Proposal for Encoding Western Music Symbols in ISO/IEC 10646

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While nearly all of the symbols used to display music are technically "glyphs", they are nevertheless used world-wide in a more-or-less standard manner by a very large user group and their usefulness would be improved if they were encoded in a compact way, that is, as character codes. The symbols frequently occur in running text and may be treated as simple spacing characters with no special properties, with a few exceptions which are described below. Examples of contexts for the use of music characters include, but are not limited to, theoretical works, pedagogical texts, terminological dictionaries, bibliographic databases, thematic catalogs, and databases of musical data. The adoption of a standard group of character names would facilitate future pseudo-textual musical encoding systems that offer efficient storage and high parsability and portability.

Even though page layout and formatting are beyond the scope of ISO/IEC 10646, the proposed characters could be used within higher-level protocols, i.e. music description languages and file formats for the representation of musical data and musical scores.

Character Set Description

The proposed Western Musical Symbols character set consists of 220 characters. These are drawn primarily from Common Music Notation (CMN) and its antecedents, mensural notation and plainchant (or Gregorian) notation. In addition, commonly recognized additions to the CMN repertoire, such as quarter-tone accidentals, cluster noteheads, and shape-note noteheads have also been included. Symbols were compiled from several sources:

- Read, Gardner. Music Notation.
- Rastall, Richard. Notation of Western Music.
- Stone, Kurt. Music Notation in the Twentieth Century.
- Gradual Sacrosanctae Romanae ...
- a wide range of musical scores from the 16th-20th centuries
- existing music fonts

Not part of the Western Musical Symbols character set are "graphical score" elements, which are pictographs usually created for a specific repertoire (sometimes even a single piece) and characters which have some specialized meaning in music but are found in other character sets, i.e. numbers for time signatures and figured basses or letters for section labels and Roman numeral harmonic analysis, etc.

Several characters resemble ones available in other sets. For example, the SHARP character looks somewhat like the octothorpe, FLAT resembles the lowercase 'b', REPEAT DOTS look like a colon, UP BOW seems to be a letter 'V', etc. While repeated usage of the ASCII 'lookalikes' in the absence of genuine music characters has conditioned our acceptance of them, careful examination reveals that the similarities are only superficial. Character sizes, baselines, line widths and other visual characteristics of the music characters are subtly different from their more common 'lookalikes'. Furthermore, their function and meaning are radically different, enough to consider them separate characters.

Because of the complexities of layout and of pitch representation in general, the encoding of musical pitch is intentionally outside the scope of this proposal. In addition to character data, considerable structure, including detailed specification of vertical and horizontal relationships between graphical elements, is required to properly represent musical scores. This character encoding provides a common set of elements for interchange and processing. The characters encoded here, in conjunction with all the other facilities of the character encoding (including alphabets and so forth), can be used for the transfer, storage, and other representation of all sorts of common musical data. In that sense, this set forms a complete basis for the specification of all musical parameters, with the conspicuous exception of pitch encoding itself. Encoding of pitch, and layout of resulting musical structure, involves not only specifications for the vertical relationship between multiple notes simultaneously, but in multiple staves, between instrumental parts, and so forth. These musical features are expected to be handled entirely in higher-level protocols making use of the proposed graphical elements. Lack of pitch encoding is thus not to be viewed as a shortcoming of the proposal, but as a necessary feature of the encoding.

Three characters (SHARP, FLAT, and NATURAL) which occur frequently in music notation are already encoded in Unicode as symbols elsewhere. To assist implementations, it is proposed that reserved codepoints be left in the music
notation block and cross-referenced back to the real symbols. In addition, the existing characters U+2669 (QUARTER NOTE), U+266A (EIGHTH NOTE) and the beamed note symbols U+266B and U+266C are to be interpreted strictly as Miscellaneous Symbols or dingbats, not as representing actual musical notes. They could be cross-referenced to this Western Musical Notation block.

It is essential to correct musical interpretation that a distinction be maintained in musical contexts between the augmentation dot (a combining, but spacing character) and the staccato dot, which is a non-spacing character. Furthermore, a distinction must be maintained between the staccato dot and the regular combining dot-above (U+0307), since both may occur in the same context (overdots on vocal texts near staccato dots on notes) and they require different glyphs (the staccato dot generally being heavier at a comparable font size than a combining dot-above).

Most Western Music Notation symbols can be thought of as simple spacing characters when used in-line within texts and examples, even though they behave in a more complex manner in full musical layout. Some characters are meant only to be combined with others to produce combined character sequences, representing musical notes and their particular articulations. A complete list of the character properties and combining priorities is given below.

