Uncia

Reference Manual

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NAME

Uncia − A big cat

DESCRIPTION

If you thought `cat −v` was considered harmful, you haven’t met my uncia.

The Unix programming philosophy is to write small utilities which can be piped together to build complex programs. The objection to `cat −v` is that looking at non-printing ASCII characters isn’t what *cat*(1) is for, because now you have something more than just joining files head-to-tail. And since Rob Pike’s 1983 paper, *cat*(1) has suffered even more creeping featurism.

At first sight, *uncia*(1) would appear to be even worse, given that it can do zillions of different things to text files. The subtlety lies in uncia’s implementation: each different filter that *uncia*(1) implements is a separate class, and all of these classes can be chained together, much like commands being piped together on the command line. The implementation uses the C++ `<iostream>` interface, allowing the various classes to be re-used in other C++ programs. This is still the Unix philosophy, but it’s implemented as a library at the `<iostream>` level, rather than a directory full of executables.

Input Filters:
column remove (colrm), crlf to nl (dos2unix), escape newline, expand, gunzip, hash comments, head, lower case, MIME base-32 decode, MIME base-32-hex decode, MIME base-64 decode, MIME quoted printable decode, number lines (cat −n), paste, prefix remove, Primos text decode, reverse (rev), reverse lines (tac), rot13, sort, tail, unique, upper case, uudecode, VMS text decode, xxdecode.

Output Filters:
base 32, base-32-hex, base 64, double space, fold, gzip, hexdump, lower case, nl to crlf (unix2dos), number lines (cat −n), prefix add, MIME quoted printable, Primos text encode, reverse (rev), rot13, rot47, show nonprinting (cat −v), show tabs (cat −T), squeeze blank (cat −s), suffix add, tee, unexpand, upper case, uuencode, VMS text encode, xxencode.

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RELEASE NOTES

This section details the various features and bug fixes of the various releases.

Version 1.2 (2010-Oct-29)

- The *uncia*(1) command now understands how to encode and decode ascii-85 and base-85 files. See http://en.wikipedia.org/wiki/Ascii85 for more information. My thanks to Paul Wayper for this suggestion.

Version 1.1 (2010-Sep-14)

- There is a new uncia -ansi input filter that may be used to remove ANSI escape sequences from the input.
- The uncia command now understands how to translate to and from Apple Macintosh formatted text files.
- There is a new uncia -o -pid output filter, which adds a process ID to the start of each output line.
- There is a new uncia -o -syslog output class, which may be used to send output to the system log.
- There is a new timestamp output filter, which may be used to prepend timestamps to output streams. Often useful for error streams and long files.

Version 1.0 (2008-Sep-01)

This was the first public release.

- The following input filters are available: base64, column-remove, crlf, down-case, escape-newline, expand, gunzip, hash-comments, head, line-numbering, non-blank, paste, quoted-printable, remove-prefix, rev, reverse-lines, rot13, rot47, tail, unique, up-case, uudecode.
- The following output filters are available: base64, crlf, double-space, down-case, fold, gzip, hexdump, line-numbering, non-blank, prefix, quoted-printable, rev, rot13, rot47, show-ends, show-nonprinting, show-tabs, squeeze-blank, suffix, tee, unexpand, upper-case uudecode.
- The *uncia*(1) command accepts Uniform Resource Identifiers (URIs) on the command line as inputs.

NAME

New input filter

DESCRIPTION

This man page describes what to do to add a new input filter.

`libuncia/input/filter/`*name*`.h`
: This file contains the class declaration, for the new `input_filter_`*name* class, defined in the class, derived from the `input_filter` class, defined in the `libuncia/input/filter.h` file. If possible, choose a class name that will work for the corresponding output class' name, and also the command line lexer.

  Be sure to put the class into the `libuncia` name space.

`libuncia/input/filter/`*name*`.cc`
: This file contains the class definition, for the new `input_filter_`*name* class.

  The heavy lifting is done by the "`ssize_t read(void *data, size_t size)`" method.

`uncia/gram.y`
: This file contains the parser for the command line. You need to add a token (as a `%token` directive), and also a new grammar rule for the input format.

`uncia/lex.cc`
: This file contains the lexical analyser for the command line. Add the new token to the table of tokens.

