REPRESENTATION

****pitch** — American National Standards Institute pitch notation

DESCRIPTION

The ****pitch** representation permits the encoding of Western musical pitches using the standard system for pitch designations adopted by the American National Standards Institute (e.g. 'G#4').

The ****pitch** representation distinguishes three types of data tokens: pitches, rests, and barlines. Pitches may be encoded using pitch letter-name, accidental, octave designation, and pitch deviation (in cents). In addition, ****pitch** provides limited capabilities for representing phrasing and slurs.

Pitch tokens consist of up to four logical parts — without any intervening spaces. The first part is the pitch letter-name; only the upper-case letters A, B, C, D, E, F, and G are permitted. The second part is an optional accidental: the octothorpe (#) for sharp, the small letter 'b' for flat, the small letter 'x' for double-sharp, and two successive small letter 'b's for double-flats. Triple and quadruple sharps (x#, xx, etc.) and flats (bbb, bbbb, etc.) are permissible, however a given pitch token may not be modified by sharps and flats concurrently.

The third part of a pitch token is the octave designation. The number 4 is used to designate all pitches between middle C and the B a major seventh above, inclusive. Octave numbers are incremented by one for each successively higher octave, and are decremented by one for each successively lower octave. Negative octave numbers are not permitted, so the lowest pitch in the ****pitch** representation is C0 (16.35 Hz). Only a single octave digit is permitted, so the highest ****pitch** pitch is B9 (15,804 Hz).

If a given pitch deviates from equal temperament, a fourth part is added to a ****pitch** pitch token denoting the cents deviation from equal temperament. This consists of an integer value preceded by either a plus or minus sign.

By way of example, the following ****pitch** token encodes a note 19 cents flat from A440 (in this case A435 Hz):

```
A4-19
```

Once again, no intervening spaces are permitted within a single note. Notice that the order of signifiers is important for pitch encodings. Pitch letter-name is followed by one or more accidentals (if appropriate), followed by an octave designation, followed by cents deviation (if appropriate) — where cents deviation is an integer preceded by the plus or minus sign.

Several notes may be encoded concurrently in a single spine by using the Humdrum

multiple-stop convention: notes within multiple-stops are separated by single spaces. The following example encodes a C-minor chord as four pitches in two ****pitch** spines — each spine containing a double-stop.

```
**pitch  **pitch
C4 Eb4   G4 C5
*-       *-
```

Pitch tokens may be modified by the presence of additional signifiers. The open brace '{' denotes the beginning of a phrase. The closed brace '}' denotes the end of a phrase. The open parenthesis '(' denotes the beginning of a slur. The closed parenthesis ')' denotes the end of a slur. The semicolon ';' denotes a pause.

Rests tokens are denoted by the lower-case letter 'r'.

Barlines are represented using the "common system" for barlines — see **barlines (2)**.

FILE TYPE

It is recommended that files containing predominantly `**pit` data should be given names with the distinguishing '.pit' extension.

SIGNIFIERS

The following table summarizes the ****pitch** mappings of signifiers and signifieds.

A-G	absolute pitches letter name
0-9	octave designation, where C4 equals middle C; also cents deviation (when preceded by minus or plus sign)
b	flat
bb	double flat
bbb	triple flat
#	sharp
x	double sharp
x#	triple sharp
xx	quadruple sharp
r	rest
=	barline; == double barline
(	slur start
)	slur end
{	phrase mark (start)
}	phrase mark (end)
;	pause sign
–	negative cents deviation (minus sign)
+	positive cents deviation

Summary of ****pitch** *Signifiers*

EXAMPLES

A sample document is given below:

```
**pitch    **pitch
*pelog     *slendro
=1         =1
A#4+20     Bb4-80
A4         .
A4         .
=2         =2
A4         {(G3+5
r          G3+73
.          G#3-2)
r          r
r          Db4+18
Db4        Db4+77}
*-         *-
```

PERTINENT COMMANDS

The following Humdrum commands accept ****pitch** encoded data as inputs:

cents	translates ****pitch** to ****cents**
deg	translate ****pitch** to ****deg**
degree	translate ****pitch** to ****degree**
freq	translates ****pitch** to ****freq**
hint	calculate harmonic intervals from ****pitch** input
kern	translates ****pitch** to ****kern**
mint	calculate melodic intervals from ****pitch** input
pc	translate ****pitch** pitch to ****pc**
semits	translate ****pitch** pitch to numerical ****semits**
solfa	translate ****pitch** pitch to ****solfa**
solfg	translate ****pitch** pitch to ****solfg**
tonh	translate ****pitch** pitch to ****Tonh**
trans	transpose ****pitch** score
vox	determine active and inactive voices in a Humdrum file

The following Humdrum command produces ****pitch** data as output:

pitch	translates ****cents**, ****degree**, ****freq**, ****fret**, ****kern**, ****MIDI**, ****semits**, ****solfg**, ****specC**, and ****Tonh** to ****pitch**

TANDEM INTERPRETATIONS

The following tandem interpretations can be used in conjunction with ****pitch**:

meter signatures	`*M6/8`
key signatures	`*k[f#c#]`
key	`*c#:`
tempo	`*MM96.3`

Tandem interpretations for ****pitch**

SEE ALSO

barlines (2), ****cents** (2), ****deg** (2), ****degree** (2), ****freq** (2), ****hint** (2), ****kern** (2), **mint** (4), ****pc** (2), **pitch** (4), ****semits** (2), ****solfa** (2), ****solfg** (2), ****specC** (2), ****Tonh** (2)