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MATHEMATICAL PHYSICS LABORATORY.

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Report No. NS t 76
Date 14.9.55
Reference
Order No.

Front Sheet.

Data Sheet 1.

Figure sheet S6/10216

DEUCE Subroutine No. 84 (RO1/1)

Report by
N.P.L.

SUMMARY.

The attached document contains details of a DEUCE Subroutine which has been prepared and tested by N.P.L.

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Description. First Order subroutine for reading one signed decimal number of up to 10 decimal digits, but with checks for decimal punching not used in R01 (No. 27).

Data. a a signed decimal integer to m digits.
$1 \leq m \leq 10$, and if $m = 10$ $|a| < 2^{31}$.
The card has sign in DEUCE Col. 1 and digits in DEUCE Cols. 2 - (m + 1).

Result. a converted to binary. Failure if the card is not decimally punched.

Instructions for Use.

Stores Used.	13	14	15	16	21_2	21_3
Contents at Entry.	Link	-	-	-	-	-
Contents at Exit.	a	zero	-	zero	$\|a\|$	X row of card.

Occupies. m.c. 0 to 30.

Entry. m.c. 25

Time. 3 m.s. after last one-shot.

Parameters. P_{m+2} in m.c. 11

$P_{2 \bullet\bullet\bullet (m+1)}$ in m.c. 18

Failure indication in m.c. 3. (this should be clear read and anything else desired).

NOTE: There is no 'CLEAR READ' instruction in this subroutine.

							Y
							X
							0
							1
0	2	13	28	0	0		2
1	2	2	16	15	13		3
2	2	26	14	0	3		4
3	2	9	24	0	30		5
4	2	26	14	0	0		6
5	2	14	28	0	19		7
6	2	27	15	0	0		8
7	2	14	16	0	0		9
8	2	25	25	0	0		Y
9	2	2	15	0	2		X
10	2	23	14	0	0		0
11		P_{m+2}					1
12	2	26	28	0	0		2
13	2	2	24	0	21		3
14	2	13	22	0	0		4
15	2	13	15	0	0		5
16	2	2	15	0	1		6
17	2	15	25	1 11	19		7
18		P_2 ---		P_{m+1}			8
19	2	0	14	0	0	X	9
20	2	12	24	0	0		Y
21	2	25	14	0	0		X
22	2	30	21	0	0	X	0
23	2	16	15	0	2		1
24	2	0	21	1	7	X	2
25	2	13	1	3	25		3
26	2	22	27	0	0		4
27	2	14	13	0	1		5
28	1	21	13	0	2		6
29	1	21	26	1	31		7
30	2	25	26	0	0		8
31							9

2_{25} 13 - 1_{30}

2_{20} 12 - 24

2_{22} 30 - 21_2 X

2_{24} 0 - 21_3 X Minus sign.

2_1 2_{18} - 16 $[P_2 \ldots P_{m+1}]$

→ 2_{16} 2_{18} - 15

2_{19} 0 - 14 X

2_{21} 25 - 14

2_{23} 16 - 15

2_{27} 14 - 13 ←

2_{30} 25 - 26 Check that no mote than one

2_0 13 - 28 digit in each column.

Z ↓ N.Z →

2_2 26 - 14 2_3 9 - 24 ←

2_7 14 - 16

2_9 2_{11} - 15 $[P_{m+2}]$ Marker

2_{13} 2 - 24

Z ↓ N.Z →

2_4 26 - 14 2_5 14 - 28 Check that

2_6 27 - 15 ← 2_{17} Z ↓ 28 at least one digit

2_8 25 - 25 Add in N.Z per column.

2_{10} 23 - 14 digit and Sign is P1

2_{12} 26 - 28 mult. by 2_{26} 22_2 - 27 - in 21_3

Z ↓ ten. ← ↘

2_{28} 21_2 - 13 2_{29} 21_2 - 26

N.Z ↘ ← Change Sign if necessary

2_{14} 13 - 22_2 1_{30}

2_{15} 13 - 15

2_{17} 15 - 25 (9 m.c.)

2_6

CODING AND FLOW DIAGRAM FOR SUBROUTINE No 84 (R01/1) Read one decimal number.

Date AUGUST 1955

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