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**yadm**  
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It's small and simple ODM for use with MongoDB.



# CHAPTER 1

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## Requirements

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YAMD support MongoDB version 3.x only. MongoDB 2.x is not supported.

Minimal version of python is 3.4.





## CHAPTER 2

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### Quick start

---

```
import pymongo
from yadm import Database, Document, fields

# Create model
class BlogPost(Document):
    __collection__ = 'blog_posts'

    title = fields.StringField()
    body = fields.StringField()

# Create post
post = BlogPost()
post.title = 'Small post'
post.body = 'Bla-bla-bla...'

# Connect to database
client = pymongo.MongoClient("localhost", 27017)
db = Database(client, 'test')

# Insert post to database
db.insert(post)

# Query posts
qs = db.get_queryset(BlogPost).find({'title': {'$regex': '^s.*'}})
assert qs.count() > 0

for post in qs:
    assert post.title.startswith('s')

# Query one post
post = db.get_queryset(BlogPost).find_one({'title': 'Small post'})

# Change post
```

```
post.title = 'Bla-bla-bla title'

# Save changed post
db.save(post)
```

## CHANGES

### 1.4.10 (2017-07-07)

- **ReferenceField.from\_mongo** try to get document from primary if not found by default.

### 1.4.9 (2017-07-06)

- Add **QuerySet.read\_primary** method for simple setup `pymongo.read_preference.Primary`.

### 1.4.4 (2017-05-17)

- Add **TimedeltaField** for stores durations;
- Add **SimpleEmbeddedDocumentField** for simply create embedded documents.

```
class Doc(Document):
    embedded = SimpleEmbeddedDocumentField({
        'i': IntegerField(),
        's': StringField(),
    })
```

### 1.4.3 (2017-05-14)

- Add **StaticField** for static data.

### 1.4.2 (2017-04-09)

- Additional arguments (like `write_concern`) for write operations;
- `create_fake` save the documents with write concern “majority” by default.

### 1.4.0 (2017-04-05)

- Drop `pymongo 2` support;
- Additional options for databases and collections;
- Add `Database.get_document`;
- Add **TypedEmbeddedDocumentField**;
- **reload** argument of `Database.update_one` `<yadm.database.Database.update_one>` must be keyword (may be backward incompatible).

### 1.3.1 (2017-02-21)

- Change raw data for Money;

### 1.3.0 (2017-02-19)

- **Add currency support to Money:**
  - Totally rewrite Money type. Now it is not subclass of Decimal;
  - Add storage for currencies: `yadm.fields.money.currency.DEFAULT_CURRENCY_STORAGE`;

### 1.2.1 (2017-01-19)

- Add `QuerySet.find_in` for \$in queries with specified order;

### 1.2.0 (2016-12-27)

- Drop MongoDB 2.X support;
- Objects for update and remove results;
- Use Faker instead fake-factory;

### 1.1.4 (2016-08-20)

- **Add some features to `:py:module:'Bulk <yadm.bulk>'`:**
  - `Bulk.update_one(document, **kw)`: method for add update one document in bulk;
  - `Bulk.find(query).update(**kw)`: update many documents by query;
  - `Bulk.find(query).upsert().update(**kw)`: upsert document;
  - `Bulk.find(query).remove(**kw)`: remove documents;

### 1.1.3 (2016-07-23)

- **Add `QuerySet.ids`** method for get only documents id's from queryset;
- **Add `Money.total_cents`** method and `Money.total_cents` classmethod;

### 1.1 (2016-04-26)

- **Add cacheing on queryset level and use it for `ReferenceField`**;
- Add mongo aggregation framework support;
- **Add `exc` argument to `QuerySet.find_one`** for raise specified exception if not found;
- **Add `multi` argument to `QuerySet.remove`**;
- Deprecate `QuerySet.find_one`
- Refactoring.