**Character Names List**

0001 xx00  RESERVED X --> U+266F MUSIC SHARP SIGN
0001 xx01  RESERVED X --> U+266D MUSIC FLAT SIGN
0001 xx02  RESERVED X --> U+266E MUSIC NATURAL SIGN
0001 xx03  WESTERN MUSICAL SYMBOL DOUBLE SHARP
0001 xx04  WESTERN MUSICAL SYMBOL DOUBLE FLAT
0001 xx05  WESTERN MUSICAL SYMBOL FLAT UP
0001 xx06  WESTERN MUSICAL SYMBOL FLAT DOWN
0001 xx07  WESTERN MUSICAL SYMBOL NATURAL UP
0001 xx08  WESTERN MUSICAL SYMBOL NATURAL DOWN
0001 xx09  WESTERN MUSICAL SYMBOL SHARP UP
0001 xx0A  WESTERN MUSICAL SYMBOL SHARP DOWN
0001 xx0B  WESTERN MUSICAL SYMBOL QUARTER TONE SHARP
0001 xx0C  WESTERN MUSICAL SYMBOL QUARTER TONE FLAT
0001 xx0D  WESTERN MUSICAL SYMBOL HAUPTSTIMME
0001 xx0E  WESTERN MUSICAL SYMBOL NEBENSTIMME
0001 xx0F  WESTERN MUSICAL SYMBOL DEGREE SLASH
0001 xx10  WESTERN MUSICAL SYMBOL ACCENT
0001 xx11  WESTERN MUSICAL SYMBOL STACCATO
0001 xx12  WESTERN MUSICAL SYMBOL TENUTO
0001 xx13  WESTERN MUSICAL SYMBOL STACCATISSIMO
0001 xx14  WESTERN MUSICAL SYMBOL MARCATO
0001 xx15  WESTERN MUSICAL SYMBOL MARCATO-STACCATO
0001 xx16  WESTERN MUSICAL SYMBOL ACCENT-STACCATO
0001 xx17  WESTERN MUSICAL SYMBOL LOURE
0001 xx18  WESTERN MUSICAL SYMBOL ARPEGGIATO UP
0001 xx19  WESTERN MUSICAL SYMBOL ARPEGGIATO DOWN
0001 xx1A  WESTERN MUSICAL SYMBOL DOT
0001 xx1B  WESTERN MUSICAL SYMBOL RIP
0001 xx1C  WESTERN MUSICAL SYMBOL FLIP
0001 xx1D  WESTERN MUSICAL SYMBOL SMEAR
0001 xx1E  WESTERN MUSICAL SYMBOL BEND
0001 xx1F  WESTERN MUSICAL SYMBOL DOUBLE TONGUE
0001 xx20  WESTERN MUSICAL SYMBOL TRIPLE TONGUE
0001 xx21  WESTERN MUSICAL SYMBOL RINFORZANDO
0001 xx22  WESTERN MUSICAL SYMBOL SUBITO
0001 xx23  WESTERN MUSICAL SYMBOL Z
0001 xx24  WESTERN MUSICAL SYMBOL SINGLE BARLINE
0001 xx25  WESTERN MUSICAL SYMBOL DOUBLE BARLINE
0001 xx26  WESTERN MUSICAL SYMBOL FINAL BARLINE
0001 xx27 WESTERN MUSICAL SYMBOL REVERSE FINAL BARLINE
0001 xx28 WESTERN MUSICAL SYMBOL DASHED BARLINE
0001 xx29 WESTERN MUSICAL SYMBOL SHORT BARLINE
0001 xx2A WESTERN MUSICAL SYMBOL LEFT REPEAT SIGN
0001 xx2B WESTERN MUSICAL SYMBOL RIGHT REPEAT SIGN
0001 xx2C WESTERN MUSICAL SYMBOL REPEAT DOTS
0001 xx2D WESTERN MUSICAL SYMBOL DAL SEGO
0001 xx2E WESTERN MUSICAL SYMBOL DA CAPO
0001 xx2F WESTERN MUSICAL SYMBOL SEGNO
0001 xx30 WESTERN MUSICAL SYMBOL CODA
0001 xx31 WESTERN MUSICAL SYMBOL REPEATED FIGURE ONE
0001 xx32 WESTERN MUSICAL SYMBOL REPEATED FIGURE TWO
0001 xx33 WESTERN MUSICAL SYMBOL REPEATED FIGURE THREE
0001 xx34 WESTERN MUSICAL SYMBOL FERMATA
0001 xx35 WESTERN MUSICAL SYMBOL FERMATA UNDER
0001 xx36 WESTERN MUSICAL SYMBOL BREATH MARK
0001 xx37 WESTERN MUSICAL SYMBOL CAESURA
0001 xx38 WESTERN MUSICAL SYMBOL BRACE
0001 xx39 WESTERN MUSICAL SYMBOL BRACKET
0001 xx3A WESTERN MUSICAL SYMBOL G CLEF
0001 xx3B WESTERN MUSICAL SYMBOL G CLEF OTTAVA ALTA
0001 xx3C WESTERN MUSICAL SYMBOL G CLEF OTTAVA BASSA
0001 xx3D WESTERN MUSICAL SYMBOL C CLEF
0001 xx3E WESTERN MUSICAL SYMBOL OLD C CLEF
0001 xx3F WESTERN MUSICAL SYMBOL F CLEF
0001 xx40 WESTERN MUSICAL SYMBOL F CLEF OTTAVA ALTA
0001 xx41 WESTERN MUSICAL SYMBOL F CLEF OTTAVA BASSA
0001 xx42 WESTERN MUSICAL SYMBOL DRUM CLEF ONE
0001 xx43 WESTERN MUSICAL SYMBOL DRUM CLEF TWO
0001 xx44 WESTERN MUSICAL SYMBOL PIANO
0001 xx45 WESTERN MUSICAL SYMBOL MEZZO
0001 xx46 WESTERN MUSICAL SYMBOL FORTE
0001 xx47 WESTERN MUSICAL SYMBOL CRESCEndo
0001 xx48 WESTERN MUSICAL SYMBOL DECRESCENDO
0001 xx49 WESTERN MUSICAL SYMBOL GREGORIAN C CLEF
0001 xx4A WESTERN MUSICAL SYMBOL GREGORIAN F CLEF
0001 xx4B WESTERN MUSICAL SYMBOL SQUARE B
0001 xx4C WESTERN MUSICAL SYMBOL VIRGA
0001 xx4D WESTERN MUSICAL SYMBOL POGATUS
0001 xx4E WESTERN MUSICAL SYMBOL CLIVIS
0001 xx4F WESTERN MUSICAL SYMBOL SCANDICUS
0001 xx50 WESTERN MUSICAL SYMBOL CLIMACES
0001 xx51 WESTERN MUSICAL SYMBOL TORCUS
0001 xx52 WESTERN MUSICAL SYMBOL PORRECTUS
0001 xx53 WESTERN MUSICAL SYMBOL PORRECTUS FLEXUS
0001 xx54 WESTERN MUSICAL SYMBOL SCANDICUS FLEXUS
0001 xx55 WESTERN MUSICAL SYMBOL TORCUS RESUPINUS
0001 xx56 WESTERN MUSICAL SYMBOL PES SUBPUNCTUS
0001 xx57 WESTERN MUSICAL SYMBOL DOWN BOW
0001 xx58 WESTERN MUSICAL SYMBOL UP BOW
0001 xx59 WESTERN MUSICAL SYMBOL HARMONIC
0001 xx5A WESTERN MUSICAL SYMBOL SNAP PIZZICATO
0001 xx5B WESTERN MUSICAL SYMBOL PEDAL MARK
0001 xx5C WESTERN MUSICAL SYMBOL PEDAL UP MARK
0001 xx5D WESTERN MUSICAL SYMBOL HALF PEDAL MARK
0001 xx5E WESTERN MUSICAL SYMBOL GLISSANDO UP
0001 xx5F WESTERN MUSICAL SYMBOL GLISSANDO DOWN
0001 xx60  WESTERN MUSICAL SYMBOL WITH FINGERNAILS
0001 xx61  WESTERN MUSICAL SYMBOL DAMP
0001 xx62  WESTERN MUSICAL SYMBOL DAMP ALL
0001 xx63  WESTERN MUSICAL SYMBOL MAXIMA
0001 xx64  WESTERN MUSICAL SYMBOL LONGA
0001 xx65  WESTERN MUSICAL SYMBOL BREVIS
0001 xx66  WESTERN MUSICAL SYMBOL SEMIBREVIS WHITE
0001 xx67  WESTERN MUSICAL SYMBOL SEMIBREVIS BLACK
0001 xx68  WESTERN MUSICAL SYMBOL MINIMA
0001 xx69  WESTERN MUSICAL SYMBOL MINIMA BLACK
0001 xx6A  WESTERN MUSICAL SYMBOL SEMIMINIMA WHITE
0001 xx6B  WESTERN MUSICAL SYMBOL SEMIMINIMA BLACK
0001 xx6C  WESTERN MUSICAL SYMBOL FUSA WHITE
0001 xx6D  WESTERN MUSICAL SYMBOL FUSA BLACK
0001 xx6E  WESTERN MUSICAL SYMBOL LONGA PERFECTA REST
0001 xx6F  WESTERN MUSICAL SYMBOL LONGA IMPERFECTA REST
0001 xx70  WESTERN MUSICAL SYMBOL BREVIS REST
0001 xx71  WESTERN MUSICAL SYMBOL SEMIBREVIS REST
0001 xx72  WESTERN MUSICAL SYMBOL MINIMA REST
