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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Information technology -- Security technique -- Check character
systems**

信息技术 安全技术 校验字符系统

(English Translation)

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1 Scope

1.1

This Standard specifies a set of check character systems capable of protecting strings against errors which occur when people copy or type data.

The strings may be of fixed or variable length and may have character sets which are a) numeric (10 digits: 0 to 9);

b) alphabetic (26 letters: A to Z); and c) alphanumeric (letters and digits).

Embedded spaces and special characters are ignored.

1.2

This Standard specifies conformance requirements for products described as generating check characters or checking strings using the systems given in this Standard.

1.3

These check character systems can detect:

a) all single substitution errors (the substitution of a single character for another, for example "4234" for "1234");

- b) all or nearly all single (local) transposition errors (the transposition of two single characters, either adjacent or with one character between them, for example "12354" or "12543" for "12345");
- c) all or nearly all circular shift errors (circular shifts of the whole string to the left or right);
- d) a high proportion of double substitution errors (two separate single substitution errors in the same string, for example "7234587" for "1234567"); and e) a high proportion of all other errors.

1.4

This Standard excludes systems designed specifically to:

- a) permit both error detection and automatic correction;
- b) detect deliberate falsification; and c) check strings interchanged solely between machines.

1.5

This Standard is for use in information interchange between organizations.

It is also strongly recommended for use in internal information systems.

2 Terms and definitions

For the purposes of this Standard, the following terms and definitions apply.

2.1 Check character

Added character which may be used to verify the accuracy of the string by a mathematical relationship to that string.

2.2 Check character system

Set of rules for generating check characters and checking strings incorporating check characters.

2.3 Supplementary check character

Check character which does not belong to the character set of the strings which are to be protected.

2.4 Modulus

Integer used as a divisor of an integer dividend in order to obtain an integer remainder.

2.5 Congruence

Property of a set of integers which differ from each other by a multiple of the modulus. Congruence is indicated by the symbol $\equiv$. For example, $39 \equiv 6 \pmod{11}$

indicates that 39 and 6 are congruent with respect to the modulus 11, i.e.,

$39 - 6 = 33$, which is a multiple of 11.

2.6 Radix

Base of a geometric progression.

3 Symbols and notation

Throughout this Standard, the following symbols and notation are used.

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