## 1.0 (2015-11-14)

- **Change document structure. No more bad `BaseDocument.__data__` attribute:**
  - `BaseDocument.__raw__`: raw data from mongo;
  - `BaseDocument.__cache__`: cached objects, casted with fields;
  - `BaseDocument.__changed__`: changed objects.
- **Changes api for custom fields:**
  - Not more need create field descriptors for every field;
  - `prepare_value` called only for setattr;
  - `to_mongo` called only for save objects to mongo;
  - `from_mongo` called only for load values from `BaseDocument.__raw__`;
  - Remove `Field.default` attribute. Use `Field.get_default` method;
  - Add `get_if_not_loaded` and `get_if_attribute_not_set` method;
  - By default raise `NotLoadedError` if field not loaded from projection;
- **Changes in `ReferenceField`:**
  - Raise `BrokenReference` if link is broken;
  - Raise `NotBindingToDatabase` if document not saved to database;
- `smart_null` keyword for `Field`;
- Fields in document must be instances (not classes!);
- Remove `ArrayContainer` and `ArrayContainerField`;
- Remove old `MapIntKeysField` and `MapObjectIdKeysField`. Use new `MapCustomKeysField`;
- Add `Database.update_one` method for run simple update query with specified document;
- Add `QuerySet.distinct`;
- `serialize.from_mongo` now accept `not_loaded` sequence with filed names who must mark as not loaded, `parent` and `name`;
- `serialize.to_mongo` do not call `FieldDescriptor.__set__`;
- Fakers! Subsystem for generate test objects;
- Tests now use `pytest`;
- And more, and more...

## API

API documentation

### Database

This module for provide work with MongoDB database.

```
import pymongo
from yadm.database import Database

from mydocs import Doc

client = pymongo.MongoClient("localhost", 27017)
db = Database(self.client, 'test')

doc = Doc()
db.insert(doc)

doc.arg = 13
db.save(doc)

qs = db.get_queryset(Doc).find({'arg': {'$gt': 10}})
for doc in qs:
    print(doc)
```

**class** `yadm.database.Database` (*client*, *name*)  
Main object who provide work with database.

#### Parameters

- **client** (*pymongo.Client*) – database connection
- **name** (*str*) – database name

**aggregate** (*document\_class*, \*, *pipeline=None*, *\*\*collection\_params*)

Return aggregator for use aggregation framework.

**Parameters**

- **document\_class** – *yadm.documents.Document*
- **pipeline** (*list*) – initial pipeline
- **\*\*collection\_params** – params for `get_collection`

**bulk** (*document\_class*, \*, *ordered=False*, *raise\_on\_errors=True*, *\*\*collection\_params*)

Return Bulk.

**Parameters**

- **document\_class** (*MetaDocument*) – class of documents fo bulk
- **ordered** (*bool*) – create ordered bulk (default *False*)
- **raise\_on\_errors** (*bool*) – raise `BulkWriteError` exception if write errors (default *True*)
- **\*\*collection\_params** – params for `get_collection`

Context manager:

**with db.bulk(Doc) as bulk:** `bulk.insert(doc_1) bulk.insert(doc_2)`

**get\_document** (*document\_class*, *\_id*, \*, *exc=None*, *read\_preference=PrimaryPreferred(tag\_sets=None, max\_staleness=-1)*, *\*\*collection\_params*)

Get document for it `_id`.

**Parameters**

- **document\_class** – *yadm.documents.Document*
- **\_id** – document's `_id`
- **exc** (*Exception*) – raise given exception if not found
- **\*\*collection\_params** – params for `get_collection`

Default `ReadPreference` is `PrimaryPreferred`.

**get\_queryset** (*document\_class*, \*, *cache=None*, *\*\*collection\_params*)

Return queryset for document class.

**Parameters**

- **document\_class** – *yadm.documents.Document*
- **cache** – cache for share with other querysets
- **\*\*collection\_params** – params for `get_collection`

This create instance of `yadm.queryset.QuerySet` with presetted document's collection information.

**insert** (*document*, *\*\*collection\_params*)

Insert document to database.

**Parameters** **document** (*Document*) – document instance for insert to database

It's bind new document to database set `_id`. :param **\*\*collection\_params**: params for `get_collection`

**reload** (*document*, *new\_instance=False*, *read\_preference=PrimaryPreferred(tag\_sets=None, max\_staleness=-1)*, *\*\*collection\_params*)

Reload document.

**Parameters**

- **document** (`Document`) – instance for reload
- **new\_instance** (`bool`) – if `True` return new instance of document, else change data in given document (default: `False`)
- **\*\*collection\_params** – params for `get_collection`

**remove** (`document`, **\*\*collection\_params**)

Remove document from database.

