
pyRestTable Documentation

Release 2020.0.2+0.gae01786.dirty

Pete R. Jemian

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Format a nice table in reST (reStructuredText) from Python.

Each cell may have multiple lines, separated by a newline. The content of each cell will be rendered as `str(cell)`. At present, *pyRestTable* only supports tables with content that does not span any cells (no rowspans or columnspans).

- Install with conda: `conda install -c prjemian pyRestTable`
- Install with pip: `pip install pyRestTable`

author Pete R. Jemian

email prjemian@gmail.com

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docs <https://pyRestTable.readthedocs.io>

URL <https://github.com/prjemian/pyRestTable>

TODO <https://github.com/prjemian/pyRestTable/issues>

citations

package

build

coverage

review

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CHAPTER 1

Usage

pyRestTable provides support for writing tables in the format of reStructured Text¹ from Python programs. (It provides no command-line or GUI program itself – no “entry points”; it should be used within a Python program.)

- Import the `pyRestTable` package
- Create the `Table` instance
- Set the list of column labels (either `labels.append()` or `addLabel()`)
- Append the list of column cells for each row (either `rows.append([])` or `addRow()`)
- Render the table with `reST()` (default table format is `simple`)

Examples are provided to demonstrate usage.

¹ <http://docutils.sourceforge.net/docs/ref/rst/restructuredtext.html>

CHAPTER 2

Installation

available for installation from PyPI via standard installers for Python 2.7 or Python 3.0+:

```
$ pip install pyRestTable
```

or from conda:

```
$ conda -c prjemian pyRestTable
```

The source code is on GitHub: <https://github.com/prjemian/pyRestTable>

Examples are provided to demonstrate usage.

3.1 Interactive example with *ipython*

```
1 In [1]: import pyRestTable
2
3 In [2]: pyRestTable.__long_description__
4
5 Out[2]: 'Format a nice table in reST (reStructuredText ) from Python'
6
7 In [3]: pyRestTable.__version__
8
9 Out[3]: '2015-1111-1'
10
11 In [4]: t = pyRestTable.Table()
12
13 In [5]: t.labels = ['x', 'y']
14
15 In [6]: t.rows.append([1,2])
16
17 In [7]: print(t.reST())
18
19 = =
20 x y
21 = =
22 1 2
23 = =
```

which displays as:

x	y
1	2

The same table may be rendered in the *grid* reST format:

```
1 In [8]: print(t.reST(fmt='grid'))
2
3 +---+---+
4 | x | y |
5 +---+---+
6 | 1 | 2 |
7 +---+---+
```

which displays as:

x	y
1	2

The same table may be rendered in the *list-table* reST format:

```
1 In [9]: print(t.reST(fmt='list-table'))
2
3 .. list-table::
4    :header-rows: 1
5    :widths: 1 1
6
7    * - x
8      - y
9    * - 1
10     - 2
```

which displays as:

x	y
1	2

3.2 simple (default)

see <http://docutils.sourceforge.net/docs/ref/rst/directives.html#tables>

These python commands:

```
1 import pyRestTable
2 t = pyRestTable.Table()
3 t.labels = ('one', 'two', 'three' )
4 t.rows.append( ['1,1', '1,2', '1,3',] )
5 t.rows.append( ['2,1', '2,2', '2,3',] )
6 t.rows.append( ['3,1', '3,2', '3,3',] )
7 t.rows.append( ['4,1', '4,2', '4,3',] )
8 print(t.reST())
```

build this table source code:

```
1 ===
2 one two three
3 ===
4 1,1 1,2 1,3
```

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```

5  2,1 2,2 2,3
6  3,1 3,2 3,3
7  4,1 4,2 4,3
8  
```

which is rendered as:

one	two	three
1,1	1,2	1,3
2,1	2,2	2,3
3,1	3,2	3,3
4,1	4,2	4,3

3.3 *plain*

These python commands:

