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# **pytablereader Documentation**

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## 1.1 Summary

pytablereader is a Python library to load structured table data from files/strings/URL with various data format: CSV / Excel / Google-Sheets / HTML / JSON / LDJSON / LTSV / Markdown / SQLite / TSV.

## 1.2 Features

- **Extract structured tabular data from various data format:**
  - CSV / Tab separated values (TSV) / Space separated values (SSV)
  - Microsoft Excel™ file
  - Google Sheets
  - HTML
  - JSON
  - Labeled Tab-separated Values (LTSV)
  - Line-delimited JSON(LDJSON) / NDJSON / JSON Lines
  - Markdown

- MediaWiki
- SQLite database file
- **Supported data sources are:**
  - Files on a local file system
  - Accessible URLs
  - `str` instances
- **Loaded table data can be used as:**
  - `pandas.DataFrame` instance
  - `dict` instance

```
pip install pytablereader
```

Some of the formats require additional dependency packages, you can install the dependency packages as follows:

- **Excel**
  - `pip install pytablereader[excel]`
- **Google Sheets**
  - `pip install pytablereader[gs]`
- **Markdown**
  - `pip install pytablereader[md]`
- **Mediawiki**
  - `pip install pytablereader[mediawiki]`
- **SQLite**
  - `pip install pytablereader[sqlite]`
- **Load from URLs**
  - `pip install pytablereader[url]`
- **All of the extra dependencies**
  - `pip install pytablereader[all]`





Python 2.7+ or 3.5+

### 3.1 Mandatory Python packages

- beautifulsoup4
- DataProperty (Used to extract data types)
- jsonschema
- mbstrdecoder
- pathvalidate
- path.py
- six
- tabledata
- typepy

### 3.2 Optional Python packages

- **logbook**
  - Logging using logbook if the package installed
- **Excel**
  - xlrd
- **Markdown**
  - markdown2

- **MediaWiki**
  - `py pandoc`
- **SQLite**
  - `SimpleSQLite`
- **URL**
  - `requests`
  - `retryrequests`
- **pandas**
  - required to get table data as a pandas data frame
- `simplejson`
- `lxml`

### 3.3 Optional packages (other than Python packages)

- `libxml2` (faster HTML conversion)
- `pandoc` (required when loading MediaWiki file)

### 3.4 Test dependencies

- `pytablewriter`
- `pytest`
- `pytest-runner`
- `responses`
- `tox`

## 4.1 Load table data from CSV

Following example shows how to extract `TableData` from CSV data by using `CsvTableFileLoader` and `CsvTableTextLoader` classes.

### Sample Code

Listing 1: Load table from CSV

```
import pytablereader as ptr
import pytablewriter as ptw

# prepare data ---
file_path = "sample_data.csv"
csv_text = "\n".join([
    "attr_a", "attr_b", "attr_c",
    '1,4,"a"',
    '2,2.1,"bb"',
    '3,120.9,"ccc"',
])

with open(file_path, "w") as f:
    f.write(csv_text)

# load from a csv file ---
loader = ptr.CsvTableFileLoader(file_path)
for table_data in loader.load():
    print("\n".join([
        "load from file",
        "=====",
        "{:s}".format(ptw.dumps_tabledata(table_data)),
    ]))
```

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```
# load from a csv text ---
loader = ptr.CsvTableTextLoader(csv_text)
for table_data in loader.load():
    print("\n".join([
        "load from text",
        "=====",
        "{:s}".format(ptw.dumps_tabledata(table_data)),
    ]))
```

**Output**

```
load from file
=====
.. table:: sample_data

=====  =====  =====
attr_a  attr_b  attr_c
=====  =====  =====
      1      4.0  a
      2      2.1  bb
      3     120.9  ccc
=====  =====  =====

load from text
=====
.. table:: csv2

=====  =====  =====
attr_a  attr_b  attr_c
=====  =====  =====
      1      4.0  a
      2      2.1  bb
      3     120.9  ccc
=====  =====  =====
```

## 4.2 Load table data from a web page

Following example shows how to extract `TableData` from a web page by using `TableUrlLoader` class.

**Sample Code**

Listing 2: Load table from a web page

```
import io

import pytablereader as ptr
import pytablewriter as ptw

loader = ptr.TableUrlLoader(
    "https://en.wikipedia.org/wiki/List_of_unit_testing_frameworks",
    "html")
```

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```

writer = ptw.TableWriterFactory.create_from_format_name("rst")
writer.stream = io.open("load_url_result.rst", "w", encoding=loader.
↳encoding)
for table_data in loader.load():
    writer.from_tabledata(table_data)
    writer.write_table()

```

**Output**

```

$ ./load_table_from_url.py
$ head load_url_result.rst -n 8
.. table:: List of unit testing frameworks - Wikipedia_html1

+-----+-----+-----+-----+
| Name   |xUnit|Source|           Remarks           |
+-----+-----+-----+-----+
|ABAP Unit|Yes  |[1]  |since SAP NetWeaver 2004|
+-----+-----+-----+-----+

```

## 4.3 Load table data from Google Sheets

Following example shows how to extract `TableData` from Google Sheets by using `GoogleSheetsTableLoader` class.

