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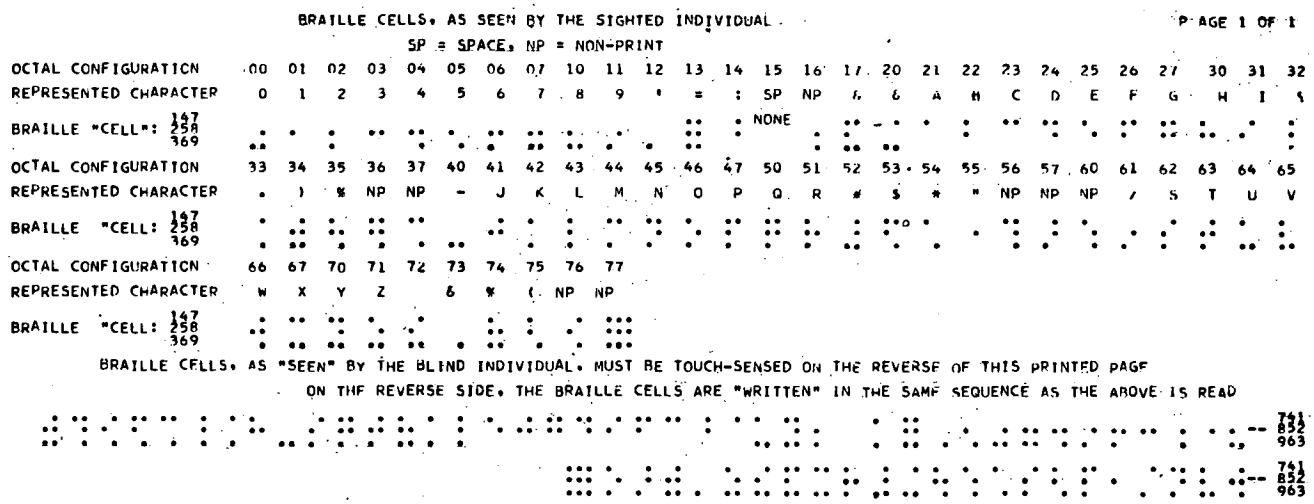
Brief 67-10087

NASA TECH BRIEF

Translator Program Converts Computer Printout into Braille Language



The problem:

The Boeing Company, with the hiring of a blind computer programmer, found that it had to devise a technique for using COBOL, a Common Business Oriented Language for the computer, to convert octal character representations into Braille language on the Honeywell-800/1800. Although special Braille printers are available commercially, their purchase for the use of one man is not economically feasible. The Braille output must enable the blind computer programmer to monitor and evaluate the data generated by his own programs.

The solution:

A computer program that converts print image tape files consisting of 120 characters per second into slightly modified six dot Braille cells. The Braille output is printed 8 lines per inch.

How it's done:

Braille cells consist of three by two matrices of raised dots which represent characters and are identified by the number and location of raised dots within the cells:

1	4
2	5
3	6

To afford a greater ease of recognition, a three by three matrix is utilized by the program:

1	4	7
2	5	8
3	6	9

Normally locations 7, 8, and 9 are left blank to separate one cell from another, but in the case of the octal 77 representation, all locations will contain dots

(continued overleaf)

Thus, there is no great problem in equating these six raised dots within a cell to the six bits of a computer character.

The Braille translator specifications that have been written for processing on the Honeywell 800/1800 in COBOL are:

INPUT: (on Tape Drive AG)

H-800/1800 PRINT IMAGE TAPE FILE(S):
- 120 characters per record
- 1 record per block
- Multiple file reel permitted
- Multiple reel file permitted

OUTPUT: (on Tape Drive AC, and AD if multiple reel)

CREATED FROM:
- Compilation processes
- TSTUPDAT processes
- "First Aid" dumps of Memory
- Automatic dumps of Memory
- Manual dumps of Tape

GENERATING:
- 3 records, containing a maximum of 120 raised dots per record, equals 40 Brâille cells.
- 5 records per block
- Multiple reel file but not multiple file reel

DISPOSITION: Honeywell 222-4 printer set to the following specifications:
- 8 lines per inch
- 1 part paper loaded
- Maximum setting for density control
- "Live" rubber electrical tape placed in front of print hammers.

Notes:

1. The Boeing blind programmer is responsible for developing the programs necessary for parts and inventory control. This same process could be used in any industry for the same purpose plus other functions such as finance, configuration management and control, program evaluation and reporting techniques, or any function that a sighted programmer could perform.
2. This technique can be used in any industry to benefit the blind by enabling him to monitor and evaluate the data generated by his own programs.
3. Inquiries concerning this innovation may be directed to:

   COSMIC
   Computer Center
   University of Georgia
   Athens, Georgia 30601
   Reference: B67-10087

Patent status:

No patent action is contemplated by NASA.

Source: R. A. Powell
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