```

1  import pyRestTable
2  t = pyRestTable.Table()
3  t.labels = ('one', 'two', 'three' )
4  t.rows.append( ['1,1', '1,2', '1,3',] )
5  t.rows.append( ['2,1', '2,2', '2,3',] )
6  t.rows.append( ['3,1', '3,2', '3,3',] )
7  t.rows.append( ['4,1', '4,2', '4,3',] )
8  print(t.reST(fmt='plain'))

```

build this table source code:

```

1  one two three
2  1,1 1,2 1,3
3  2,1 2,2 2,3
4  3,1 3,2 3,3
5  4,1 4,2 4,3

```

The *plain* format is useful when generating very compact tables as text.

3.4 *grid (complex)*

see <http://docutils.sourceforge.net/docs/ref/rst/restructuredtext.html#grid-tables>

These python commands:

```

1  import pyRestTable
2  t = pyRestTable.Table()
3  t.labels = ('one', 'two', 'three' )
4  t.rows.append( ['1,1', '1,2', '1,3',] )
5  t.rows.append( ['2,1', '2,2', '2,3',] )
6  t.rows.append( ['3,1', '3,2', '3,3',] )
7  t.rows.append( ['4,1', '4,2', '4,3',] )
8  print(t.reST(fmt='grid'))

```

build this table in reST source code:

```
1 +-----+-----+-----+
2 | one | two | three |
3 +-----+-----+-----+
4 | 1,1 | 1,2 | 1,3 |
5 +-----+-----+-----+
6 | 2,1 | 2,2 | 2,3 |
7 +-----+-----+-----+
8 | 3,1 | 3,2 | 3,3 |
9 +-----+-----+-----+
10 | 4,1 | 4,2 | 4,3 |
11 +-----+-----+-----+
```

which is rendered as:

one	two	three
1,1	1,2	1,3
2,1	2,2	2,3
3,1	3,2	3,3
4,1	4,2	4,3

Note: API Changes

- version 2015.1111.01

In versions previous to 2015.1111.01, the complex output table format was supported:

```
print t.reST(fmt='complex')
```

The complex output format has been aliased `grid` to be consistent with the docutils¹ documentation:

```
print (t.reST(fmt='grid'))
```

The two commands are identical (except the latter is upgraded for compatibility with Python v3). To preserve existing code, no plans are made to deprecate the `complex` name.

3.5 markdown

see <https://github.com/adam-p/markdown-here/wiki/Markdown-Cheatsheet#tables>

These python commands:

```
1 import pyRestTable
2 t = pyRestTable.Table()
3 t.labels = ('one', 'two', 'three' )
4 t.rows.append( ['1,1', '1,2', '1,3',] )
5 t.rows.append( ['2,1', '2,2', '2,3',] )
6 t.rows.append( ['3,1', '3,2', '3,3',] )
7 t.rows.append( ['4,1', '4,2', '4,3',] )
8 print (t.reST(fmt="markdown"))
```

¹ docutils: <http://docutils.sourceforge.net/docs/ref/rst/restructuredtext.html>

build this table source code:

```

1  | | one | | two | | three
2  | | --- | | --- | | ---
3  | | 1,1 | | 1,2 | | 1,3
4  | | 2,1 | | 2,2 | | 2,3
5  | | 3,1 | | 3,2 | | 3,3
6  | | 4,1 | | 4,2 | | 4,3

```

which is rendered (by markdown) as:

one	two	three
1,1	1,2	1,3
2,1	2,2	2,3
3,1	3,2	3,3
4,1	4,2	4,3

3.6 *list-table*

see <http://docutils.sourceforge.net/docs/ref/rst/directives.html#list-table>

These python commands:

```

1  import pyRestTable
2  t = pyRestTable.Table()
3  t.labels = ('one', 'two', 'three' )
4  t.rows.append( ['1,1', '1,2', '1,3',] )
5  t.rows.append( ['2,1', '2,2', '2,3',] )
6  t.rows.append( ['3,1', '3,2', '3,3',] )
7  t.rows.append( ['4,1', '4,2', '4,3',] )
8  print(t.reST(fmt='list-table'))

```

build this table source code:

```

1  .. list-table::
2     :header-rows: 1
3     :widths: 3 3 5
4
5     * - one
6       - two
7       - three
8
9     * - 1,1
10       - 1,2
11       - 1,3
12
13     * - 2,1
14       - 2,2
15       - 2,3
16
17     * - 3,1
18       - 3,2
19       - 3,3
20
21     * - 4,1
22       - 4,2
23       - 4,3

```

which is rendered as:

one	two	three
1,1	1,2	1,3
2,1	2,2	2,3
3,1	3,2	3,3
4,1	4,2	4,3

3.7 *html*

see https://www.w3schools.com/html/html_tables.asp

These python commands:

```
1 import pyRestTable
2 t = pyRestTable.Table()
3 t.labels = ('one', 'two', 'three' )
4 t.rows.append( ['1,1', '1,2', '1,3',] )
5 t.rows.append( ['2,1', '2,2', '2,3',] )
6 t.rows.append( ['3,1', '3,2', '3,3',] )
7 t.rows.append( ['4,1', '4,2', '4,3',] )
8 print(t.reST(fmt='html'))
```

build this table in HTML source code:

```
1 <table>
2   <tr>
3     <th>one</th>
4     <th>two</th>
5     <th>three</th>
6   </tr>
7   <tr>
8     <td>1,1</td>
9     <td>1,2</td>
10    <td>1,3</td>
11  </tr>
12  <tr>
13    <td>2,1</td>
14    <td>2,2</td>
15    <td>2,3</td>
16  </tr>
17  <tr>
18    <td>3,1</td>
19    <td>3,2</td>
20    <td>3,3</td>
21  </tr>
22  <tr>
23    <td>4,1</td>
24    <td>4,2</td>
25    <td>4,3</td>
26  </tr>
27 </table>
```


3.8 Complicated example

These python commands setup the table:

```

1 import pyRestTable
2 t = pyRestTable.Table()
3 t.addLabel('Name\nand\nAttributes')
4 t.addLabel('Type')
5 t.addLabel('Units')
6 t.addLabel('Description\n(and Occurrences)')
7 t.addRow( ['one,\ntwo', "buckle my", "shoe.\n\n\nthree,\nfour", "..."] )
8 t.addRow( ['class', 'NX_FLOAT', '', None, ] )
9 t.addRow( range(0,4) )
10 t.addRow( [None, {'a': 1, 'b': 'dreamy'}, 1.234, range(3)] )
11 t.setLongtable()
12 t.setTabularColumns(True, 'l l c r'.split())

```

Here, we assert more control over the table format using `setLongtable()` and `setTabularColumns()` configuration options.

3.8.1 Format: `print(t.reST(fmt='simple'))`

this reST code:

```

1 .. tabularcolumns:: |l|l|c|r|
2    :longtable:
3
4 =====
5 Name      Type                               Units  Description
6 and
7 Attributes (and Occurrences)
8 =====
9 one,      buckle my                          shoe.  ...
10 two
11
12                               three,
13                               four
14 class     NX_FLOAT                          None
15 0         1                               2      3
16 None     {'a': 1, 'b': 'dreamy'} 1.234  [0, 1, 2]
17 =====

```

is rendered as:

Name	Type	Units	Description
and			(and Occurrences)
Attributes			
one,	buckle my	shoe.	...
two		three, four	
class	NX_FLOAT		None
0	1	2	3
None	{'a': 1, 'b': 'dreamy'}	1.234	[0, 1, 2]

3.8.2 Format: `print(t.reST(fmt='grid'))`

this reST code:

```

1 .. tabularcolumns:: |l|L|c|r|
2    :longtable:
3
4 +-----+-----+-----+-----+
5 | Name   | Type   | Units | Description |
6 | and    |        |       | (and Occurrences) |
7 | Attributes |      |      |
8 +-----+-----+-----+-----+
9 | one,   | buckle my | shoe. | ...
10 | two    |          |       |
11 |        |          |       |
12 |        |          | three, |
13 |        |          | four  |
14 +-----+-----+-----+-----+
15 | class  | NX_FLOAT |       | None
16 +-----+-----+-----+-----+
17 | 0      | 1        | 2     | 3
18 +-----+-----+-----+-----+
19 | None   | {'a': 1, 'b': 'dreamy'} | 1.234 | [0, 1, 2]
20 +-----+-----+-----+-----+

```

is rendered as:

Name and Attributes	Type	Units	Description (and Occurrences)
one, two	buckle my	shoe. three, four	...
class	NX_FLOAT		None
0	1	2	3
None	{ 'a': 1, 'b': 'dreamy' }	1.234	[0, 1, 2]

3.8.3 Format: `print(t.reST(fmt='list-table'))`

this reST code:

```

1 .. list-table::
2    :header-rows: 1
3    :widths: 10 23 6 17
4
5    * - Name
6      and
7      Attributes
8    - Type
9    - Units
10   - Description
11     (and Occurrences)
12 * - one,
13   two
14   - buckle my
15   - shoe.
16
17
18   three,

```

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```

19     four
20     - ...
21 * - class
22     - NX_FLOAT
23     -
24     -
25 * - 0
26     - 1
27     - 2
28     - 3
29 * - None
30     - {'a': 1, 'b': 'dreamy'}
31     - 1.234
32     - [0, 1, 2]

```

is rendered as:

Name and At-tributes	Type	Units	Description (and Occur-ences)
one, two	buckle my	shoe. three, four	...
class	NX_FLOAT		
0	1	2	3
None	{ 'a': 1, 'b': 'dreamy' }	1.234	[0, 1, 2]

3.9 Example using XML source data from a URL

Another example (*cansas.py* in the source distribution) shows how content can be scraped from a URL that provides XML (using the *lxml* package) and written as a reST table. This particular XML uses a namespace which we setup in the variable *nsmap*:

```

1  #!/usr/bin/env python
2
3  import io
4  import sys
5  from lxml import etree
6  try:
7      # python 3
8      from urllib.request import urlopen
9  except ImportError as _exc:
10     # python 2
11     from urllib2 import urlopen
12 sys.path.insert(0, '..')
13 from pyRestTable import Table
14
15 SVN_BASE_URL = 'http://www.cansas.org/svn/ldwg/trunk'
16 GITHUB_BASE_URL = 'https://raw.githubusercontent.com/canSAS-org/ldwg/master'
17 CANSAS_URL = '/'.join((GITHUB_BASE_URL, 'examples/cs_af1410.xml'))
18
19
20 def main():
21     nsmap = dict(cs='urn:cansasld:1.1')

```

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```

22
23     r = urlopen(CANSAS_URL).read().decode("utf-8")
24     doc = etree.parse(io.StringIO(r))
25
26     node_list = doc.xpath('//cs:SASentry', namespaces=nsmap)
27     t = Table()
28     t.labels = ['SASentry', 'description', 'measurements']
29     for node in node_list:
30         s_name, count = '', ''
31         subnode = node.find('cs:Title', namespaces=nsmap)
32         if subnode is not None:
33             s = etree.tostring(subnode, method="text")
34             s_name = node.attrib['name']
35             count = len(node.xpath('cs:SASdata', namespaces=nsmap))
36             title = s.strip().decode()
37             t.rows += [[s_name, title, count]]
38
39     return t
40
41
42 if __name__ == '__main__':
43     table = main()
44     # use "complex" since s_name might be empty string
45     print(table.reST(fmt='complex'))

```

The output from this code:

```

1 10 SASentry elements in http://www.cansas.org/svn/ldwg/trunk/examples/cs_af1410.xml
2
3 +-----+-----+-----+
4 | entry      | description                                | measurements |
5 +-----+-----+-----+
6 | AF1410:10 | AF1410-10 (AF1410 steel aged 10 h) | 2            |
7 +-----+-----+-----+
8 | AF1410:8h | AF1410-8h (AF1410 steel aged 8 h)   | 2            |
9 +-----+-----+-----+
10 | AF1410:qu | AF1410-qu (AF1410 steel aged 0.25 h) | 2            |
11 +-----+-----+-----+
12 | AF1410:cc | AF1410-cc (AF1410 steel aged 100 h)  | 2            |
13 +-----+-----+-----+
14 | AF1410:2h | AF1410-2h (AF1410 steel aged 2 h)    | 2            |
15 +-----+-----+-----+
16 | AF1410:50 | AF1410-50 (AF1410 steel aged 50 h)   | 2            |
17 +-----+-----+-----+
18 | AF1410:20 | AF1410-20 (AF1410 steel aged 20 h)   | 1            |
19 +-----+-----+-----+
20 | AF1410:5h | AF1410-5h (AF1410 steel aged 5 h)    | 2            |
21 +-----+-----+-----+
22 | AF1410:1h | AF1410-1h (AF1410 steel aged 1 h)    | 2            |
23 +-----+-----+-----+
24 | AF1410:hf | AF1410-hf (AF1410 steel aged 0.5 h)  | 2            |
25 +-----+-----+-----+

```

The resulting table is shown:

10 SASentry elements in http://www.cansas.org/svn/ldwg/trunk/examples/cs_af1410.xml

entry	description	measurements
AF1410:10	AF1410-10 (AF1410 steel aged 10 h)	2
AF1410:8h	AF1410-8h (AF1410 steel aged 8 h)	2
AF1410:qu	AF1410-qu (AF1410 steel aged 0.25 h)	2
AF1410:cc	AF1410-cc (AF1410 steel aged 100 h)	2
AF1410:2h	AF1410-2h (AF1410 steel aged 2 h)	2
AF1410:50	AF1410-50 (AF1410 steel aged 50 h)	2
AF1410:20	AF1410-20 (AF1410 steel aged 20 h)	1
AF1410:5h	AF1410-5h (AF1410 steel aged 5 h)	2
AF1410:1h	AF1410-1h (AF1410 steel aged 1 h)	2
AF1410:hf	AF1410-hf (AF1410 steel aged 0.5 h)	2

author Pete R. Jemian**version** 2020.0.2**release** 2020.0.2+0.gae01786.dirty**published** Nov 09, 2020

4.1 source code documentation

Format a nice table in reST (restructured text)

User Interface	Description
<i>Table</i>	Construct a table in reST
<code>addLabel()</code>	add label for one additional column
<code>addRow()</code>	add list of items for one additional row
<code>setLongtable()</code>	set <i>longtable</i> attribute
<code>setTabularColumns()</code>	set <i>use_tabular_columns</i> & <i>alignment</i> attributes
<code>reST()</code>	render the table in reST format

<i>Table</i> ()	Construct a table in reST (no row or column spans).
<i>example_minimal</i> ()	minimal example table
<i>example_basic</i> ()	basic example table
<i>example_complicated</i> ()	complicated example table

class `pyRestTable.rest_table.Table`

Construct a table in reST (no row or column spans).

Parameters

- **`use_tabular_columns`** (*bool*) – if True, embed table in Sphinx ‘*. tabularcolumns::*

|%s|' % *alignment*' role

- **alignment** (*[str]*) – with *use_tabular_columns*, each list item is a column format string, as specified by LaTeX *tabulary* package format: <http://sphinx-doc.org/markup/misc.html?highlight=tabularcolumns#directive-tabularcolumns>
- **longtable** (*bool*) – with *use_tabular_columns*, if True, add Sphinx *:longtable:* directive

MAIN METHODS

<code>addLabel(text)</code>	add label for one additional column
<code>addRow(list_of_items)</code>	add list of items for one additional row
<code>reST(indentation, fmt)</code>	render the table in reST format

SUPPORTING METHODS

<code>setLongtable([state])</code>	set <i>longtable</i> attribute
<code>setTabularColumns([state, column_spec])</code>	set <i>use_tabular_columns</i> & <i>alignment</i> attributes
<code>plain_table(indentation)</code>	render the table in <i>plain</i> reST format
<code>simple_table(indentation)</code>	render the table in <i>simple</i> reST format
