
webhelpers_grid2 Documentation

Release 0.9

Marcin Lulek - Webreactor.eu

Oct 07, 2018

Contents

1	Basic Usage	3
1.1	What grid is about?	3
1.2	Basic Example	3
1.3	Item number column	4
1.4	Basic template output	4
1.5	Customizing column names	5
1.6	Fetching the data from row/Customizing column cell markup	5
1.7	Controlling which columns allow sorting the data	6
1.8	Working with other item types	7
1.9	Order markers	7
1.10	Customizing row markup	8
2	API	9
3	Indices and tables	11
	Python Module Index	13

HTML Grid system that helps generating HTML tables (or other structures) for data presentation, supports ordering, sorting columns, and has customizable looks.

DOCUMENTATION: http://readthedocs.org/docs/webhelpers2_grid/en/latest/

DEMOS: http://ergo.github.io/webhelpers2_grid/gh-pages/ (static page)

BUG TRACKER: https://github.com/ergo/webhelpers2_grid

Contents:

1.1 What grid is about?

This class is designed to aid programmer in the task of creation of tables/grids - structures that are mostly built from lists/iterables of data rows.

The system allows you to hook your favourite framework and datasource and generate markup from it.

Supported features:

- auto generated headers
- headers allow you to generate clickable links for data ordering based on columns
- support for auto numbering resultset in separate columns
- header name auto generation
- extensive customizability
- framework agnostic solution
- works with iterables of objects/dictionaries/tuples
- default generated markup contains lots of css handy for styling

1.2 Basic Example

Creating a basic grid object:

To create a grid at minimum one needs to pass a dataset, like an iterable of objects or dictionaries:

```
grid = Grid(itemlist, ['c1', 'c2', 'c4'])
```

where itemlist in this simple scenario is a list of dicts:

```
[[{'c1':1,'c2'... }, {'c1'... }, ...]
```

This helper also received the list that defines order in which columns will be rendered.

1.3 Item number column

A special column name that can be passed in list that defines order - `_numbered` - this adds additional column that shows the number of item:

```
g = Grid(test_data, columns=["_numbered", "group_name", "options"], start_
↪number=10)
```

For paging sql data there one can pass `start_number` argument to the grid to define where to start counting. Descendant sorting on `_numbered` column decrements the value, you can change how numbering function behaves by overloading `calc_row_no` property.

Resulting rendering:

#	Group Name	Options
1	foo	bar
2		bar2
3	foo3	bar3
4	foo4	bar4
5	obj foo	bar
6	obj None	bar2
7	obj foo3	bar3
8	obj foo4	bar4

1.4 Basic template output

Converting the grid to a string renders the table rows. By default that's *just* the `<tr>` tags, not the `<table>` around them. The part outside the `<tr>`s have too many variations for us to render it. In many template systems (like jinja2/mako, you can simply assign the grid to a template variable and it will be automatically converted to a string. Example using a Jinja2 template:

```
<table class="stylized">
<caption>My Lovely Grid</caption>
{{ grid }}
</table>
```


1.5 Customizing column names

The names of the columns will get automatically converted for humans ie. `foo_bar` becomes `Foo Bar`. If you want the title to be something else you can change the `grid.labels` dict. If you want the column `part_no` to become `Catalogue Number` just do:

```
grid = Grid(itemlist, ['_numbered', 'part_name', 'part_no'])
grid.labels["part_no"] = u'Catalogue Number'
```

You can also control all aspects of grid rendering/behavior by creating your own subclasses of `Grid`.

1.6 Fetching the data from row/Customizing column cell markup

Since various programmers have different needs, `Grid` is highly customizable. By default `grid` attempts to read the value from object attributes (`getattr(record, column)`) if this fails there will be an attempt to read it via `record.get(column)`, if this fails `None` value will be used instead. For every column it will try to output value of `current_row['colname']`.

Since very often this behavior needs to be overridden like we need date formatted, use conditionals or generate a link one can use the `column_formats` dict and pass a rendering function to it. For example we want to append `foo` to part number:

```
class CustomGrid(Grid):
    def __init__(self, *args, **kwargs):
        super(CustomGrid, self).__init__(*args, **kwargs)
        self.labels["options"] = "Custom label"
        self.column_formats["options"] = self.options_td

    def options_td(self, col_num, i, item):
        u = url(
            "/tickets/view", ticket_id=item.id, y=self.additional_kw["context"]["y
↪"]
        )
        a = link_to(item.options, u)
        return HTML.td(a)

g = CustomGrid(
    test_obj_data,
    columns=["_numbered", "group_name", "options", "non-existant"],
    context={"x": "context var", "y": 99},
)
return g
```

Resulting rendering:

#	Group Name	Custom label	Non-Existant
1	obj foo	bar	
2	obj None	bar2	
3	obj foo3	bar3	
4	obj foo4	bar4	

1.7 Controlling which columns allow sorting the data

It may be desired to exclude some or all columns from generation sorting urls (used by subclasses that are sorting aware). You can use grids `exclude_ordering` property to pass list of columns that should not support sorting. By default sorting is disabled - this `exclude_ordering` contains every column name:

```
grid = CustomGrid(itemlist, ['_numbered', 'part_name', 'part_no'],
                        order_column='options', order_direction='asc',
                        request=requestObj)
#enable ordering support
grid.exclude_ordering = []
```

Since grid is framework agnostic the url generator is not working out-of-the-box, you will need to subclass grid object and override a special method called `generate_header_link` implementing ordering there.