0001 xx73  WESTERN MUSICAL SYMBOL SEMIMINIMA REST
0001 xx74  WESTERN MUSICAL SYMBOL TEMPUS PERFECTUM CUM PROLATIONE PERFECTA
0001 xx75  WESTERN MUSICAL SYMBOL TEMPUS PERFECTUM CUM PROLATIONE IMPERFECTA
0001 xx76  WESTERN MUSICAL SYMBOL TEMPUS PERFECTUM CUM PROLATIONE PERFECTA DIMINUTION ONE
0001 xx77  WESTERN MUSICAL SYMBOL TEMPUS IMPERFECTUM CUM PROLATIONE PERFECTA
0001 xx78  WESTERN MUSICAL SYMBOL TEMPUS IMPERFECTUM CUM PROLATIONE IMPERFECTA
0001 xx79  WESTERN MUSICAL SYMBOL TEMPUS IMPERFECTUM CUM PROLATIONE IMPERFECTA DIMINUTION ONE
0001 xx7A  WESTERN MUSICAL SYMBOL TEMPUS IMPERFECTUM CUM PROLATIONE IMPERFECTA DIMINUTION TWO
0001 xx7B  WESTERN MUSICAL SYMBOL TEMPUS IMPERFECTUM CUM PROLATIONE IMPERFECTA DIMINUTION THREE
0001 xx7C  WESTERN MUSICAL SYMBOL CROIX
0001 xx7D  WESTERN MUSICAL SYMBOL X NOTEHEAD
0001 xx7E  WESTERN MUSICAL SYMBOL PLUS NOTEHEAD
0001 xx7F  WESTERN MUSICAL SYMBOL CIRCLE X NOTEHEAD
0001 xx80  WESTERN MUSICAL SYMBOL SQUARE NOTEHEAD WHITE
0001 xx81  WESTERN MUSICAL SYMBOL SQUARE NOTEHEAD BLACK
0001 xx82  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD UP WHITE
0001 xx83  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD UP BLACK
0001 xx84  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD LEFT WHITE
0001 xx85  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD LEFT BLACK
0001 xx86  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD RIGHT WHITE
0001 xx87  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD RIGHT BLACK
0001 xx88  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD DOWN WHITE
0001 xx89  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD DOWN BLACK
0001 xx8A  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD UP RIGHT WHITE
0001 xx8B  WESTERN MUSICAL SYMBOL TRIANGLE NOTEHEAD UP RIGHT BLACK
0001 xx8C  WESTERN MUSICAL SYMBOL MOON NOTEHEAD WHITE
0001 xx8D  WESTERN MUSICAL SYMBOL MOON NOTEHEAD BLACK
0001 xx8E  WESTERN MUSICAL SYMBOL TRIANGLE-ROUND NOTEHEAD DOWN WHITE
0001 xx8F  WESTERN MUSICAL SYMBOL TRIANGLE-ROUND NOTEHEAD DOWN BLACK
0001 xx90  WESTERN MUSICAL SYMBOL PARENTHESIS NOTEHEAD
0001 xx91  WESTERN MUSICAL SYMBOL VOID NOTEHEAD
0001 xx92  WESTERN MUSICAL SYMBOL NULL NOTEHEAD
0001 xx93  WESTERN MUSICAL SYMBOL NOTEHEAD BLACK
0001 xx94  WESTERN MUSICAL SYMBOL CLUSTER NOTEHEAD WHITE
0001 xx95  WESTERN MUSICAL SYMBOL CLUSTER NOTEHEAD BLACK
0001 xx96  WESTERN MUSICAL SYMBOL STEM
0001 xx97  WESTERN MUSICAL SYMBOL SPEECHGESANG STEM
0001 xx98  WESTERN MUSICAL SYMBOL TREMOLO STEM ONE
0001 xx99  WESTERN MUSICAL SYMBOL TREMOLO STEM TWO
0001 xx9A  WESTERN MUSICAL SYMBOL TREMOLO STEM THREE
0001 xx9B  WESTERN MUSICAL SYMBOL FINGERED TREMOLO
0001 xx9C  WESTERN MUSICAL SYMBOL BREVE
0001 xx9D  WESTERN MUSICAL SYMBOL WHOLE NOTE
0001 xx9E  WESTERN MUSICAL SYMBOL HALF NOTE
0001 xx9F  WESTERN MUSICAL SYMBOL QUARTER NOTE
0001 xxA0  WESTERN MUSICAL SYMBOL EIGHTH NOTE
0001 xxA1  WESTERN MUSICAL SYMBOL SIXTEENTH NOTE
0001 xxA2  WESTERN MUSICAL SYMBOL THIRTY-SECOND NOTE
0001 xxA3  WESTERN MUSICAL SYMBOL SIXTY-FOURTH NOTE
0001 xxA4  WESTERN MUSICAL SYMBOL ONE HUNDRED TWENTY-EIGHTH NOTE
0001 xxA5  WESTERN MUSICAL SYMBOL AUGMENTATION DOT
0001 xxA6  WESTERN MUSICAL SYMBOL TIE-START
0001 xxA7  WESTERN MUSICAL SYMBOL TIE-END
0001 xxA8  WESTERN MUSICAL SYMBOL BEAM-START
0001 xxA9  WESTERN MUSICAL SYMBOL BEAM-END
0001 xxAA  WESTERN MUSICAL SYMBOL SLUR-START
0001 xxAB  WESTERN MUSICAL SYMBOL SLUR-END
0001 xxAC  WESTERN MUSICAL SYMBOL PHRASE-START
0001 xxAD  WESTERN MUSICAL SYMBOL PHRASE-END
0001 xxAE  WESTERN MUSICAL SYMBOL OTTAVA ALTA
0001 xxAF  WESTERN MUSICAL SYMBOL OTTAVA BASSA
0001 xxB0  WESTERN MUSICAL SYMBOL QUINDICESIMA ALTA
0001 xxB1  WESTERN MUSICAL SYMBOL QUINDICESIMA BASSA
0001 xxB2  WESTERN MUSICAL SYMBOL GRACE NOTE SLASH
0001 xxB3  WESTERN MUSICAL SYMBOL GRACE NOTE NO SLASH
0001 xxB4  WESTERN MUSICAL SYMBOL TR
0001 xxB5  WESTERN MUSICAL SYMBOL TURN
0001 xxB6  WESTERN MUSICAL SYMBOL INVERTED TURN
0001 xxB7  WESTERN MUSICAL SYMBOL TURN SLASH
0001 xxB8  WESTERN MUSICAL SYMBOL TURN UP
0001 xxB9  WESTERN MUSICAL SYMBOL ORNAMENT STROKE ONE
0001 xxBA  WESTERN MUSICAL SYMBOL ORNAMENT STROKE TWO
0001 xxBB  WESTERN MUSICAL SYMBOL ORNAMENT STROKE THREE
0001 xxBC  WESTERN MUSICAL SYMBOL ORNAMENT STROKE FOUR
0001 xxBD  WESTERN MUSICAL SYMBOL ORNAMENT STROKE FIVE
0001 xxBE  WESTERN MUSICAL SYMBOL ORNAMENT STROKE SIX
0001 xxBF  WESTERN MUSICAL SYMBOL ORNAMENT STROKE SEVEN
0001 xxC0  WESTERN MUSICAL SYMBOL ORNAMENT STROKE EIGHT
0001 xxC1  WESTERN MUSICAL SYMBOL ORNAMENT STROKE NINE
0001 xxC2  WESTERN MUSICAL SYMBOL ORNAMENT STROKE TEN
0001 xxC3  WESTERN MUSICAL SYMBOL ORNAMENT STROKE ELEVEN
0001 xxC4  WESTERN MUSICAL SYMBOL MULTI REST
0001 xxC5  WESTERN MUSICAL SYMBOL WHOLE REST
0001 xxC6  WESTERN MUSICAL SYMBOL HALF REST
0001 xxC7  WESTERN MUSICAL SYMBOL QUARTER REST
0001 xxC8  WESTERN MUSICAL SYMBOL EIGHTH REST
0001 xxC9  WESTERN MUSICAL SYMBOL SIXTEENTH REST
0001 xxCA  WESTERN MUSICAL SYMBOL THIRTY-SECOND REST
0001 xxCB  WESTERN MUSICAL SYMBOL SIXTY-FOURTH REST
0001 xxCC  WESTERN MUSICAL SYMBOL ONE HUNDRED TWENTY-EIGHTH REST
0001 xxCD  WESTERN MUSICAL SYMBOL ONE-LINE STAFF
0001 xxCE  WESTERN MUSICAL SYMBOL TWO-LINE STAFF
Proposal for Encoding Western Music Symbols in ISO/IEC 10646