Listing 3: Load table data from Google Sheets

```

import io

import pytablereader as ptr
import pytablewriter as ptw

loader = ptr.TableUrlLoader(
    "https://en.wikipedia.org/wiki/List_of_unit_testing_frameworks",
    "html")

writer = ptw.TableWriterFactory.create_from_format_name("rst")
writer.stream = io.open("load_url_result.rst", "w", encoding=loader.encoding)
for table_data in loader.load():
    writer.from_tabledata(table_data)
    writer.write_table()

```

## 4.4 Get loaded table data as `pandas.DataFrame`

A `TableData` instance can be converted to a `pandas.DataFrame` instance by `as_dataframe()`.

**Sample Code**

Listing 4: Convert from loaded tabledata.TableData to pandas.DataFrame

```
import pytablereader as ptr

loader = ptr.CsvTableTextLoader(
    "\n".join([
        "a,b",
        "1,2",
        "3.3,4.4",
    ]))
for table_data in loader.load():
    print(table_data.as_dataframe())
```

**Output**

	a	b
0	1	2
1	3.3	4.4

## 5.1 Table Loader Wrapper Classes

### 5.1.1 File Loader Wrapper

**class** `pytablereader.TableFileLoader` (*file\_path*, *format\_name=None*, *encoding=None*, *type\_hint\_rules=None*)

Loader class to loading tables from a file.

#### Parameters

- **file\_path** (*str*) – Path to the file to load.
- **format\_name** (*str*) – Data format name to load. Supported formats are as follows: "csv", "excel", "html", "json", "ltsv", "markdown", "mediawiki", "sqlite", "ssv", "tsv". If the value is `None`, automatically detect file format from the `file_path`.

#### Raises

- `pytablereader.InvalidFilePathError` – If `file_path` is an invalid file path.
- `pytablereader.LoaderNotFoundError` – If an appropriate loader not found for loading the file.

#### `load()`

Loading table data from a file as `format_name` format. Automatically detect file format if `format_name` is `None`.

**Returns** Loaded table data iterator.

**Return type** `TableData` iterator

#### See also:

- `pytablereader.factory.TableFileLoaderFactory.create_from_format_name()`
- `pytablereader.factory.TableFileLoaderFactory.create_from_path()`

**classmethod** `get_format_names()`

**Returns** Available format names. These names can use by `TableFileLoader` class constructor.

**Return type** `list`

**Example**

```
>>> from pytablereader import TableFileLoader
>>> for format_name in TableFileLoader.get_format_names():
...     print(format_name)
...
csv
excel
html
json
json_lines
jsonl
ldjson
ltsv
markdown
mediawiki
ndjson
sqlite
ssv
tsv
```

### 5.1.2 URL Loader Wrapper

**class** `pytablereader.TableUrlLoader` (*url*, *format\_name=None*, *encoding=None*, *type\_hint\_rules=None*, *proxies=None*)

Loader class to loading tables from URL.

#### Parameters

- **url** (*str*) – URL to load.
- **format\_name** (*str*) – Data format name to load. Supported formats are: "csv", "excel", "html", "json", "ltsv", "markdown", "mediawiki", "sqlite", "ssv", "tsv". If the value is `None`, automatically detect file format from the url.
- **proxies** (*dict*) – http/https proxy information.

#### See also:

`requests proxies`

#### Raises

- `pytablereader.LoaderNotFoundError` – If an appropriate loader not found for loading the URL.
- `pytablereader.HTTPError` – If loader received an HTTP error when access to the URL.

**Example** *Load table data from a web page*

**load()**

Load tables from URL as `format_name` format.

**Returns** Loaded table data iterator.



**Return type** TableData iterator

**See also:**

- `pytablereader.factory.TableUrlLoaderFactory.create_from_format_name()`
- `pytablereader.factory.TableUrlLoaderFactory.create_from_path()`

**classmethod** `get_format_names()`

**Returns** Available format names. These names can use by `TableUrlLoader` class constructor.

**Return type** list

**Example**

```
>>> from pytablereader import TableUrlLoader
>>> for format_name in TableUrlLoader.get_format_names():
...     print(format_name)
...
csv
excel
html
json
json_lines
jsonl
ldjson
ltsv
markdown
mediawiki
ndjson
sqlite
ssv
tsv
```

## 5.2 Format Specific Table Loader Classes

### 5.2.1 TableLoader class

**class** `pytablereader.interface.TableLoader` (*source*, *quoting\_flags*, *type\_hints*, *type\_hint\_rules=None*)

Bases: `pytablereader.interface.TableLoaderInterface`

The abstract class of table data file loader.

**table\_name**

Table name string.

**source**

Table data source to load.

