Wikidata Documentation

Release 0.6.1

Hong Minhee

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Contents

This package provides easy APIs to use Wikidata for Python.

```
>>> from wikidata.client import Client
>>> client = Client()
>>> entity = client.get('Q20145', load=True)
>>> entity
<wikidata.entity.Entity Q20145 'IU'>
>>> entity.description
m'South Korean singer and actress'
>>> image_prop = client.get('P18')
>>> image = entity[image_prop]
>>> image
<wikidata.commonsmedia.File 'File:KBS "The Producers" press conference, 11 May 2015␣
↪10.jpg'>
>>> image.image_resolution
(820, 1122)
>>> image.image_url
'https://upload.wikimedia.org/wikipedia/commons/6/60/KBS_%22The_Producers%22_press_
↪conference%2C_11_May_2015_10.jpg'
```

CHAPTER 1

wikidata — Wikidata client library

wikidata.cache — Caching policies

Changed in version 0.5.0.

wikidata.cache.**CacheKey**(*x*)
The type of keys to look up cached values. Alias of str.

class wikidata.cache.**CachePolicy**
Interface for caching policies.

get(*key: <function NewType.<locals>.new_type at 0x7f04246838c8>*) → typing.Union[<function NewType.<locals>.new_type at 0x7f0424683a60>, NoneType]
Look up a cached value by its key.

Parameters **key** (*CacheKey*) – The key string to look up a cached value.

Returns The cached value if it exists. None if there's no such key.

Return type Optional[*CacheValue*]

set(*key: <function NewType.<locals>.new_type at 0x7f04246838c8>, value: typing.Union[<function NewType.<locals>.new_type at 0x7f0424683a60>, NoneType]*) → None
Create or update a cache.

Parameters

- **key** (*CacheKey*) – A key string to create or update.
- **value** (Optional[*CacheValue*]) – A value to cache. None to remove cache.

wikidata.cache.**CacheValue**(*x*)
The type of cached values.

class wikidata.cache.**MemoryCachePolicy**(*max_size: int = 128*) → None
LRU (least recently used) cache in memory.

Parameters **max_size** (int) – The maximum number of values to cache. 128 by default.

class wikidata.cache.**NullCachePolicy**
No-op cache policy.

class wikidata.cache.**ProxyCachePolicy**(*cache_object*, *timeout: int*, *property_timeout: typing.Union[int, NoneType] = None*, *namespace: str = 'wd_'*) → None
This proxy policy is a proxy or an adaptor to another cache object. Cache objects can be anything if they satisfy the following interface:

```
def get(key: str) -> Optional[bytes]: pass
def set(key: str, value: bytes, timeout: int=0) -> None: pass
def delete(key: str) -> None: pass
```

(The above methods omit `self` parameters.) It's compatible with de facto interface for caching libraries in Python (e.g. python-memcached, `werkzeug.contrib.cache`).

Parameters

- **cache_object** – The cache object to adapt. Read the above explanation.
- **timeout** (`int`) – Lifespan of every cache in seconds. 0 means no expiration.
- **property_timeout** (`int`) – Lifespan of caches for properties (in seconds). Since properties don't change frequently or their changes usually don't make important effect, longer lifespan of properties' cache can be useful. 0 means no expiration. Set to the same as `timeout` by default.
- **namespace** (`str`) – The common prefix attached to every cache key. `'wd_'` by default.

wikidata.client — Client session

wikidata.client.**WIKIDATA_BASE_URL = 'https://www.wikidata.org/'**
(`str`) The default `base_url` of *`Client`* constructor.

Changed in version 0.3.0: As the meaning of *`Client`* constructor's `base_url` parameter, it now became to `https://www.wikidata.org/` from `https://www.wikidata.org/wiki/` (which contained the trailing path `wiki/`).

class wikidata.client.**Client**
Wikidata client session.

Parameters

- **base_url** (`str`) – The base url of the Wikidata. *`WIKIDATA_BASE_URL`* is used by default.
- **opener** (`urllib.request.OpenerDirector`) – The opener for `urllib.request`. If omitted or `None` the default opener is used.
- **entity_type_guess** (`bool`) – Whether to guess *`type`* of *`Entity`* from its `id` for less HTTP requests. `True` by default.
- **cache_poliy** – A caching policy for API calls. No cache (*`NullCachePolicy`*) by default.

