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# **python-json-patch Documentation**

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*python-json-patch* is a Python library for applying JSON patches ([RFC 6902](#)). Python 2.6, 2.7, 3.2, 3.3 and PyPy are supported.

## Contents



Please refer to [RFC 6902](#) for the exact patch syntax.

## Creating a Patch

Patches can be created in two ways. One way is to explicitly create a `JsonPatch` object from a list of operations. For convenience, the method `JsonPatch.from_string()` accepts a string, parses it and constructs the patch object from it.

```
>>> import jsonpatch
>>> patch = jsonpatch.JsonPatch([
    {'op': 'add', 'path': '/foo', 'value': 'bar'},
    {'op': 'add', 'path': '/baz', 'value': [1, 2, 3]},
    {'op': 'remove', 'path': '/baz/1'},
    {'op': 'test', 'path': '/baz', 'value': [1, 3]},
    {'op': 'replace', 'path': '/baz/0', 'value': 42},
    {'op': 'remove', 'path': '/baz/1'},
])

# or equivalently
>>> patch = jsonpatch.JsonPatch.from_string('[{"op": "add", ...}]')
```

Another way is to *diff* two objects.

```
>>> src = {'foo': 'bar', 'numbers': [1, 3, 4, 8]}
>>> dst = {'baz': 'qux', 'numbers': [1, 4, 7]}
>>> patch = jsonpatch.JsonPatch.from_diff(src, dst)

# or equivalently
>>> patch = jsonpatch.make_patch(src, dst)
```

## Applying a Patch

A patch is always applied to an object.

```
>>> doc = {}
>>> result = patch.apply(doc)
{'foo': 'bar', 'baz': [42]}
```

The `apply` method returns a new object as a result. If `in_place=True` the object is modified in place.

If a patch is only used once, it is not necessary to create a patch object explicitly.

```
>>> obj = {'foo': 'bar'}

# from a patch string
>>> patch = '[{"op": "add", "path": "/baz", "value": "qux"}]'
>>> res = jsonpatch.apply_patch(obj, patch)

# or from a list
>>> patch = [{'op': 'add', 'path': '/baz', 'value': 'qux'}]
>>> res = jsonpatch.apply_patch(obj, patch)
```



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## The jsonpatch module

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Apply JSON-Patches (RFC 6902)

**class** `jsonpatch.AddOperation(operation)`  
Adds an object property or an array element.

**class** `jsonpatch.CopyOperation(operation)`  
Copies an object property or an array element to a new location

**exception** `jsonpatch.InvalidJsonPatch`  
Raised if an invalid JSON Patch is created

**class** `jsonpatch.JsonPatch(patch)`  
A JSON Patch is a list of Patch Operations.

```
>>> patch = JsonPatch([
...     {'op': 'add', 'path': '/foo', 'value': 'bar'},
...     {'op': 'add', 'path': '/baz', 'value': [1, 2, 3]},
...     {'op': 'remove', 'path': '/baz/1'},
...     {'op': 'test', 'path': '/baz', 'value': [1, 3]},
...     {'op': 'replace', 'path': '/baz/0', 'value': 42},
...     {'op': 'remove', 'path': '/baz/1'},
... ])
>>> doc = {}
>>> result = patch.apply(doc)
>>> expected = {'foo': 'bar', 'baz': [42]}
>>> result == expected
True
```

`JsonPatch` object is iterable, so you could easily access to each patch statement in loop:

```
>>> lpatch = list(patch)
>>> expected = {'op': 'add', 'path': '/foo', 'value': 'bar'}
>>> lpatch[0] == expected
True
>>> lpatch == patch.patch
True
```

Also `JsonPatch` could be converted directly to `bool` if it contains any operation statements:

```
>>> bool(patch)
True
>>> bool(JsonPatch([]))
False
```

This behavior is very handy with `make_patch()` to write more readable code:

```
>>> old = {'foo': 'bar', 'numbers': [1, 3, 4, 8]}
>>> new = {'baz': 'qux', 'numbers': [1, 4, 7]}
>>> patch = make_patch(old, new)
>>> if patch:
...     # document have changed, do something useful
...     patch.apply(old)
{...}
```

**apply** (*obj*, *in\_place=False*)

Applies the patch to given object.

#### Parameters

- **obj** (*dict*) – Document object.
- **in\_place** (*bool*) – Tweaks way how patch would be applied - directly to specified *obj* or to his copy.

**Returns** Modified *obj*.

**classmethod from\_diff** (*src*, *dst*, *optimization=True*)

Creates `JsonPatch` instance based on comparing of two document objects. Json patch would be created for *src* argument against *dst* one.

#### Parameters

- **src** (*dict*) – Data source document object.
- **dst** (*dict*) – Data source document object.

**Returns** `JsonPatch` instance.

```
>>> src = {'foo': 'bar', 'numbers': [1, 3, 4, 8]}
>>> dst = {'baz': 'qux', 'numbers': [1, 4, 7]}
>>> patch = JsonPatch.from_diff(src, dst)
>>> new = patch.apply(src)
>>> new == dst
True
```

**classmethod from\_string** (*patch\_str*)

Creates `JsonPatch` instance from string source.

**Parameters** **patch\_str** (*str*) – JSON patch as raw string.

**Returns** `JsonPatch` instance.

**to\_string** ()

Returns patch set as JSON string.