`test/*/*.sh`
: Submit your new filter with at least one test, preferably in a way that exercises all code branches.

  Include any test vectors in the defining document or RFC.

`man/man1/uncia.1`
: Add the new filter to the list of supported filters. Be sure to include the URL of a site that accurately defines the operation, or quote the RFC number.

`etc/readme.man`
: Add the new filter to the list of supported filters.

`web-src/index.html`
: Add the new filter to the list of supported filters.

Please send patches in "`diff -nur`" format.

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NAME

New output filter

DESCRIPTION

This man page describes what to do to add a new output filter.

`libuncia/output/filter/`*name*`.h`
: This file contains the class declaration, for the new `output_filter_`*name* class, defined in the class, derived from the `output_filter` class, defined in the `libuncia/output/filter.h` file. If possible, choose a class name that will work for the corresponding input class' name, and also the command line lexer.

  Be sure to put the class into the `libuncia` name space.

`libuncia/output/filter/`*name*`.cc`
: This file contains the class definition, for the new `output_filter_`*name* class.

  The heavy lifiting is done by the "`ssize_t write(const void *data, size_t size)`" method.

`uncia/gram.y`
: This file contains the parser for the command line. You need to add a token (as a `%token` directive), and also a new grammar rule for the output format.

`uncia/lex.cc`
: This file contains the lexical analyser for the command line. Add the new token to the table of tokens.

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: Submit your new filter with at least one test, preferably in a way that exercises all code branches.

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Please send patches in "`diff -nur`" format.

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NAME

uncia − a big cat

SYNOPSIS

uncia [*option* ...][*input-spec* ...][**−Output** *output-spec*]

uncia −version

DESCRIPTION

If you thought *cat −n* was considered harmful, you haven't met my uncia. Uncia is the genus of Snow Leopards in the family Felidae (cats).

The *uncia* command may be used to catenate (join) files head-to-tail. It can also optionally perform pre-processing on its inputs, and post-processing on its output.

OPTIONS

The uncia command understands the following options:

−VERSion
This option may be used to print the version of the uncia command.

−Output *output-spec*
This option may be used to specify the destination to write the output to. This must appear *after* all of the *input-spec* on the command line.

@filename
This option is replaced by the contents of the file, as if they were given as arguments on the command line. Comments (typical Unix # style) are discarded. White space, including newlines, separate the arguments in the file. There is no quoting. There is no file name pattern expansion.

All options may be abbreviated; the abbreviation is documented as the upper case letters, all lower case letters and underscores (_) are optional. You must use consecutive sequences of optional letters.

All options are case insensitive, you may type them in upper case or lower case or a combination of both, case is not important.

For example: the arguments "−echo", "−ec" and "−e" are all interpreted to mean the **−Echo** option. The argument "−eco" will not be understood, because consecutive optional characters were not supplied.

The GNU long option names are understood. Since all option names for *uncia* are long, this means ignoring the extra leading '−'. The "−−*option*=*value*" convention is also understood.

input-spec

The inputs (the data to be catenated (joined) head-to-tail) may be simple or complex. You may specify as many inputs as you like. If no *input-spec* is given, the standard input is used.

If you are familiar with programming languages, be aware that this is a grammar specification. The chaining of filters is achieved using a recursive grammar; the actual order of evaluation is more-or-less indicated by the order in which options appear on the command line.

−
This means the standard input is to be used. You may only specify this input once.

For example, the command

```
$ uncia first − second −o third
$
```

will sandwich the standard input between two files, and write the result to a third file.

filename
The named file is used for input.

For example, the command

```
$ uncia first second −o third
```

```
$
```

will take the contents of the first two files, join them head-to-tail, and write the result to a third file.

The results are undefined if you use the same file as an input and as an output. You can use the same file as input multiple times.

URI

Uniform Resource Identifier (URI) is a compact string of characters used to identify or name a resource on the Internet.

For example, the command

```
$ uncia http://miller.emu.id.au/pmiller/ −o index.html
$
```

will download the given URL, and write it to the given output file.

input-spec **−APple**

This input filter turns pre-OS-X Apple Macintosh line termination (CR) into ANSI C line termination (LF), and write the result to the *pretty.txt* file. It can do the same for URIs, too; or any other input source.