## 5.2.2 CSV Loader Classes

### 5.2.2.1 CSV Table Loader

**class** `pytablereader.csv.core.CsvTableLoader` (*source*, *quoting\_flags*, *type\_hints*,  
*type\_hint\_rules*)

The abstract class of CSV table loaders.

**headers**

Attribute names of the table. Use the first line of the CSV file as attribute list if `headers` is empty.

**delimiter**

A one-character string used to separate fields. Defaults to `,`.

**quotechar**

A one-character string used to quote fields containing special characters, such as the `delimiter` or `quotechar`, or which contain new-line characters. Defaults to `'`.

**encoding**

Encoding of the CSV data.

### 5.2.2.2 CSV File Loader

**class** `pytablereader.CsvTableFileLoader` (*file\_path*, *quoting\_flags=None*, *type\_hints=None*,  
*type\_hint\_rules=None*)

Bases: `pytablereader.csv.core.CsvTableLoader`

A file loader class to extract tabular data from CSV files.

**Parameters** `file_path` (*str*) – Path to the loading CSV file.

**table\_name**

Table name string. Defaults to `%(filename)s`.

**Examples** *Load table data from CSV*

**load()**

Extract tabular data as `TableData` instances from a CSV file. *source* attribute should contain a path to the file to load.

**Returns**

Loaded table data. Table name determined by the value of *table\_name*. Following format specifiers in the *table\_name* are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	Filename (without extension)
<code>%(format_name)s</code>	<code>"csv"</code>
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises** `pytablereader.DataError` – If the CSV data is invalid.

**See also:**

`csv.reader()`

### 5.2.2.3 CSV Text Loader

**class** `pytablereader.CsvTableTextLoader` (*text*, *quoting\_flags=None*, *type\_hints=None*,  
*type\_hint\_rules=None*)

Bases: `pytablereader.csv.core.CsvTableLoader`

A text loader class to extract tabular data from CSV text data.

**Parameters** `text` (*str*) – CSV text to load.

**table\_name**

Table name string. Defaults to `%(format_name)s%(format_id)s`.

**Examples** *Load table data from CSV*

**load()**

Extract tabular data as `TableData` instances from a CSV text object. *source* attribute should contain a text object to load.

**Returns**

Loaded table data. Table name determined by the value of *table\_name*. Following format specifiers in the *table\_name* are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	" "
<code>%(format_name)s</code>	"csv"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises** `pytablereader.DataError` – If the CSV data is invalid.

**See also:**

`csv.reader()`

## 5.2.3 HTML Loader Classes

### 5.2.3.1 HTML File Loader

**class** `pytablereader.HtmlTableFileLoader` (*file\_path=None*, *quoting\_flags=None*,  
*type\_hints=None*, *type\_hint\_rules=None*)

A file loader class to extract tabular data from HTML files.

**Parameters** `file_path` (*str*) – Path to the loading HTML file.

**table\_name**

Table name string. Defaults to `%(title)s_%(key)s`.

**encoding**

HTML file encoding. Defaults to "utf-8".

**load()**

Extract tabular data as `TableData` instances from HTML table tags in a HTML file. *source* attribute should contain a path to the file to load.

**Returns**

Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename) s</code>	Filename (without extension)
<code>%(title) s</code>	<title> tag value of the HTML.
<code>%(key) s</code>	This replaced to: <b>(1)</b> id attribute of the table tag <b>(2)</b> <code>%(format_name) s%(format_id) s</code> if id attribute not present in the table tag.
<code>%(format_name) s</code>	"html"
<code>%(format_id) s</code>	A unique number between the same format.
<code>%(global_id) s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises** `pytablereader.DataError` – If the HTML data is invalid or empty.

---

**Note:** Table tag attributes ignored with loaded `TableData`.

---

### 5.2.3.2 HTML Text Loader

**class** `pytablereader.HtmlTableTextLoader` (*text*, *quoting\_flags=None*, *type\_hints=None*,  
*type\_hint\_rules=None*)

A text loader class to extract tabular data from HTML text data.

**Parameters** `text` (*str*) – HTML text to load.

**table\_name**

Table name string. Defaults to `%(title) s_%(key) s`.

**load()**

Extract tabular data as `TableData` instances from HTML table tags in a HTML text object. `source` attribute should contain a text object to load.

**Returns**

Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename) s</code>	" "
<code>%(title) s</code>	<title> tag value of the HTML.
<code>%(key) s</code>	This replaced to: (1) <code>id</code> attribute of the table tag (2) <code>%(format_name) s%(format_id) s</code> if <code>id</code> attribute is not included in the table tag.
<code>%(format_name) s</code>	"html"
<code>%(format_id) s</code>	A unique number between the same format.
<code>%(global_id) s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises** `pytablereader.DataError` – If the HTML data is invalid or empty.

## 5.2.4 JSON Loader Classes

### 5.2.4.1 Json File Loader

**class** `pytablereader.JsonTableFileLoader` (*file\_path=None*, *quoting\_flags=None*,  
*type\_hints=None*, *type\_hint\_rules=None*)

A file loader class to extract tabular data from JSON files.

