NAME

context — congeal data records to form a contextual frame

SYNOPSIS

context [**-b** *regexp*] [**-d** *string*] [**-e** *regexp*] [**-i** *regexp*] [**-n** *n*] [**-o** *regexp*] [**-p** *n*] [*inputfile ...*]

DESCRIPTION

The **context** command amalgamates one or more successive input data records into single records according to user-defined criteria. Only single-spine Humdrum inputs are permitted. The **context** command provides a useful means for amalgamating on a single line those data tokens that are somehow deemed to be contextually related. For example, **context** might be used to link together all pitches in a measure, or pair the first and last notes of each phrase. The command is useful in such tasks as partitioning possible pitch-class sets or grouping arpeggio tones into chords.

In its simplest mode of operation **context** will join a specified number of successive data records together to form a single output record. By way of example, consider a file (named `input`) consisting of a single spine whose data records contain the numbers 1 through 6 on separate lines:

```
**numbers
1
2
3
4
5
6
*-
```

The command

```
context -n 3 input
```

will produce the following output:

```
**numbers
1 2 3
2 3 4
3 4 5
4 5 6
.
.
*-
```

Notice that the output file has been padded with null tokens so that the number of output records matches the number of input records. By invoking the **-p** option, the padded null tokens can be placed either at the beginning or the end of the file, or split between beginning and end. For example, the command

```
context -n 3 -p 3 input
```

will place the trailing null tokens in the above example at the beginning of the output. The **-p** option defaults to the value 0.

If null tokens are present in the input, they remain in place, yet do not affect the congealed data records. For example, if a null token was present between the numbers 1 and 2 in the above input, the command

```
context -n 4 -p 1 input
```

would produce an output beginning with a single padded null token:

```
**numbers
.
1 2 3 4
.
2 3 4 5
3 4 5 6
.
.
*-
```

Rather than specifying a fixed number of congealed data records, input records can alternatively be amalgamated according to the signifiers present in the input data itself. The **-e** option allows the user to specify an "end" signifier. When this signifier is encountered in the input, the input record is appended to the current congealed record — which is then output — and a new congealed output record begins. End signifiers are defined as string patterns using the *regular expression* syntax (see **regexp (5)**). For example, given an input of six successive numbers, the command

```
context -e [0246] input
```

would produce the following output:

```
**numbers
1 2
.
3 4
.
5 6
.
*-
```

OPTIONS

The **context** command supports the following options:

-b *regexp*	begin a new output record starting with token matching *regexp*
-d *string*	use *string* as output delimiter for input records rather than the space character
-e *regexp*	begin a new output record starting after token matching *regexp*
-h	displays a help screen summarizing the command syntax
-i *regexp*	ignore any records matching *regexp* when counting
-n *n*	amalgamate *n* input data records for each output record
-o *regexp*	omit any records matching *regexp* from amalgamated output; do not count
-p *n*	pad *n* (normally trailing) null tokens at the beginning of the output spine

Options are specified in the command line. Note that the **-b** and **-e** options are mutually exclusive with the **-n**, **-p**, and **-i** options.

In the default operation, **context** separates amalgamated tokens by inserting a space character. (Thus the input tokens are treated as subtokens in a Humdrum multiple-stop.) The **-d** option allows the user to define an alternative string as the subtoken delimiter.

The **-n** option allows the user to specify the maximum number of data records assembled into a single output record.

The **-b** option allows the user to specify a "begin" marker. When this marker (*regexp*) is matched in the input, any current congealed record is output, and a new congealed record begins. Begin signifiers are defined as string patterns using the *regular expression* syntax.

With the **-e** option, if **context** encounters a data record matching *regexp* then it appends the current input record to the current assembled output record and begins assembling a new record with the following input record.

The **-i** option is used only with **-n;** it causes any data records matching *regexp* to be ignored in the counting of amalgamated tokens. Such "uncounted" records are nevertheless output.

The **-o** option causes data records matching *regexp* to be omitted from the output.

The **-p** option may be used in conjunction with **-n**. Normally, the output from **context -n** is padded with trailing null tokens — one fewer in number than the value specified with **-n**. The **-p** *n* option causes *n* null tokens to be padded at the *beginning* of the output spine, rather

than trailing at the end.

Note that tandem interpretations and comments are processed like null tokens; they are merely echoed in the output in their appropriate position. Note also that **context** automatically breaks a congealed output record whenever it encounters a spine-path terminator or exclusive interpretation in the input.

