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# **Anyblok / Marshmallow Documentation**

***Release 1.2.0***

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Information about the AnyBlok / Marshmallow project.

## 1.1 Project Homepage

AnyBlok is hosted on [github](#) - the main project page is at [https://github.com/AnyBlok/AnyBlok\\_Marshmallow](https://github.com/AnyBlok/AnyBlok_Marshmallow). Source code is tracked here using [GIT](#).

Releases and project status are available on Pypi at [http://pypi.python.org/pypi/anyblok\\_marshallow](http://pypi.python.org/pypi/anyblok_marshallow).

The most recent published version of this documentation should be at <http://doc.anyblok-marshmallow.anyblok.org>.

## 1.2 Project Status

AnyBlok with Marshmallow is currently in beta status and is expected to be fairly stable. Users should take care to report bugs and missing features on an as-needed basis. It should be expected that the development version may be required for proper implementation of recently repaired issues in between releases;

## 1.3 Installation

Install released versions of AnyBlok from the Python package index with [pip](#) or a similar tool:

```
pip install anyblok_marshallow
```

Installation via source distribution is via the `setup.py` script:

```
python setup.py install
```

Installation will add the `anyblok` commands to the environment.

## 1.4 Unit Test

Run the test with nose:

```
pip install nose
nosetests anyblok_marshmallow/tests
```

## 1.5 Dependencies

AnyBlok works with **Python 3.3** and later. The install process will ensure that [AnyBlok](#), [marshmallow](#) and [marshmallow-sqlalchemy](#) are installed, in addition to other dependencies. The latest version of them is strongly recommended.

## 1.6 Contributing (hackers needed!)

Anyblok / Marshmallow is at a very early stage, feel free to fork, talk with core dev, and spread the word!

## 1.7 Author

Jean-Sébastien Suzanne

## 1.8 Contributors

[Anybox](#) team:

- Jean-Sébastien Suzanne

[Sensee](#) team:

- Franck Bret

## 1.9 Bugs

Bugs and feature enhancements to AnyBlok should be reported on the [Issue tracker](#).

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- \* *Add the **registry** by the Meta*
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## 2.1 Declare your AnyBlok model

```
from anyblok.column import Integer, String
from anyblok.relationship import Many2One, Many2Many
from anyblok import Declarations

@Declarations.register(Declarations.Model)
class City:

    id = Integer(primary_key=True)
    name = String(nullable=False)
    zipcode = String(nullable=False)

    def __repr__(self):
        return '<City(name={self.name!r})>'.format(self=self)

@Declarations.register(Declarations.Model)
class Tag:

    id = Integer(primary_key=True)
    name = String(nullable=False)

    def __repr__(self):
        return '<Tag(name={self.name!r})>'.format(self=self)

@Declarations.register(Declarations.Model)
class Customer:
    id = Integer(primary_key=True)
    name = String(nullable=False)
    tags = Many2Many(model=Declarations.Model.Tag)
```

```
def __repr__(self):
    return '<Customer(name={self.name!r}, '
        'tags={self.tags!r})>'.format(self=self)

@Declarations.register(Declarations.Model)
class Address:

    id = Integer(primary_key=True)
    street = String(nullable=False)
    city = Many2One(model=Declarations.Model.City, nullable=False)
    customer = Many2One(
        model=Declarations.Model.Customer, nullable=False,
        one2many="addresses")
```

**Warning:** The AnyBlok model must be declared in a blok

## 2.2 Declare your schema

```
from anyblok_marshmallow import ModelSchema
from anyblok_marshmallow.fields import Nested

class CitySchema(ModelSchema):

    class Meta:
        model = 'Model.City'

class TagSchema(ModelSchema):

    class Meta:
        model = 'Model.Tag'

class AddressSchema(ModelSchema):

    # follow the relationship Many2One and One2One
    city = Nested(CitySchema)

    class Meta:
        model = 'Model.Address'

class CustomerSchema(ModelSchema):

    # follow the relationship One2Many and Many2Many
    # - the many=True is required because it is *2Many
    # - exclude is used to forbid the recurse loop
    addresses = Nested(AddressSchema, many=True, exclude=('customer', ))
    tags = Nested(TagSchema, many=True)

    class Meta:
```

```

model = 'Model.Customer'
# optionally attach an AnyBlok registry
# to use for serialization, deserialization and validation
registry = registry
# optionally return an AnyBlok model instance
post_load_return_instance = True

customer_schema = CustomerSchema()