**Parameters** `file_path` (*str*) – Path to the loading JSON file.

**table\_name**

Table name string. Defaults to `%(filename) s_%(key) s`.

**load()**

Extract tabular data as `TableData` instances from a JSON file. *source* attribute should contain a path to the file to load.

This method can be loading four types of JSON formats:

(1) Single table data in a file:

Listing 1: Acceptable JSON Schema (1): single table

```
{
  "type": "array",
  "items": {
    "type": "object",
    "additionalProperties": {
      "anyOf": [
        {"type": "string"},
        {"type": "number"},
        {"type": "boolean"},
        {"type": "null"}
      ]
    }
  }
}
```

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```

    }
  }
}

```

Listing 2: Acceptable JSON example for the JSON schema (1)

```

[
  {"attr_b": 4, "attr_c": "a", "attr_a": 1},
  {"attr_b": 2.1, "attr_c": "bb", "attr_a": 2},
  {"attr_b": 120.9, "attr_c": "ccc", "attr_a": 3}
]

```

The example data will be loaded as the following tabular data:

attr_a	attr_b	attr_c
1	4.0	a
2	2.1	bb
3	120.9	ccc

(2) Single table data in a file:

Listing 3: Acceptable JSON Schema (2): single table

```

{
  "type": "object",
  "additionalProperties": {
    "type": "array",
    "items": {
      "anyOf": [
        {"type": "string"},
        {"type": "number"},
        {"type": "boolean"},
        {"type": "null"}
      ]
    }
  }
}

```

Listing 4: Acceptable JSON example for the JSON schema (2)

```

{
  "attr_a": [1, 2, 3],
  "attr_b": [4, 2.1, 120.9],
  "attr_c": ["a", "bb", "ccc"]
}

```

The example data will be loaded as the following tabular data:

attr_a	attr_b	attr_c
1	4.0	a
2	2.1	bb
3	120.9	ccc

(3) Single table data in a file:

```

:caption: Acceptable JSON Schema (3): single table

{
  "type": "object",
  "additionalProperties": {
    "anyOf": [
      {"type": "string"},
      {"type": "number"},
      {"type": "boolean"},
      {"type": "null"}
    ]
  }
}

```

Listing 5: Acceptable JSON example for the JSON schema (3)

```

{
  "num_ratings": 27,
  "support_threads": 1,
  "downloaded": 925716,
  "last_updated": "2017-12-01 6:22am GMT",
  "added": "2010-01-20",
  "num": 1.1,
  "hoge": null
}

```

The example data will be loaded as the following tabular data:

key	value
num_ratings	27
support_threads	1
downloaded	925716
last_updated	2017-12-01 6:22am GMT
added	2010-01-20
num	1.1
hoge	None

#### (4) Multiple table data in a file:

Listing 6: Acceptable JSON Schema (4): multiple tables

```

{
  "type": "object",
  "additionalProperties": {
    "type": "array",
    "items": {
      "type": "object",
      "additionalProperties": {
        "anyOf": [
          {"type": "string"},
          {"type": "number"},
          {"type": "boolean"},
          {"type": "null"}
        ]
      }
    ]
  }
}

```

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```

    }
  }
}

```

Listing 7: Acceptable JSON example for the JSON schema (4)

```

{
  "table_a" : [
    {"attr_b": 4, "attr_c": "a", "attr_a": 1},
    {"attr_b": 2.1, "attr_c": "bb", "attr_a": 2},
    {"attr_b": 120.9, "attr_c": "ccc", "attr_a": 3}
  ],
  "table_b" : [
    {"a": 1, "b": 4},
    {"a": 2 },
    {"a": 3, "b": 120.9}
  ]
}

```

The example data will be loaded as the following tabular data:

Table 1: table\_a

attr_a	attr_b	attr_c
1	4.0	a
2	2.1	bb
3	120.9	ccc

Table 2: table\_b

a	b
1	4.0
2	None
3	120.9

#### (5) Multiple table data in a file:

Listing 8: Acceptable JSON Schema (5): multiple tables

```

{
  "type": "object",
  "additionalProperties": {
    "type": "object",
    "additionalProperties": {
      "type": "array",
      "items": {
        "anyOf": [
          {"type": "string"},
          {"type": "number"},
          {"type": "boolean"},
          {"type": "null"}
        ]
      }
    }
  }
}

```

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```

}
}

```

Listing 9: Acceptable JSON example for the JSON schema (5)

```

{
  "table_a" : {
    "attr_a": [1, 2, 3],
    "attr_b": [4, 2.1, 120.9],
    "attr_c": ["a", "bb", "ccc"]
  },
  "table_b" : {
    "a": [1, 3],
    "b": [4, 120.9]
  }
}

```

The example data will be loaded as the following tabular data:

Table 3: table\_a

attr_a	attr_b	attr_c
1	4.0	a
2	2.1	bb
3	120.9	ccc

Table 4: table\_b

a	b
1	4.0
3	120.9

#### (6) Multiple table data in a file:

Listing 10: Acceptable JSON Schema (6): multiple tables