New in version 0.5.0: The `cache_policy` option.

Changed in version 0.3.0: The meaning of `base_url` parameter changed. It originally meant `https://www.wikidata.org/wiki/` which contained the trailing path `wiki/`, but now it means only `https://www.wikidata.org/`.

New in version 0.2.0: The `entity_type_guess` option.

cache_policy = <wikidata.cache.NullCachePolicy object>
(`CachePolicy`) A caching policy for API calls.

New in version 0.5.0.

datavalue_decoder = None
(`Union[Decoder, Callable[[Client, str, Mapping[str, object]], object]]`) The function to decode the given datavalue. It's typically an instance of `Decoder` or its subclass.

decode_datavalue(*datatype: str, datavalue: typing.Mapping[str, object]*) → object
Decode the given `datavalue` using the configured *datavalue_decoder*.

New in version 0.3.0.

entity_type_guess = True
(`bool`) Whether to guess *type* of *Entity* from its `id` for less HTTP requests.

New in version 0.2.0.

get(*entity_id: <function NewType.<locals>.new_type at 0x7f04245b66a8>*, *load: bool = False*) → wikidata.entity.Entity
Get a Wikidata entity by its `EntityId`.

Parameters

- **entity_id** – The `id` of the *Entity* to find.
- **load** (`bool`) – Eager loading on `True`. Lazy loading (`False`) by default.

Returns The found entity.

Return type *Entity*

New in version 0.3.0: The `load` option.

guess_entity_type(*entity_id: <function NewType.<locals>.new_type at 0x7f04245b66a8>*) → typing.Union[wikidata.entity.EntityType, NoneType]
Guess *EntityType* from the given `EntityId`. It could return `None` when it fails to guess.

Note: It always fails to guess when *entity_type_guess* is configued to `False`.

Returns The guessed `EntityId`, or `None` if it fails to guess.

Return type `Optional[EntityType]`

New in version 0.2.0.

wikidata.commonsmedia — Wikimedia Commons

New in version 0.3.0.

class wikidata.commonsmedia.**File**(*client: wikidata.client.Client*, *title: str*) → None
Represent a file on Wikimedia Commons.

image_mimetype
(`Optional[str]`) The MIME type of the image. It may be `None` if it's not an image.

image_resolution
(Optional[Tuple[int, int]]) The (width, height) pair of the image. It may be None if it's not an image.

image_size
(Optional[int]) The size of the image in bytes. It may be None if it's not an image.

image_url
(Optional[str]) The image url. It may be None if it's not an image.

page_url
(str) The canonical url of the page.

exception wikidata.commonsmedia.**FileError**
Exception raised when something goes wrong with *File*.

wikidata.datavalue — Interpreting datavalues

This module provides the decoder interface for customizing how datavalues are decoded, and the default *Decoder* implementation.

Technically the interface is just a callable so that its implementation doesn't necessarily have to be an instance of *Decoder* or its subclass, but only need to satify:

```
typing.Callable[[wikidata.client.Client, str, typing.Mapping[str, object]],
                object]
```

New in version 0.3.0.

exception wikidata.datavalue.**DatavalueError**(**args*, ***kwargs*)
Exception raised during decoding datavalues. It subclasses ValueError as well.

datavalue
The datavalue which caused the decoding error.

class wikidata.datavalue.**Decoder**
Decode the given datavalue to a value of the appropriate Python type. For extensibility it uses visitor pattern and is intended to be subclassed. To customize decoding of datavalues subclass it and configure datavalue_decoder option of *Client* to the customized decoder.

It automatically invokes an appropriate visitor method using a simple rule of name: {datatype}__{datavalue[type]}. For example, if the following call to a decoder was made:

```
decoder(client, 'mydatatype', {'type': 'mytype', 'value': '...'})
```

it's delegated to the following visitor method call:

decoder.mydatatype__mytype(client, {'type': 'mytype', 'value': '...'})

If a decoder failed to find a visitor method matched to {datatype}__{datavalue[type]} pattern it secondly try to find a general version of visitor method: {datavalue[type]} which lacks double underscores. For example, for the following call:

```
decoder(client, 'mydatatype', {'type': 'mytype', 'value': '...'})
```

It firstly try to find the following visitor method:

decoder.mydatatype__mytype

but if there's no such method it secondly try to find the following general visitor method:

decoder.mytype

This twice-try dispatch is useful when to make a visitor method to be matched regardless of datatype.