**Parameters**

- **document** (`Document`) – instance for remove from database
- **\*\*collection\_params** – params for `get_collection`

**save** (`document`, `full=False`, `upsert=False`, **\*\*collection\_params**)

Save document to database.

**Parameters**

- **document** (`Document`) – document instance for save
- **full** (`bool`) – fully resave document (default: `False`)
- **upsert** (`bool`) – see documentation for MongoDB's `update` (default: `False`)
- **\*\*collection\_params** – params for `get_collection`

If document has no `_id` `insert` new document.

**update\_one** (`document`, `*`, `reload=True`, `set=None`, `unset=None`, `inc=None`, `push=None`, `pull=None`, **\*\*collection\_params**)

Update one document.

**Parameters**

- **document** (`Document`) – document instance for update
- **reload** (`bool`) – if `True`, reload document
- **\*\*collection\_params** – params for `get_collection`

## Documents

Basic documents classes for build models.

```
class User(Document):
    __collection__ = 'users'

    first_name = fields.StringField()
    last_name = fields.StringField()
    age = fields.IntegerField()
```

All fields placed in `yadm.fields` package.

**class** `yadm.documents.MetaDocument` (`cls`, `name`, `bases`, `cls_dict`)  
Metaclass for documents.

**class** `yadm.documents.BaseDocument` (**\*\*kwargs**)  
Base class for all documents.

**\_\_raw\_\_**

Dict with raw data from mongo

**\_\_cache\_\_**

Dict with cached objects, casted with fields

**\_\_changed\_\_**

Dict with changed objects

**\_\_data\_\_**

Deprecated! For backward compatibility only!

Old way to storing data in documents. Now equal to `__raw__`.

**\_\_debug\_print\_\_()**

Print debug information.

**\_\_fake\_\_** (*values, faker, depth*)

Fake data customizer.

**class** `yadm.documents.Document` (*\*\*kwargs*)

Class for build first level documents.

**\_\_collection\_\_**

Name of MongoDB collection

**\_id**

Mongo object id (`bson.ObjectId`)

**id**

Alias for `_id` for simply use

**\_\_db\_\_**

Internal attribute contain instance of `yadm.database.Database` for realize `yadm.fields.references.ReferenceField`. It bind in `yadm.database.Database` or `yadm.queryset.QuerySet`.

**\_\_qs\_\_**

Documents gets from this queryset

**class** `yadm.documents.DocumentItemMixin`

Mixin for custom all fields values, such as `EmbeddedDocument`, `yadm.fields.containers.Container`.

**\_\_parent\_\_**

Parent object.

```
assert doc.embedded_doc.__parent__ is doc
assert doc.list[13].__parent__ is doc.list
```

**\_\_name\_\_**

```
assert doc.list.__name__ == 'list'
assert doc.list[13].__name__ == 13
```

**\_\_db\_\_**

Database object.

```
assert doc.f.l[0].__db__ is doc.__db__
```



**\_\_document\_\_**

Root document.

```
assert doc.f.l[0].__document__ is doc
```

**\_\_field\_name\_\_**

Dotted field name for MongoDB operations, like as \$set, \$push and other...

```
assert doc.f.l[0].__field_name__ == 'f.l.0'
```

**\_\_get\_value\_\_(document)**

Get value from document with path to self.

**\_\_path\_\_**

Path to root generator.

```
assert list(doc.f.l[0].__path__) == [doc.f.l[0], doc.f.l, doc.f]
```

**\_\_path\_names\_\_**

Path to root generator.

```
assert list(doc.f.l[0].__path__) == [0, 'l', 'f']
```

**\_\_qs\_\_**

Queryset object.

**\_\_weakref\_\_**

list of weak references to the object (if defined)

```
class yadm.documents.EmbeddedDocument (**kwargs)
```

Class for build embedded documents.

## Serializers and deserializers

Functions for serialize and deserialize data.

```
yadm.serialize.from_mongo (document_class, data, not_loaded=(), parent=None, name=None)
```

Deserialize MongoDB data to document.