For example, the command

```
$ uncia ugly.mac.txt −apple −o pretty.txt
$
```

will take the *ugly.mac.txt* file and convert it to POSIX line termination, writing the result to the *pretty.txt* file.

input-spec **−Base32**

This input filter decodes the MIME base 32 encoding. See RFC 4648 for more information.

For example, the command

```
$ uncia attachment.txt −base32 −o content
$
```

will take the *attachment.txt* file and decode the BASE32, writing the binary result to the *content* file.

input-spec **−Base32Hex**

This input filter decodes the MIME base-32-hex encoding. See RFC 4648 for more information.

For example, the command

```
$ uncia attachment.txt −base32hex −o content
$
```

will take the *attachment.txt* file and decode the BASE32HEX, writing the binary result to the *content* file.

input\[hy]spec **−Base64**

This input filter decodes the MIME base 64 encoding. See RFC 4648 for more information.

For example, the command

```
$ uncia attachment.txt −base64 −o content
$
```

will take the *attachment.txt* file and decode the BASE64, writing the binary result to the *content* file.

input\[hy]spec **−Base85**

This output filter decodes the data using the “atob” base 85 decoding. See http://en.wikipedia.org/wiki/Ascii85 for more information.

For example, the command

```
$ uncia attachment.txt −base85 −o content
$
```

will take the *attachment.txt* file and decode the base-85 encoding, writing the binary result to the *content* file.

input\[hy]spec −**CRLF**

This input filter turns DOS line termination (CRLF) into ANSI C line termination (LF). If the file contains a mixture of POSIX and PC line termination, the lines with POSIX line termination are passed through unaltered.

For example, the command

```
$ uncia http://example.com/ugly.htm −crlf −o pretty.html
$
```

will take download the given URI, convert it from PC line termination (CRLF) to POSIX line termination (LF), and write the result to the *pretty.html* file.

input\[hy]spec −**COLumn_ReMove** *start* [*stop*]

This input filter removes the specified range of columns. The columns are numbered from 1, for compatibility with the *colrm*(1) command. No stop column means infinitely wide.

For example, the command

```
$ uncia input.txt −colrm 9 −o output.txt
$
```

will remove everything but the first 8 characters of each line of the *input.txt* file, and write the result to the *output.txt* file.

input\[hy]spec −**Down_Case**

This input filter maps upper case ASCII characters to lower case.

For example, the command

```
$ uncia shout.txt −downcase −o whisper.txt
$
```

will convert all upper case letters in the *shout.txt* file into lower case, passing through all other characters unchanged, and writes the result to the *whisper.txt* file.

−**Echo** *string*

The given string (with a newline appended) will be used as input. If you want more than one word, you must use quotes, so that uncia sees only a single string constant.

For example, the command

```
$ uncia −echo ’Hello, World’
Hello, World
$
```

will write the string “Hello, World” to the standard output. In this way, constant text can be treated as an input, and be used anywhere a file or URL may be used.

If you want binary data, team this up with a −**Quoted_Printable** filter. For example, the command

```
$ uncia −echo ’=01=42=83=FF’ −qp −o output.bin
$
```

will write the binary data given to the *output.bin* file. To avoid the implied newline, end the string with “=”, because that’s how the quoted\[hy]printable encoding wraps long lines without disturbing the content.

input\[hy]spec **−Escape_NewLine**
This input filter removes backslash\[hy]newline sequences, the kind of line breaks seen in C and C++ code.

input\[hy]spec **−EXpand** [*tab\[hy]width*]
This input filter replaces tab characters with the appropriate number of spaces. The *tab\[hy]width* defaults to 8 characters if not set.

For example, the command

```
$ uncia tabs.txt −expand −o spaces.txt
$
```

will convert all horizontal tabs in the *tabs.txt* file into the appropriate number of spaces, and writes the result to the *spaces.txt* file.

This is similar to the *expand*(1) command.

Another example is converting from 8\[hy]character to 4\[hy]character tabs. The command

```
$ uncia input.txt −expand −o −unexpand 4 output.txt
$
```

will replaces the horizontal tabs in the *input.txt* file (treating them as eight characters wide) with the appropriate number of horizontal (treating them as four characters wide), and writes the result to the *output.txt* file.

input\[hy]spec **−Gnu_UnZip**
This input filter decompresses data compressed by *gzip*(1).

