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ISO/TC97/SC2/WG6
Control Functions

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TITLE: Liaison statement to ISO/TC97/SC2/WG8 and ISO/TC97/SC18/WG8.

SOURCE: ISO/TC97/SC2/WG6

Action: For the discussion in ISO/TC97/SC2/WG8 and ISO/TC97/SC18/WG8.

1. Introduction

In the previous SC2 plenary meeting in Berlin, it is proposed to add control functions to transmit character pattern in bitmap format to ISO 6429 and ISO 6937/4. To contribute this, Japanese SC2 experts tried to find the means of transmitting character pattern in bitmap format, failing at last.

ISO/TC97/SC2/WG6 may not be able to define control functions to transmit the shape of characters without regarding other WGs' work because of the following reasons.

- (1) The coding of the character pattern in bitmap format is relevant to the job of SC2/WG8, which is under consideration of picture coding.
- (2) Along with the character shape itself, its attributes such as the position of the reference point and the amount of italic correction must also be transmitted. This is deeply related to the job of SC18/WG8, now considering the method of exchanging the shape of characters not only in bitmap format but also in other format such as vector.

Thus, we'd like to present two examples, JIS X 0207 and DCS for consideration of character pattern transmission.

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2. Control functions defined in JIS X 0207.

2.1 General

The coding principal of JIS X 0207 is different from that of ISO 6429 and JIS X 0211. In JIS 0207, additional control functions are preceded by C0 control character CEX (Control EXtention, code is 01/12), which is followed by an identifier of control function and parameters.

Parameters which are necessarily transmitted with the character pattern are as follows:

- (1) Code of the character whose pattern is to be transmitted.
- (2) Size of the pattern.

In (1), G set where the character is designated must also be specified.

2.2 Select Character Pattern Configuration Mode (SCP)

This control function specifies the configuration of the bitmap format of character shape which will be transmitted later. This control function has two numeric parameters and two selective parameters.

The first parameter specifies the number of pixels of each character in horizontal direction.

The second parameter specifies the number of pixels of each character in vertical direction.

The third parameter specifies the direction of scanning of the bitmap. The meaning of the third parameter is:

- 0: Bitmap is horizontally scanned.
- 1: Bitmap is vertically scanned.

The fourth parameter specifies whether bitmap is packed or unpacked. The meaning of the fourth parameter is:

- 0: Bitmap is unpacked.
- 1: Bitmap is packed.

2.3 Character Pattern Transmit (CPT)

This control function character specifies and loads the bitmap of a character. This control function has two parameters and is followed by bitmap itself. Bitmap is encoded using the bit combination of column 3. Four least significant bits of each bit combination specify the bitmap. The length of the following bit combination for bitmap is determined by preceding SCP.

The first parameter of CPT specifies the character set of the character:

- 0: The character is that defined in JIS X 0208 or that at the vacant position of JIS X 0208 character set;
- 1: The character is out of the code table of JIS X 0208.

Comment: To introduce this control function into ISO 6429 and/or ISO 6937/4, this parameter should be modified to specify G set where the character set is designated.

The second parameter specifies the code of the character.

2.4 Problems

According to JIS X 0207, character pattern itself follows CPT control as a part of data stream, which is encoded in the following method.

- (1) To represent bitmap of character pattern, bit combination of column 3 is used.
- (2) Rows of each bit combination represent 4 bits of character pattern.

In this method, one bit combination of 7 bits is necessary to represent 4 bits of bitmap. More efficient encoding method will have to be developed. For example, mapping 16 bits of bitmap into three bit combinations of graphic characters using least 6 bits of each bit combinations increases the efficiency.

3. Method of using DCS

The pattern of DRCS can be transmitted using DCS, preceded by IDCS with parameter value 2. It will be another solution to add parameter value 3 to IDCS to specify character pattern transmission. In this case, the bit combination other than column 3 can be used to specify character pattern. Therefore, more efficient encoding of character pattern such as described above can be used. However, Because detailed definition of control string itself has not been standardized yet, some conflict may occur with existing devices if it is standardized.

4. Additional proposal

We would like to propose cooperation or liaison with ISO/TC97/SC2/WG8 and ISO/TC97/SC18/WG8 on control functions for transmission of character pattern and attributes of the character shape as the future work.