```

{
  "type": "object",
  "additionalProperties": {
    "type": "object",
    "additionalProperties": {
      "anyOf": [
        {"type": "string"},
        {"type": "number"},
        {"type": "boolean"},
        {"type": "null"}
      ]
    }
  }
}

```

Listing 11: Acceptable JSON example for the JSON schema (6)

```

{
  "table_a": {

```

(continues on next page)

(continued from previous page)

```

    "num_ratings": 27,
    "support_threads": 1,
    "downloaded": 925716,
    "last_updated": "2017-12-01 6:22am GMT",
    "added": "2010-01-20",
    "num": 1.1,
    "hoge": null
  },
  "table_b": {
    "a": 4,
    "b": 120.9
  }
}

```

The example data will be loaded as the following tabular data:

Table 5: table\_a

key	value
num_ratings	27
support_threads	1
downloaded	925716
last_updated	2017-12-01 6:22am GMT
added	2010-01-20
num	1.1
hoge	None

Table 6: table\_b

key	value
a	4.0
b	120.9

## Returns

Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	Filename (without extension)
<code>%(key)s</code>	This replaced the different value for each single/multiple JSON tables: [single JSON table] <code>%(format_name)s%(format_id)s</code> [multiple JSON table] Table data key.
<code>%(format_name)s</code>	"json"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** TableData iterator

**Raises**

- `pytablereader.DataError` – If the data is invalid JSON.
- `pytablereader.error.ValidationError` – If the data is not acceptable JSON format.

### 5.2.4.2 Json Text Loader

**class** `pytablereader.JsonTableTextLoader` (*text*, *quoting\_flags=None*, *type\_hints=None*, *type\_hint\_rules=None*)

A text loader class to extract tabular data from JSON text data.

**Parameters** `text` (*str*) – JSON text to load.

**table\_name**

Table name string. Defaults to `%(key)s`.

**load()**

Extract tabular data as TableData instances from a JSON text object. `source` attribute should contain a text object to load.

**Returns**

Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	" "
<code>%(key)s</code>	This replaced the different value for each single/multiple JSON tables: [single JSON table] <code>%(format_name)s%(format_id)s</code> [multiple JSON table] Table data key.
<code>%(format_name)s</code>	"json"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** TableData iterator

**See also:**

`JsonTableFileLoader.load()`

### 5.2.4.3 Line-delimited Json File Loader

**class** `pytablereader.JsonLinesTableFileLoader` (*file\_path=None*, *quoting\_flags=None*, *type\_hints=None*, *type\_hint\_rules=None*)

A file loader class to extract tabular data from Line-delimited JSON files.

**Parameters** `file_path` (*str*) – Path to the loading Line-delimited JSON file.

**table\_name**

Table name string. Defaults to `%(filename)s_%(key)s`.

**load()**

Extract tabular data as `TableData` instances from a Line-delimited JSON file. `source` attribute should contain a path to the file to load.

**Returns** Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

**Return type** `TableData` iterator

**Raises**

- `pytablereader.DataError` – If the data is invalid Line-delimited JSON.
- `pytablereader.error.ValidationError` – If the data is not acceptable Line-delimited JSON format.

#### 5.2.4.4 Line-delimited Json Text Loader

```
class pytablereader.JsonLinesTableTextLoader(text, quoting_flags=None,  
                                              type_hints=None)
```

A text loader class to extract tabular data from Line-delimited JSON text data.

**Parameters** `text` (*str*) – Line-delimited JSON text to load.

**table\_name**

Table name string. Defaults to `%(key)s`.

**load()**

Extract tabular data as `TableData` instances from a Line-delimited JSON text object. `source` attribute should contain a text object to load.

**Returns** Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

**Return type** `TableData` iterator

**See also:**

`JsonLinesTableFileLoader.load()`

### 5.2.5 LTSV Loader Classes

#### 5.2.5.1 LTSV File Loader