```

---

**Note:** New in version 1.1.0 the Nested field must come from **anyblok\_marshmallow**, because **marshmallow** cache the Nested field with the context. And the context is not propagated again if it changed

---

## 2.3 (De)serialize your data and validate it

```

customer = registry.Customer.insert(name="JS Suzanne")
tag1 = registry.Tag.insert(name="tag 1")
customer.tags.append(tag1)
tag2 = registry.Tag.insert(name="tag 2")
customer.tags.append(tag2)
rouen = registry.City.insert(name="Rouen", zipcode="76000")
paris = registry.City.insert(name="Paris", zipcode="75000")
registry.Address.insert(customer=customer, street="Somewhere", city=rouen)
registry.Address.insert(customer=customer, street="Another place", city=paris)

dump_data = customer_schema.dump(customer).data
# {
#     'id': 1,
#     'name': 'JS Suzanne',
#     'tags': [
#         {
#             'id': 1,
#             'name': 'tag 1',
#         },
#         {
#             'id': 2,
#             'name': 'tag 2',
#         },
#     ],
#     'addresses': [
#         {
#             'id': 1
#             'street': 'Somewhere'
#             'city': {
#                 'id': 1,
#                 'name': 'Rouen',
#                 'zipcode': '76000',
#             },
#         },
#         {
#             'id': 2
#             'street': 'Another place'
#             'city': {

```

```
#             'id': 2,
#             'name': 'Paris',
#             'zipcode': '75000',
#         },
#     ],
# }

customer_schema.load(dump_data).data
# <Customer(name='JS Suzanne' tags=[<Tag(name='tag 1')>, <Tag(name='tag 2')>])>

errors = customer_schema.validate(dump_data)
# dict with all the validating errors
```

---

**Note:** By default: the deserialization return a dict with deserialized data, here we get an instance of the model because the CustomerSchema add `post_load_return_instance = True` in their Meta

---

## 2.4 Give the registry

The schema need to have the registry.

If no registry found when the de(serialization) or validation then the **RegistryNotFound** exception will be raised.

### 2.4.1 Add the registry by the Meta

This is the solution given in the main exemple:

```
class CustomerSchema(ModelSchema):

    class Meta:
        model = 'Model.Customer'
        registry = registry
```

### 2.4.2 Add the registry during init

This solution is use during the instantiation

```
customer_schema = CustomerSchema(registry=registry)
```

### 2.4.3 Add the registry by the context

This solution is use during the instantiation or after

```
customer_schema = CustomerSchema(context={'registry': registry})
```

or

```
customer_schema = CustomerSchema()
customer_schema.context['registry'] = registry
```

## 2.4.4 Add the registry when the de(serialization or validator) is called

```
customer_schema.dump(customer, registry=registry)
customer_schema.load(dump_data, registry=registry)
customer_schema.validate(dump_data, registry=registry)
```

## 2.5 post\_load\_return\_instance option

As the registry this option can be passed by initialization of the schema, by the context or during the call of methods

The value of this options can be:

- False: **default**, the output is a dict
- True: the output is an instance of the model. The primary keys must be in value
- array of string: the output is an instance of the model, each str entry must be an existing column

**Warning:** If the option is not False, and the instance can no be found, then the **instance** error will be added in the errors dict of the method

**Warning:** The post load is only for load method!!!

## 2.6 model option

This option add in the model name. As the registry, this option can be passed by definition, initialization, context or during the call of the (de)serialization / validation

```
class AnySchema(ModelSchema):

    class Meta:
        model = "Model.Customer"
```

or

```
any_schema = AnySchema(model="Model.customer")
```

or

```
any_schema.context['model'] = "Model.Customer"
```

or

```
any_schema.dump(instance, model="Model.Customer")
any_schema.load(dump_data, model="Model.Customer")
any_schema.validate(dump_data, model="Model.Customer")
```