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>0001 xxCF</td>
<td>WESTERN MUSICAL SYMBOL THREE-LINE STAFF</td>
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<tr>
<td>0001 xxD0</td>
<td>WESTERN MUSICAL SYMBOL FOUR-LINE STAFF</td>
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<tr>
<td>0001 xxD1</td>
<td>WESTERN MUSICAL SYMBOL FIVE-LINE STAFF</td>
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<td>0001 xxD2</td>
<td>WESTERN MUSICAL SYMBOL SIX-LINE STAFF</td>
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<tr>
<td>0001 xxD3</td>
<td>WESTERN MUSICAL SYMBOL STEM PLUS FLAG ONE</td>
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<td>0001 xxD4</td>
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<td>WESTERN MUSICAL SYMBOL STEM PLUS FLAG THREE</td>
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<tr>
<td>0001 xxD6</td>
<td>WESTERN MUSICAL SYMBOL STEM PLUS FLAG FOUR</td>
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<td>0001 xxD7</td>
<td>WESTERN MUSICAL SYMBOL STEM PLUS FLAG FIVE</td>
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<tr>
<td>0001 xxD8</td>
<td>WESTERN MUSICAL SYMBOL SIX-STRING FRETBOARD</td>
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<tr>
<td>0001 xxD9</td>
<td>WESTERN MUSICAL SYMBOL FOUR-STRING FRETBOARD</td>
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<tr>
<td>0001 xxDA</td>
<td>WESTERN MUSICAL SYMBOL COMMON TIME</td>
</tr>
<tr>
<td>0001 xxDB</td>
<td>WESTERN MUSICAL SYMBOL CUT TIME</td>
</tr>
</tbody>
</table>