**Parameters**

- **document\_class** – document class
- **data** (*dict*) – data from MongoDB
- **not\_loaded** (*list*) – fields, who marked as not loaded
- **parent** – parent for new document
- **name** (*str*) – name for new document

```
yadm.serialize.to_mongo (document, exclude=(), include=None)
```

Serialize document to MongoDB data.

**Parameters**

- **document** (*BaseDocument*) – document for serializing
- **exclude** (*list*) – exclude fields
- **include** (*list*) – include only fields (all by default)

## Queryset

**class** `yadm.queryset.BaseQuerySet` (*db, document\_class, \*, cache=None, criteria=None, projection=None, sort=None, slice=None, collection\_params=None*)

Query builder.

### Parameters

- **db** –
- **document\_class** –
- **cache** –
- **criteria** (*dict*) –
- **projection** (*dict*) –
- **sort** (*list*) –
- **slice** (*slice*) –
- **collection\_params** (*dict*) –

### cache

Queryset cache object.

**copy** (*\*, cache=None, criteria=None, projection=None, sort=None, slice=None, collection\_params=None*)

Copy queryset with new parameters.

Only keywords arguments is allowed. Parameters simply replaced with given arguments.

### Parameters

- **cache** –
- **criteria** (*dict*) –
- **projection** (*dict*) –
- **sort** (*list*) –
- **slice** (*slice*) –
- **collection\_params** (*dict*) –

**Returns** new `yadm.queryset.QuerySet` object

**fields** (*\*fields*)

Get only setted fields.

Update projection with fields.

**Parameters** **fields** (*str*) –

**Returns** new `yadm.queryset.QuerySet`

```
qs('field', 'field2')
```

**fields\_all** ()

Clear projection.

**find** (*criteria=None, projection=None*)

Return queryset copy with new criteria and projection.

### Parameters

- **criteria** (*dict*) – update queryset’s criteria
- **projection** (*dict*) – update queryset’s projection

**Returns** `new yadm.queryset.QuerySet`

```
qs({'field': {'$gt': 3}}, {'field': True})
```

**read\_preference** (*read\_preference*)

Setup readPreference.

Return new QuerySet instance.

Deprecated since 1.4.0. Use *collection\_params* argument in *copy*.

**read\_primary** (*preferred=False*)

Return queryset with setupd read concern for primary.

If *preferred* argument is *True*, *PrimaryPreferred* is used else *Primary*.

**sort** (*\*sort*)

Return queryset with sorting.

**Parameters** **sort** (*tuples*) – tuples with two items: (*field\_name*, *sort\_order\_as\_int*).

```
qs.sort(('field_1', 1), ('field_2', -1))
```

**class** `yadm.queryset.NotFoundBehavior`

An enumeration.

## Bulk queries

**class** `yadm.bulk.Bulk` (*db, document\_class, ordered, raise\_on\_errors, collection\_params*)

Bulk object.

### Parameters

- **db** (*Database*) – Database instance
- **document\_class** (*MetaDocument*) – document class for collection
- **ordered** (*bool*) – create ordered bulk (default *False*)
- **raise\_on\_errors** (*bool*) – raise *BulkWriteError* exception if write errors (default *True*)

Context manager example:

```
with db.bulk(Doc, ordered=True) as bulk:
    bulk.insert(doc_1)
    bulk.insert(doc_2)
    bulk.update_one(doc_3, inc={'incr_key': 1})
    bulk.find({'key': 'value'}).update(set={'key':
    'new_value'})
    bulk.find({'key': 'new_value'}).remove()
```

**error**

True for executed errors.

**execute** ()

Execute the bulk query.

**Returns** *BulkResult* instance

**find** (*query*)

Start “find” query in bulk.

**Parameters** **query** (*dict*) –

**Returns** BulkQuery instance

**insert** (*document*)

Add insert document to bulk.

**Parameters** **document** (*Document*) – document for insert

**Warning:** This unlike *Database.insert!* Currently, it is not bind objects to database and set id.

**result**

A BulkResult instance or rise RuntimeError if not executed.

**update\_one** (*document*, \*, *set=None*, *unset=None*, *inc=None*, *push=None*, *pull=None*)

Add update one document to bulk.