For example, the command

```
$ uncia tabs.txt.gz −gunzip −expand −o −gzip spaces.txt.gz
$
```

will uncompress the contents of the *tabs.txt.gz* file, convert all horizontal tabs into the appropriate number of spaces, gzip the result, and write it to the *spaces.txt.gz* file.

input\[hy]spec **−Hash_Comments**
This input filter may be used to remove comments. The comments start with a hash character (#) and extend to the end of the line.

input\[hy]spec **−HEad** [*number*]
This input filter limits the content to the first *number* lines, or the first 10 if no number is given.

input\[hy]spec **−number_nonBlank**
This input filter numbers the non\[hy]blank lines of the preceding input source.

input\[hy]spec **−Number**
This input filter numbers the lines of the preceding input source.

−PAste *input\[hy]spec input\[hy]spec*
This input filter may be used to read two files, and glue them together side\[hy]by\[hy]side, with the corresponding lines of each file separated by a TAB character. If you want more than two columns, chain **−paste** filters together on the right.

For example, the command

```
$ uncia −paste one.txt two.txt −o three.txt
$
```

will take the first line of *one.txt*, then a tab, then the first line of *two.txt*, and write it as the first line of *three.txt*; and so on for all the rest of the lines in the files.

−PAste_Delimited *string input\[hy]spec input\[hy]spec*
This input filter may be used to read two files, and glue them together side\[hy]by\[hy]side, with the corresponding lines of each file separated by the given *delimiter* string. If you want more

than two columns, chain **−paste\[hy]delim** filters together on the right.

For example, the command

```
$ uncia −paste\[hy]delim ’=’ name.txt value.txt −o pairs.txt
$
```

will take the first line of *name.txt*, then an equals sign, then the first line of *value.txt*, and write it as the first line of *pairs.txt*; and so on for all the rest of the lines in the files.

input\[hy]spec **−PRImos**
This filter may be used to convert a Primos text input into a Posix text input. See http://en.wikipedia.org/wiki/PRIMOS for more information.

input\[hy]spec **−Quoted_Printable**
This input filter decodes the MIME Quoted Printable encoding. See RFC 1521 for more information.

For example, the command

```
$ uncia attachment.txt −qp −o content
$
```

will take the *attachment.txt* file and decode the Quoted Printable, writing the result to the *content* file.

input\[hy]spec **−Remove_Prefix** *text*
This input filter removes a constant string from the start of the input lines. Lines which don’t match are passed through unchanged.

input\[hy]spec **−REVerse**
This input filter reverses the order of the characters on each line.

For example, the command

```
$ uncia /usr/share/dict/words −rev −sort −rev
lots of boring output
waist
shirtwaist
cubist
supremacist
pharmacist
racist
publicist
lyricist
classicist
physicist
more boring output
$
```

will print the contents of the */usr/share/dict/words* file sorted by the last letter, then the second last letter, *etc*.

input\[hy]spec **−REVerse_Lines**
This input filter reverses the order of the lines in the input.

input\[hy]spec **−Rotate13**
This input filter is a simple Caesar\[hy]cipher encryption that replaces each English letter with the one 13 places forward or back along the alphabet. It is its own inverse.

input\[hy]spec **−Rotate47**
ROT47 is a derivative of ROT13 which, in addition to scrambling the basic letters, also scrambles numbers and common symbols. Instead of using the sequence A−Z as the alphabet, ROT47 uses a larger set of characters from the common character encoding known as ASCII. It is its own

inverse.

input\[hy]spec **−SOrt**
This input filter sorts its input lines (using *strcmp*(3), or equivalent, it does not understand locales).

input\[hy]spec **−TAil** [*number*]
This input filter limits the content to the last *number* lines, or the last 10 if no number is given.

input\[hy]spec **−UNique**
This input filter suppresses duplicate lines. This filter does not detect repeated lines unless they are adjacent; you may want to sort the input first.

input\[hy]spec **−Upper_Case**
This input filter maps lower case ASCII characters to upper case.

