

## NAME

**num** — number selected records according to user-defined criteria

## SYNOPSIS

```
num [-efT] [-a **interp] [-i n] [-n regex] [-o n] [-O n] [-p regex] [-P regex]
      [-r regex] [-R regex] [-s regex] [-S regex] [-x regex] [-z regex] [-Z regex]
      [inputfile ...]
```

## DESCRIPTION

The **num** command produces sequential numerical output according to user-defined numbering criteria. In its default operation, **num** simply inserts numbers at the beginning of each data record — beginning with the value 1, and increasing by 1 for successive data records. However, **num** provides various options that allow the user to specify more precisely the kinds of data and conditions under which numbering occurs.

Numbers may be inserted prior to data tokens, appended following data tokens, or inserted in the middle of data tokens. Numbers may be output only for the first input spine, or for all input spines. Alternatively, numbers may be output in a separate output spine specified by the user. Numbers may be assigned only to those data records *matching* a given regular expression, or may be assigned to all records *other* than those matching a regular expression. Numerical counts may begin at any real or integer value and may be incremented or decremented by any real or integer value. Numbering may restart at some defined value whenever a certain regular expression is matched in the input. Numbers may be output only when certain conditions are met; for example, although counting may continue, outputting of numbers may be suspended or resumed when the input data match user-specified regular expressions.

The **num** command may be used to number measures, phrases, chords, notes, rests, or other musically-pertinent features. (See EXAMPLES below.)

## OPTIONS

The **num** command provides the following options:

<b>-a</b> <i>**interp</i>	append a new spine ( <i>**interp</i> ) containing numbered data
<b>-e</b>	place numbers at end of data tokens (rather than at the beginning)
<b>-f</b>	number all spines (all fields) in the input
<b>-h</b>	displays a help screen summarizing the command syntax
<b>-i</b> <i>n</i>	set increment value to <i>n</i>
<b>-n</b> <i>regexp</i>	number only those records matching <i>regexp</i>
<b>-o</b> <i>n</i>	set initial offset value to <i>n</i>
<b>-O</b> <i>n</i>	set offset value to <i>n</i> after a reset
<b>-p</b> <i>regexp</i>	place output number immediately following the first occurrence of <i>regexp</i> on the line
<b>-P</b> <i>regexp</i>	place output number immediately following the first occurrence of <i>regexp</i> on the line
<b>-r</b> <i>regexp</i>	resume numbering records when <i>regexp</i> is matched
<b>-R</b> <i>regexp</i>	resume numbering records <b>after</b> <i>regexp</i> is matched
<b>-s</b> <i>regexp</i>	suspend numbering records when <i>regexp</i> is matched
<b>-S</b> <i>regexp</i>	suspend numbering records <b>after</b> <i>regexp</i> is matched
<b>-T</b>	reset counter when all spines have exclusive interpretations
<b>-x</b> <i>regexp</i>	exclude numbering those records matching <i>regexp</i>
<b>-z</b> <i>regexp</i>	reset counter when record matches <i>regexp</i>
<b>-Z</b> <i>regexp</i>	reset counter <b>after</b> record matches <i>regexp</i>

Options are specified in the command line.

Normally, the effect of **num** is to add numbers to data tokens already in the input. With the **-a** option, **num** creates a new spine which is appended to the right of the input stream. The numerical outputs of **num** become data records in this new output spine. The user can specify the name of the output interpretation via the command line parameter *\*\*interp*. The **-a** cannot be used with the **-p** or **-P** options.

The **-e** option causes numbers generated by **num** to be append to the end of each appropriate data token rather than the (default) beginning of each data token. The **-e** and **-a** options are mutually exclusive. In addition, the **-e** cannot be used with the **-p** or **-P** options.

The **-f** option causes all spines (all fields) in the input to be numbered rather than the (default) first (left-most) spine. The **-f** option is mutually exclusive with the **-a** option. In addition, the **-f** cannot be used with the **-p** or **-P** options.

The **-i** option allows the user to set the increment value for successive numbers. The default value is 1 — meaning that successive numerical outputs are 1 greater than the previous value. Negative increment values are also permissible. For example, the user might define an initial value beginning at 100, and decrement by 5 with each successive value.

The **-n** option causes **num** to output numerical values, only when the current data record matches a specified regular expression.

The **-o** option is used to define an initial (offset) value from which subsequent numbers are calculated. If no offset is defined, the default value is 1.



The **-O** option defines an offset value to which the counter will be returned each time a *reset* action occurs. The **-O** option should be used in conjunction with one of either the **-T**, **-z** or **-Z** options.