**Character Code Chart**

Click on the image for a high-resolution version (79K)

[Image of character code chart]

http://www.lib.virginia.edu/dmnc/Music/UnicodeMusic/
Character Properties List

Controls:
0001 xxA6 WESTERN MUSICAL SYMBOL TIE-START
0001 xxA7 WESTERN MUSICAL SYMBOL TIE-END
0001 xxA8 WESTERN MUSICAL SYMBOL BEAM-START
0001 xxA9 WESTERN MUSICAL SYMBOL BEAM-END
0001 xxAA WESTERN MUSICAL SYMBOL SLUR-START
0001 xxAB WESTERN MUSICAL SYMBOL SLUR-END
0001 xxAC WESTERN MUSICAL SYMBOL PHRASE-START
0001 xxAD WESTERN MUSICAL SYMBOL PHRASE-END

Non-spacing marks and their combining classes:
0001 xx10 WESTERN MUSICAL SYMBOL ACCENT (230)
0001 xx11 WESTERN MUSICAL SYMBOL STACCATO (230)
0001 xx12 WESTERN MUSICAL SYMBOL TENUTO (230)
0001 xx13 WESTERN MUSICAL SYMBOL STACCATISSIMO (230)
0001 xx14 WESTERN MUSICAL SYMBOL MARCATO (230)
0001 xx15 WESTERN MUSICAL SYMBOL MARCATO-STACCATO (230)
0001 xx16 WESTERN MUSICAL SYMBOL ACCENT-STACCATO (230)
0001 xx17 WESTERN MUSICAL SYMBOL LOURE (230)
0001 xxBE WESTERN MUSICAL SYMBOL ORNAMENT STROKE SIX (230)
0001 xx59 WESTERN MUSICAL SYMBOL HARMONIC (230)
*These are specified as identical so that "staccato + tenuto" is different from, and is rendered differently than, "tenuto + staccato."