<code>grid_table(indentation)</code>	render the table in <i>grid</i> reST format
<code>list_table(indentation)</code>	render the table in <i>list-table</i> reST format:
<code>html_table(indentation)</code>	render the table in <i>HTML</i>

addLabel (*text*)

add label for one additional column

Parameters **text** (*str*) – column label text

Return int number of labels

addRow (*list_of_items*)

add list of items for one additional row

Parameters **list_of_items** (*[obj]*) – list of items for one complete row

Return int number of rows

find_widths ()

measure the maximum width of each column, considering possible line breaks in each cell

grid_table (*indentation=""*)

render the table in *grid* reST format

html_table (*indentation=""*)

render the table in *HTML*

list_table (*indentation=""*)

render the table in *list-table* reST format:

See <http://docutils.sourceforge.net/docs/ref/rst/directives.html>

Table 4: Frozen Delights!

Treat	Quantity	Description
Albatross	2.99	On a stick!
Crunchy Frog	1.49	If we took the bones out, it wouldn't be crunchy, now would it?
Gannet Ripple	1.99	On a stick!

markdown_table (*indentation=""*)

render the table in GitHub-flavored *markdown* (not reST) format

see: <https://github.com/adam-p/markdown-here/wiki/Markdown-Cheatsheet#tables>

plain_table (*indentation=""*)

render the table in *plain* reST format

reST (*indentation=""*, *fmt='simple'*)

render the table in reST format

setLongtable (*state=True*)

set *longtable* attribute

Parameters **longtable** (*bool*) – True | False

setTabularColumns (*state=True*, *column_spec=None*)

set *use_tabular_columns* & *alignment* attributes

Parameters

- **state** (*bool*) – True | False
- **column_spec** (*[str]*) – list of column specifications

simple_table (*indentation=""*)

render the table in *simple* reST format

`pyRestTable.rest_table.example_basic()`

basic example table

`pyRestTable.rest_table.example_complicated()`

complicated example table

`pyRestTable.rest_table.example_minimal()`

minimal example table

5.1 Production

2020.0.2 2019.07-30 - bug fix

- #33 not really a bug – add side pipes to markdown table

2020.0.1 2019.07-23 - bug fix

- #31 fix bug in column width detection

2020.0.0 2019.07.09 - packaging and code review

- #28 switch to semantic version numbering (<https://semver.org/>) automated code reviews
- #27 automated code reviews
- #22 automated code reviews

2019.0508.1

- add output in markdown table format

2019.0321.0

- conda release of noarch packaging, also pip

2019.0321.0.rc2

- develop and test conda release packaging

2019.0321.0.rc1

- develop and test conda release packaging

2018.10.25

- for zenodo DOI

2018.4.0

- #12 provide HTML table output format

2017.2.0

- #9 provide default rendering: `t = Table(); ...; str(t)`
- #8 add a plain table output

2016.1024.0 unit tests, repaired python 3 support

2016.1003.1 support python 3 AND python 2

2015.1115.0 add support methods, such as *addLabel* and *addRow*

2015.1111.01 support output as ReST *list-table* directive

2014.0710.01 provide docs at <http://pyRestTable.readthedocs.org>

2014.0430.01 release after forking from previous home

CHAPTER 6

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CHAPTER 7

Features

- create *simple*, *plain*, *grid* (also known as *complex*), and *list-table* reST formatted tables¹, also *markdown*-formatted tables²
- defines table cells through Python lists, row-by-row
- use with Python 2 or Python 3

¹ <http://docutils.sourceforge.net/docs/ref/rst/restructuredtext.html#tables>

² <https://github.com/adam-p/markdown-here/wiki/Markdown-Cheatsheet#tables>

CHAPTER 8

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