

APPROVED BY

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Read Decimal Integers Routine, MU RDI2

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PURPOSE

To read up to two decimal integers from a card, convert them to binary integers and place them in core storage.

METHOD

Accuracy: Integers, I, are read and converted exactly.

Range: $0 \leq I \leq 999,999,999$

Procedure: The decimal digits d_i of the integers are read and decoded from the card row-by-row without the use of a card image. In the course of this the decimal digits are packed as binary coded decimal digits. This sequence of digits d_i is then converted to the proper binary integer by use of the algorithm

$$P_i = 10P_{i-1} + d_i$$

where P_i is the partially converted integer at the i th stage. After the last digit has been processed, this is the desired integer.

USAGE

Calling Sequence: The data cards to be read are readied in the reader.

UA SAP	
<u>Loc.</u>	<u>Instruction</u>
α	TSX RDI2, 4
$\alpha + 1$	return

MURASS	
<u>Loc.</u>	<u>Instruction</u>
α	BTSX A
$\alpha + 1$	return

Space Required:

62 words program at:
6 words temporary at:

UA SAP
RDI2
COMMON

MURASS
A
T

Card Format: Starting in column one the first integer is punched followed by a blank, followed by the second integer followed by a blank. Up to nine

columns may be used to specify both integers and the intervening space, and either integer may be omitted. The word omission means "leaving out and closing up" rather than "leaving out and replacing by space." No signs may be punched and the integers are considered positive. The first integer is placed in COMMON and the second in COMMON + 1.

CODING INFORMATION

Exit from this routine is after each card with 12R in the accumulator as a logical word. Exit is also made on END OF FILE. 24.9 ms. are available for computing between exit and re-entry in order to keep the reader operating at full speed.

RD12	REM RD12 MURA READ DECIMAL INTEGERS	MU	RD12
	SXD COMMON+4,1 SAVE IR1		RD12 0001
	RCD		RD12 0002
	CLA RD12+59		RD12 0003
	STO COMMON+5 SET T EQUAL TO 10		RD12 0004
	PXD 2,0		RD12 0005
	STO COMMON+2 CLEAR CHARACTER WORD		RD12 0006
	CPY COMMON LEFT COPY		RD12 0007
	TRA RD12+42 TO RIGHT COPY		RD12 0008
	TRA RD12+28 TO END OF FILE		RD12 0009
	CLA RD12+15 END OF RECORD, CONVERT INTEGERS		RD12 0010
	STA RD12+20 SET SWITCH TO I SUB 1		RD12 0011
	PXD 9,0		RD12 0012
	STO COMMON+1 CLEAR CONSTRUCTION WORD		RD12 0013
	LXA RD12+11,1 SET IR1 TO 9		RD12 0014
	LDQ COMMON+2 CHARACTER WORD IN MQ		RD12 0015
	PXD RD12+21,0 CLEAR AC		RD12 0016
	LGL 4 X IN AC		RD12 0017
	STO COMMON+5 STORE X		RD12 0018
	TNZ RD12+31 IF NOT 0, NOT A BLANK		RD12 0019
	CAL COMMON+1		RD12 0020
	TRA SWITCH		RD12 0021
	STO COMMON STORE FIRST INTEGER		RD12 0022
	CAL RD12+33		RD12 0023
	STA RD12+20 SET SWITCH TO I SUB 2		RD12 0024
	PXD 0,0		RD12 0025
	STO COMMON+1 CLEAR CONSTRUCTION WORD		RD12 0026
	TIX RD12+15,1,1 TO NEXT CHARACTER		RD12 0027
	TRA RD12+20 TO SWITCH		RD12 0028
	CAL COMMON+3 IZR IN AC		RD12 0029
	LXD COMMON+4,1 RESTORE IR1		RD12 0030
	TRA 1,4 EXIT		RD12 0031
	SUB RD12+60 X-12 IN AC		RD12 0032
	TNZ RD12+35 I NOT 0, X NOT 0		RD12 0033
	PXD RD12+28,0 CLEAR AC		RD12 0034
	STO COMMON+5 STORE X		RD12 0035
	CLA COMMON+1 CONSTRUCTION WORD		RD12 0036
	ALS 2 4N		RD12 0037
	ADD COMMON+1 5N		RD12 0038
	ALS 1 10N		RD12 0039
	ADD COMMON+5 10N+X		RD12 0040
	STO COMMON+1 STORE WORD TO DATE		RD12 0041
	TRA RD12+26 PROCEED TO NEXT CHARACTER		RD12 0042
	CPY COMMON+3 RIGHT COPY		RD12 0043
	CLA COMMON+5 T IN AC		RD12 0044
	SUB RD12+61 T-1		RD12 0045
	TNZ RD12+47 IF NOT 0, STORE		RD12 0046
	CLA RD12+60 12		RD12 0047
	STO COMMON+5 STORE T		RD12 0048
	LDQ COMMON LEFT COPY WORD IN MQ		RD12 0049
	LXA RD12+11,1 SET IR1 TO 9		RD12 0050
	PXD 0,0 CLEAR AC		RD12 0051
	ALS 4		RD12 0052
	TOP RD12+54 IF MQS IS PLUS, DO NOT ADD T		RD12 0053

ADD COMMON+5
RSL 1
TIX RD12+51,1,1
ACL COMMON+2
SLW COMMON+2
TRA RD12+6
HTR 10
HTR 12
HTR 1

ADD T
GENERATE PARTIAL CHARACTER WORD
ADD CHARACTER WORD SO FAR
STORE CHARACTER WORD SO FAR
COPY NEXT ROW
10
12
1

RD12 0054
RD12 0055
RD12 0056
RD12 0057
RD12 0058
RD12 0059
RD12 0060
RD12 0061
RD12 0062