If its `datavalue[type]` contains hyphens they're replaced by underscores. For example:

```
decoder(client, 'string',
        {'type': 'wikibase-entityid', 'value': 'a text value'})
```

the above call is delegated to the following visitor method call:

```
decoder.string__wikibase_entityid(
    #     Note that the ^ underscore
    client,
    {'type': 'wikibase-entityid', 'value': 'a text value'}
)
```

`wikidata.entity` — Wikidata entities

class `wikidata.entity.`**`Entity`**

Wikidata entity. Can be an item or a property. Its attrributes can be lazily loaded.

To get an entity use *`Client.get()`* method instead of the constructor of *`Entity`*.

Note: Although it implements `Mapping`[*`EntityId`*, `object`], it actually is multidict. See also *`getlist()`* method.

Changed in version 0.2.0: Implemented `Mapping`[*`EntityId`*, `object`] protocol for easy access of statement values.

Changed in version 0.2.0: Implemented `Hashable` protocol and ==/= operators for equality test.

`getlist`(*key: wikidata.entity.Entity*) → typing.Sequence[object]

Return all values associated to the given `key` property in sequence.

Parameters **`key`** (*`Entity`*) – The property entity.

Returns A sequence of all values associated to the given `key` property. It can be empty if nothing is associated to the property.

Return type `Sequence`[`object`]

`lists`() → typing.Sequence[typing.Tuple[typing.Entity, typing.Sequence[object]]]

Similar to `items()` except the returning pairs have each list of values instead of each single value.

Returns The pairs of (key, values) where values is a sequence.

Return type `Sequence`[`Tuple`[*`Entity`*, `Sequence`[`object`]]]

`type`

(*`EntityType`*) The type of entity, *`item`* or *`property`*.

New in version 0.2.0.

`wikidata.entity.`**`EntityId`**(*x*)

The identifier of each *`Entity`*. Alias of `str`.

class `wikidata.entity.`**`EntityType`**

The enumerated type which consists of two possible values:

- *item*
- *property*

New in version 0.2.0.

item = 'item'
(*EntityType*) Items are *Entity* objects that are typically represented by Wikipage (at least in some Wikipedia languages). They can be viewed as "the thing that a Wikipage is about," which could be an individual thing (the person Albert Einstein), a general class of things (the class of all Physicists), and any other concept that is the subject of some Wikipedia page (including things like History of Berlin).

See also:

Items — Wikibase Data Model The data model of Wikibase describes the structure of the data that is handled in Wikibase.

property = 'property'
(*EntityType*) Properties are *Entity* objects that describe a relationship between items (or other *Entity* objects) and values of the property. Typical properties are *population* (using numbers as values), *binomial name* (using strings as values), but also *has father* and *author of* (both using items as values).

See also:

Properties — Wikibase Data Model The data model of Wikibase describes the structure of the data that is handled in Wikibase.

wikidata.multilingual — Multilingual texts

class wikidata.multilingual.**MonolingualText**
Locale-denoted text. It's almost equivalent to str (and indeed subclasses str) except that it has two more attribute: *locale* and *locale_code* that denote what language the text is written in.

locale
(Locale) The language (locale) that the text is written in.

locale_code = None
(str) The code of *locale*.

wikidata.multilingual.**normalize_locale_code**(*locale: typing.Union[babel.core.Locale, str]*) → str
Determine the normalized locale code string.

```
>>> normalize_locale_code('ko-kr')
'ko_KR'
>>> normalize_locale_code('zh_TW')
'zh_Hant_TW'
>>> normalize_locale_code(Locale.parse('en_US'))
'en_US'
```

CHAPTER 2

Changelog

Version 0.6.1

Released on September 18, 2017.

