \times \Sigma t}{N}$	$= d_{new} - \frac{D1 - m \times D4}{D3}$
ANYTHING	HIR 2 (SA)	Σt^2	$= D5$
ANYTHING	HIR 3 (TA)	$(\Sigma t)^2$	$= (D4)^2$
ANYTHING	HIR 8	d_{new}	IS DISPLAY-COPY

NON STATISTIC FUNCTIONS AND THEIR USE OF HIERARCHICAL INTERNAL REGISTERS:

POWERKEY Y^x AND ROOTKEY $\sqrt[x]{Y}$:

AS WELL AS THE POWERKEY AS THE ROOTKEY USE THE FIRST AVAILABLE HIR TO STORE THE NUMBER THAT IS RAISED TO A POWER RESPECTIVELY TO ITS ROOTS.

PRESS FIRST THE NUMBER YOU WANT RAISED TO A POWER, THEN THE POWERKEY AND THEN THE POWER AND AT LAST =.

WITH:	IN:	GIVES THE OUTPUT:
A,B Y^x C =	DISPLAY	A,B^C
A,B INV Y^x C =	DISPLAY	$C\sqrt{A,B}$
ANYTHING	HIR 1 (FA)	A,B (BY BOTH)

DEGREE FORMAT CONVERSIONS D.MS:

D.MS CONVERTS FROM THE DEGREE,MINUTE-SECOND FORMAT TO DECIMAL DEGREES (DDD,MMSSsss TO DDD,dddd). D.MS USES THE FIRST TWO AVAILABLE HIRS AND HIR 8.

WITH:	IN:	GIVES THE OUTPUT:
AAB.CCDDE	DISPLAY	$AAB + .CC \times \frac{100}{60} + .00DDE \times \frac{10000}{3600}$
ANYTHING	HIR 1 (FA)	AAB x 36 + .CC x 60 + .00DDE x 100
ANYTHING	HIR 2 (SA)	.CCDDE
ANYTHING	HIR 8	CC.DDE

INVERSE DEGREE CONVERSIONS INV D.MS:

INV D.MS CONVERTS FROM DECIMAL DEGREES TO DEGREE,MINUTE-SECOND FORMAT (DDD,dddd TO DDD,MMSSsss). INV D.MS USES THE FIRST TWO AVAILABLE HIRS AND HIR 8.

WITH:	IN:	GIVES THE OUTPUT:
AAB.CCDDE	DISPLAY	$\frac{INT(G) + 6 \times INV\ INT(G)}{100}$ $(G) = AAB \times 100 + .CCDDE \times 6$
ANYTHING	HIR 1 (FA)	INT(G) + 6 x INV INT(G)
ANYTHING	HIR 2 (SA)	INV INT(G)
ANYTHING	HIR 8	(G) = AAB x 100 + .CCDDE x 6

POLAR/RECTANGULAR CONVERSION P/R:

P/R CONVERTS FROM POLAR TO RECTANGULAR COORDINATES.
THIS FUNCTION USES THE FIRST AVAILABLE HIR TOGETHER WITH HIR 7 AND HIR 8.

BE SURE THAT THE ANGULAR MODE IS CORRECT

WITH:	IN:	GIVES THE OUTPUT:
d_{angle}	DISPLAY	$SIN(d_{ANGLE}) \times t_R$ (= d-COORDINATE)
t_R	TESTREGISTER	$COS(d_{ANGLE}) \times t_R$ (= t-COORDINATE)
ANYTHING	HIR 1 (FA)	$SIN(d_{ANGLE})$
ANYTHING	HIR 7	t_R
ANYTHING	HIR 8	d_{ANGLE}

RECTANGULAR/POLAR CONVERSION INV P/R:

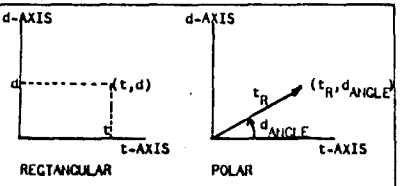
INV P/R CONVERTS RECTANGULAR TO POLAR COORDINATES.
THIS FUNCTION USES BESIDES HIR 7 AND HIR 8 TOGETHER WITH THE FIRST AVAILABLE HIR ALSO THE SECOND AVAILABLE HIR.