**exception** `jsonpatch.JsonPatchConflict`

Raised if patch could not be applied due to conflict situation such as: - attempt to add object key then it already exists; - attempt to operate with nonexistence object key; - attempt to insert value to array at position beyond of it size; - etc.

**exception** `jsonpatch.JsonPatchException`

Base Json Patch exception

**exception** `jsonpatch.JsonPatchTestFailed`

A Test operation failed

**class** `jsonpatch.MoveOperation(operation)`

Moves an object property or an array element to new location.

**class** `jsonpatch.PatchOperation(operation)`

A single operation inside a JSON Patch.

**apply** (*obj*)

Abstract method that applies patch operation to specified object.

**class** `jsonpatch.RemoveOperation(operation)`

Removes an object property or an array element.

**class** `jsonpatch.ReplaceOperation(operation)`

Replaces an object property or an array element by new value.

**class** `jsonpatch.TestOperation(operation)`

Test value by specified location.

`jsonpatch.apply_patch(doc, patch, in_place=False)`

Apply list of patches to specified json document.

#### Parameters

- **doc** (*dict*) – Document object.
- **patch** (*list or str*) – JSON patch as list of dicts or raw JSON-encoded string.
- **in\_place** (*bool*) – While `True` patch will modify target document. By default patch will be applied to document copy.

**Returns** Patched document object.

**Return type** `dict`

```
>>> doc = {'foo': 'bar'}
>>> patch = [{'op': 'add', 'path': '/baz', 'value': 'qux'}]
>>> other = apply_patch(doc, patch)
>>> doc is not other
True
>>> other == {'foo': 'bar', 'baz': 'qux'}
True
>>> patch = [{'op': 'add', 'path': '/baz', 'value': 'qux'}]
>>> apply_patch(doc, patch, in_place=True) == {'foo': 'bar', 'baz': 'qux'}
True
>>> doc == other
True
```

`jsonpatch.get_loadjson()`

adds the `object_pairs_hook` parameter to `json.load` when possible

The “`object_pairs_hook`” parameter is used to handle duplicate keys when loading a JSON object. This parameter does not exist in Python 2.6. This methods returns an unmodified `json.load` for Python 2.6 and a partial function with `object_pairs_hook` set to `multidict` for Python versions that support the parameter.

`jsonpatch.make_patch(src, dst)`

Generates patch by comparing of two document objects. Actually is a proxy to `JsonPatch.from_diff()` method.

### Parameters

- **src** (*dict*) – Data source document object.
- **dst** (*dict*) – Data source document object.

```
>>> src = {'foo': 'bar', 'numbers': [1, 3, 4, 8]}
>>> dst = {'baz': 'qux', 'numbers': [1, 4, 7]}
>>> patch = make_patch(src, dst)
>>> new = patch.apply(src)
>>> new == dst
True
```

`jsonpatch.multipdict` (*ordered\_pairs*)  
Convert duplicate keys values to lists.

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## Commandline Utilities

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The JSON patch package contains the commandline utilities `jsondiff` and `jsonpatch`.

### `jsondiff`

The program `jsondiff` can be used to create a JSON patch by comparing two JSON files

```
usage: jsondiff [-h] [--indent INDENT] [-v] FILE1 FILE2

Diff two JSON files

positional arguments:
  FILE1
  FILE2

optional arguments:
  -h, --help            show this help message and exit
  --indent INDENT       Indent output by n spaces
  -v, --version         show program's version number and exit
```

### Example

```
# inspect JSON files
$ cat a.json
{ "a": [1, 2], "b": 0 }

$ cat b.json
{ "a": [1, 2, 3], "c": 100 }

# show patch in "dense" representation
$ jsondiff a.json b.json
[{"path": "/a/2", "value": 3, "op": "add"}, {"path": "/b", "op": "remove"}, {"path":
↪ "/c", "value": 100, "op": "add"}]
```

```
# show patch with some indentation
$ jsondiff a.json b.json --indent=2
[
  {
    "path": "/a/2",
    "value": 3,
    "op": "add"
  },
  {
    "path": "/b",
    "op": "remove"
  },
  {
    "path": "/c",
    "value": 100,
    "op": "add"
  }
]
```

## jsonpatch

The program `jsonpatch` is used to apply JSON patches on JSON files.

```
usage: jsonpatch [-h] [--indent INDENT] [-v] ORIGINAL PATCH
```

Apply a JSON patch on a JSON files

positional arguments:

ORIGINAL	Original file
PATCH	Patch file

optional arguments:

-h, --help	show this help message <b>and</b> exit
--indent INDENT	Indent output by n spaces
-v, --version	show program's version number and exit

## Example

```
# create a patch
$ jsondiff a.json b.json > patch.json

# show the result after applying a patch
$ jsonpatch a.json patch.json
{"a": [1, 2, 3], "c": 100}

$ jsonpatch a.json patch.json --indent=2
{
  "a": [
    1,
    2,
    3
  ],
```

```
"c": 100
}

# pipe result into new file
$ jsonpatch a.json patch.json --indent=2 > c.json

# c.json now equals b.json
$ jsondiff b.json c.json
[]
```





## CHAPTER 4

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### Indices and tables

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