ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646[1]
Please fill all the sections A, B and C below.
Please read Principles and Procedures Document (P & P) from http://www.dkuug.dk/JTC1/SC2/WG2/docs/principles.html **for guidelines and details before filling this form.**
Please ensure you are using the latest Form from http://www.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html**.**
See also http://www.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html **for latest *Roadmaps*.**

A. Administrative

1. **Title: Operator Characters for Linear-Format Mathematics**
2. Requester's name: Murray Sargent III
3. Requester type (Member body/Liaison/Individual contribution): Member
4. Submission date: 18-nov-2004
5. Requester's reference (if applicable): _____
6. Choose one of the following:
This is a complete proposal: _x_____
or, More information will be provided later: _____

B. Technical - General

1. Choose one of the following:
   a. This proposal is for a new script (set of characters): _____
      Proposed name of script: _____
   b. The proposal is for addition of character(s) to an existing block: _x_____
      Name of the existing block: General Punctuation
2. Number of characters in proposal: 3
3. Proposed category (select one from below - see section 2.2 of P&P document):
   A-Contemporary _____ B.1-Specialized (small collection) __x__ B.2-Specialized (large collection) _____
   C-Major extinct _____ D-Attested extinct _____ E-Minor extinct _____
   F-Archaic Hieroglyphic or Ideographic _____ G-Obscure or questionable usage symbols _____
4. Proposed Level of Implementation (1, 2 or 3) (see Annex K in P&P document): 2
   Is a rationale provided for the choice? Yes
      If Yes, reference: given below
5. Is a repertoire including character names provided? Yes
   a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document? Yes
   b. Are the character shapes attached in a legible form suitable for review? Yes
6. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard? Yes
   If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used: _____
7. References:
   a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? Yes
   b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached? No
8. Special encoding issues:
   Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?
   Yes
9. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at http://www.unicode.org for such information on other scripts. Also see http://www.unicode.org/Public/UNIDATA/UCD.html and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

[1] Form number: N2652-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? No

   If YES explain _____

2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? Yes

   If YES, with whom? Mathematics community within Microsoft

   If YES, available relevant documents: The TeXbook

3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? Mathematical

   Reference: _____

4. The context of use for the proposed characters (type of use; common or rare) Mathematical

   Reference: _____

5. Are the proposed characters in current use by the user community? Not as such

   If YES, where? Reference: _____

6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? Yes

   If YES, is a rationale provided? Yes

   If YES, reference: See below

7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? No

8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? No

   If YES, is a rationale for its inclusion provided? _____

   If YES, reference: _____

9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? No

   If YES, is a rationale for its inclusion provided? _____

   If YES, reference: _____

10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character? No

    If YES, is a rationale for its inclusion provided? _____

    If YES, reference: _____

11. Does the proposal include use of combining characters and/or use of composite sequences? No

    If YES, is a rationale for such use provided? _____

    If YES, reference: _____

    Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? No

    If YES, reference: _____

12. Does the proposal contain characters with any special properties such as control function or similar semantics? Yes

    If YES, describe in detail (include attachment if necessary) _____

13. Does the proposal contain any Ideographic compatibility character(s)? No

    If YES, is the equivalent corresponding unified ideographic character(s) identified? _____

    If YES, reference: _____

This proposal considers three characters: a pair of invisible brackets and an operator representing a matrix or array.

In mathematical documents one often has the need for an unpaired bracket or brace that grows in size relative to associated text, but has no visible bracket mate. An example is the formula for the absolute value function:

$$f(x) = \begin{cases} x, x \geq 0 \\ -x, x < 0 \end{cases}$$

Here the opening brace needs to grow proportionally to the array of conditions on its right, but no closing brace should be displayed. To handle this kind of situation, we propose adding a special closing brace that is invisible when built up, but is visible in linear format. Specifically, we propose to use the glyph

to represent the invisible left bracket in linear format and

to represent the invisible right bracket in linear format.

We also need a symbol to represent a matrix. The proposed glyph is

With these symbols, the equation above can be represented in linear format as

$$f(x) = \{ \square(x, x \geq 0 \ \& \ -x, x < 0)$$

The linear format will be used in the next version of Microsoft Office both in an input method and for displaying formulae in applications, such as NotePad, that are not able to display the built-up format.