- Fixed `ImportError` on Python 3.4 due to lack of `typing` module. [#4]

Version 0.6.0

Released on September 12, 2017.

- Fixed `KeyError` from *`Client.get()`* on an entity is redirected to its canonical entity.

Version 0.5.4

Released on September 18, 2017.

- Fixed `ImportError` on Python 3.4 due to lack of `typing` module. [#4]

Version 0.5.3

Released on June 30, 2017.

- Fixed `ValueError` from `Entity.label`/`Entity.description` with languages ISO 639-1 doesn't cover (e.g. `cbk-zam`). [#2]

  Although this fix prevents these properties from raising `ValueError`, it doesn't completely fix the problem. `babel.core.Locale` type, which Wikidata depends on, currently doesn't supprot languages other than ISO 639-1. In order to completely fix the problem, we need to patch Babel to support them, or make Wikidata independent from Babel.

Version 0.5.2

Released on June 28, 2017.

- Fixed `AssertionError` from empty `multilingual_attributes`.

Version 0.5.1

Released on June 28, 2017.

- Fixed `AssertionError` from `len()` or iterating (`iter()`) on *`Entity`* objects with empty claims.

Version 0.5.0

Released on June 13, 2017.

- Wikidata API calls over network became possible to be cached.
  - *`Client`* now has *`cache_policy`* attribute and constructor option. Nothing is cached by default.
  - Added *`wikidata.cache`* module and *`CachePolicy`* interface in it. Two built-in implementation of the interface were added:

    `NullCachePolicy` No-op.

    `MemoryCachePolicy` LRU cache in memory.

    `ProxyCachePolicy` Proxy/adapter to another proxy object. Useful for utilizing third-party cache libraries.
  - `wikidata.client.Client.request` logger became to record logs about cache hits as `DEBUG` level.

Version 0.4.4

Released on June 30, 2017.

- Fixed `ValueError` from `Entity.label`/`Entity.description` with languages ISO 639-1 doesn't cover (e.g. `cbk-zam`). [#2]

  Although this fix prevents these properties from raising `ValueError`, it doesn't completely fix the problem. `babel.core.Locale` type, which Wikidata depends on, currently doesn't supprot languages other than ISO 639-1. In order to completely fix the problem, we need to patch Babel to support them, or make Wikidata independent from Babel.

Version 0.4.3

Released on June 28, 2017.

- Fixed `AssertionError` from empty `multilingual_attributes`.

Version 0.4.2

Released on June 28, 2017.

- Fixed `AssertionError` from `len()` or iterating (`iter()`) on *`Entity`* objects with empty claims.

Version 0.4.1

Released on April 30, 2017.

- Fixed `AssertionError` from *`getlist()`* on entities with empty claims.

Version 0.4.0

Released on April 24, 2017.

- Monolingual texts became able to be handled.
  - Added *`MonolingualText`* type which is a true subtype of `str`.

Version 0.3.0

Released on February 23, 2017.

- Now *`Client`* became able to customize how it decodes datavalues to Python objects.
  - Added *`wikidata.datavalue`* module and *`Decoder`* class inside it.
  - Added *`datavalue_decoder`* option to *`Client`*.
- Now files on Wikimeda Commons became able to be handled.
  - New decoder became able to parse Wikimedia Commons files e.g. images.
  - Added *`wikidata.commonsmedia`* module and *`File`* class inside it.
- The meaning of *`Client`* constructor's `base_url` prameter beccame not to contain the trailing path `wiki/` from `https://www.wikidata.org/wiki/`. As its meaning changed, the value of *`WIKIDATA_BASE_URL`* constant also changed to not have the trailing path.
- Added `load` option to *`Client.get()`* method.

Version 0.2.0

Released on February 19, 2017.

- Made *`Entity`* multidict. Now it satisfies `Mapping`[*`Entity`*, `object`] protocol.
- Added *`Entity.type`* property and *`EntityType`* enum class to represent it.
- Added *`entity_type_guess`* option and *`guess_entity_type()`* method to *`Client`* class.
- Implemented `Hashable` protocol and ==/= operators to *`Entity`* for equality test.

Version 0.1.0

Initial version. Released on February 15, 2017.

CHAPTER 3

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