

PROGRAMMING STAFF NOTE 69

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SUBJ: Attachment of 2741 Typewriter Consoles to 7094 CTSS
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Following is a summary of the strategy of the attachment of IBM 2741 consoles to 7094 CTSS:

1. Basic assumption: A 2741 console has a 963 (EBCDIC) golf ball, a 1050 console has either a 938 ("standard correspondence", currently the standard ball) or a 963 ball. Initially, the 938 ball is assumed as a default with a user option to specify that he is using the 963 ball. If appropriate at a later date the default can be reversed. In any case, the 963 ball is now considered the preferred ball for consoles attached to 7094 CTSS. This ball is currently the best one available for representing the CTSS set, the ASCII set, for TSS/360, and for Multics.
2. From a 1050 or a 2741, the user will dial the same telephone number. The 7750 program which answers will perform an addressing experiment to determine which kind of console dialed up; it will report the result of this experiment to the 7094. In general, from the 7094, the two types of consoles look electrically identical; (the 7750 program absorbs any differences) the only apparent difference is that they use different golf balls.
3. The 2741 console will appear within the 7094 as device "8"; a typical console I.D. of a 2741 might be "800 204". A new code table for device

8 will be installed in core A to translate the golf ball graphics into CTSS characters.

4. Eighty-six of the 88 graphics on the 963 ball correspond directly to CTSS graphics; the new code table makes these correspondences. The remaining two are made to correspond to CTSS graphics as follows:

<u>963 graphic</u>	<u>CTSS graphic</u>
cent sign	left slant
negation	circumflex

These two correspondences are made in accordance with the standard ASCII suggestions and MULTICS practice. As usual, CTSS graphics not included in the mapping cannot be input from a 2741; on output they are discarded from the output stream.

5. The present table for device "2", the 1050 with 938 ball is modified as follows:
- a. The 938 cent sign will map to the CTSS left slant, as does the 963 cent sign, rather than its current map to the vertical bar. (N.B., this change is necessary, since the 963 also has a vertical bar)
 - b. The 938 exclamation point will map to the CTSS exclamation point rather than its current map to the left bracket. (The old mapping is a left-over from the days when a MAC ball was planned.)

- c. The 938 "lozenge", which used to map to the CTSS left slant, will map to the vertical bar; the 938 "plus-over-minus" which was the right bracket becomes the CTSS circumflex.
- d. All other characters map as at present.

This modification appears to be the minimum modification which can be made to the 1050 table which retains reasonable correspondence to the 2741 table. CTSS users have been warned not to use any of the affected characters by a note in the TYPSET description for the last year or so.

- 6. The user of a 1050 can inform the LOGIN command, either by a third parameter, as

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LOGIN T234 XERXES 963
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or by a bit in a USER PROFIL file in his directory that he is using a 963 ball on his 1050. The LOGIN command will then change (by a patch) his device identification from "20000." to "82000."; thus causing him to use from then on the 2741 code table (because of the first digit of "8") and get the 963 graphic mapping conventions. The "2" is inserted as the second character of the I.D. code so that a casual inspector (such as WHO) can determine what kind of console is involved; the core-A system in general ignores the second character. Note that a user does not need to use any of the characters in which the two balls differ in order to get himself logged in.

7. Although the 2741 console can produce a four-character identification code, the first of the four characters from the console will be forced to zero by the 7750 to avoid student-provided four-letter words as I.D. codes.