For example, the command

```
$ uncia whisper.txt −upcase −o shout.txt
$
```

will convert all lower case letters in the *whisper.txt* file into upper case, passing through all other characters unchanged, and writes the result to the *shout.txt* file.

input\[hy]spec **−UUDecode**
This input filter decodes the Unix\[hy]to\[hy]Unix encoding, used to transmit binary files over channels that support only simple ASCII data.

input\[hy]spec **−XXDecode**
This input filter decodes the xxencoding, used to transmit binary files over channels that support only simple ASCII data. See http://en.wikipedia.org/wiki/Xxencode for more information.

Filters may be chained together, and will be applied in the order given.

output-spec
The outputs may be simple or complex. If no *output\[hy]spec* is given, the standard output is used.

If you are familiar with programming languages, be aware that this is a grammar specification. The chaining of filters is achieved using a recursive grammar; the actual order of evaluating is more\[hy]or\[hy]less indicated by the order in which options appear on the command line.

− This means the standard output is to be used. You may only specify this output once.

filename
The named file will be written to.

The results are undefined if you use the same file as an input and as an output.

−APple *output\[hy]spec*
This output filter translates ANSI C line termination (LF) into Apple Macintosh line termination (CR).

−Ascii85 *output\[hy]spec*
This output filter encodes the data using the Adobe Ascii85 encoding. See http://en.wikipedia.org/wiki/Ascii85 for more information.

−Base32 *output\[hy]spec*
This output filter encodes the data using the MIME base 32 encoding. See RFC 4648 for more information.

−Base32Hex *output\[hy]spec*
This output filter encodes the data using the MIME base\[hy]32\[hy]hex encoding. See RFC 4648 for more information.

−Base64 *output\[hy]spec*
: This output filter encodes the data using the MIME base 64 encoding. See RFC 4648 for more information.

−Base85 *output\[hy]spec*
: This output filter encodes the data using the “btoa” base 85 encoding. See http://en.wikipedia.org/wiki/Ascii85 for more information.

−CRLF *output\[hy]spec*
: This output filter translates ANSI C line termination (LF) into DOS line termination (CRLF).

−Double_Space *output\[hy]spec*
: This output filter double spaces the output, doubling each newline.

−Down_Case *output\[hy]spec*
: This output filter maps ASCII upper case characters to lower case.

−FOld [*line\[hy]width* [*tab\[hy]width*]] *output\[hy]spec*
: This output filter folds long lines; it even copes with overwriting using carriage returns and/or back space to overwrite character positions. The *line\[hy]width* defaults to 75. The *tab\[hy]width* defaults to 8.

−Fold_Spaces [*line\[hy]width* [*tab\[hy]width*]] *output\[hy]spec*
: As above, but it tries to break lines at spaces rather than in the middle of words.

−Gnu_Zip *output\[hy]spec*
: This output filter compresses its output using the *gzip*(1) algorithm.

For example, the command

```
$ uncia tabs.txt.gz −gunzip −expand −o −gzip spaces.txt.gz
$
```

will uncompress the contents of the *tabs.txt.gz* file, convert all horizontal tabs into the appropriate number of spaces, gzip the result, and write it to the *spaces.txt.gz* file.

−HexDump *output\[hy]spec*
: This output filter turns maps the data into a hexadecimal dump.

For example, the command

```
$ uncia −echo ’Boring’ −o −hexdump −
0000: 42 6F 72 69 6E 67 0A                            Boring.
$
```

dumps the fixed string “Boring”, but you can use any input you like, including a file. To get a hexdump to the standard output, you must give the “−” argument; it’s only implied when no *output-spec* is specified at all.

−Number *output\[hy]spec*
: This output filter numbers the lines, and delivers them to the following output.

For example, the command

```
$ uncia /etc/motd −o −number −
     1  Linux yada yada yada
     2  Ubuntu 10.10
     3
     4  Welcome to Ubuntu!
     5   * Documentation:  https://help.ubuntu.com/
     6
$
```

adds line numbers to the */etc/motd* file, and prints the result to the standard output.

−number_nonBlank *output\[hy]spec*

This output filter numbers the non\[hy]blank lines, and delivers them to the following output.