Combining marks and their combining classes:
0001 xxA3 WESTERN MUSICAL SYMBOL AUGMENTATION DOTTED (0)
0001 xx96 WESTERN MUSICAL SYMBOL STEM (1)
0001 xx97 WESTERN MUSICAL SYMBOL SPRECHGESANG STEM (1)
0001 xx98 WESTERN MUSICAL SYMBOL TREMOLO STEM ONE (1)
Spacing marks:
ALL THE REST

User Community

Estimating the size of the user community is very difficult. As some indication, however, of the amount of output containing some reference to music (and therefore, potential usage of the proposed character set) the following statistics are offered. Books In Print contains 17,869 entries with the subject heading "music", slightly more than the number of entries with the subject heading "mathematics" (17,388), and nearly double the number for the heading "computer" (only 9775). Repertoire International de Litterature Musicale (RILM) indexed approximately 3500 different journals between 1989 and 1993 covering the field of music in whole or in part. These figures indicate the pervasiveness of music-related writing in our society and the wide range of potential uses of a music character set from popular magazines to scholarly treatises.

There is an historical interest in music data transmission and storage which began with the increased availability of computers in the 1950s. Over the years, several encoding methods have been proposed, i.e. Bauer-Mengelberg's Digital Alternative Representation of Musical Scores (DARMS) and Brook's Plaine & Easie Code, but these individual efforts have all suffered from the lack of a common nomenclature and method for coding even the most basic elements of music. Adoption of this character set as a standard would help alleviate this problem.

Processing

It is anticipated that music characters will be input, processed and displayed in a manner similar to mathematical symbols. Collation of the character set is unnecessary. There is no intrinsic order of symbols. When embedded in text most of the symbols are simple spacing characters with no special properties. There are a few characters with control functions which are described below.

Input of the characters may be accomplished in ways similar to those used for Chinese, Japanese, and Korean. Input can be from an alphanumeric keyboard using character entities, e.g. &treble; or &flat;, or assisted with software which allows keyboard mapping, e.g. ALT-G for treble clef. In addition, input methods utilizing pointing devices or piano keyboards could be developed similar to those in existing musical layout systems. For example, using a graphical user interface (GUI), the user could choose symbols from a palette-style menu.

The setting of vocal texts is beyond the scope of this proposal; however, there are no known bi-directional implications of Western Musical Notation. When combined with right-to-left texts, in Hebrew or Arabic for example, the music notation is still written left-to-right as usual, the words being divided into syllables and placed under or above the notes in the same fashion as Latin scripts. The individual words or syllables corresponding to each note, however, are written in the dominant direction of the script.

Extensive ligature-like beams are used frequently in music notation between groups of notes having short values. The practice is widespread and very regular, and is amenable to algorithmic handling. The control characters BEAM-START and BEAM-END can be used to indicate the extents of beam groupings and these are easily parsed. In some exceptional cases, beams are left-unclosed on one end. This can be indicated with a "null note" (0001 xx’92 WESTERN MUSICAL SYMBOL NULL NOTEHEAD) character if no stem is to appear at the end of the beam.

Similarly, control codes have been provided for other connecting structures. The characters TIE-START, TIE-END, SLUR-START, SLUR-END, PHRASE-START, and PHRASE-END indicate the extent of these features. Like beaming, these features are easily handled in an algorithmic fashion.
These pairs of characters modify the layout and grouping of notes and phrases in full music notation. When musical examples are written or rendered in plain text without special software, the start/end control characters may be rendered as brackets or left uninterpreted. More sophisticated in-line software may interpret them, to the extent possible, in their actual control capacity, rendering slurs, beams, and so forth as appropriate.

For maximum flexibility, the character set includes both pre-composed note values and primitives from which complete notes may be constructed. Due to their ubiquity, the pre-composed versions are provided mainly for convenience. In addition to coding ease, their use will also reduce data size. The following table illustrates these canonical equivalents.

1. WESTERN MUSICAL SYMBOL HALF NOTE
2. WESTERN MUSICAL SYMBOL QUARTER NOTE
3. WESTERN MUSICAL SYMBOL EIGHTH NOTE
4. WESTERN MUSICAL SYMBOL SIXTEENTH NOTE
5. WESTERN MUSICAL SYMBOL THIRTY-SECOND NOTE
6. WESTERN MUSICAL SYMBOL SIXTY-FOURTH NOTE
7. WESTERN MUSICAL SYMBOL ON HUNDRED TWENTY-EIGHTH NOTE

= WESTERN MUSICAL SYMBOL VOID NOTEHEAD + WESTERN MUSICAL SYMBOL STEM
= WESTERN MUSICAL SYMBOL NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM
= WESTERN MUSICAL SYMBOL NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM PLUS FLAG ONE
= WESTERN MUSICAL SYMBOL NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM PLUS FLAG TWO
= WESTERN MUSICAL SYMBOL NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM PLUS FLAG THREE
= WESTERN MUSICAL SYMBOL NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM PLUS FLAG FOUR
= WESTERN MUSICAL SYMBOL NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM PLUS FLAG FIVE