**class** yadm.bulk.**BulkResult** (*bulk*, *raw*)

Object who provide result of *Bulk.execute()*.

**n\_inserted**

Provide *nInserted* from raw result.

**n\_modified**

Provide *nModified* from raw result.

**n\_removed**

Provide *nRemoved* from raw result.

**n\_upserted**

Provide *nUpserted* from raw result.

**write\_errors**

Provide *writeErrors* from raw result.

## Mongo Aggregation Framework

Mongo Aggregation Framework helper.

```
cur = db.aggregate(Doc).match({'i': {'$gt': 13}}).project(a='$i').limit(8)
```

## Join

**class** yadm.join.**Join** (*qs*)

Helper for build client-side joins.

```
# Doc.ref is instance of ReferenceField
qs = db(Doc).find({'k': 1}) # queryset filter
join = qs.join('ref') # create join query in this place
for doc in join:
    print(doc.ref) # do not create query to database
```

**get\_queryset** (*field\_name*)

Return queryset for joined objects.

**join** (*\*field\_names*)

Do manual join.

## Fields

This package contain all fields.

### Base fields

Base classes for build database fields.

**class** `yadm.fields.base.NotLoadedError`  
 Raise if value marked as not loaded.

```
doc = db(Doc).fields('a').find_one()
try:
    doc.b
except NotLoadedError:
    print("raised!")
```

**class** `yadm.fields.base.FieldDescriptor` (*name, field*)  
 Base descptior for fields.

**name**

Name of field

**field**

Field instance for this descptior

**\_\_delete\_\_** (*instance*)

Mark document's key as not set.

**\_\_get\_\_** (*instance, owner*)

Get python value from document.

1.Lookup in `__changed__`;

2.Lookup in `__cache__`;

3.Lookup in `__raw__`:

- if `AttributeNotSet` – call `Field.get_if_attribute_not_set`;
- if `NotLoaded` – call `Field.get_if_not_loaded`;
- call `Field.from_mongo`;
- set `__name__` and `__parent__`
- save to `__cache__`

4.Call `Field.get_default`;

5.If `AttributeNotSet` – call `Field.get_if_attribute_not_set`;

6.Return value.

**\_\_set\_\_** (*instance, value*)

Set value to document.

1.Call `Field.prepare_value` for cast value;

2.Save in `Document.__changed__`;

3.Call `Field.set_parent_changed`.

**class** `yadm.fields.base.Field` (*smart\_null=False*)

Base field for all database fields.

**Parameters** `smart_null` (*bool*) – If it *True*, access to not exists fields return *None* instead *AttributeError* exception. You will not be able to distinguish null value from not exist. Use with care.

**descriptor\_class**

Class of descriptor for work with field

**document\_class**

Class of document. Set in `contribute_to_class()`.

**name**

Name of field in document. Set in `contribute_to_class()`.

**contribute\_to\_class** (*document\_class, name*)

Add field for document\_class.

**Parameters** `document_class` (*MetaDocument*) – document class for add

**copy** ()

Return copy of field.

**descriptor\_class**

alias of `FieldDescriptor`

**from\_mongo** (*document, value*)

Convert mongo value to python value.

**Parameters**

- **document** (*BaseDocument*) – document
- **value** – mongo value

**Returns** python value

**get\_default** (*document*)

Return default value.

**get\_fake** (*document, faker, deep*)

Return fake data for testing.

**get\_if\_attribute\_not\_set** (*document*)

Call if key not exist in document.

**get\_if\_not\_loaded** (*document*)

Call if field data marked as not loaded.

**prepare\_value** (*document, value*)

The method is called when value is assigned for the attribute.

**Parameters**

- **document** (*BaseDocument*) – document
- **value** – raw value

**Returns** prepared value

It must be accept *value* argument and return processed (e.g. casted) analog. Also it is called once for the default value.

**to\_mongo** (*document, value*)

Convert python value to mongo value.