```
class pytablereader.LtsvTableFileLoader(file_path, quoting_flags=None, type_hints=None,  
                                         type_hint_rules=None)
```

Bases: `pytablereader.ltsv.core.LtsvTableLoader`

Labeled Tab-separated Values (LTSV) format file loader class.

**Parameters** `file_path` (*str*) – Path to the loading LTSV file.

**table\_name**

Table name string. Defaults to `%(filename)s`.

**load()**

Extract tabular data as `TableData` instances from a LTSV file. `source` attribute should contain a path to the file to load.

**Returns**

Loaded table data. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	Filename (without extension)
<code>%(format_name)s</code>	"ltsv"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises**

- `pytablereader.InvalidHeaderNameError` – If an invalid label name is included in the LTSV file.
- `pytablereader.DataError` – If the LTSV data is invalid.

**5.2.5.2 LTSV Text Loader**

**class** `pytablereader.LtsvTableTextLoader` (*text*, *quoting\_flags=None*, *type\_hints=None*)  
 Bases: `pytablereader.ltsv.core.LtsvTableLoader`

Labeled Tab-separated Values (LTSV) format text loader class.

**Parameters** `text` (*str*) – LTSV text to load.

**table\_name**

Table name string. Defaults to `%(format_name)s%(format_id)s`.

**load()**

Extract tabular data as `TableData` instances from a LTSV text object. `source` attribute should contain a text object to load.

**Returns**

Loaded table data. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	" "
<code>%(format_name)s</code>	"ltsv"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises**

- `pytablereader.InvalidHeaderNameError` – If an invalid label name is included in the LTSV file.
- `pytablereader.DataError` – If the LTSV data is invalid.

## 5.2.6 Markdown Loader Classes

### 5.2.6.1 Markdown File Loader

**class** `pytablereader.MarkdownTableFileLoader` (*file\_path=None*, *quoting\_flags=None*, *type\_hints=None*, *type\_hint\_rules=None*)

A file loader class to extract tabular data from Markdown files.

**Parameters** `file_path` (*str*) – Path to the loading Markdown file.

**table\_name**

Table name string. Defaults to `%(filename)s_%(key)s`.

**load()**

Extract tabular data as `TableData` instances from a Markdown file. `source` attribute should contain a path to the file to load.

**Returns**

Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	Filename (without extension)
<code>%(key)s</code>	<code>%(format_name)s%(format_id)s</code>
<code>%(format_name)s</code>	"markdown"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises** `pytablereader.DataError` – If the Markdown data is invalid or empty.

### 5.2.6.2 Markdown Text Loader

**class** `pytablereader.MarkdownTableTextLoader` (*text*, *quoting\_flags=None*, *type\_hints=None*)

A text loader class to extract tabular data from Markdown text data.

**Parameters** `text` (*str*) – Markdown text to load.

**table\_name**

Table name string. Defaults to `%(key)s`.

**load()**

Extract tabular data as `TableData` instances from a Markdown text object. `source` attribute should contain a text object to load.

**Returns**

Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	" "
<code>%(key)s</code>	<code>%(format_name)s%(format_id)s</code>
<code>%(format_name)s</code>	"markdown"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** TableData iterator

**Raises** `pytablereader.DataError` – If the Markdown data is invalid or empty.

## 5.2.7 MediaWiki Loader Classes

### 5.2.7.1 MediaWiki File Loader

**class** `pytablereader.MediaWikiTableFileLoader` (*file\_path=None*, *quoting\_flags=None*,  
*type\_hints=None*, *type\_hint\_rules=None*)

A file loader class to extract tabular data from MediaWiki files.

**Parameters** `file_path` (*str*) – Path to the loading file.

**table\_name**

Table name string. Defaults to `%(filename)s_%(key)s`.

**load()**

Extract tabular data as TableData instances from a MediaWiki file. *source* attribute should contain a path to the file to load.

**Returns**

Loaded table data iterator. Table name determined by the value of *table\_name*. Following format specifiers in the *table\_name* are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	Filename (without extension)
<code>%(key)s</code>	This replaced to: (1) caption mark of the table (2) <code>%(format_name)s%(format_id)s</code> if caption mark not included in the table.
<code>%(format_name)s</code>	"mediawiki"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** TableData iterator

**Raises** `pytablereader.DataError` – If the MediaWiki data is invalid or empty.

### 5.2.7.2 MediaWiki Text Loader

**class** `pytablereader.MediaWikiTableTextLoader` (*text*, *quoting\_flags=None*,  
*type\_hints=None*)

A text loader class to extract tabular data from MediaWiki text data.

**Parameters** `text` (*str*) – MediaWiki text to load.

**table\_name**

Table name string. Defaults to `%(key)s`.

**load()**

Extract tabular data as `TableData` instances from a MediaWiki text object. `source` attribute should contain a text object to load.

**Returns**

Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename) s</code>	" "
<code>%(key) s</code>	This replaced to: (1) caption mark of the table (2) <code>%(format_name) s%(format_id) s</code> if caption mark not included in the table.
<code>%(format_name) s</code>	"mediawiki"
<code>%(format_id) s</code>	A unique number between the same format.
<code>%(global_id) s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises** `pytablereader.DataError` – If the MediaWiki data is invalid or empty.

## 5.2.8 Spread Sheet Loader Classes

### 5.2.8.1 Excel File Loader