Coding convenience notwithstanding, notes built up from alternative noteheads, stems and flags, and articulation symbols are necessary for complete implementations and complex scores. Examples of their use include American shape-note and modern percussion notations. For example,

1. WESTERN MUSICAL SYMBOL SQUARE NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM
2. WESTERN MUSICAL SYMBOL X NOTEHEAD + WESTERN MUSICAL SYMBOL STEM

Augmentation dots and articulation symbols may be appended to either the pre-composed or built-up notes. For example,

1. WESTERN MUSICAL SYMBOL EIGHTH NOTE + WESTERN MUSICAL SYMBOL AUGMENTATION DOT
2. WESTERN MUSICAL SYMBOL QUARTER NOTE + WESTERN MUSICAL SYMBOL STACCATO

= WESTERN MUSICAL SYMBOL NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM PLUS FLAG ONE + WESTERN MUSICAL SYMBOL AUGMENTATION DOT
= WESTERN MUSICAL SYMBOL NOTEHEAD BLACK + WESTERN MUSICAL SYMBOL STEM + WESTERN MUSICAL SYMBOL STACCATO

In addition, augmentation dots and articulation symbols may be repeated as necessary to build a complete note symbol. For example,

WESTERN MUSICAL SYMBOL EIGHTH NOTE + WESTERN MUSICAL SYMBOL AUGMENTATION DOT + WESTERN MUSICAL SYMBOL AUGMENTATION DOT + WESTERN MUSICAL SYMBOL ACCENT

Ornamentation chart

Included below is a list of common 18th-century ornaments and the combining sequences of characters from which they can be generated. Click on the image for a high-resolution version (87k)
Examples

The following examples demonstrate some current uses of music characters in textual materials. Often, music characters are not included because of the difficulty of integrating them into the text. When they are included, they are frequently drawn in by hand after setting the other text, i.e. the Balaban example. Music characters are also used extensively in creating data tables set apart from the text and single-line rhythmic examples either in the text or set apart from it, i.e. the Kennedy and Ottman examples.

Introduction of a standardized group of characters would undoubtedly change current practices in both number and kind.
From Balaban, ed. *Understanding Music with AI*, p. 128:

From the *Encyclopedia Britannica*, v. 24, p. 531:

Eventually, precision of pitch was further achieved by using horizontal staff lines as a grid on which to space the staves, so that degrees of the scale fell alternately on one line or in a space, and by colouring one line red to signify the pitch F and another yellow to signify C, or by placing a letter F or C at the beginning of the appropriate line. Together, the two devices fixed the relative pitches of all lines by indicating where the stations of the scale occurred (that is, immediately below the masked lines). In the 17th century, two signs from a quite different system of notation (alphanumeric notation: see below) were incorporated: the notes B, B, and E., in the 17th century, a flexible staff ruled entirely in black or red had become established, using slanted forms for notes that were not positioned directly below each other. The staff lines were set as a reference for the notation of the modern five-line staff. For polyphonic music, a five-line staff became standard in the 16th century, but keyboard music in some countries used six- or seven-line staves at least as late as the mid-17th century.

During the 17th century, in northern and northeastern Europe, the thin, curved lines of notes were drawn more thickly at the points corresponding to the separate notes within them, in time, a slanted rectangular notation of heavy horizontal pen strokes, diamond-shaped dots, and half-tone vertical strokes emerged, whose groups of notes are called "ligatures."
From the *New Harvard Dictionary of Music*, p. 212:

**212 CRAB CANON / CRITICISM**

 Crab casea. See Canon 1, 3.
 Crab meteot. "Retrgrade.
 Crecaa [Fr.]. *L'Archiduc.*
 Creation, The (Ger. *Die Schöpfung*). An oratorio by Haydn for solos, chorus, and orchestra, Hob.
XXI:2 (1796-97). It is a setting of a poem compiled by
an unknown Mr. Liddly (Lindley?) from Milton's
Prometheus Laid, the whole project having been sug-
gested to Haydn by the concert manager Johann
Peter Salomon during the composer's second stay in
London (1794-95). Upon Haydn's return to
Vienna, the text was translated into German by
Benedict Gottfried van Swieten as *Die Schöpfung.*
The work was first performed in Vienna in 1798 and in
this translation.

Création Mass. Popular name for Haydn's Mass in
B-major Hob. XXI:13 (1801), so called because a
theme from his oratorio *The Creation* appears in the
"Qui tollis."

Creation of Prometheus. See *Geschöpf des Pro-
metheus.*

Crecite (Fr.). *Cogitate.*

Crelo (Lat., Eng. *Creed*). The third item of
the *Ordinary of the Roman Catholic Mass*, except
on certain feast when it is omitted. Its text is the
Nicene *Creed*, first used in association with the
Eucharist in the East in the 4th century, in the 6th
century it was prescribed for the Mozarabic Mass, and it
now appears as in Creo in the *Cremonese* method: it was


From Ottman, *Elementary Harmony*, 2nd ed., p. 11:

<table>
<thead>
<tr>
<th>Thirty-Second Note</th>
<th>1/32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixty-Fourth Note</td>
<td>1/64</td>
</tr>
</tbody>
</table>

These notes do not indicate any specific duration of sound, rather their
fractional names indicate relative duration. Any note value is twice as long as the
next smaller value (i.e., a half note is twice as long as a quarter note).


