

November 28, 1966

Mr. John G. Fletcher
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Dear Mr. Fletcher:

In reply to your inquiry of October 28, 1966, this letter is an attempt to pull together answers to your questions. Also I have enclosed copies of some supporting material drawn from an internal working document referred to as the "MULTICS System-Programmers' Manual" (MSPM). You should be aware that the MSPM sections are strictly working documents, and they are subject to continuous revision.

Numbers refer to questions in your letter.

1. We use ASCII as a software standard on Multics for the GE-645, now. We have made provision (escapes) for non-ASCII oriented hardware equipment.
2. Our hardware I/O channels pick characters off communication lines in whatever format appears there and deposits them in 9-bit fields in core memory (4 per 36-bit word). Ideally, only ASCII codes would appear in core, located in the low order 7 bits of each field with high order bits zeroes. In fact, some communication devices not using ASCII will force us to convert to ASCII. The design approach to the system would suggest that this conversion be done in the communication line adapter hardware so that software never sees anything but ASCII. Initially, we expect to have software do this conversion.

3. Bits 8 and 9 in our representation are zeroes, and are reserved for future ASCII expansion.
4. No additional code definitions are made in our software. We have placed our own interpretation on several of the ASCII control codes, and therefore our I/O software must occasionally interpret a control code coming from or going to an ASCII device using a different interpretation.
5. The only device that we have direct control over is a prototype soft-copy, graphic (symbol and line-drawing) console with keyboard and a form of graphic input. This unit will respond to ASCII from the computer. It will ignore parity but leave room for adding it as an option. Its symbol set will be the 95 printable ASCII symbols. In addition it will produce a 'blob' for DEL. The control characters to which it will respond are: ENQ; FF; DC2; DC3. It may also be made to respond to CR; LF; BS; HT; VT. All others will be ignored.

As defined at this point this device will not react to ASCII code extenders (SO, SI, ESC, DLE). Our use of DC2 and DC3 is in fact similar to the intention of ESC. DC2 identifies a Start Point command and the following 4 characters are interpreted as data. DC3 identifies a Vector command followed by 4 data characters. It must be emphasized, however, that this console is strictly a prototype and is subject to change.

I hope this information proves useful.

Sincerely yours,

R. G. Mills
Assistant Director

RGM/tlb

Enclosures

cc: F. J. Corbato

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