The **-p** and **-P** options allow the user to place any output numerical value in a particular (horizontal) place in the output line. In the case of **-p** the output number is positioned immediately following the first (left-most) string matching the specified regular expression. With the **-P** option, the output number is positioned immediately prior to the first string matching the specified regular expression. The **-p** and **-P** options cannot be used with either the **-a**, **-e** or **-f** options.

The **-r** option defines a condition under which the outputting of numbers will resume. Specifically, the user defines a regular expression with the **-r** option that, when matched, causes the immediate resumption of printing.

The **-R** option is similar to the **-r** option, with the exception that outputting of numbers is resumed *after* any record matching the specified regular expression.

The **-s** option causes the outputting of numbers to be suspended when an input record matches a specified regular expression. Although the numerical values are not outputted, the numerical values continue to be incremented in accordance with the defined counting conditions.

The **-S** option is similar to the **-s** option, with the exception that the outputting of numbers is suspended *after* any record matching the specified regular expression.

The **-T** option causes the counter to be reset (to the value specified by **-O**) whenever exclusive interpretations are encountered in all of the input spines. If no initial offset has been specified via the **-O** option, then the counter is reset to the value 1.

The **-x** option causes records matching a given regular expression to be excluded from the counting; no output is generated for such records. Note that when used in conjunction with the **-n** option, both the *match* and *don't match* criteria must be fulfilled in order for the current record to participate in the counting.

The **-z** option causes the counter to be reset (to the value specified by **-O**) whenever a data record matches a specified regular expression. If no initial offset has been specified via the **-O** option, then the counter is reset to the value 1.

The **-Z** option is similar to the **-z** option, with the exception that the counter is reset *after* any record matching the specified regular expression.

## EXAMPLES

The following examples illustrate how **num** may be used. Consider the following input (left spine) and corresponding **num** output (right spine).

```

**kern    **plength
=23      .
{8a      .
.        .
8cc      .
}8ee     3
{8g#     .
=24      .
8dd      .
8ee      .
}8ff     4
8r       .
.        .
=25      .
{8gn     .
8cc      .
}8ee     3
{8f#     .
=26      .
8cc      .
8dd      .
}8ee-    4
*_       *_

```

The **\*\*plength** output indicates the number of notes in each phrase for the corresponding **\*\*kern** spine. The output was generated using the following command:

```
num -a '**plength' -z '{' -x '[.r=]' -s '{' -r '}' -S '}'
```

The **-x** option excludes **\*\*kern** rests, barlines, and null tokens from the counting. The **-z** option causes the counter to be reset to 1 whenever a begin-phrase signifier ('{') is encountered. The **-s** option causes suspension of output numbers to occur at the beginning of each phrase, and the **-r** option causes output numbers to be resumed at the end of each phrase (hence, only the phrase-end signifiers are given numbered output). The **-S** option ensures that numbers are not printed for notes outside of phrases; that is, it suspends outputting numbers following the end of a phrase.<sup>†</sup> The **-a** option causes the numbers to be output as a separate spine labelled **\*\*plength**.

The command

```
num -a '**ordo' koto
```

outputs a new spine labelled **\*\*ordo** containing successive integers beginning at 1 for each

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<sup>†</sup> Note that this command will still fail to suppress the numbering of notes occurring prior to the first phrase.

data record in the input.

```
num -n '^=' -x '==' -p '=' -o 108 sarod
```

numbers all “common system” barlines in the file `sarod`, beginning with measure 108. Double barlines are not numbered (due to the `-x` option) and numbers are positioned directly following the equals sign (due to the `-p` option). The `-p` option ensures that the number precedes pause markings and other possible barline signifiers. Note that if measure numbers already exist for a file, the measures can be renumbered by first removing the current measure numbers using **humsed**.

The command

```
num -a '**phrase#' -n '{' -T rebec
```

outputs a spine containing numbers that number the beginning of each `**kern` phrase for the file `rebec`; if any exclusive interpretation is encountered, the phrase numbering restarted at 1.

The command

```
num -x '^='
```

numbers all data records other than common system barlines.

```
num -x '^=' -Z '='
```

numbers all data records within each common system measure — starting at the value 1 with each new measure.

## PORTABILITY

DOS 2.0 and up, with the MKS Toolkit. OS/2 with the MKS Toolkit. UNIX systems supporting the *Korn* shell or *Bourne* shell command interpreters, and revised *awk* (1985).

## SEE ALSO

**nl** (UNIX), **\*\*ordo** (2), **regexp** (4), **regexp** (6), **rend** (4)

## NOTES

The `-O` option should be used in conjunction with one of either the `-T`, `-z` or `-Z` options.