EXAMPLES

The following excerpt from Edgar Varèse's *Density 21.5 (1936)* illustrates the use of **context.** Consider the initial input:

```
!! Edgar Varèse, Density 21.5 (1936)
!! excerpt: mm.41-45
**kern
*MM72
=41
(16f#
16e#
[8gn
2.g_
=42
4g])
4r
4r
8r
(16f#
16e#
=43
6gn)
(6e#
6f#
8g)
(8f#
12e#
12g
12dn
=44
2a-)
(4an
8een
[8bb-
=45
4bb-]
2.ccc#)
=45
8r
*-
```

A simple transformation would be to amalgamate successive data records in overlapping groups of 3. The following command:

```
context -n 3 density
```

would produce the following output:

```
!! Edgar Varèse, Density 21.5 (1936)
!! excerpt: mm.41-45
**kern
*MM72
=41 (16f# 16e#
(16f# 16e# [8gn
16e# [8gn 2.g_
[8gn 2.g_ =42
2.g_ =42 4g])
=42 4g]) 4r
4g]) 4r 4r
4r 4r 8r
4r 8r (16f#
8r (16f# 16e#
(16f# 16e# =43
16e# =43 6gn)
=43 6gn) (6e#
6gn) (6e# 6f#
(6e# 6f# 8g)
6f# 8g) (8f#
8g) (8f# 12e#
(8f# 12e# 12g
12e# 12g 12dn
12g 12dn =44
12dn =44 2a-)
=44 2a-) (4an
2a-) (4an 8een
(4an 8een [8bb-
8een [8bb- =45
[8bb- =45 4bb-]
=45 4bb-] 2.ccc#)
4bb-] 2.ccc#) =45
2.ccc#) =45 8r
.
.
*-
```

Notice once again that the input and output have the same number of records. Preserving the structure in this way allows the user to coordinate the contextual output with the original input using the **assemble** command.

A more useful transformation might amalgamate successive data records in overlapping groups of 3 *notes;* that is rests and barlines should be ignored. The following command causes input records containing either an equals-sign or the letter 'r' to be ignored when counting the number of amalgamated data records:

```
context -n 3 -i [=r] density
```

The input and corresponding output are given in the left and right spines below:

```
!! Edgar Varèse, Density 21.5 (1936)
!! excerpt: mm.41-45
**kern    **kern
*MM72     *MM72
=41       =41 (16f# 16e# [8gn
(16f#     (16f# 16e# [8gn
16e#      16e# [8gn 2.g_
[8gn      [8gn 2.g_ =42 4g])
2.g_      2.g_ =42 4g]) 4r 4r 8r (16f#
=42       =42 4g]) 4r 4r 8r (16f# 16e#
4g])      4g]) 4r 4r 8r (16f# 16e#
4r        4r 4r 8r (16f# 16e# =43 6gn)
4r        4r 8r (16f# 16e# =43 6gn)
8r        8r (16f# 16e# =43 6gn)
(16f#     (16f# 16e# =43 6gn)
16e#      16e# =43 6gn) (6e#
=43       =43 6gn) (6e# 6f#
6gn)      6gn) (6e# 6f#
(6e#      (6e# 6f# 8g)
6f#       6f# 8g) (8f#
8g)       8g) (8f# 12e#
(8f#      (8f# 12e# 12g
12e#      12e# 12g 12dn
12g       12g 12dn =44 2a-)
12dn      12dn =44 2a-) (4an
=44       =44 2a-) (4an 8een
2a-)      2a-) (4an 8een
(4an      (4an 8een [8bb-
8een      8een [8bb- =45 4bb-]
[8bb-     [8bb- =45 4bb-] 2.ccc#)
=45       .
4bb-]     .
2.ccc#)   .
=45       .
8r        .
*-        *-
```

Notice that as the end of the file is approached, **context** will continue amalgamating data records until it is no longer able to satisfy the amalgamating criteria. If unable to complete an output record, **context** will output a null token.

If the above command had used the **-o** rather than the **-i** option, all of the rests and barlines would have been omitted from the output. Otherwise, the output would be the same as given above.

A more musically useful partitioning of Varèse's work might be based on slur markings. The following command uses open- and closed-slur markings to demarcate the contextual

outputs; (note the need to escape the parentheses since they are regular expression metacharacters).

```
context -b '\(' -e '\)' -o '[=r]' density
```

Notice that the ensuing output (shown below) pads the output with null tokens in order to maintain the same number of data records as the original input. (An output such as the following might be used as input to a command sequence such as **pc -x | pcset**).

```
!! Edgar Varèse, Density 21.5 (1936)
!! excerpt: mm.41-45
**kern
*MM72
.
(16f# 16e# [8gn 2.g_ 4g])
.
.
.
.
.
.
.
.
(16f# 16e# 6gn)
.
.
(6e# 6f# 8g)
.
.
(8f# 12e# 12g 12dn 2a-)
.
.
.
.
.
(4an 8een [8bb- 4bb-] 2.ccc#)
.
.
.
.
.
.
*-
```

If there were any notes not embraced within a slur, the above command would have caused them to be output on their own line.

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

context (4), **grep** (UNIX), **nf** (4), **patt** (4), **pattern** (4), **pcset** (4)

WARNINGS

The **-b** and **-e** options are mutually exclusive with the **-n**, **-p**, and **-i** options.