**Parameters**

- **document** (`BaseDocument`) – document
- **value** – python value

**Returns** mongo value

**Simple fields**

Fields for basic data types.

```
class yadm.fields.simple.BooleanField (default=<class 'yadm.markers.AttributeNotSet'>, *,
                                         choices=None, **kwargs)
```

Field for boolean values.

```
type
    alias of bool
```

```
class yadm.fields.simple.FloatField (default=<class 'yadm.markers.AttributeNotSet'>, *,
                                         choices=None, **kwargs)
```

Field for float.

```
type
    alias of float
```

```
class yadm.fields.simple.IntegerField (default=<class 'yadm.markers.AttributeNotSet'>, *,
                                         choices=None, **kwargs)
```

Field for integer.

```
type
    alias of int
```

```
class yadm.fields.simple.ObjectIdField (default_gen=False)
    Field for ObjectId.
```

**Parameters** **default\_gen** (*bool*) – generate default value if not set

```
type
    alias of ObjectId
```

```
class yadm.fields.simple.SimpleField (default=<class 'yadm.markers.AttributeNotSet'>, *,
                                         choices=None, **kwargs)
```

Base field for simple types.

**Parameters**

- **default** – default value
- **choices** (*set*) – set of possible values

```
class yadm.fields.simple.StaticField (data)
    Field for static data.
```

```
class yadm.fields.simple.StringField (default=<class 'yadm.markers.AttributeNotSet'>, *,
                                         choices=None, **kwargs)
```

Field for string.

```
type
    alias of str
```

## Datetime field

`class yadm.fields.datetime.DatetimeField(*, auto_now=False, **kwargs)`  
Field for time stamp.

**Parameters** `auto_now` (*bool*) – `datetime.now` as default (default: False)

## Decimal field

Field for decimal numbers

This code save to MongoDB document:

`class yadm.fields.decimal.DecimalField(*, context=None, **kwargs)`  
Field for work with `decimal.Decimal`.

### Parameters

- **context** (*decimal.Context*) – context for decimal operations (default: run `decimal.getcontext()` when need)
- **default** (*decimal.Decimal*) –

TODO: context in copy()

### context

Context.

**Returns** `decimal.Context` for values

**prepare\_value** (*document, value*)

Cast value to `decimal.Decimal`.

## Embedded documents fields

Work with embedded documents.

```
class EDoc(EmbeddedDocument):
    i = fields.IntegerField()

class Doc(Document):
    __collection__ = 'docs'
    edoc = EmbeddedDocumentField(EDoc)

doc = Doc()
doc.edoc = EDoc()
doc.edoc.i = 13
db.insert(doc)
```

`class yadm.fields.embedded.EmbeddedDocumentField(embedded_document_class, *, auto_create=True, **kwargs)`

Field for embedded objects.

### Parameters

- **embedded\_document\_class** (*EmbeddedDocument*) – class for embedded document
- **auto\_create** (*bool*) – automatic creation embedded document from access



**copy()**  
Return copy of field.

**get\_if\_attribute\_not\_set** (*document*)  
Call if key not exist in document.

If `auto_create` is `True`, create and return new embedded document. Else `AttributeError` is raised.

**class** `yadm.fields.embedded.SimpleEmbeddedDocumentField` (*fields*, \*, *auto\_create=True*,  
\*\**kwargs*)

Field for simply create embedded documents.

Usage:

**class** `Doc(Document)`:

```
    embedded = SimpleEmbeddedDocumentField({ 'i': IntegerField(), 's': StringField(),
    })
```

**class** `yadm.fields.embedded.TypedEmbeddedDocumentField` (*type\_field=None*, *types=None*,  
\*\**kwargs*)

Field for embedded document with variable types.

**Parameters**

- **type\_field** (*str*) – name of field in embedded document for select type
- **types** (*dict*) – map of type names to embedded document classes

## Reference field

Work with references.

```
class RDoc(Document):
    i = fields.IntegerField

class Doc(Document):
    rdoc = fields.ReferenceField(RDoc)

rdoc = RDoc()
rdoc.i = 13
db.insert(rdoc)

doc = Doc()
doc.rdoc = rdoc
db.insert(doc)

doc = db.get_queryset(Doc).find_one(doc.id) # reload doc
assert doc.rdoc.id == rdoc.id
assert doc.rdoc.i == 13
```

**exception** `yadm.fields.reference.BrokenReference`

Raise if referenced document is not found.

**exception** `yadm.fields.reference.NotBindingToDatabase`

Raise if set `ObjectId` insted referenced document to new document, who not binded to database.