## 2.7 only\_primary\_key option

This option add in the only argument the primary keys of the model. As the registry, this option can be passed by definition, initialization, context or during the call of the (de)serialization / validation

```
class CustomerSchema (ModelSchema) :  
  
    class Meta:  
        model = "Model.Customer"  
        only_primary_key = True
```

or

```
customer_schema = CustomerSchema(only_primary_key=True)
```

or

```
customer_schema.context['only_primary_key'] = True
```

or

```
customer_schema.dump(instance, only_primary_key=True)  
customer_schema.load(dump_data, only_primary_key=True)  
customer_schema.validate(dump_data, only_primary_key=True)
```

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  - *ModelSchema*



#### 3.1 RegistryNotFound

**exception** `anyblok_marshmallow.exceptions.RegistryNotFound`

Bases: `Exception`

Exception raised when no registry is found to build schema

**with\_traceback()**

Exception.with\_traceback(tb) – set `self.__traceback__` to `tb` and return `self`.



## 4.1 Nested

**class** anyblok\_marshmallow.fields.**Nested** (*nested*, *default=<marshmallow.missing>*, *exclude=()*, *only=None*, *\*\*kwargs*)

Bases: marshmallow.fields.Nested

Inherit marshmallow fields.Nested

**context**

The context dictionary for the parent Schema.

**deserialize** (*value*, *attr=None*, *data=None*)

Deserialize *value*.

**Raises `ValidationError`** – If an invalid value is passed or if a required value is missing.

**fail** (*key*, *\*\*kwargs*)

A helper method that simply raises a *ValidationError*.

**get\_value** (*attr*, *obj*, *accessor=None*, *default=<marshmallow.missing>*)

Return the value for a given key from an object.

**root**

Reference to the *Schema* that this field belongs to even if it is buried in a *List*. Return *None* for unbound fields.

**schema**

Overload the super property to remove cache

it is the only way to propagate the context at each call

**serialize** (*attr*, *obj*, *accessor=None*)

Pulls the value for the given key from the object, applies the field's formatting and returns the result.

**Parameters**

- **attr** (*str*) – The attribute or key to get from the object.

- **obj** (*str*) – The object to pull the key from.
- **accessor** (*callable*) – Function used to pull values from obj.

**Raises `ValidationError`** – In case of formatting problem

## 5.1 update\_from\_kwargs

`anyblok_marshmallow.schema.update_from_kwargs(*entries)`  
decorator to get temporary the value in kwargs and put it in schema

**Params** `entries` array of entry name to take from the kwargs

## 5.2 format\_field

`anyblok_marshmallow.schema.format_fields(x)`  
remove the anyblok prefix from the field name

## 5.3 ModelConverter

**class** `anyblok_marshmallow.schema.ModelConverter(schema_cls=None)`  
Bases: `marshmallow_sqlalchemy.convert.ModelConverter`

Overwrite the `ModelConverter` class of `marshmallow-sqlalchemy`

The goal is to fix the fieldname, because they are prefixed.

**fields\_for\_model** (`*args, **kwargs`)  
Overwrite the method and remove prefix of the field name

## 5.4 ModelSchemaOpts

**class** `anyblok_marshmallow.schema.ModelSchemaOpts(meta, *args, **kwargs)`  
Bases: `marshmallow.schema.SchemaOpts`

Model schema option for Model schema

Add get option from the Meta:

- **model:** name of an AnyBlok model **required**
- **registry:** an AnyBlok registry
- **post\_load\_return\_instance:** return an instance object

## 5.5 ModelSchema

```
class anyblok_marshmallow.schema.ModelSchema (*args, **kwargs)
```

Bases: `marshmallow.schema.Schema`

A marshmallow schema based on the AnyBlok Model

Wrap the real schema, because at the instantiation the registry is not available

```
class Meta
```

Bases: `object`

Options object for a Schema.

Example usage:

```
class Meta:
    fields = ("id", "email", "date_created")
    exclude = ("password", "secret_attribute")
```

Available options:

- **fields:** Tuple or list of fields to include in the serialized result.
- **additional:** Tuple or list of fields to include *in addition* to the explicitly declared fields. **additional** and **fields** are mutually-exclusive options.
- **include:** Dictionary of additional fields to include in the schema. **It is** usually better to define fields as class variables, but you may need to use this option, e.g., if your fields are Python keywords. May be an *OrderedDict*.
- **exclude:** Tuple or list of fields to exclude in the serialized result. Nested fields can be represented with dot delimiters.
- **dateformat:** Date format for all `DateTime` fields that do not have their date format explicitly specified.
- **strict:** If *True*, raise errors during marshalling rather than storing them.
- **json\_module:** JSON module to use for *loads* and *dumps*. Defaults to the `json` module in the `stdlib`.
- **ordered:** If *True*, order serialization output according to the order in which fields were declared. Output of *Schema.dump* will be a *collections.OrderedDict*.
- **index\_errors:** If *True*, errors dictionaries will include the **index** of invalid items in a collection.
- **load\_only:** Tuple or list of fields to exclude from serialized results.
- **dump\_only:** Tuple or list of fields to exclude from deserialization

**OPTIONS\_CLASS**

alias of `ModelSchemaOpts`

**accessor** (*func*)

Decorator that registers a function for pulling values from an object to serialize. The function receives the Schema instance, the key of the value to get, the `obj` to serialize, and an optional default value.

Deprecated since version 2.0.0: Set the `error_handler` class Meta option instead.

**dumps** (*obj*, *many=None*, *update\_fields=True*, *\*args*, *\*\*kwargs*)

Same as `dump()`, except return a JSON-encoded string.

**Parameters**

- **obj** – The object to serialize.
- **many** (*bool*) – Whether to serialize *obj* as a collection. If *None*, the value for *self.many* is used.
- **update\_fields** (*bool*) – Whether to update the schema's field classes. Typically set to *True*, but may be *False* when serializing a homogenous collection. This parameter is used by *fields.Nested* to avoid multiple updates.

**Returns** A tuple of the form (*data*, *errors*)

**Return type** *MarshalResult*, a *collections.namedtuple*

New in version 1.0.0.

**error\_handler** (*func*)

Decorator that registers an error handler function for the schema. The function receives the Schema instance, a dictionary of errors, and the serialized object (if serializing data) or data dictionary (if deserializing data) as arguments.

Example:

```
class UserSchema(Schema):
    email = fields.Email()

@UserSchema.error_handler
def handle_errors(schema, errors, obj):
    raise ValueError('An error occurred while marshalling {}'.format(obj))

user = User(email='invalid')
UserSchema().dump(user) # => raises ValueError
UserSchema().load({'email': 'bademail'}) # raises ValueError
```

New in version 0.7.0.

Deprecated since version 2.0.0: Set the `error_handler` class Meta option instead.

**generate\_marshmallow\_instance** ()

Generate the real marshmallow-sqlalchemy schema

**get\_attribute** (*attr*, *obj*, *default*)

Defines how to pull values from an object to serialize.

New in version 2.0.0.

**handle\_error** (*error*, *data*)

Custom error handler function for the schema.

**Parameters**

- **error** (*ValidationError*) – The *ValidationError* raised during (de)serialization.
- **data** – The original input data.

New in version 2.0.0.

**loads** (*json\_data*, *many=None*, *\*args*, *\*\*kwargs*)

Same as `load()`, except it takes a JSON string as input.

#### Parameters

- **json\_data** (*str*) – A JSON string of the data to deserialize.
- **many** (*bool*) – Whether to deserialize *obj* as a collection. If *None*, the value for *self.many* is used.
- **partial** (*bool/tuple*) – Whether to ignore missing fields. If *None*, the value for *self.partial* is used. If its value is an iterable, only missing fields listed in that iterable will be ignored.

**Returns** A tuple of the form (*data*, *errors*)

**Return type** *UnmarshalResult*, a *collections.namedtuple*

New in version 1.0.0.

**on\_bind\_field** (*field\_name*, *field\_obj*)

Hook to modify a field when it is bound to the *Schema*. No-op by default.

**schema**

property to get the real schema

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### 6.1 1.2.0 (2017-11-30)

- [REF] decrease complexity
- [IMP] Add `validates_schema` on `ModelSchema` to automatically check if the field exist on the model

### 6.2 1.1.0 (2017-11-02)

- Add option put only the primary keys
- Fix the Front page
- REF model option, can be given by another way than Meta
- Put `RegistryNotFound` in exceptions
- Add Nested field, this field is not and have not to be cached

### 6.3 1.0.2 (2017-10-25)

- Fix pypi documentation

### 6.4 1.0.0 (2017-10-24)

- Add marshmallow schema for `AnyBlok` for:
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- Validation

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## CHAPTER 8

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