```
class pytablereader.ExcelTableFileLoader (file_path=None, quoting_flags=None,  
                                           type_hints=None, type_hint_rules=None)
```

A file loader class to extract tabular data from Microsoft Excel™ files.

**Parameters** `file_path` (*str*) – Path to the loading Excel workbook file.

**table\_name**

Table name string. Defaults to `%(sheet) s`.

**start\_row**

The first row to search header row.

**load()**

Extract tabular data as `TableData` instances from an Excel file. This method automatically search the header row of the table start from `start_row`. The header row requires all of the columns has value (except empty columns).

**Returns**

Loaded `TableData` iterator. `TableData` created for each sheet in the workbook. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:



Format specifier	Value after the replacement
% (filename) s	Filename of the workbook
% (sheet) s	Name of the sheet
% (format_name) s	"spreadsheet"
% (format_id) s	A unique number between the same format.
% (global_id) s	A unique number between all of the format.

**Return type** TableData iterator

**Raises**

- `pytablereader.DataError` – If the header row is not found.
- `pytablereader.error.OpenError` – If failed to open the source file.

### 5.2.8.2 Google Sheets Loader

**class** `pytablereader.GoogleSheetsTableLoader` (*file\_path=None*, *quoting\_flags=None*,  
*type\_hints=None*, *type\_hint\_rules=None*)

Concrete class of Google Spreadsheet loader.

**table\_name**

Table name string. Defaults to % (sheet) s.

**Parameters** `file_path` (*str*) – Path to the Google Sheets credential JSON file.

**Dependency Packages**

- `gsread`
- `SimpleSQLite`
- `oauth2client`
- `pyOpenSSL`

**Examples** *Load table data from Google Sheets*

**load()**

Load table data from a Google Spreadsheet.

This method consider *source* as a path to the credential JSON file to access Google Sheets API.

The method automatically search the header row start from *start\_row*. The condition of the header row is that all of the columns have value (except empty columns).

**Returns** Loaded table data. Return one TableData for each sheet in the workbook. The table name for data will be determined by `make_table_name()`.

**Return type** iterator of TableData

**Raises**

- `pytablereader.DataError` – If the header row is not found.
- `pytablereader.OpenError` – If the spread sheet not found.

## 5.2.9 Database Loader Classes

### 5.2.9.1 SQLite File Loader

**class** `pytablereader.SQLiteFileLoader` (*file\_path=None*, *quoting\_flags=None*,  
*type\_hints=None*, *type\_hint\_rules=None*)

A file loader class to extract tabular data from SQLite database files.

**Parameters** `file_path` (*str*) – Path to the loading SQLite database file.

**table\_name**

Table name string. Defaults to `%(filename)s_%(key)s`.

**Dependency Packages**

- SimpleSQLite

**load()**

Extract tabular data as `TableData` instances from a SQLite database file. `source` attribute should contain a path to the file to load.

**Returns**

Loaded table data iterator. Table name determined by the value of `table_name`. Following format specifiers in the `table_name` are replaced with specific strings:

Format specifier	Value after the replacement
<code>%(filename)s</code>	Filename (without extension)
<code>%(key)s</code>	<code>%(format_name)s%(format_id)s</code>
<code>%(format_name)s</code>	"sqlite"
<code>%(format_id)s</code>	A unique number between the same format.
<code>%(global_id)s</code>	A unique number between all of the format.

**Return type** `TableData` iterator

**Raises** `pytablereader.DataError` – If the SQLite database file data is invalid or empty.

## 5.3 Table Loader Factory Classes

### 5.3.1 File Loader Factory

**class** `pytablereader.factory.TableFileLoaderFactory` (*source*, *encoding=None*)

**Parameters** `file_path` (*str*) – Path to the loading file.

**Raises** `pytablereader.InvalidFilePathError` – If the `file_path` is an empty path.

**create\_from\_format\_name** (*format\_name*)

Create a file loader from a format name. Supported file formats are as follows:

Format name	Loader
"csv"	<i>CsvTableFileLoader</i>
"excel"	<i>ExcelTableFileLoader</i>
"html"	<i>HtmlTableFileLoader</i>
"json"	<i>JsonTableFileLoader</i>
"json"	<i>JsonTableFileLoader</i>
"json_lines"	<i>JsonTableFileLoader</i>
"jsonl"	<i>JsonLinesTableFileLoader</i>
"ltsv"	<i>LtsvTableFileLoader</i>
"markdown"	<i>MarkdownTableFileLoader</i>
"mediawiki"	<i>MediaWikiTableFileLoader</i>
"ndjson"	<i>JsonLinesTableFileLoader</i>
"sqlite"	<i>SqliteFileLoader</i>
"ssv"	<i>CsvTableFileLoader</i>
"tsv"	<i>TsvTableFileLoader</i>

**Parameters** `format_name` (*str*) – Format name string (case insensitive).

**Returns** Loader that coincides with the `format_name`:

**Raises** *pytablereader.LoaderNotFoundError* – If an appropriate loader not found for the format.

`create_from_path()`