**class** `yadm.fields.reference.ReferenceField` (*reference\_document\_class*, \*\**kwargs*)

Field for work with references.

**Parameters** `reference_document_class` – class for refered documents

`get_fake (document, faker, depth)`  
Try create referenced document.

## Containers fields

Base classes for containers.

`class yadm.fields.containers.Container (field, parent, value)`  
Base class for containers.

`reload ()`  
Reload all object from database.

`class yadm.fields.containers.ContainerField (item_field=None, *, auto_create=True, **kwargs)`

Base class for container fields.

`container`  
alias of `Container`

`from_mongo (document, value)`

`get_default (document)`

`get_default_value ()`

`prepare_item (container, item, value)`

`prepare_value (document, value)`

`to_mongo (document, value)`

## List fields

List of objects.

```
class Doc (Document) :
    __collection__ = 'docs'
    integers = fields.ListField(fields.IntegerField)

doc = Doc()
doc.integers.append(1)
doc.integers.append(2)
assert doc.integers == [1, 2]

db.insert(doc)
doc = db.get_queryset(Doc).find_one(doc.id) # reload

doc.integers.append(3) # do not save
assert doc.integers == [1, 2, 3]
doc = db.get_queryset(Doc).find_one(doc.id) # reload
assert doc.integers == [1, 2]

doc.integers.remove(2) # do not save too
assert doc.integers == [1]
doc = db.get_queryset(Doc).find_one(doc.id) # reload
assert doc.integers == [1, 2]

doc.integers.push(3) # $push query
assert doc.integers == [1, 2, 3]
```

```

doc = db.get_queryset(Doc).find_one(doc.id) # reload
assert doc.integers == [1, 2, 3]

doc.integers.pull(2) # $pull query
assert doc.integers == [1, 3]
doc = db.get_queryset(Doc).find_one(doc.id) # reload
assert doc.integers == [1, 3]

```

**class** `yadm.fields.list.List` (*field, parent, value*)  
 Container for list.

**append** (*item*)

Append item to list.

**Parameters** *item* – item for append

This method does not save object!

**insert** (*index, item*)

Append item to list.

**Parameters**

- **index** (*int*) –
- **item** – item for insert

This method does not save object!

**pull** (*query, reload=True*)

Pull item from database.

**Parameters**

- **query** – query for *\$pull* on this field
- **reload** (*bool*) – automatically reload all values from database

See *\$pull* in MongoDB's *update*.

**push** (*item, reload=True*)

Push item directly to database.

**Parameters**

- **item** – item for *\$push*
- **reload** (*bool*) – automatically reload all values from database

See *\$push* in MongoDB's *update*.

**remove** (*item*)

Remove item from list.

**Parameters** *item* – item for remove

This method does not save object!

**replace** (*query, item, reload=True*)

Replace list elements.

**Parameters**

- **query** – query for *update*. Keys of this query is relative.
- **item** – embedded document or dict

- **reload** (*bool*) – automatically reload all values from database

**update** (*query, values, reload=True*)  
Update fields in embedded documents.

#### Parameters

- **query** – query for *update*. Keys of this query is relative.
- **values** – dict of new values
- **reload** (*bool*) – automatically reload all values from database

**class** `yadm.fields.list.ListField` (*item\_field=None, \*, auto\_create=True, \*\*kwargs*)  
Field for list values.

For example, document with list of integers:

```
class TestDoc(Document):
    __collection__ = 'testdoc'
    li = fields.ListField(fields.IntegerField())
```

#### **container**

alias of *List*

## Set field

Field with sets.

Similar as `yadm.fields.list`.

**class** `yadm.fields.set.Set` (*field, parent, value*)  
Container for set.

**add** (*item*)  
Append item to set.

**Parameters** *item* – item for add

This method does not save object!

**add\_to\_set** (*item, reload=True*)  
Add item directly to database.

#### Parameters

- **item** – item for *\$addToSet*
- **reload** (*bool*) – automatically reload all values from database

See *\$addToSet* in MongoDB's *update*.

**discard** (*item*)  
Remove item from the set if it is present.

**Parameters** *item* – item for discard

This method does not save object!