For example, the command

```
$ uncia /etc/motd −o −nnb −
     1  Linux  yada yada yada
     2  Ubuntu 10.10

     3  Welcome to Ubuntu!
     4   * Documentation:  https://help.ubuntu.com/

$
```

adds line numbers to the */etc/motd* file, but only the non\[hy]blank lines, and prints the result to the standard output.

−PREfix *string output\[hy]spec*

This output filter adds the given *string* to the start of each line.

−PRImos *output\[hy]spec*

This filter may be used to convert a Posix text stream into a Primos text stream. See http://en.wikipedia.org/wiki/PRIMOS for more information.

−Process_IDentifier *output\[hy]spec*

This output filter may be used to add a process ID to the start of each line.

−Quoted_Printable *output\[hy]spec*

This output filter encodes the MIME Quoted Printable encoding. See RFC 1521 for more information.

−REVerse *output\[hy]spec*

This output filter reverses the order of the characters on each line.

−Rotate13 *output\[hy]spec*

This output filter is a simple Caesar\[hy]cipher encryption that replaces each English letter with the one 13 places forward or back along the alphabet. It is its own inverse.

−Rotate47 *output\[hy]spec*

ROT47 is a derivative of ROT13 which, in addition to scrambling the basic letters, also treats numbers and common symbols. Instead of using the sequence A−Z as the alphabet, ROT47 uses a larger set of characters from the common character encoding known as ASCII. It is its own inverse.

−Show\[hy]All *output\[hy]spec*

This is shorthand for "−show\[hy]ends −show\[hy]nonprinting −show\[hy]tabs *output\[hy]spec*".

−Show_Ends *output\[hy]spec*

This output filter displays $ at the end of each line. This is shorthand for "−suffix '$'".

−Show_Non_Printing *output\[hy]spec*

This output filter uses ˆ and M\[hy] notation to display non\[hy]printing characters, except for LF and TAB.

−Show_Tabs *output\[hy]spec*

This output filter displays TAB as ˆI and leaves all other characters unchanged.

−Squeeze_Blank *output\[hy]spec*

This output filter suppress repeated empty output lines.

−SUFfix *string output\[hy]spec*

This output filter adds the given *string* to the end of each line.

−SysLog
The output will be written to the system log. See *syslogd*(8) for more information.

For example, the command

```
$ uncia −e 'Hello, World' −o −syslog
$
```

will print the string “Hello, World” into the system log, resulting in something like this:

```
Nov 10 20:53:32 hawk uncia: Hello, World
```

appearing in the system log.

−TEE *output\[hy]spec output\[hy]spec*
This output filter may be used to write the same data to two outputs. Each output may specify additional and different filters. If you need more than two simultaneous output streams, chain **−tee** options together on the right.

The result is undefined if you attempt to write to the same file on both branches of the tee.

−Time_Stamp *output\[hy]spec*
This output filter may be used to prepend a time stamp to the start of each output line. Works best with line buffered input. The default format is “`%Y\[hy]%m\[hy]%d %H:%M:%S`”

−Time_Stamp_Format *format\[hy]string output\[hy]spec*
This output filter may be used to prepend a time stamp in the given *strftime*(3) format, to the start of each output line. Works best with line buffered input. See *strftime*(3) for more information about possible formats.

−UnExpand [*tab\[hy]width*] *output\[hy]spec*
This output filter attempt to optimize leading white space output using horizontal tabs where possible.

−UnExpand_All [*tab\[hy]width*] *output\[hy]spec*
This output filter attempt to optimize all white space output using horizontal tabs where possible.

−Upper_Case *output\[hy]spec*
This output filter maps ASCII lower case characters to upper case.

−UUEncode *output\[hy]spec*
This output filter encodes using the Unix\[hy]to\[hy]Unix encoding, used to transmit binary files over channels that support only simple ASCII data.

−VMS *output\[hy]spec*
This output filter formats the output as a VMS text file.

−XXEncode *output\[hy]spec*
This output filter encodes using the xxencoding, used to transmit binary files over channels that support only simple ASCII data. See http://en.wikipedia.org/wiki/Xxencode for more information.

The output filters may be chained together in arbitrary combinations.

EXIT STATUS

The uncia command exits with status 1 on any error. The uncia command only exits with status 0 if there are no errors.

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uncia version 1
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AUTHOR

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