Create a file loader from the file extension to loading file. Supported file extensions are as follows:

Extension	Loader
"csv"	<i>CsvTableFileLoader</i>
"xls"/"xlsx"	<i>ExcelTableFileLoader</i>
"htm"/"html"	<i>HtmlTableFileLoader</i>
"json"	<i>JsonTableFileLoader</i>
"jsonl"	<i>JsonLinesTableFileLoader</i>
"ldjson"	<i>JsonLinesTableFileLoader</i>
"ltsv"	<i>LtsvTableFileLoader</i>
"md"	<i>MarkdownTableFileLoader</i>
"ndjson"	<i>JsonLinesTableFileLoader</i>
"sqlite"/"sqlite3"	<i>SqliteFileLoader</i>
"tsv"	<i>TsvTableFileLoader</i>

**Returns** Loader that coincides with the file extension of the `file_extension`.

**Raises** *pytablereader.LoaderNotFoundError* – If an appropriate loader not found for loading the file.

`file_extension`

File extension of the `source` (without period). :rtype: str

**Type** return

`get_extension_list()`

`get_extensions()`

**Returns** Available format file extensions.

**Return type** `list`

`get_format_name_list()`

`get_format_names()`

**Returns** Available format names.

**Return type** `list`

**source**

Data source to load. `:rtype: str`

**Type** `return`

### 5.3.2 Url Loader Factory

`class pytablereader.factory.TableUrlLoaderFactory(url, encoding=None, proxies=None)`

`create_from_format_name(format_name)`

Create a file loader from a format name. Supported file formats are as follows:

Format name	Loader
"csv"	<i>CsvTableTextLoader</i>
"excel"	<i>ExcelTableFileLoader</i>
"html"	<i>HtmlTableTextLoader</i>
"json"	<i>JsonTableTextLoader</i>
"json_lines"	<i>JsonLinesTableTextLoader</i>
"jsonl"	<i>JsonLinesTableTextLoader</i>
"ldjson"	<i>JsonLinesTableTextLoader</i>
"ltsv"	<i>LtsvTableTextLoader</i>
"markdown"	<i>MarkdownTableTextLoader</i>
"mediawiki"	<i>MediaWikiTableTextLoader</i>
"ndjson"	<i>JsonLinesTableTextLoader</i>
"sqlite"	<i>SqliteFileLoader</i>
"ssv"	<i>CsvTableFileLoader</i>
"tsv"	<i>TsvTableTextLoader</i>

**Parameters** `format_name` (`str`) – Format name string (case insensitive).

**Returns** Loader that coincide with the `format_name`:

**Raises**

- `pytablereader.LoaderNotFoundError` – If an appropriate loader not found for the format.
- `TypeError` – If `format_name` is not a string.

`create_from_path()`

Create a file loader from the file extension to loading file. Supported file extensions are as follows:

Extension	Loader
"csv"	<i>CsvTableTextLoader</i>
"xls"/"xlsx"	<i>ExcelTableFileLoader</i>
"htm"/"html"/"asp"/"aspx"	<i>HtmlTableTextLoader</i>
"json"	<i>JsonTableTextLoader</i>
"jsonl"/"ldjson"/"ndjson"	<i>JsonLinesTableTextLoader</i>
"ltsv"	<i>LtsvTableTextLoader</i>
"md"	<i>MarkdownTableTextLoader</i>
"sqlite"/"sqlite3"	<i>SqliteFileLoader</i>
"tsv"	TsvTableTextLoader

**Returns** Loader that coincides with the file extension of the URL.

**Raises**

- *pytablereader.UrlError* – If unacceptable URL format.
- *pytablereader.LoaderNotFoundError* – If an appropriate loader not found for loading the URL.

**get\_extension\_list()**

**get\_extensions()**

**Returns** Available format file extensions.

**Return type** list

**get\_format\_name\_list()**

**get\_format\_names()**

**Returns** Available format names.

**Return type** list

**source**

Data source to load. :rtype: str

**Type** return

## 5.4 Exceptions

**exception** *pytablereader.ValidationError*

Bases: *Exception*

Exception raised when data is not properly formatted.

**exception** *pytablereader.PathError*

Bases: *Exception*

Base path exception class.

**exception** *pytablereader.InvalidFilePathError*

Bases: *pytablereader.error.PathError*

Exception raised when invalid file path used.

TODO: rename the error class

**exception** `pytablereader.UrlError`

Bases: `pytablereader.error.PathError`

Exception raised when invalid URL used.

**exception** `pytablereader.OpenError`

Bases: `OSError`

Exception raised when failed to open a file.

**exception** `pytablereader.LoaderNotFoundError`

Bases: `Exception`

Exception raised when loader not found.

**exception** `pytablereader.HTTPError` (\*args, \*\*kwargs)

Bases: `requests.exceptions.RequestException`

An HTTP error occurred.

**See also:**

<http://docs.python-requests.org/en/master/api/#exceptions>

**exception** `pytablereader.ProxyError` (\*args, \*\*kwargs)

Bases: `requests.exceptions.ProxyError`

A proxy error occurred.

**See also:**

[http://docs.python-requests.org/en/master/\\_modules/requests/exceptions/](http://docs.python-requests.org/en/master/_modules/requests/exceptions/)

## CHAPTER 6

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## CHAPTER 7

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### Links

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- [GitHub repository](#)
- [Issue tracker](#)
- [PyPI](#)
- [pip](#): A tool for installing Python packages



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