**pull** (*query, reload=True*)  
Pull item from database.

#### Parameters

- **query** – query for *\$pull* on this field

- **reload** (*bool*) – automatically reload all values from database

See *\$pull* in MongoDB's *update*.

**remove** (*item*)

Remove item from set.

**Parameters** *item* – item for remove

This method does not save object!

**class** `yadm.fields.set.SetField` (*item\_field=None, \*, auto\_create=True, \*\*kwargs*)

Field for set values.

**container**

alias of *Set*

## Map field

Map.

```
class Doc(Document):
    __collection__ = 'docs'
    map = fields.MapField(fields.IntegerField)

doc = Doc()
doc.map['a'] = 1
doc.map['b'] = 2
assert doc.map == {'a': 1, 'b': 2}

db.insert(doc)
doc = db.get_queryset(Doc).find_one(doc.id) # reload

doc.map['c'] = 3 # do not save
assert doc.map == {'a': 1, 'b': 2, 'c': 3}
doc = db.get_queryset(Doc).find_one(doc.id) # reload
assert doc.map == {'a': 1, 'b': 2}

del doc.map['b'] # do not save too
assert doc.map == {'a': 1}
doc = db.get_queryset(Doc).find_one(doc.id) # reload
assert doc.map == {'a': 1, 'b': 2}

doc.map.set('d', 3) # $set query
assert doc.map == {'a': 1, 'b': 2, 'c': 3}
doc = db.get_queryset(Doc).find_one(doc.id) # reload
assert doc.map == {'a': 1, 'b': 2, 'c': 3}

doc.map.unset('d', 3) # $unset query
assert doc.map == {'a': 1, 'b': 2}
doc = db.get_queryset(Doc).find_one(doc.id) # reload
assert doc.map == {'a': 1, 'b': 2}
```

**class** `yadm.fields.map.Map` (*field, parent, value*)

Map.

**set** (*key, value, reload=True*)

Set key directly in database.

**Parameters**

- **key** – key
- **value** – value for *\$set*

See *\$set* in MongoDB's *set*.

**unset** (*key*, *reload=True*)

Unset key directly in database.

**Parameters** **key** – key

See *\$unset* in MongoDB's *unset*.

**class** `yadm.fields.map.MapCustomKeysField` (*item\_field*, *key\_factory*, \*, *key\_to\_str=<class 'str'>*,  
*auto\_create=True*, *\*\*kwargs*)

Field for maps with custom key type.

**Parameters**

- **item\_field** (*field*) –
- **key\_factory** (*func*) – function, who return thue key from raw string key
- **key\_to\_str** (*func*) –
- **auto\_create** (*bool*) –

**class** `yadm.fields.map.MapField` (*item\_field=None*, \*, *auto\_create=True*, *\*\*kwargs*)

Field for maps.

**container**

alias of *Map*

## Geo fields

Fields for geo data

See: <http://docs.mongodb.org/manual/applications/geospatial-indexes/>

GeoJSON: <http://geojson.org/geojson-spec.html>

**class** `yadm.fields.geo.Geo`

Base class for GeoJSON data.

**class** `yadm.fields.geo.GeoCoordinates`

Base class for GeoJSON data with coordinates.

**class** `yadm.fields.geo.GeoField` (*types=[<class 'yadm.fields.geo.Point'>*, *<class 'yadm.fields.geo.MultiPoint'>*], *\*\*kwargs*)

Base field for GeoJSON objects.

**class** `yadm.fields.geo.GeoOneTypeField` (*\*\*kwargs*)

Base field for GeoJSON objects with one acceptable type.

**class** `yadm.fields.geo.MultiPoint` (*points*)

Class for GeoJSON MultiPoint objects.

See: <http://geojson.org/geojson-spec.html#id5>

**class** `yadm.fields.geo.MultiPointField` (*\*\*kwargs*)

Field for MultiPoint.

**type**

alias of *MultiPoint*

**class** `yadm.fields.geo.Point` (*longitude, latitude*)  
Class for GeoJSON Point objects.

See: <http://geojson.org/geojson-spec.html#id2>

**class** `yadm.fields.geo.PointField` (*\*\*kwargs*)  
Field for Point.

**type**  
alias of *Point*





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