BE SURE THAT THE ANGULAR MODE IS CORRECT

WITH:	IN:	GIVES THE OUTPUT:
d-COORD.	DISPLAY	INV TAN $(\frac{d}{t})$ (= d_{ANGLE})
t-COORD.	TESTREGISTER	$\sqrt{d^2 + t^2}$ (= t_R)
ANYTHING	HIR 1 (FA)	0 (= ZERO)
ANYTHING	HIR 2 (SA)	d-COORDINATE
ANYTHING	HIR 7	t-COORDINATE
ANYTHING	HIR 8	d-COORDINATE

NOTE BY POLAR TO RECTANGULAR AND RECTANGULAR TO POLAR:

ANGULAR MODE — DEG / RAD / GRAD — ANGULAR MODE



	WITH:	IN:	GIVES THE OUTPUT:
00 CLEAR PRINT-REGISTER 1-4 OP 00:	ABCDEFGHIJ,KLMN	DISPLAY	ABCDEFGHIJ
	ANYTHING	HIR 5	0
OP 00 CLEARS THE FOUR PRINTREGISTERS	ANYTHING	HIR 6	0
AND ON THE DISPLAY IT WORKS JUST	ANYTHING	HIR 7	0
LIKE THE INTEGER (INT)-FUNCTION.	ANYTHING	HIR 8	0
00 FILL PRINT-REGISTER 1 OP 01:	ABCDEFGHIJ,KLMN	DISPLAY	ABCDEFGHIJ
	ANYTHING	HIR 5	0.00ABCDEFGHIJ
FILL PRINT-REGISTER 2 OP 02:	ABCDEFGHIJ,KLMN	DISPLAY	ABCDEFGHIJ
	ANYTHING	HIR 6	0.00ABCDEFGHIJ
FILL PRINT-REGISTER 3 OP 03:	ABCDEFGHIJ,KLMN	DISPLAY	ABCDEFGHIJ
	ANYTHING	HIR 7	0.00ABCDEFGHIJ
FILL PRINT-REGISTER 4 OP 04:	ABCDEFGHIJ,KLMN	DISPLAY	ABCDEFGHIJ
	ANYTHING	HIR 8	0.00ABCDEFGHIJ

OP 01 TILL OP 04 ARE ALL WORKING AS
INTEGER.
OP 05 AND OP 06 ARE ONLY FOR THE
PRINTING ON THE PC-100A/B.
WE SEE THAT THE PRINT-CODE-INSTRUCTION IS DIVIDED BY 10^{12}.

LAST NOTE BY THE LAST FOUR OP-INSTRUCTIONS:

IF WE STORE 0.0051515151 IN HIR 8 WITH THE INSTRUCTION HIR 08, THEN WITH OP 05 WE SEE THAT IN PRINT-REGISTER 04 ARE NO VIFE STARS ***** BUT ONLY CCC7 . (PRINTCODE: 1515151000).
HOW THE MACHINE EXACTLY IS WORKS WITH THE PRINTREGISTERS I DON'T KNOW.
BUT IF YOU STORE IN PRINTREGISTER 4 999.5151515151 OR 9995151515.151 THEN IT WORKS.

RULE:
IF YOU WANT TO STORE A PRINTCODE IN A HIR PLACE THREE DUMMY DIGITS FOR THE PRINTCODE, AND IT DOESN'T MATTER WERE THE COMMA IS STANDING AND YOU WILL GET YOUR RIGHT PRINTCODE.

IF YOU FIND SOMETHING INCORRECT OR HAVING SOME NEW INFORMATION,
PLEASE SEND A COPY TO:

A. HOOYER
WIARDI BECKMANSTRAAT 184
3762 ME SOEST
THE NETHERLANDS

THANKS