Whole operation consists of setting `self.order_column` and `self.order_dir` to their CURRENT values, and generating new urls passed as labels for state that header should set after its clicked.:

Example implementation for pyramid app (but flask/pylons/django should be the same with the exception of handling of request object implementation/url generator):

```
from webhelpers2.html.builder import HTML

class CustomGrid(Grid):
    """
    Subclass of Grid that can handle header link generation for quick building
    of tables that support ordering of their contents, paginated results etc.
    """

    def generate_header_link(self, column_number, column, label_text):
        """ This handles generation of link and then decides to call
        self.default_header_ordered_column_format
        or
        self.default_header_column_format
        based on if current column is the one that is used for sorting or not
        """

        # implementation START #
        # this will handle possible URL generation
        GET_copy = self.request.copy().GET.mixed()

        self.order_column = GET_copy.pop("order_col", None)
```

(continues on next page)

(continued from previous page)

```

self.order_dir = GET_copy.pop("order_dir", None)

if column == self.order_column and self.order_dir == "asc":
    new_order_dir = "dsc"
else:
    new_order_dir = "asc"

GET_copy['order_col'] = column
GET_copy['order_dir'] = new_order_dir

url = self.request.current_route_url(_query=GET_copy)

label_text = HTML.tag("a", href=url, c=label_text)
# implementation END #
# Is the current column the one we're ordering on?
if column == self.order_column:
    return self.default_header_ordered_column_format(column_number,
                                                    column,
                                                    label_text)
else:
    return self.default_header_column_format(column_number, column,
                                              label_text)

```

Resulting rendering:

#	Group Name	Options ▲
1	foo	bar
2		bar2
3	foo3	bar3
4	foo4	bar4

1.8 Working with other item types

The module also includes *ListGrid* where the difference between default grid is how default column format function handles data fetching from objects. It is a good example how quickly and easy one can customize all aspects of grid behavior.

1.9 Order markers

Ordered columns by default include marker spans that you can easily stylize using CSS to contain arrows or images showing order direction.

Example:

```

<style type="text/css">
    table .header .asc .marker:before {

```

(continues on next page)

(continued from previous page)

```
        content: '\25b2' /* up arrow code */
    }

    table .header .dsc .marker:before {
        content: '\25be'; /* down arrow code */
    }
</style>
```

1.10 Customizing row markup

You can customize the grids look and behavior by overloading grids instance render functions, bu subclassing and reimplementing those functions you can output ul/div or any other markup you desire:

grid.default_column_format (self, column_number, i, record, column_name) by default generates markup like:

```
<td class="cNO">VALUE</td>
```

grid.default_header_column_format (self, column_number, column_name, header_label)

by default generates markup like:

```
<td class="cNO COLUMN_NAME">VALUE</td>
```

grid.default_header_ordered_column_format (self, column_number, order, column_name, header_label):

Used by grids that support ordering of columns in the grid like, webhelpers.pylonslib.grid.GridPylons. by default generates markup like:

```
<td class="cNO ordering ORDER_DIRECTION COLUMN_NAME">LABEL<span class="marker"></span>
↔</td>
```

grid.default_header_record_format (self, headers) by default generates markup like:

```
<tr class="header">HEADERS_MARKUP</tr>
```

grid.default_record_format (self, i, record, columns) Make an HTML table from a list of objects, and soon a list of sequences, a list of dicts, and a single dict.:

```
<tr class="ODD_OR_EVEN">RECORD_MARKUP</tr>
```

grid.generate_header_link (self, column_number, column, label_text) by default just sets the order direction and column properties for grid.

Actual link generation is handled by subclasses of Grid.

grid.numbered_column_format (self, column_number, i, record) by default generates markup like:

```
<td class="cNO">RECORD_NO</td>
```

A helper to make an HTML table from a list of dicts, objects, or sequences.

A set of CSS styles complementing this helper is in “webhelpers2_grid/html/public/stylesheets/grid.css”. To use them, include the stylesheet in your application and set your <table> class to “stylized”.

```
class webhelpers2_grid.Grid(itemlist, columns, column_labels=None, column_formats=None,
                             start_number=1, order_column=None, order_direction=None, request=None, url_generator=None, exclude_ordering=None, **kw)
```

This class is designed to aid programmer in the task of creation of tables/grids - structures that are mostly built from datasets.

```
generate_header_link(column_number, column, label_text)
```

This handles generation of link and then decides to call `self.default_header_ordered_column_format` or `self.default_header_column_format` based on whether current column is the one that is used for sorting.

```
class webhelpers2_grid.ObjectGrid(itemlist, columns, column_labels=None, column_formats=None, start_number=1, order_column=None, order_direction=None, request=None, url_generator=None, exclude_ordering=None, **kw)
```

Bw. compatibility object

```
class webhelpers2_grid.ListGrid(itemlist, columns=None, column_labels=None, *args, **kw)
```

A grid class for a sequence of lists.

This grid class assumes that the rows are lists rather than dicts, and uses subscript access to retrieve the column values. Some constructor args are also different.

If `columns` is not specified in the constructor, it will examine `itemlist[0]` to determine the number of columns, and display them in order. This works only if `itemlist` is a sequence and not just an iterable. Alternatively, you can pass an int to specify the number of columns, or a list of int subscripts to override the column order. Examples:

```
grid = ListGrid(list_data)
grid = ListGrid(list_data, columns=4)
grid = ListGrid(list_data, columns=[1, 3, 2, 0])
```

`column_labels` may be a list of strings. The class will calculate the appropriate subscripts for the superclass dict.

CHAPTER 3

Indices and tables

- `genindex`
- `modindex`
- `search`

W

`webhelpers2_grid`, 8

G

`generate_header_link()` (`webhelpers2_grid.Grid` method),
[9](#)

`Grid` (class in `webhelpers2_grid`), [9](#)

L

`ListGrid` (class in `webhelpers2_grid`), [9](#)

O

`ObjectGrid` (class in `webhelpers2_grid`), [9](#)

W

`webhelpers2_grid` (module), [8](#)