From Kennedy, *Oxford Dictionary of Music*, p. 494:

<table>
<thead>
<tr>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAMIE</td>
</tr>
<tr>
<td>NAMES OF THE NOTES AND RHYTHMIC VALUES</td>
</tr>
<tr>
<td>ENGLISH, ITALIAN, FRENCH, GERMAN, AND AMERICAN</td>
</tr>
</tbody>
</table>

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![Image](http://www.lib.virginia.edu/drmc/Music/UnicodeMusic/)
<table>
<thead>
<tr>
<th>English</th>
<th>Italian</th>
<th>French</th>
<th>German</th>
<th>American</th>
</tr>
</thead>
<tbody>
<tr>
<td>breve</td>
<td>breve</td>
<td>enchie</td>
<td>Doppeltakst</td>
<td>decile</td>
</tr>
<tr>
<td>semibreve</td>
<td>semibreve</td>
<td>rond</td>
<td>Ganz-Takt</td>
<td>whole-note</td>
</tr>
<tr>
<td>minim</td>
<td>minim o' blanc</td>
<td>blanc</td>
<td>Halbe</td>
<td>half-note</td>
</tr>
<tr>
<td>crotch</td>
<td>semiminima</td>
<td>noir</td>
<td>Vierel</td>
<td>quarter-note</td>
</tr>
<tr>
<td>quaver</td>
<td>croceta</td>
<td>croche</td>
<td>Achsel</td>
<td>eighths-note</td>
</tr>
<tr>
<td>demisemiquaver</td>
<td>demisemiminima</td>
<td>demisemiminima</td>
<td>Schachtel</td>
<td>sixteens-note</td>
</tr>
<tr>
<td>semiquaver</td>
<td>semiquaver</td>
<td>quaver</td>
<td>Zweiletztes</td>
<td>thirty-second</td>
</tr>
</tbody>
</table>

References


ISO/IEC JTC 1/SC 2/WG 2

http://www.lib.virginia.edu/dmnc/Music/UnicodeMusic/
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646

Please fill Sections A, B and C below. Section D will be filled by SC 2/WG 2.

For instructions and guidance for filling in the form please see the document "Principles and Procedures for Allocation of New Characters and Scripts" (http://www.dkug.dk/JTC1/SC2/WG2/prot)

A. Administrative

1. Title: Proposal for Encoding Western Music Symbols in ISO/IEC 10646

2. Requester’s name: Perry Roland

3. Requester type (Member body/Liaison/Individual contribution): Individual contribution

4. Submission date: February, 1998

5. Requester’s reference (if applicable):

6. (Choose one of the following:)
   This is a complete proposal; or,
   More information will be provided later: This is a complete proposal.

B. Technical - General

1. (Choose one of the following:)
   a. This proposal is for a new script (set of characters):
      Proposed name of script: Western Musical Symbols
   b. The proposal is for addition of character(s) to an existing block:
      Name of the existing block:

2. Number of characters in proposal: 220

3. Proposed category (see section II, Character Categories): Category "A"

4. Proposed Level of Implementation (see clause 15, ISO/IEC 10646-1): Level 2
   Is a rationale provided for the choice? No.
   If Yes, reference:

5. Is a repertoire including character names provided? Yes.
Proposal for Encoding Western Music Symbols in ISO/IEC 10646

6. Who will provide the appropriate computerized font (ordered preference: True Type, PostScript or 96x96 bit-mapped format) for publishing the standard? Perry Roland

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 (such as samples from newspapers, magazines, or other sources) of use of proposed characters attached? Yes.

8. Special encoding issues:

   Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transiliteration etc. (if yes, please enclose information): Yes.

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? Contact has been made with members of the Music Library Association, the American Musicological Society, and faculty members and library staff at the University of Virginia.

   If YES, available relevant documents?

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

   Reference:

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

   Reference:

5. Are the proposed characters in current use by the user community? Yes.

   If YES, where? World-wide.

   Reference:

6. After giving due considerations to the principles in N 1352 must the proposed characters be entirely in the BMP? No. This script is not appropriate for encoding in the BMP.

   If YES, is a rationale provided?

   If YES, reference:

7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? Yes.

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 character(s) be considered to be similar (in appearance or function) to an existing character?
If YES, is a rationale for its inclusion provided? Yes.
If YES, reference:

10. Does the proposal include use of combining characters and/or use of composite sequences (see clause 4.11 and 4.13 in ISO/IEC 10646-1)? Yes.
If YES, is a rationale for such use provided? Yes.
If YES, reference:

Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? No.
If YES, reference:

11. 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)

D. SC 2/WG 2 Administrative (To be completed by SC 2/WG 2)

1. Relevant SC 2/WG 2 document numbers:

2. Status (list of meeting number and corresponding action or disposition):

3. Additional contact to user communities, liaison organizations etc:

4. Assigned category and assigned priority/time frame: