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# **latexcodec Documentation**

***Release 1.0.0***

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## 1.1 Getting Started

### 1.1.1 Overview

A lexer and codec to work with LaTeX code in Python.

- Download: <http://pypi.python.org/pypi/latexcodec/#downloads>
- Documentation: <http://latexcodec.readthedocs.org/>
- Development: <http://github.com/mcmtroffaes/latexcodec/>

### 1.1.2 Installation

Install the module with `pip install latexcodec`, or from source using `python setup.py install`.

### 1.1.3 Minimal Example

Simply import the `latexcodec` module to enable "latex" to be used as an encoding:

```
import latexcodec
text_latex = br"\el\`eve"
assert text_latex.decode("latex") == u"élève"
text_unicode = u"ångström"
assert text_unicode.encode("latex") == br'\aa ngstr\'om'
```

By default, the LaTeX input is assumed to be ascii, as per standard LaTeX. However, you can also specify an extra codec as `latex+<encoding>`, where `<encoding>` describes another encoding. In this case characters will be translated to and from that encoding whenever possible. The following code snippet demonstrates this behaviour:

```
import latexcodec
text_latex = b"\xfe"
assert text_latex.decode("latex+latin1") == u"p"
assert text_latex.decode("latex+latin2") == u"ť"
text_unicode = u"ť"
assert text_unicode.encode("latex+latin1") == b'\xc t' # ě is not latin1
assert text_unicode.encode("latex+latin2") == b'\xfe'  # but it is latin2
```

## 1.2 API

### 1.2.1 LaTeX Codec

The `latexcodec.codec` module contains all classes and functions for LaTeX code translation. For practical use, you should only ever need to import the `latexcodec` module, which will automatically register the codec so it can be used by `str.encode()`, `str.decode()`, and any of the functions defined in the `codecs` module such as `codecs.open()` and so on. The other functions and classes are exposed in case someone would want to extend them.

`latexcodec.codec.register()`

Register the `find_latex()` codec search function.

**See also:**

`codecs.register()`

`latexcodec.codec.find_latex(encoding)`

Return a `codecs.CodecInfo` instance for the requested LaTeX *encoding*, which must be equal to `latex`, or to `latex+<encoding>` where `<encoding>` describes another encoding.

**class** `latexcodec.codec.LatexIncrementalEncoder(errors='strict')`

Bases: `latexcodec.lexer.LatexIncrementalEncoder`

Translating incremental encoder for latex. Maintains a state to determine whether control spaces etc. need to be inserted.

**get\_space\_bytes** (*bytes\_*)

Inserts space bytes in space eating mode.

**class** `latexcodec.codec.LatexIncrementalDecoder(errors='strict')`

Bases: `latexcodec.lexer.LatexIncrementalDecoder`

Translating incremental decoder for LaTeX.

**class** `latexcodec.codec.LatexCodec`

Bases: `codecs.Codec`

**decode** (*bytes\_*, *errors='strict'*)

Convert LaTeX bytes to unicode string.

**encode** (*unicode\_*, *errors='strict'*)

Convert unicode string to LaTeX bytes.

**class** `latexcodec.codec.LatexUnicodeTable(lexer)`

Tabulates a translation between LaTeX and unicode.

**register** (*unicode\_text*, *latex\_text*, *mode='text'*, *package=None*, *decode=True*, *encode=True*)

Register a correspondence between *unicode\_text* and *latex\_text*.

#### Parameters

- **unicode\_text** (*str*) – A unicode character.
- **latex\_text** (*bytes*) – Its corresponding LaTeX translation.
- **mode** (*str*) – LaTeX mode in which the translation applies (`'text'` or `'math'`).
- **package** (*str*) – LaTeX package requirements (currently ignored).
- **decode** (*bool*) – Whether this translation applies to decoding (default: `True`).
- **encode** (*bool*) – Whether this translation applies to encoding (default: `True`).



**register\_all()**

Register all symbols and their LaTeX equivalents (called by constructor).

## 1.2.2 LaTeX Lexer

This module contains all classes for lexing LaTeX code, as well as general purpose base classes for incremental LaTeX decoders and encoders, which could be useful in case you are writing your own custom LaTeX codec.

**class** latexcodec.lexer.**Token** (*name, text*)

A `collections.namedtuple()` storing information about a matched token.

**See also:**

`LatexLexer.tokens`

**name**

The name of the token as a `str`.

**text**

The matched token text as `bytes`. The constructor also accepts text as `memoryview`, in which case it is automatically converted to `bytes`. This ensures that the token is hashable.

**\_\_len\_\_()**

Length of the token text.

**\_\_nonzero\_\_()**

Whether the token contains any text.

**decode** (*encoding*)

Returns the decoded token text in the specified *encoding*.

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**Note:** Control words get an extra space added at the back to make sure separation from the next token, so that decoded token sequences can be `str.join()` ed together.

For example, the tokens `b'\hello'` and `b'world'` will correctly result in `u'\hello world'` (remember that LaTeX eats space following control words). If no space were added, this would wrongfully result in `u'\helloworld'`.

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**class** latexcodec.lexer.**LatexLexer** (*errors='strict'*)

Bases: `codecs.IncrementalDecoder`

A very simple lexer for tex/latex code.

**flush\_raw\_tokens()**

Flush the raw token buffer.

**get\_raw\_tokens** (*bytes\_, final=False*)

Yield tokens without any further processing. Tokens are one of:

- `\<word>`: a control word (i.e. a command)
- `\<symbol>`: a control symbol (i.e. `^` etc.)
- `#<n>`: a parameter
- a series of byte characters

**getstate()**

Get state.

**reset()**

Reset state.

**setstate** (*state*)

Set state. The *state* must correspond to the return value of a previous `getstate()` call.

**class** `latexcodec.lexer.LatexIncrementalLexer` (*errors='strict'*)

Bases: `latexcodec.lexer.LatexLexer`

A very simple incremental lexer for tex/latex code. Roughly follows the state machine described in Tex By Topic, Chapter 2.

The generated tokens satisfy:

- no newline characters: paragraphs are separated by ‘par’
- spaces following control tokens are compressed

**get\_tokens** (*bytes\_, final=False*)

Yield tokens while maintaining a state. Also skip whitespace after control words and (some) control symbols. Replaces newlines by spaces and par commands depending on the context.

**class** `latexcodec.lexer.LatexIncrementalDecoder` (*errors='strict'*)

Bases: `latexcodec.lexer.LatexIncrementalLexer`

Simple incremental decoder. Transforms lexed LaTeX tokens into unicode.

To customize decoding, subclass and override `get_unicode_tokens()`.

**decode** (*bytes\_, final=False*)

Decode LaTeX *bytes\_* into a unicode string.

This implementation calls `get_unicode_tokens()` and joins the resulting unicode strings together.

**get\_unicode\_tokens** (*bytes\_, final=False*)

Decode every token in `inputenc` encoding. Override to process the tokens in some other way (for example, for token translation).

**class** `latexcodec.lexer.LatexIncrementalEncoder` (*errors='strict'*)

Bases: `codecs.IncrementalEncoder`

Simple incremental encoder for LaTeX. Transforms unicode into bytes.

To customize decoding, subclass and override `get_latex_bytes()`.

**encode** (*unicode\_, final=False*)

Encode the *unicode\_* string into LaTeX bytes.

This implementation calls `get_latex_bytes()` and joins the resulting bytes together.

**get\_latex\_bytes** (*unicode\_, final=False*)

Encode every character in `inputenc` encoding. Override to process the unicode in some other way (for example, for character translation).

## 1.3 Changes

### 1.3.1 1.0.0 (5 August 2014)

- Add Python 3.4 support.
- Fix “DZ” decoding (see issue #21, reported and fixed by Philipp Spitzer).

### 1.3.2 0.3.2 (17 April 2014)

- Fix underscore “\_” encoding (see issue #17, reported and fixed by Michael Radziej).

### 1.3.3 0.3.1 (5 February 2014)

- Drop Python 3.2 support.
- Drop 2to3 and instead use six to support both Python 2 and 3 from a single code base.
- Fix control space “” decoding.
- Fix LaTeX encoding of number sign “#” and other special ascii characters (see issues #11 and #13, reported by beltiste).

### 1.3.4 0.3.0 (19 August 2013)

- Copied lexer and codec from sphinxcontrib-bibtex.
- Initial usage and API documentation.
- Some small bugs fixed.

### 1.3.5 0.2 (28 September 2012)

- Adding additional codec with brackets around special characters.

### 1.3.6 0.1 (26 May 2012)

- Initial release.

## 1.4 Authors

Main authors:

- David Eppstein
  - wrote the original LaTeX codec as a recipe on ActiveState <http://code.activestate.com/recipes/252124-latex-codec/>
- Peter Tröger
  - wrote the original latexcodec package, which contained a simple but very effective LaTeX encoder
- Matthias Troffaes ([matthias.troffaes@gmail.com](mailto:matthias.troffaes@gmail.com))
  - wrote the lexer
  - integrated codec with the lexer for a simpler and more robust design
  - various bugfixes

Contributors:

- Michael Radziej
- Philipp Spitzer

## 1.5 License

latexcodec is a lexer and codec to work with LaTeX code in Python  
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### Remark

Versions 0.1 and 0.2 of the latexcodec package were written by Peter Tröger, and were released under the Academic Free License 3.0. The current version of the latexcodec package shares no code with those earlier versions.

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## Indices and tables

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