<table>
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<tr>
<td>AUTHOR</td>
<td>James Kelly</td>
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</table>
| COMPANY      | Digital Equipment Corporation  
|              | Maynard, Massachusetts |
| DATE         | April 30, 1969      |
| SOURCE LANGUAGE | PAL                |

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CUBEROOT SUBROUTINE ENTER WITH OPERAND IN AC

RETURN ADDRESS STORAGE

STORE OPERAND ZEROROOT COUNTER

SET AC=1, LINK=1

GET NUMBER TO BE ROOTED

SUBTRACT CURRENT MAGIC

OVERFLOW?

STORE MAGIC

GET MAGIC

MAKE NEW ROOTING NUMBER

STORE MAGIC

ADD MINUS 6

STORE PARTIAL ROOT

INDEX ROOT

GET CURRENT MAGIC

STORE MAGIC

GET CUBE ROOT

EXIT
ERRORS DETECTED: 0

RUN-TIME: 2 SECONDS

4K CORE USED
CUBE ROOT SUBROUTINE

DECUS Program Library Write-up

This is called with an effective "JMS CUBE" with the argument in the accumulator. The subroutine returns to the memory location following "JMS CUBE" with the result in the accumulator and the remainder in MAGIC:

The following routine will serve to illustrate its calling sequence:

Example:

```
SA 0200
CAL CLL
TAD X
JMS CUBE
HLT /ANSWER IS IN AC.
```

ALGORITHM

The algorithm makes use of the fact that the third order difference of any stream of consecutive cubes is always equal to six (6).