


**INTEROFFICE
MEMORANDUM**

M-1092

DATE November 22, 1960

SUBJECT SQUARE ROOT SUBROUTINE FOR PDP-1¹

TO PDP Distribution List

FROM Chas. W. Adams Associates, Inc.

I. This square root subroutine will find the square root of any octal number between +.000000 and +.377777. The binary point is considered to be immediately to the right of the sign position. To obtain greater accuracy the number may be scaled by even powers of 2 before entering the subroutine. In such a case, the answer will have a scale factor of a power of two which is one half of the power of two in original scaling, e.g., $\sqrt{2^{-4}A} = 2^{-2}\sqrt{A}$. This subroutine uses the divide subroutine.

II. Calling sequence:

LIO (the address of the number for which the square root is desired)

JSP (the address of the first instruction of the square root routine.)

III. Subroutine:

	ORG	(fill in)
	OPD	Divide 001500
	DAP	SQX
	SPI	
	HLT	
	LAC	ONE
	DAC	XN
	DIO	A
	LAC	A
	SAD	ZER
	JMP	SQX
SQA	ADD	ONE
	JMP	SQB
SQC	JSP	DIVIDE
	LOC	A
	LOC	ZER

1. Acknowledgment

The Square Root Subroutine was supplied to DEC by Chas. W. Adams Associates, Inc., Bedford, Mass.

	LOC	XN
	HLT	
	ADD	XN
SQB	CLI	
	RCR	S1
	DAC	T
	SUB	XN
	LIO	T
	DIO	XN
	SAR	S1
	SPA	
	CMA	
	SZA	
	JMP	SQC
	LAC	SN
SQX	JMP	
	A	
	T	
	XN	
	ONE	377777
	ZER	000000
	END	